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UNIDO INDUSTRY SECTOR REVIEW AND PROGRAMMING MISSION TO ZAMBIA

Report

This report was prepared by the Regional and Country Studies Branch.

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## Preface

The aim of the UNIDO industrial sector review and programming mission to Zambia is to assist the Government of Zambia, in consultation with the UNDP office in Lusaka, to formulate the global policy guidelines for technical co-operation in the industrial sector, and to prepare the subsequent Technical Co-operation Programme.

UNIDO's industrial sector programming assistance to Zambia will be integrated within the Master Plan that the Government has defined for the implementation of the second phase of the NATCAP exercise. This framework will also provide the Government and UNDP with the analytical inputs for the elaboration of the Fifth National Country Programme for Zambia.

The approach is broad and based on the national policies and plans, viewed in the Fourth National Development Plan 1989-93 (FNDP), the New Economic Recovery Programme, the Public Investment Programme and the Economic and Financial Policy Framework Paper, United Nations resolutions and memoranda, and the objectives of the donor agencies.

UNIDO's industrial sector programming assistance to Zambia is in two phases. This report covers the first phase and presents the framework for the Technical Co-operation Programme. It will be followed by a second phase, aimed at the preparation of a detailed Technical Co-operation Programme for the period 1991-96.

The present report contains an assessment of the structure and performance of the Zambian economy under recent economic policies and its impact on the industrial sector (Chapter 1), a summary of Government priorities and plans for the industrial sector (Chapter 2), an assessment of the socio-economic potential of the industrial sector (Chapter 3) and a review of policy issues affecting the industrial sector (Chapter 4). This is followed by an identification of priority industrial subsectors of both the Government of Zambia and its international technical co-operation partners (Chapter 5) where assessments are made and conclusions drawn based on resource availability. Evaluation of technical co-operation is made in Chapter 6. Technical co-operation priority areas in the industrial sector are subsequently dealt with in Chapter 7, which also presents conclusions and recommendations.

Data and information from follow-up meetings with representatives from enterprises included in the UNIDO 1988 rehabilitation survey of Zambian manufacturing industry are also presented in Appendix 1. Appendix 2 contains the terms of reference for the second phase of the UNIDO Industry Sector Programming Mission.

This Industry Sector Programming Report was prepared by the Regional and Country Studies Branch in co-operation with the AREA Programmes Division, Africa Branch. The report is based on a field mission by a UNIDO team visiting Zambia during the period 8 June - 6 July 1990. The team consisted of UNIDO consultants Messrs. Björn Almquist and Michael Hodd. An additional resource in the field work was provided by Zambian counterparts from the National Commission for Development Planning, Messrs. Patric Nkanza and Mkonga Mwemba.

The Mission would like to express its gratitude to the Government authorities of Zambia, UN and donor agency representatives, National and Commercial banks and private organizations for their assistance and support. The Mission would particularly like to express its gratitude to Mr. A. Sallah, UNDP Resident Representative, Mr. E. Taylor, UNIDO Country Director and Mr. E. Kjerstad, UNIDO Junior Professional Officer for their guidance and assistance.

## Table of contents

<u>Chapter</u>	<u>Page</u>
PREFACE .. .. .	i
TABLE OF CONTENTS .. .. .	iii
LIST OF TABLES AND FIGURES .. .. .	v
MAP OF ZAMBIA .. .. .	vi
ZAMBIA BASIC INFORMATION .. .. .	vii
LIST OF ABBREVIATIONS .. .. .	viii
SUMMARY .. .. .	ix
1 ECONOMIC AND SOCIAL BACKGROUND .. .. .	1
1.1 Introduction .. .. .	1
1.2 Economic structure .. .. .	1
1.3 Economic performance .. .. .	7
1.4 The role of the industrial sector .. .. .	10
1.5 Economic policy in Zambia .. .. .	13
1.6 External influences .. .. .	15
1.7 Implications of changes for industrial sector .. .. .	15
1.8 Social dimensions of development .. .. .	18
1.8.1 Social indicators .. .. .	18
1.8.2 Social implications .. .. .	18
1.9 Institutional capacity to implement policy .. .. .	21
1.10 Summary and conclusions .. .. .	24
2 GOVERNMENT PRIORITIES AND PLANS FOR THE INDUSTRIAL SECTOR .. .. .	25
2.1 Introduction .. .. .	25
2.2 Mining .. .. .	25
2.3 Manufacturing .. .. .	26
2.4 Electricity and water .. .. .	26
2.5 Construction .. .. .	27
2.6 Summary and conclusions .. .. .	27
3 ASSESSMENT OF THE SOCIO-ECONOMIC POTENTIAL .. .. .	28
3.1 The industrial sector .. .. .	28
3.2 Human resource development issues .. .. .	33
3.3 The financial sector .. .. .	39
3.4 Raw material resources .. .. .	39
3.5 Energy resources, electricity .. .. .	46
3.6 Environmental considerations .. .. .	48
3.7 Summary and conclusions .. .. .	49
4 POLICY ISSUES IN THE INDUSTRIAL SECTOR .. .. .	52
4.1 Introduction .. .. .	52
4.2 Tariffs .. .. .	52
4.3 Foreign exchange controls and exchange rates .. .. .	53
4.4 Price controls .. .. .	54
4.5 Export promotion .. .. .	55
4.6 Parastatal sector .. .. .	56
4.7 Private sector .. .. .	56
4.8 Financial sector .. .. .	57
4.9 Small firms and village industries .. .. .	57
4.10 Incomes policy .. .. .	58
4.11 Taxation .. .. .	58
4.12 Summary and conclusions .. .. .	59

# Table of contents

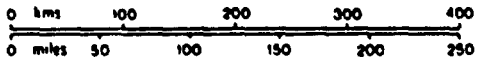
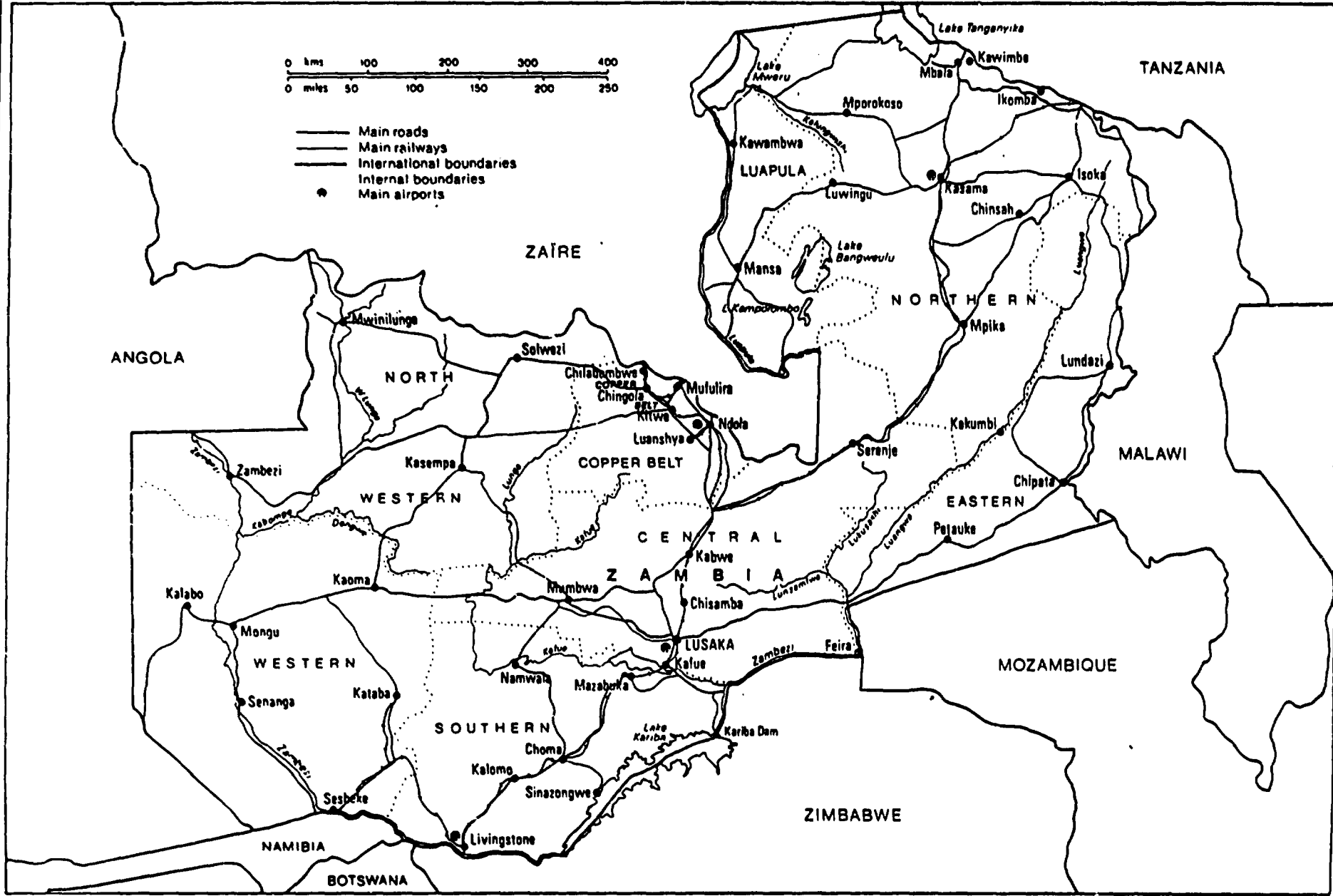
(continued)

<u>Chapter</u>	<u>Page</u>
5 IDENTIFIED PRIORITY INDUSTRIAL SUBSECTORS .. .. .	61
5.1 The Government's subsector priorities .. .. .	61
5.2 Priorities by donor agencies .. .. .	65
5.3 Conclusions and assessment .. .. .	67
6 TECHNICAL CO-OPERATION IN INDUSTRY .. .. .	71
6.1 Introduction .. .. .	71
6.2 Development assistance, technical co-operation and industry	71
7 TECHNICAL CO-OPERATION PRIORITY AREAS IN THE INDUSTRIAL SECTOR ..	76
7.1 Assistance for key Government institutions .. .. .	76
7.2 Priority areas for industrial development .. .. .	77
7.3 Social dimension of adjustment .. .. .	78
7.4 Women in development .. .. .	78
7.5 Environmental issues .. .. .	78
7.6 Follow-up of rehabilitation projects identified in 1988	
UNIDO survey .. .. .	79
7.6.1 Zambia Pork Products Ltd. (ZAPP) .. .. .	79
7.6.2 ZATCO Stockfeeds Ltd. (ZATCO) .. .. .	79
7.7 Conclusions and recommendations .. .. .	79
APPENDIX 1 RECOMMENDATIONS ON FOLLOW-UP ACTIVITIES TO THE 1988	
INDUSTRIAL REHABILITATION SURVEY .. .. .	81
Zambia Pork Products Ltd. .. .. .	81
E.C. Milling .. .. .	86
ZATCO Stockfeeds Ltd. .. .. .	89
APPENDIX 2 TERMS OF REFERENCE FOR PHASE TWO OF THE FORMULATION OF A	
TECHNICAL CO-OPERATION PROGRAMME FOR ZAMBIA .. .. .	94
APPENDIX 3 EXPLORATION PROGRESS BY MINES AND GEOLOGICAL SURVEY 1980-88	99
APPENDIX 4 DONOR AGENCIES CONTRIBUTION GRANTS .. .. .	103
APPENDIX 5 LIST OF AUTHORITIES, AGENCIES AND PERSONS CONTACTED .. .. .	106
APPENDIX 6 REFERENCES .. .. .	109

## List of tables and figures

	<u>Page</u>
Table 1.1	Structure of production 1987 .. .. . 2
Table 1.2	Labour force 1987 .. .. . 3
Table 1.3	Expenditure 1987 .. .. . 3
Table 1.4	International trade 1987 .. .. . 4
Table 1.5	Merchandise exports 1987 .. .. . 4
Table 1.6	Merchandise imports 1987 .. .. . 5
Table 1.7	Zambia's balance of payments 1989 .. .. . 5
Table 1.8	Budget 1989 .. .. . 6
Table 1.9	Population growth rates .. .. . 7
Table 1.10	Production growth rates .. .. . 8
Table 1.11	GNP per capita growth .. .. . 9
Table 1.12	Gross domestic investment .. .. . 9
Table 1.13	Growth of merchandise trade volumes .. .. . 10
Table 1.14	Inflation .. .. . 10
Table 1.15	Manufacturing production 1984-88 .. .. . 10
Table 1.16	Manufacturing, value added, establishments, 1989 .. .. . 12
Table 1.17	Manufacturing production .. .. . 13
Table 1.18	Domestic resource cost ratios, 1980-81 .. .. . 16
Table 1.19	Domestic resource cost ratios at full capacity, 1980-81 .. .. . 16
Table 1.20	Domestic resource cost ratios by product, 1980-81 .. .. . 17
Table 1.21	Government social expenditure per capita .. .. . 18
Table 1.22	Social action programme expenditure, 1990-93 .. .. . 20
Figure 1.1	Organizational structure .. .. . 23
Table 3.1	Mineral production .. .. . 30
Table 3.2	Size of labour force and unemployment, selected years 1969-95 34
Table 3.3	Percentage of distribution of public recurrent expenditure by level of education and type of expenditure .. .. . 35
Table 3.4	Capital expenditure on primary and secondary schools .. .. . 35
Table 3.5	Number of pupils enrolled in primary and secondary schools 36
Table 3.6	Number of farms in different categories .. .. . 40
Table 3.7	Comparison between planted area and production of agricultural crops, 1984-85 and 1988-89 .. .. . 41
Table 3.8	Production targets for selected crops .. .. . 42
Table 3.9	Livestock population estimates .. .. . 43
Table 3.10	Installed generating capacity, MW, 31 March 1988 .. .. . 47
Table 5.1	Public investment programme, 1990-1993, sector investment programmes .. .. . 62
Table 5.2	Public investment programme, 1990-93, manufacturing sector 63
Table 5.3	Highest priority projects, by subsector .. .. . 63
Table 5.4	Donor funds' disbursement 1989 .. .. . 66
Table 6.1	Development assistance to Zambia .. .. . 71
Table 6.2	Technical co-operation to Zambian industry .. .. . 72
Table 6.3	Technical assistance: ongoing projects 1984-1988 .. .. . 72
Table 6.4	Technical assistance: disbursements 1984-1988 .. .. . 73
Figure 7.1	Promotion of industrial development .. .. . 80
Table A.1	Exploration progress by mines and geological survey 1980-88 99





- Main roads
- Main railways
- - - International boundaries
- - - Internal boundaries
- Main airports

Map of Zambia

## ZAMBIA

### Basic information

#### Geography

- Size:** 752,620 km<sup>2</sup> (2.5 per cent of African continent).
- Location:** Southern African region between longitudes 220° and 340° East and latitudes 80° and 180° South. Zambia is landlocked and has common borders with Tanzania, Malawi, Mozambique, Zimbabwe, Botswana, Namibia, Angola and Zaire.
- Climate:** Tropical, with annual rainfall everywhere above 750 mm a year.

#### Population

- Size:** 8.0 million (mid-1990 estimate).
- Composition:** 51 per cent female; 49 per cent male.
- Density:** 10.6 persons per km<sup>2</sup>.
- Urbanization:** 53 per cent (1987).
- Population growth rate:** 3.6 per cent (1980-87).
- Literacy rate:** 76 per cent (1985).
- Life expectancy:** 53 years (1987).

#### Economy

- GDP:** US\$2,030 million (1987, World Bank estimate);  
US\$5,736 million (1987, UNDP estimate).
- GNP per head:** US\$250 (1987, World Bank estimate);  
US\$717 (1987, UNDP estimate).
- Inflation:** 25.4 per cent per year (1980-87); 123 per cent (1989).
- Merchandise exports:** US\$924 million (f.o.b. 1989).
- Merchandise imports:** US\$839 million (c.i.f. 1989).
- External debt:** US\$6.9 billion (end 1989).
- Exchange rate:** Kwacha 29 = US\$1 (priority rate, June 1990)  
Kwacha 40 = US\$1 (official rate, June 1990)  
Kwacha 60-70 = US\$1 (parallel rate, June 1990)

## List of abbreviations

CIDA	Canadian International Development Agency
CSO	Central Statistical Office
DBZ	Development Bank of Zambia
DRC	Domestic Cost Ratio
EBZ	Export Board of Zambia
EC	European Community
ECM	E.C. Milling Company Limited
EFPF	Economic and Financial Policy Framework
FAO	Food and Agriculture Organization of the United Nations
FEMAC	Foreign Exchange Management Committee
FNDP	Fourth National Development Plan 1989-1993
GDP	Gross Domestic Product
GNP	Gross National Product
GRZ	Government of the Republic of Zambia
IMF	International Monetary Fund
INDECO	Industrial Development Corporation
ISIC	International Standard Industrial Classification
ITC	International Trade Centre of the United Nations
NATCAP	National Technical Co-operation Assessment Programme
NCDP	National Council for Development Planning
PIC	Prices and Incomes Commission
PIP	Public Investment Programme
PTA	Preferential Trade Area
SADCC	Southern African Development Co-ordination Conference
SAP	Social Action Programme
SCB	Social Cost Benefit
SDR	Special Drawing Rights
SIDA	Swedish International Development Authority
SIDO	Small Industries Development Organization
SME	Self-Management Enterprise
SSA	Sub-Saharan Africa
TNDP	Third National Development Plan
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNIP	United National Independence Party
USAID	United States Agency for International Development
ZAPP	Zambian Pork Products Limited
ZCCM	Zambia Consolidated Copper Mines
ZESCO	Zambian Electricity Supply Commission
ZGPMA	Zambia Gemstone and Precious Metals Association
ZIMCO	Zambian Industrial and Mining Corporation

## Summary

### 1. Economic and social background

Zambia is a land-locked country with a small population and low population density. The country is heavily urbanized. The economy generates low-income levels and has a relatively small agriculture sector and a large industrial sector. There is heavy dependence on copper mining in the industrial sector and for export earnings. Levels of social indicators for health, education and the position of women and children are among the best in SSA.

Economic performance has been extremely poor since 1965, with GNP per head continuously falling, and resource mobilization, trade volumes and inflation well below the average for SSA.

The industrial sector faces structural changes with the anticipated decline in the copper sector. Studies show that other mining activities as well as several subsectors of manufacturing have good prospects.

Economic policies have been characterized by considerable government intervention, regulation, control and ownership, which have contributed to poor economic performance. The Government is currently committed to a comprehensive programme of liberalization and other economic reforms.

The industrial sector faces new challenges with the anticipated expansion of trade links in the Southern African region resulting from political developments in South Africa. Manufacturing which relies on processing of Zambian produced agricultural forest and mining products are expected to prosper. Manufacturing which involves skill intensive, high quality, sophisticated processes, or large economies of scale are expected to find competition from South Africa and Zimbabwe particularly severe.

The Government has drafted proposals for a social action programme to assist low-income groups, those disadvantaged by economic liberalization reforms, and to restore health, educational and basic infrastructure provision.

There is a lack of ability to implement policies due to shortages of adequately qualified professional staff, weakness in programme and policy management, inadequate maintenance and general shortages of equipment, and poor working morale.

### 2. Government priorities and plans for the industrial sector

Policy development in the 1980s has taken the form of concentration on more narrow growth priorities at the expense of self-sufficiency, indigenisation and international initiatives. Industrial sector priorities now comprise rehabilitation of existing capacity and cautious expansion where studies indicate financial viability.

Long-term considerations relating to mineral exploration, training, conservation, pollution control, environmental monitoring and the establishment of standards receive little emphasis in current investment plans. There still remain important issues for the donor community, however, which is concerned that the immediate demands of stabilization and structural adjustment do not impair prospects for future growth or incur heavy costs through neglect of environmental issues.

### 3. Assessment of socio-economic potential

Development efforts in industry are not only hampered by lack of financial resources but also due to lack of adequately qualified human resources.

After agricultural development, Government priorities are focused on expansion and development of industries. Industrial production should be based on locally available raw material and preferably be export-oriented. Hence agro-industries will not only play an important role in Zambia's future industrial expansion but also in mineral-based processing industries.

The construction subsector is particularly weak. A substantial regeneration of this subsector is essential for development of the industrial sector as a whole. A strong construction industry is essential for rehabilitation and expansion of industry as a whole, for building of storage facilities to reduce post-harvest losses of food grains and oilseeds, for improvement of infrastructure for transport and tourism, and for construction of housing as the standard of living is increased.

The Zambia Bureau of Standards (ZABS) is poorly equipped to be able to function as a testing and control institution for industry and to undertake pollution monitoring and control. Without adequate testing facilities for quality assurance of industrial products, a vital tool to assist the export industry will be missing. The prevention of industrial, and other sources of pollution, cannot be successfully pursued without appropriate laboratories.

Zambia has vast human resources in quantitative terms, but there are reasons for concern about the future availability of qualified manpower at all levels. This is attributed to:

- (a) inadequate education at primary and secondary level, in particular, and vocational training;
- (b) losses of qualified professionals and skilled workers through employment in neighbouring and other countries;
- (c) degradation of health services and undernourishment of large numbers of the population due to poverty with detrimental effects on education and quality of workforce.

The raw material base in terms of agricultural products is not limited by the availability of arable land. Variations in output per year will prevail due to climatic conditions. Extended irrigated areas for production of cash crops such as industrial raw material is one option which should be considered when a National Water Use Plan has been elaborated. The main constraints for substantial increased agricultural output are:

- inadequate finance, equipment and inputs;
- use of traditional methods with low productivity per unit of labour;
- inadequate institutional support in terms of education, training, extension services and credit systems;
- unsatisfactory marketing system and pricing policy.

Government plans and objectives include major actions necessary to come to terms with these constraints but there is a proven inability to implement the plans to any great extent.

Increased crop production according to the Fourth National Development Plan 1989-1993 (FNDP) would probably provide sufficient raw material to support existing agro-industries if capacity utilization is increased from current levels, frequently below 50 per cent, to acceptable levels of 70-80 per cent. One exception is the maize milling branch where additional capacities would be necessary, both small-scale village industry and larger maize mills in urban areas.

Fruit and vegetables from the horticultural subsector could become a supplier of raw material to industry. However, available background information is insufficient for a realistic assessment to be made and competition on world markets for processed vegetables is fierce. Background information on the horticultural subsector should be improved as an important element in future planning.

An overall international market survey would be necessary to determine product type, and volumes, before plans are made for investments in horticultural-based processing industries and the subsequent planning of structure and extent of production of fruit and vegetables in Zambia. The relevant comparative advantages will have to be fully identified and assessed.

The livestock subsector of agriculture will most likely only be able to supply marginal quantities of raw materials to a growing agro-based processing industry.

Forestry could play an important role as supplier of industrial inputs, round logs and pulp wood in particular, in addition to supply of wood for charcoal production. Institutional support in accordance with Government's plans is essential.

In summary, if agriculture is to be the future supplier of raw material to industry, the agricultural sector as a whole must be given the opportunity to expand and to increase productivity. This will require improved means of financing including credits, introduction of better technology in an attempt to raise productivity, and also better trained manpower at all levels.

It is highly questionable, however, whether agriculture will be capable of supplying a growing food processing industry, geared for export, with sufficient quantities of raw material of the required quality. This issue should be examined in detail and, if necessary, be a reason for reconsidering the present strategy for agricultural development.

The use of non-metal mineral resources has future potential as a supplier of rough stones both for export but primarily for an emerging domestic gem stone processing industry. This subsector suffers from marketing problems which hamper its growth. Recommendations for this has been prepared by the International Trade Centre of the United Nations (ITC).

Natural reserves and wildlife are a natural resource base for tourism. In order to fully exploit these possibilities, the tourist infrastructure has to be upgraded. This is an area where the construction subsector of industry is the obvious partner.

Of the four main sources of energy, electrical power, coal, oil and charcoal, electricity is the most important source for industry. The generation of hydro-electricity is sufficient for domestic use. There is also some surplus for export. There is still a margin at present with scope of further hydro-power exploitation if required. The availability of electricity in quantities at a low cost suggests that Zambia may have a comparative advantage in energy-intensive industries.

Environmental pollution has hitherto not been a serious problem in Zambia. The Government has taken the initiative to establish institutional means to impose appropriate environmental protection regulations for industry, agriculture, and other activities.

#### 4. Policy issues in the industrial sector

Tariff reform, moving toward a uniform rate of around 20 per cent of inputs, will assist edible oils, grain mills, bakery products, fertilisers, cement and non-metallic mineral producers.

Exchange rate adjustment will benefit food producers, wood and wood products, some textiles and fabricated metal products, as well as some goods in other industry branches.

The decontrol of prices will assist small private sector enterprises which are predominantly in the food, garments, wood and other manufacturing branches, provided they are able to survive the current credit squeeze.

The Government is committed to streamlining procedures and extending duty drawback schemes to encourage exports. At present the arbitrary nature of export licencing discourages all industrial exporters outside the copper sector. The current ineffectiveness of drawback procedures hampers footwear, textiles, garments and electrical goods.

Reform of the parastatal sector can be expected to threaten the financial viability of refined oils, soaps and detergents, plastic and polythene bags, glass, vehicle assembly and basic industrial chemicals enterprises in public ownership.

The private sector will be considerably assisted if the regulatory climate in which it operates is liberalized and the scope for discretionary intervention by the authorities reduced. This will particularly assist smaller enterprises in food, garments, wood products and other manufacturing sectors.

A revision of the investment code together with efficient implementation of its measures can be expected to be an extremely important stimulus to the private sector of industry, although it will still take some time before investor confidence is restored.

The implementation of a tight credit policy in the short term is expected to have an adverse effect on small enterprises in food, garments, wood and general manufacturing as well as purchasers of agricultural products for food and industrial processing.

Problems of extending credit to small enterprises still remain despite efforts by special bodies and a loan guarantee scheme. Relaxing the incomes policy which restricted salaries of skilled and professional employees in the public sector will ease the recruitment and retention problems in the parastatals.

Although the Government's assignment of high priority to agriculture is justified, agricultural growth will be limited if it is not balanced by appropriate industrial expansion.

#### 5. Identified priority industrial subsectors

Government priorities for industrial subsectors is determined on the basis of general priorities for:

- rehabilitation rather than creating new capacity;
- development of human resources;
- protection of the environment;
- privatization of parastatals and the introduction of Self-Manager Enterprises;
- small-scale industries.

On the basis of the above, chemical industries are the highest priority subsectors. These are followed by agro-based industries (particularly flour milling and stockfeeds), building materials, and metal manufacturing.

Education, health and social services subsectors have been given relatively less priority in terms of the allocation in expenditure in the Public Investment Programme (PIP) 1990-93.

Gem stone mining is a particular priority in the rural areas.

Donor priorities are not too dissimilar to Government priorities. They include, in descending order:

- Agriculture (particularly, rice milling, oil crushing);
- Transport and communications;
- Energy;
- Health and Education.



In rural areas, donor contributions for the mining subsector are not focused on gem stone mining. On the basis of an in-depth integrated examination of Government and Donor priorities and Zambia's industrial development needs, a number of issues must be addressed.

First, a diversion of resources from other sectors to nutrition, health and education to ensure that human resources are developed and not wasted; comparative analysis methods should be employed to assess fully the impact of required changes.

Second, the identification of suitable agro-based products on the international market which could be grown successfully in Zambia and can be competitively processed under local conditions.

Third, a review of the strategy for development of agriculture directed toward diversified agro-industrial expansion geared for export.

Fourth, the determination of options for Government to regenerate the construction sector in preparation for a dynamic expansion of industry; cost benefit analyses should be employed to evaluate the consequences of alternative actions.

Fifth, the establishing of a programme for exploitation of the gem stone mining and processing industry.

The above strategy is predicted on the assumption that the new Investment Code will prove capable of creating an overall investment climate conducive to both domestic and foreign investments.

## 6. Technical assistance to industry

Total development assistance to Zambia has fallen in the past five years but technical co-operation has increased, and is now over 40 per cent of total assistance.

Technical co-operation in industry is small. For most years, it is under 5 per cent of total technical co-operation spending. This does not reflect the importance of industry in the Zambian economy.

Within industry, technical co-operation is predominantly in food, chemicals, general projects and small-scale and rural projects. In the subsectors, there have been no projects in mining or construction. Comparatively neglected are paper, wood, basic metals, non-metallic minerals and women's issues.

The major constraint in increasing technical co-operation to the industry sector is the lack of capacity in ministries to formulate appropriate programmes within which technical co-operation projects can be planned and implemented.

## 7. Priority areas for technical co-operation in industry

The following priority areas for technical co-operation in industry are recommended:

### a) Assistance for key Government institutions

- Strengthening the institutional capacity of the Ministry of Commerce and Industry and the NCDP.
- Strengthening the capability for broad strategic thinking, particularly the wider consequences of decisions, in the Ministry of Commerce and Industry.
- Strengthening the statistical information services and documentation at the Ministry of Commerce and Industry.
- Consolidating the capacity of NCDP to undertake financial and economic feasibility studies, and extending this capability to the Ministry of Commerce and Industry.
- Investigating the options to divert resources from other sectors of the Zambian economy to nutrition, health and education to ensure that the human resources are developed and not wasted; comparative analysis methods should be employed to assess fully the impact of required changes.
- Considering alternative measures to be adopted should the new Investment Code not prove capable of creating an overall investment climate conducive to domestic and foreign investment alike.

### b) Priority areas for industrial development

- Formulation of a plan for regeneration and expansion for the construction subsector, and the building materials supply branches including training.
- Establishment of institutional links with intermediate technology groups already established in other countries, such as the U.K., India, Kenya and elsewhere.
- Formulation of streamlined procedures for: a) duty draw-backs for exporters, (b) export licencing and documentation.

- Evaluation of credit delivery systems for small-scale industries, and recommendations for improvement.
- Identification in detail of the requirements for laboratory facilities to cope with industrial standards and quality control work for:  
a) food and chemical industries, b) textiles and leather, and c) for material testing.
- Identification of appropriate small-scale industrial equipment, in particular vegetable oil crushing units, and low speed stationary vegetable oil powered engines, for testing in Zambia and the subsequent manufacture in Zambia should the tests be favourable.
- Identification on the international market of agro-based products which can be grown successfully in Zambia and can be competitively processed under local conditions.
- Review of the strategy for development of agriculture directed toward diversified agro-industrial expansion geared for export.
- Determination of options for Government to regenerate the construction sector in preparation for a dynamic industrial expansion; cost benefit analyses should be employed to evaluate the consequences of alternative actions.
- Establishment of programme for exploration of the gem stone mining and processing industry.

#### Social dimension of adjustment

- (i) Assessment of the extent of the brain-drain and migration of skilled labour from Zambia, and the short- and long-term consequences for industry; suggestions for actions to stem or reverse the situation.
- (ii) Determination of the need for studies on the impact of the secular changes in the copper industry resulting in the reduction of employment and consideration of how training provisions can absorb the labour force elsewhere in the economy.
- (iii) Determination of the need for studies to assess the loss of employment in other parastatals as a result of reforms, consideration of how training provisions can absorb this labour force elsewhere in the economy.
- (iv) Evaluation of the employment and income generation implications of various public works schemes, and assessment of the value of their contribution to water, sanitation, roads, market places and school construction, so that the most cost-effective public works schemes can be chosen.

#### Women in development

- (i) Formulation of ways to constructively increase the participation of women in education in general, but particularly in vocational training related to industry sector employment.

Environmental issues

- (i) Formulation of alternative policies in dealing with industrial pollution in the context of a general strategy for environmental issues related to the whole economy, so that the most cost-effective measures can be employed; preparation of the legal framework to make the protection of the environment effective.
- (ii) Elaboration of an effective code of standards for acceptable levels of waste emission, and a suitable monitoring system.
- (iii) Establishment of an environmental control laboratory within ZBS.
- c) Follow-up of rehabilitation projects identified in 1988 UNIDO survey

ZAMBIA PORK PRODUCTS LTD. (ZAPP)

Technical assistance to prepare a techno-economic feasibility study for the physical rehabilitation of the enterprise and expansion of the industry according to current requirements.

ZATCO STOCKFEEDS LTD. (ZATCO)

- a) TC for determining suitable range of laboratory equipment for programmed, routine sampling and analysis of ingredients and finished products.
- b) Training of personnel:
  - (i) Assistant production manager in production scheduling and planning, plant management;
  - (ii) Production (engineer) quality control;
  - (iii) Mechanical maintenance personnel (4 numbers); leithing and machine tooling. The candidates have 12 grade basic education and craftsman level certificate but lack exposure to modern techniques and experience.

# CHAPTER 1

## ECONOMIC AND SOCIAL BACKGROUND

### 1.1 Introduction

A major aim of this report is to identify priority areas for technical co-operation in Zambia's industrial sector. A special aim, however, is to focus on how technical co-operation to the industrial sector can be directed to mitigate the negative effects of structural adjustment and contribute to the improvement of social-economic conditions in Zambia. An essential prerequisite, therefore, is to consider the industrial sector within the context of the overall economy, as regards structure and performance, and also with regard to the social dimensions of structural adjustment.

Thus, this chapter provides essential background against which priority areas for technical co-operation in Zambia's industrial sector can properly be identified in subsequent chapters. The chapter begins with a section on the structure of the Zambian economy which underlines the strategic importance of industry. As the economy is anticipating structural changes as a result of the policy developments discussed in section 1.5, key social indicators are next examined to determine the current position with regard to human development in the context of the social effects of the structural adjustment process. The Zambian authorities are particularly interested in the effects of the structural adjustment process on the human resource base of the economy, the strength of which is vital for long-term growth, both in industry and elsewhere in the economy. The next section deals with economic performance, and indicates that not only has Zambian performance been poor, but that it has been significantly worse than in Africa generally. The section on overall economic performance provides key background for the evaluation of the industrial sector in the next section. Developments in economic policy and external changes are then examined as a prelude to determining what the effect of these will be on industry and on social factors. The chapter concludes with an assessment of Zambia's ability to formulate and implement industrial economic policy.

### 1.2 Economic structure

Zambia's population, estimated at 8 million in mid-1990, is below the average for Sub-Saharan Africa (SSA). The country has a low population density at 10.6 persons per square kilometre, about half the SSA average level. The population is heavily urbanized by African standards, with 53 per cent of the population living in towns. The average rate of urbanisation for SSA is under half this level, and only three SSA countries have higher rates. The population expanded at 3.6 per cent a year in the period 1980-87. The fertility rate, the number of children born to each woman, was 6.8 in 1987. The population growth and fertility rates are comparable with those elsewhere in SSA.

Zambia's high level of urbanization has important implications to industrial development and the provision of social infrastructure.

GDP was estimated by the World Bank at US\$2,030 million in 1987. Zambia's economic size is thus slightly below average in the SSA context. GNP per capita was estimated at US\$250, which places Zambia in the the middle of the World Bank low-income classification of countries.

However, both GDP and GNP per capita in US dollars are calculated by the World Bank by converting GDP and GNP in local currency using the official exchange rates. An alternative method, which is less prone to errors arising when exchange rates do not reflect purchasing powers of the respective currencies, is to sum all of Zambia's net output, valued at United States prices. Estimates on this basis<sup>1/</sup> would put Zambia's GNP per capita decidedly higher at US\$ 717.

Zambia's structure of production is shown in Table 1.1. The agricultural sector is relatively small. In SSA, almost three times as much GDP is typically generated in agriculture. The industrial sector generates about a quarter more GDP than the SSA average, while the services sector is about a third larger. Within industry, the manufacturing sector is particularly large, generating 23 per cent of GDP, more than twice that generated elsewhere in SSA.

Table 1.1: Structure of production 1987  
(% of GDP)

	Agriculture	Industry	(Manufacturing) <sup>a/</sup>	Services
Zambia	12	36	23	52
SSA	34	28	10	39

Source: World Bank 1989, From Crisis to Sustained Growth.

a/ Manufacturing is a subsector of industry.

The percentages of the labour force in the various sectors are shown in Table 1.2. The distribution of the labour force is a fair reflection of the situation elsewhere in SSA. The most striking aspect is that although agriculture generates only 12 per cent of GDP, it utilises 73 per cent of the labour force. Industry utilises 10 per cent of the labour force to generate 36 per cent of GDP, and services uses 17 per cent of the labour force to generate 52 per cent.

The respective shares of the sectors in GDP and in labour force utilisation indicate wide differences in labour productivities. On the basis of the World Bank conversions to US dollars, agriculture has a productivity of US\$95 per worker, industry US\$2,249, and services US\$1,760.

1/ UNDP 1990, Human Development Report.

Table 1.2: Labour force 1987  
(% of total)

	Agriculture	Industry	Services
Zambia	73	10	17
SSA	71	8	15

Source: World Bank 1989, From Crisis to Sustained Growth.

One strategy for improving average incomes overall is to endeavour to raise productivity in the agricultural sector, and this clearly has beneficial social implications as incomes are currently lowest in this sector. However, it is also important not to lose sight of the need to encourage structural changes which absorb more labour into the highest productivity sector, by expanding industry.

Table 1.3 shows categories of expenditure in GDP. The share of private consumption is low by SSA standards. The share of government consumption is high, over half as much again when compared with the typical share for SSA. Gross domestic investment at 16 per cent is about the SSA average. The resource balance is the difference between savings and investment, and in Zambia's case, gross domestic saving is 20 per cent of GDP, a quarter higher than in SSA. As Zambia has a similar investment ratio to the rest of SSA, but economic growth, as detailed in section 1.4, has been inferior, questions are raised over the efficiency of the allocation of investment.

Table 1.3: Expenditure 1987  
(% of GDP)

	Private consumption	Investment	Government consumption	Resource balance
Zambia	55	15	25	5
SSA	71	16	16	..

Source: World Bank 1989, From Crisis to Sustained Growth.

Involvement in international trade is shown in Table 1.4. Zambia's reliance on exports of goods and services to generate GDP, and on imports of goods and services to meet domestic demand is almost twice that observed in SSA. The broad structure of merchandise exports is shown in Table 1.5. Mining products, particularly copper, make up almost all of the fuels, minerals and metals category. The reliance on this category for export earnings is twice the SSA average.

Table 1.4: International trade 1987  
(% of GDP)

	Exports	Imports	Resource balance
Zambia	47	42	5
SSA	26	26	..

Source: World Bank 1989, From Crisis to Sustained Growth.

In policy terms, this makes Zambia very vulnerable to shocks arising from changes in the price of the major export, copper. Thus, viable industrial projects which produce goods to replace imports serve the twin purpose of insuring against future copper price falls and protecting the economy from the destabilizing effects of copper price fluctuations.

The structure of merchandise imports is shown in Table 1.6, and although food features slightly less strongly, and machinery and transport equipment is more prominent, the pattern is fairly representative of elsewhere in SSA.

With machinery and transport equipment and other manufactures making up 80 per cent of imports, there is considerable scope for the production of import-substituting industrial products, where viable, to ease Zambia's foreign exchange shortage.

Table 1.5: Merchandise exports 1987  
(% of total)

	Fuels, minerals, metals	Other primary	Machinery, transport equipment	Other manufactures
Zambia	93	4	1	2
SSA	47	39	2	10

Source: World Bank 1989, From Crisis to Sustained Growth.

The destinations of Zambia's exports in 1988 were: Japan 35 per cent, Italy 10 per cent, France 8 per cent and India 6 per cent, with 41 per cent going to a variety of other countries. The source of Zambia's imports in 1988 were: South Africa 23 per cent, United Kingdom 19 per cent, West Germany 9 per cent, Japan 9 per cent, and other supplying countries providing 40 per cent.



Table 1.6: Merchandise imports 1987  
(% of total)

	Food	Fuels	Other primary	Machinery, transport equipment	Other manufactures
Zambia	7	12	1	39	41
SSA	12	10	4	32	41

Source: World Bank 1989, From Crisis to Sustainable Growth.

A summary of Zambia's balance of payments is shown in Table 1.7. The main features are that Zambia has a surplus on the balance of trade, but a deficit on services (with interest payments making up 82 per cent of the services deficit), which gives a current account deficit. There is a net outflow on the capital account, and this increases the deficit on the overall balance.

Zambia's total external debt was estimated at US\$ 6.9 billion at the end of 1989. Forty-two per cent of Zambia's debt is owed to governments on a bilateral basis, 36 per cent to multilateral agencies, and 22 per cent to commercial banks and other private creditors. There are only three SSA countries with a higher ratio of debt to GNP. Around US\$ 3.4 billion has accumulated in arrears of interest and principal, of which an estimated US\$ 1,100 million is outstanding to the IMF and the World Bank. Debt service payments due each year (but currently not being met in full, with the residual being carried over into arrears) comprise 80 per cent of the earnings on exports of goods and services.

Table 1.7: Zambia's balance of payments 1989  
(SDRm)

Exports fob	1,088
Imports cif	-807
Trade balance	<u>142</u>
Net services and transfers	<u>385</u>
Current account balance	<u>-103</u>
Net capital flows	-63
Errors and omissions	<u>-46</u>
Overall balance	<u>-212</u>

Source: Bank of Zambia.

The summary of the budget is shown in Table 1.8. The main feature is the relationship between expenditures and revenues, which gives rise to a budget deficit equivalent to -10.4 per cent of GDP. Of this deficit, 5.3 per cent is expected to be funded by domestic borrowing. In recent years there has been a tendency for ministries to exceed their budgeted spending levels, and this has been met by ad hoc bank borrowing. In addition, the parastatals have had automatic overdraft facilities with the banks. These two factors have led to a considerable inflationary increase in the money supply.

Table 1.8: Budget 1989  
(% of GDP)

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Expenditure	
Recurrent	19.2
Investment	4.4
Exceptional	2.1
Total	25.7
Revenue	15.3
Budget deficit	-10.4
Deficit finance	
Grants	1.6
External	3.4
Domestic	5.3

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Source: Ministry of Finance 1989, Estimates of Revenue and Expenditure.

The main features of Zambia's economic structure that need to be borne in mind when determining policy for the industrial sector are three-fold. Firstly, Zambia has a comparatively large industrial sector which has significant resources of capital and skilled manpower engaged in it. Secondly, Zambia has a heavily urbanized population in comparison to other countries in SSA. Thus, too heavy a weighting towards agriculture and rural development may lead to difficulties. On equity grounds, it may be desirable to improve agricultural productivity, the inter-relationship between agriculture and industry means this cannot be achieved without appropriate expansion of industry which purchases agriculture outputs and supplies its inputs. Finally, the scope for saving foreign exchange with domestically produced substitutes for imports lie largely in the industrial sector, as 80 per cent of imports are industrial goods.

(i) Education

The adult literacy rate in 1985 was 76 per cent, the highest rate in SSA. The enrolment rate in primary education was equivalent to 104 per cent of the primary school age group, and this compares well with the SSA average of 73 per cent. Secondary (19 per cent) and tertiary (2 per cent) enrolment rates were more or less at the SSA level.

(ii) Health and nutrition

Life expectancy in 1987 was 53 years, slightly above the SSA average of 51 years. There was one doctor for every 7,100 persons in 1983, and one nurse for every 740 persons. These levels of provision are over three times better than for SSA generally. The daily average calorie supply, however, was only 92 per cent of minimum nutritional requirements.

(iii) Women

The literacy rate for women is a fifth lower than for men, and primary school enrolments are a tenth lower than for men. In general, the divergence between basic educational attainment and provision for women compared with men is much lower in Zambia than is the norm elsewhere in SSA.

(iv) Children

Infant mortality in 1988 was 79 per thousand, and child mortality was 127 per thousand. In 1987, 84 per cent of one-year-olds had been immunised. These rates are markedly better than the average for SSA. The figures for wasting and stunting among children, indicate less malnutrition than the SSA average.

Overall, the current levels of social indicators compare well with the rest of SSA, with a qualification with respect to the average levels of nutrition. The threat to the maintenance of social infrastructural support posed by current economic conditions is taken up in Chapter 3.

### 1.3 Economic performance

Economic performance is assessed over three periods. First, from independence to the first oil price shock in 1973. Second, the period from the first oil price shock in 1973 to the second oil price shock in 1980. Third, the period from 1980 to date.

Population growth rates are shown in Table 1.9. Zambia has consistently had population growth rates above the average for SSA. Moreover, the rate of population expansion has accelerated, and forecasts for the period to the end of the century show only a slight slowing of the rate. Such high rates of population expansion lead to large proportions of the population, typically up to 50 per cent, below the age of 15 years. This aspect of population structure has an important bearing on the provision of social infrastructural support, as it implies significantly greater demands for the provision of basic education and health services.

Table 1.9: Population growth rates  
(% per year)

	1965-73	1973-80	1980-87	1987-2000
Zambia	3.0	3.1	3.6	3.5
SSA	2.6	2.8	3.1	3.1

Source: World Bank 1989, From Crisis to Sustainable Growth.

The growth of the economy for GDP and for the main sectors is shown in Table 1.10. In the period up to the first oil price shock, GDP grew faster than population in SSA at 5.9 per cent a year. In the second period, GDP grew a little slower than population in SSA at 2.5 per cent a year. Finally, in the 1980s, GDP has grown at 0.5 per cent a year in SSA, significantly below the rate of population growth.

Table 1.10: Production growth rates  
(% per year)

	1965-70	1973-80	1980-87
GDP	2.4	0.3	-0.1
Agriculture	2.0	1.6	3.2
Industry	2.7	-0.3	-0.7
Manufacturing <sup>1/</sup>	9.8	0.5	0.8
Services	2.3	0.4	-0.6

Source: World Bank 1989, From Crisis to Sustainable Growth.

1/ Manufacturing is a subsector of industry.

Against this background of secularly declining economic performance in SSA, Zambia has performed noticeably worse than the rest of the continent. It is not the case that Zambia's current economic decline is solely the result of adverse factors that have affected all of Africa. This realisation has caused the Government to introduce the wide-ranging economic reforms to bring about recovery that are discussed in section 1.5.

The major sectors of the economy have shown varying performance. Agriculture has been the most stable, showing positive growth rates in all periods. In the 1980s, as a result of policies to stimulate agriculture, growth has been fastest in this sector. However, agriculture growth has not been as rapid as population growth in any period.

The Government's assignment of high priority to agriculture is thus justified, but as has been stressed earlier, agricultural growth will be limited if it is not balanced by appropriate industrial expansion.

Industry was the main engine of growth up to 1973, with manufacturing expanding particularly rapidly. Although manufacturing showed some expansion in the two later periods, it was at a slower rate. Despite the expansion of manufacturing, the contraction of the rest of the other industrial sectors particularly mining, has meant that overall industrial output has fallen since 1973.

The services sector has reflected the trends in the rest of the economy, with contraction in the 1980s being more rapid.

Growth in income levels per capita is determined by GDP growth rates, population growth rates, terms of trade changes, and changes in the net flow of income from abroad. For Zambia, growth in GNP per capita is given in Table 1.11. There have been falling average incomes in each period, a markedly worse performance than in SSA generally. Zambia's average income level has fallen particularly rapidly in the 1980s. Incomes fell by a total of -4.5 per cent in the period 1965-73, by -17.3 per cent in the period 1973-80, and in the period 1980-87, by -37.0 per cent. By 1987, average income levels had fallen to almost exactly half their levels in 1965. Thus, Zambia has moved from one of Africa's most prosperous countries at independence, firmly in the middle-income group of world economies, to a position in the midst of the world's low-income countries.

Table 1.11: GNP per capita growth  
(% per year)

	1965-73	1973-80	1980-87
Zambia	-0.5	-2.2	-5.6
SSA	2.9	0.1	-2.8

Source: World Bank 1989, From Crisis to Sustainable Growth.

The development effort, as indicated by the proportion of GDP devoted to gross domestic investment is shown for selected dates in Table 1.12. Zambia's effort to augment its capital stock increased markedly in the 1965-73 period, but has subsequently fallen away as declining income levels have resulted in a greater emphasis on consumption. Throughout this period, the investment ratio has been as high, or higher than in SSA, but growth rates for GDP have been distinctly inferior. This again points to poor productivity of investment in Zambia, with Zambia's productivity in the 1980s being negative.

Table 1.12: Gross domestic investment  
(% of GDP)

	1965	1973	1980	1987
Zambia	25	33	23	15
SSA	14	19	20	16

Source: World Bank 1989, From Crisis to Sustainable Growth.

Trade performance shows much the same pattern as other indicators. Export and import volume growth rates are shown in Table 1.13. Zambia's export volumes have declined since 1973, and this factor, together with increasing external debt obligations, and a decline in Zambia's terms of trade, has led to even faster contraction in import volumes.

**Table 1.13: Growth of merchandise trade volumes  
(% per year)**

	1965-73	1973-80	1980-87
Exports: Zambia	5.5	-0.3	-3.3
SSA	15.1	0.2	-1.3
Imports: Zambia	0.8	-7.5	-6.2
SSA	3.7	7.6	-5.8

Source: World Bank 1989, From Crisis to Sustainable Growth.

Inflation performance is shown in Table 1.14. In the two most recent periods, price stability has been inferior to that in SSA. Moreover, there is an accelerating trend in the rate of inflation with 123 per cent recorded for 1989.<sup>1/</sup>

**Table 1.14: Inflation  
(% per year)**

	1965-73	1973-80	1980-87
Zambia	5.8	8.9	28.9
SSA	7.5	6.8	15.2

Source: World Bank 1989, From Crisis to Sustainable Growth.

#### 1.4 The role of the industrial sector

The industrial sector comprises four subsectors: mining and quarrying; manufacturing; electricity; gas and water; and construction. Production in these subsectors for recent years is shown in Table 1.15.

**Table 1.15: Manufacturing production 1984-88  
(Kwacha, million, constant 1977 prices)**

	1984	1985	1986	1987	1988
Mining and quarrying	200.0	185.8	176.5	184.2	189.1
Manufacturing	309.3	421.6	425.3	450.0	476.8
Electricity, gas and water	70.9	72.7	71.1	62.7	64.9
Construction	88.6	77.1	81.1	77.3	73.6

Source: Republic of Zambia, Fourth National Development Plan, 1989-1993. Office of the President. National Commission for Development Planning, 1989.

<sup>1/</sup> Republic of Zambia, Consumer Price Statistics, (June 1990), Vol.31. Lusaka, Central Statistical Office.

Output volumes for mining and quarrying have fallen over the period 1984-1988: it is to be expected that a gradual decline in this sector will occur over the next decade as the mainstay, the copper deposits, become depleted, with less rich and more inaccessible ores being mined. Long-term forecasts<sup>1/</sup> indicate that the real price of copper is likely to fall up to the end of the century. These factors will lead to major structural changes in the economy. There will be a gradual release of manpower from copper and this manpower will need to be absorbed in other activities. There will also be a shift in investment away from copper. As copper has provided the bulk, over 90 per cent, of foreign exchange earnings, and to the extent that net foreign exchange earnings by the copper sector fall, pressure will be placed on the exchange rate unless exports of other commodities can be increased. As is discussed later in Chapter 3, certain non-copper mining activities, particularly gem stones, have good prospects. Thus some of the re-allocation of resources could well come about within the mining sector.

The output of the utilities sector has fallen. Zambia has excellent hydro-electric potential, but so have several of Zambia's neighbours, and the improvement expected in the stability of the Southern African region will limit prospects for exporting electricity. The output of this sector will, in the main, be determined by the overall growth of the economy. In periods of expanding GDP, it should be expected that this sector will grow faster than GDP as water and electricity are extended to more of the population.

Output of the construction sector has fallen, and by the largest amount, some -17.0 per cent in the period 1984-88. The growth of this sector, like utilities, will in the long term be largely determined by overall growth in the economy. Given the degree to which Zambia's infrastructure has deteriorated in the past decade, increased aid flows directed toward rehabilitation may see this sector revive considerably in the short term. In the longer term, however, it will be growth in other sectors that will be the major determinant of the demand for construction.

The only sector within industry that has grown in recent years is manufacturing, with an expansion of over 10 per cent a year. As income increases, a larger proportion of income is spent on manufactures than on agricultural products. Furthermore, the growth of manufactures in international trade is faster than that of agricultural commodities. An efficient and outward-looking manufacturing sector will be a key element in recovery of the Zambian economy. It is manufacturing, non-copper mineral mining, agriculture and tourism, as discussed in Chapter 3, which can be expected to expand as leading sectors, generating future growth in the Zambian economy.

Because of the importance of fostering linkages between the sectors, it is important that the industry sector as a whole grows at a rate which supplies inputs (electricity, fertilizers, pesticides, agricultural implements and machinery construction) as they are required, without bottlenecks and shortages. Expansion of these subsectors of manufacturing in which Zambia has a comparative advantage will be important if the Zambian economy is to maximize its growth potential.

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1/ World Bank 1989. Price prospects for major primary commodities, 1988-2000. 2 Vols., Washington D.C.

The issue of in which sectors Zambia has a comparative advantage is taken up later.

The structure of the manufacturing sector is shown in Table 1.16. The foodstuffs subsector is the largest, providing 42 per cent of GDP in the sector, followed by other manufacturing with 23 per cent and non-metallic minerals with 12 per cent.

Table 1.16: Manufacturing, value added, establishments, 1989

	ISIC	Value added (km)	Establish- ments <sup>b/</sup> (1981)	Capacity utilization <sup>a/</sup> (percentage)
Foodstuffs	31	6,300.9	136	65
Textiles	32	961.7	127	n.a.
Wood	33	270.6	29	14 - 25
Paper	34	900.0	37	n.a.
Chemicals	35	1,156.5	51	41 - 44
Non-metallic minerals	36	1,888.5	25	58
Basic metals	37	107.5	4	25 - 46
Other	38	3,562.9	130	n.a.

Source: NCDP 1989 Economic report.

a/ Selected utilization rates and ranges for sub-branches.

b/ World Bank 1984, Zambia's Industrial Policy and Performance. Industrial Strategy and Policy Division, Industry Development.

Growth in the manufacturing sector is examined in Table 1.17, where eight subsectors are considered. Foodstuffs production remained virtually unchanged in the 1980s until 1988 when there was a 77 per cent increase. Textiles production has fluctuated, for the most part reflecting changes in the availability of foreign exchange for raw materials. There is no significant trend in textiles output. Wood products reached a peak in 1981, but have since declined considerably, being in 1988 under half the 1981 output level. Paper products have grown rapidly, reaching a peak in 1988, before tailing off in 1989. Nevertheless, this sector, having observed its output fall to a third of its 1973 level, recovered and by 1989 was 88 per cent up on 1973 production. Chemicals have, if anything, shown a slow declining trend in the 1980s, with 1989 production 7 per cent down on 1980 levels. Non-metallic minerals have shown an expanding trend in the 1980s, with production in 1989 73 per cent up on 1980. Basic metals have shown a declining trend, with production in 1989 36 per cent down on 1980 levels. Finally, other manufacturing has expanded, and 1989 output 135 per cent up on the 1980 level.



**Table 1.17: Manufacturing production**  
(indices, 1973 = 100)

	ISIC	1980	1983	1984	1985	1986	1987	1988	1989 <sup>a/</sup>
Foodstuffs	31	93.6	93.4	90.6	89.0	90.2	95.1	168.3	131.9
Textiles	32	165.4	162.0	159.9	196.2	162.8	174.6	195.8	207.3
Wood	33	79.8	46.8	57.6	51.5	51.5	46.7	45.2	47.5
Paper	34	32.9	87.1	95.8	104.4	131.5	204.0	236.4	188.1
Chemicals	35	92.6	90.9	93.1	86.2	82.3	78.4	79.3	86.6
Non-metallic minerals	36	81.3	94.7	83.6	138.0	105.8	112.1	133.6	140.4
Basic metals	37	114.2	91.5	96.8	93.2	83.2	86.2	71.6	72.6
Other	38	66.4	68.0	82.8	95.5	117.1	137.8	182.0	156.0

Source: Republic of Zambia, Monthly Digest of Statistics, July-December 1989, Central Statistical Office, Lusaka; NCDP 1989, Economic Report.

a/ Preliminary.

Overall, the performance in manufacturing has been very uneven. The significantly expanding subsectors, foodstuffs, textiles, paper, non-metallic minerals and other manufactures, have more than offset the fairly stagnant chemicals, and declining wood and basic metals.

It is difficult to avoid concluding that the manufacturing sector has not fulfilled its potential over the past two decades. This is particularly so in the 1970s, when, despite high rates of investment in the Zambian economy and one of the best human resource bases in Africa, Zambian manufacturing stagnated while elsewhere in SSA it grew at above 8.0 per cent a year.

### 1.5 Economic policy in Zambia

Since independence in 1964 until 1989, economic policy has been characterised by increasing intervention in the economy by the Government. This has meant that most economic activities are either owned or effectively controlled by the state rather than by nationals of other countries. In the early part of the post-independence period, Zambia devoted increased resources to education and health provision as well as expanding government administration and building up the strength of the political party, UNIP.

In addition to the reasons listed above, the Government intervened in the economy to realise other objectives as well. One critical intervention was the maintenance of a fixed exchange rate. As Zambia has experienced more rapid rates of inflation than her trading partners, the fixed exchange rate led to an over-valuation of the currency. This leads to the Kwacha price received for exports being lower and the Kwacha price of imports being higher than if there was a free market in foreign exchange. This discouraged Zambian production of goods for export and goods that can substitute for imports. The agriculture sector has been particularly discouraged by the fixed exchange rate policy.

A parallel market in foreign exchange emerged, encouraging smuggling which reduced official receipts of foreign exchange and import duties. The balance of payments was maintained by limiting imports through licencing. Since the Zambian economy did not, and still does not, produce certain key requirements such as fuels, spare parts and certain raw materials, sections of industry began to run at lower levels of capacity as a result of shortages.

In an effort to quicken the pace of development, investment was channeled into the industrial sector and employment in industry increased. Much of the industrial activity generated by Government investment was at high cost, and was maintained only by virtue of restricting competing imports, limiting domestic competition, or by deficits covered by the Government. With a limited tax base, Government spending increased the budget deficit, leading to higher levels of inflation than experienced by Zambia's main trading partners, further increasing the over-valuation of the domestic currency.

In a desire to encourage investment, interest rates were kept at fixed, low nominal rates. Invariably, this has meant negative real interest rates with two consequences. First, relatively cheap capital has encouraged capital-intensive production which has limited the expansion of formal sector employment. Second, domestic saving has been discouraged.

The private sector has found life difficult, with licences being required for businesses, for exports and for imports. Restrictions on repatriation of profits discouraged direct foreign investment, which in any case suffered a loss of confidence when the major part of the private sector, much of it foreign-owned, was nationalised in the late 1960s.

In an effort to control inflation, prices of all main consumer goods together with agricultural producer prices were set by the Government. Prices set at low levels led to shortages, losses in the private sector, deficits in the public sector and parallel markets in scarce goods.

The gains that Zambia has made since independence in terms of control of the economy by Zambians and improved health and education provision have been accompanied by an economic performance significantly below the average for SSA, and a halving of average real incomes.

After a false start in the mid 1980s, when certain liberalizing measures were attempted and then abandoned, Zambia has made a determined effort since mid-1989 to reform the economy. Prices have been decontrolled, with the exception of the main food, maize meal. The price of maize meal is being steadily increased towards the market price. The exchange rate has effectively been adjusted by a variety of measures, and the intention is that the official rate will eventually reflect the market valuation of the Kwacha, eliminating the parallel market, and the need for import licencing. Plans are under discussion to introduce some degree of private ownership and management in the parastatal sector. A new investment code is being developed. A tight monetary policy is being pursued, which aims to bring down inflation and thereby raise real interest rates to positive levels. A more uniform tariff structure is to be introduced, and protective tariffs are to be kept to a minimum.

## 1.6 External influences

Over the period since independence, there have been several factors beyond Zambia's control which have hampered economic progress. Foremost among these have been periodic droughts, the two oil price rises in 1973 and 1979, and instability in the Southern African region.

It is now possible that political changes in South Africa will begin a process that will end the disruption of Zambia's trade routes, bring South Africa into more open trading links with its neighbours and allow a recovery in the economies of Angola and Mozambique.

## 1.7 Implications of changes for industrial sector

The policy changes introduced in mid-1989 are designed to move Zambia toward a more market-orientated economy. This is the clear intention of the Economic and Financial Policy Framework (EFPF) paper published by the Ministry of Finance and the National Commission for Development Planning in August 1989. The main issues yet to be resolved concern the timing and sequencing of changes as well as the nature and extent of the reform of the parastatal sector.

The opening up of the Southern African market will expose parts of Zambia's industry to vigorous competition, while creating new opportunities for others. It needs to be borne in mind that South Africa has quite the largest industrial sector in Africa, able to take advantage of scale economies, and with the most skilled and experienced labour force in the region.

The exposure of Zambian industry to increased competition has raised doubts as to the viability of existing enterprises. The issue will turn on comparative advantage. If a given quantity of productive resources, is able to produce a greater value of output in agriculture, when this output is valued at world prices, than they are able to produce in industry, then agriculture has a comparative advantage. If exchange rates are allowed to adjust, the relatively efficiently produced agricultural goods will appear cheap overseas and will be exported. Industrial goods will be imported. The industrial sector would then be reduced to goods that cannot be traded (such as construction) or goods for which transport costs, or the remaining lower levels of tariff protection enable Zambian goods to compete with imports.

On this basis it might be expected that industrial activities which process locally produced raw materials from agriculture, forestry and mining, to be viable, particularly when the processing involves significant loss of weight in raw materials.

Calculations of domestic resource cost ratios (DRCS) can give an indication of the sectors in which the economy has a comparative advantage. A DRC, for a sector or a product, is the domestic resource cost incurred in earning a unit of foreign exchange, through exporting, or in saving a unit of foreign exchange by substituting for an import. Those sectors with low DRCs have a comparative advantage compared to those with higher ratios. A DRC of less than one indicates that an enterprise or product is internationally competitive.

The World Bank<sup>1/</sup> calculated a set of DRCs for a sample of 24 firms for 1980-81. These are shown for commodities grouped by end-use in Table 1.18, for the levels of capacity utilisation then operating. The report indicates that in 1982-83, the industrial sector was operating on average at around 64 per cent of capacity. Average DRCs indicate that the food products sector was the most efficient, followed by capital goods, other consumer goods and light intermediate goods. Durable consumer goods and heavy intermediate goods were the least efficient. More interesting, however, is the degree of variation shown within each group of commodities. The best ratios in each group, were below one except for capital goods. This indicates that there were enterprises competitive in 1980/81 in five of the six groups.

Table 1.18: Domestic resource cost ratios, 1980-81

	Average	Best	Worst	No. of firms
Consumer goods: Food products	0.470	0.157	-2.471	5
Other	1.529	0.380	7.366	5
Durables	2.584	0.443	4.665	2
Intermediate goods: Light	1.600	0.676	4.642	6
Heavy	3.020	0.266	-6.288	4
Capital goods	1.445	1.179	1.711	2

Source: World Bank 1984, Zambia's Industrial Policy and Performance.

Table 1.19 shows the DRCs if the enterprises operated at full capacity. This shows enterprises in all commodity groups with DRCs under one.

Table 1.19: Domestic resource cost ratios at full capacity, 1980-81

	Average	Best	Worst	Number of firms
Consumer goods				
Food products	0.326	0.105	-1.667	5
Other	1.250	0.319	2.051	5
Durables	1.730	0.433	3.017	2
Intermediate goods				
Light	1.600	0.676	3.179	6
Heavy	2.086	0.185	-4.283	4
Capital goods	1.201	0.779	1.623	2

Source: World Bank 1984, Zambia's Industrial Policy and Performance.

1/ World Bank, Zambia's Industrial Policy and Performance, Industrial Strategy and Policy Division, Industry Development.

DRCs for enterprises classified according to producing sector rather than type of good are given in Table 1.20. There were no enterprises sampled in the basic metals category. Of the seven other sectors, five produced products with DRCs less than or equal to one.

Table 1.20: Domestic resource cost ratios by product, 1980-81

	DRC Interval		
	ISIC	0 to 1.0	Above 1.0 or negative
Foodstuffs	31	6	7
Textiles	32	1	3
Wood	33	2	0
Paper	34	0	4
Chemicals	35	4	6
Non-metallic minerals	36	0	3
Basic metals	37	-	-
Other	38	4	8
Total		17	31

Source: World Bank 1984, Zambia's Industrial Policy and Performance.

The evidence presented by the DRC study needs to be interpreted with caution. The method relies on certain approximations, assumptions and simplifications. International prices and production techniques will have undergone changes since 1980-81. Nevertheless they present tentative evidence that there are products that were, and maybe still are, internationally competitive at equilibrium exchange rates in a liberalised, competitive market economy. If the economic reforms reduce shortages of inputs such that more enterprises can operate at higher levels of capacity utilisation and managements are able to use resources more efficiently, it is to be expected that significantly more commodities can be produced competitively.

The study tends to indicate that parts of Zambia's manufacturing sector have a future, even with no tariff protection, as exports or competing with imports. The sample is too small, and the study too out-of-date, to draw any firm conclusions, but enterprises in foodstuffs, chemicals and other manufacturing show promise. Food processing was also indentified as a sector with promising export prospects in another recent major UNIDO study.<sup>1/</sup>

A series of feasibility studies have been done for projects and enterprises in the industrial sector. Only two of the studies<sup>2/</sup> have included formal social cost-benefit (SCB) exercises. In principle, a SCB study that shows a positive net present value, or an internal rate of return

1/ UNIDO 1988, The regeneration of Zambian manufacturing industry with emphasis on agro-based industries. Special reports on industrial rehabilitation No.1, PPP/R.19.

2/ UNIDO 1988, Assistance in establishment of a copper fabrication plant in Zambia, SI/ZAM/88/801 and UNIDO 1989, Establishment of a pilot and demonstration sponge iron plant using non-coking coal as a reductant, DP/ZAM/88/A-37.

greater than the chosen rate of discount, will have a DRC ratio less than one. One of the studies, for a copper fabrication plant had an internal rate of return close to 10 per cent, and the other, for a sponge iron plant had a rate of return above 10 per cent.

These two studies suggest that comparative advantage can lie in basic metal sectors when there is a substantial component of locally-produced raw materials.

## 1.8 Social dimensions of development

### 1.8.1 Social indicators

There is considerable concern that social conditions do not deteriorate as a result of economic policy changes. In addition, human resource development is a vital element in facilitating the long-term growth process.

### 1.8.2 Social implications

The deteriorating levels of average real incomes, and falling real GDP per capita since independence have had two effects on social conditions. Firstly, increasing numbers of households have fallen below the poverty line, joining those whose incomes were already below the level necessary to sustain the barest necessities of life. GNP per capita has halved since 1965. Secondly, government provisions of health services and education, have declined seriously as GDP per capita has fallen. Table 1.21 shows falling real expenditure per capita for these categories. Health and education expenditure have both fallen as a percentage of total government spending.

Table 1.21: Government social expenditure per capita

	1972	1980	1987
Education	88	52	24
Health	34	28	14
Social services	6	15	7
Other	334	360	243
Total	462	455	288

Source: Derived from World Bank 1989, From Crisis to Sustainable Growth; UNDP, Human development report 1990.

The measures contained in the EFPF are designed to begin reversing the declines in GDP and in GNP per capita experienced in the 1980s. If successful, these measures will, in the long term, raise the incomes of some of those who have fallen below the poverty line.

However, the success of the EFPF measures will still leave serious social problems.

The EFPF projects a fall in GDP per capita continuing into 1990 and 1991, with increases occurring in 1992 and 1993. However, over the four-year period, because the falls are expected to be greater than the rises, GDP per capita will average a -0.3 per cent per year reduction in the four years up to 1993. If Zambia managed to increase GDP at 6 per cent annually, with population expanding at 3.5 per cent per year, it will take 16 years to restore average incomes to their levels in 1980, and almost 30 years to restore them to their levels at independence in 1964.

Thus, many who have fallen into poverty in the era of falling incomes since independence are expected to continue to have living standards below an acceptable minimum. In addition, there is the problem of households unable to take any advantage of improving economic conditions because they lack skills to make them productive members of the labour force. Finally the measures being introduced to restructure the economy (particularly in the context of tight monetary policy, a determination to maintain public sector spending limits and to introduce reforms in the parastatal sector), can be expected to increase job losses in the formal sector with a lag before the policies can create new jobs.

In view of these considerations, a series of measures are planned through the Social Action Programme (SAP)<sup>1/</sup> to raise the productivity of the labour force and provide income earning opportunities or effective income supplements for those disadvantages in the short term.

The SAP covers eight areas of the economy where resources are to be placed, as well as proposals for implementing and monitoring the proposals. The programme will involve a significant proportion of total government spending, and is costed at US\$ 354 million over the four-year period 1990-93. The breakdown of expenditure is shown in Table 1.22. Two areas given separate treatment in the programme, health, and nutrition and food security are aggregated in the expenditure estimates. The public works programme is designed to contribute to seven target areas. The proposals regarding enterprise development are not considered to have net expenditure implications. The proposals are summarized below.

- (i) Health provision in the programme will increase resources for rehabilitation and maintenance of health infrastructure; improve preventative care; provide drugs, supplies and equipment.
- (ii) Food security and nutrition will aim to increase agricultural output in small farms and farms headed by women; raise income-earning opportunities in poor households by supporting non-farm production efforts and public works; target and streamline food subsidy programmes; strengthen food security and nutrition monitoring; create capacity for national food and nutrition policy.
- (iii) Education and training plans will provide learning materials and equipment; support adult and continuing education; expand primary schooling; rehabilitate existing primary schools.

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1/ Republic of Zambia 1990, Social Action Programme for 1990-93, Lusaka: Consultative Group for Zambia.

**Table 1.22: Social action programme expenditure, 1990-93**  
(millions)

	Foreign (\$ US)	Local (Kwacha)	Total (\$ US)
Health, nutrition and food security	67.1	805.7	99.0
Education and training	86.0	722.2	114.5
Water sanitation	31.0	254.0	41.2
Roads, market places, public transport	61.5	447.2	82.5
Women in development	6.7	73.2	9.7
Household energy	4.9	64.5	7.5
<b>Total</b>	<b>257.2</b>	<b>2,366.8</b>	<b>354.4</b>
Public works (included in above)	99.5	1,453.5	157.7

Source: Republic of Zambia, 1990 Social Action Programme 1990-93.

Note: Estimates based on Kwacha 25 = US\$ 1.

- (iv) Water and sanitation is to receive attention through water and sanitation rehabilitation and improvement in four major urban areas; rehabilitate and maintain existing rural water supply and sanitation.
- (v) Roads, market places and public transport are to benefit from rural feeder road construction, maintenance and improvement; urban road rehabilitation; upgrading, extending and revising regulations for market places; rehabilitation and replacement of buses.
- (vi) Enterprise development is expected to encourage small-scale enterprises by streamlining regulation; promoting awareness; skill-training; marketing assistance; improving input availability; developing credit availability.
- (vii) Women in development will concentrate on extending credit extension, inputs and marketing services to women in agriculture; promote environment conserving energy practices in wood and charcoal use; encourage participation of women in co-operatives; reduce barriers



to women in informal and formal employment; improve women's literacy rates; provide child-care in workplaces; target nutrition assistance to pregnant women and nursing mothers; establish research and training on women's issues.

- (viii) Public works projects, utilising labour-intensive methods will generate income for poor or disadvantaged in projects directed in the main to providing infrastructure in health, education and training, water and sanitation, roads and public transport.

Implementation issues are to be the subject of an inquiry to determine whether SAP measures can best be delivered through strengthened existing institutions, for instance, the Ministry of Health, Ministry of General Education and so on, or through a specially created body.

Monitoring, evaluation and development of the SAP is to be achieved by strengthening existing data collection and analysis units such as the Central Statistical Office (CSO); the Ministry of Health, the University of Zambia and so on, co-ordinated by the Secretariat of the National Economic Monitoring Committee.

## 1.9 Institutional capacity to implement policy

### (a) Organizational structure

In the administration of Government line ministries, the Permanent Secretary is the principal authority for the management, monitoring, control and evaluation of programmes and projects. In this, the Permanent Secretary relies on a group of professional staff who carry out the detailed work. The nature and categories of professional staff will depend on the responsibilities of a particular ministry. Figure 1.1 illustrates a typical establishment.

Typically, the professional officers will be qualified at the level of a university degree in their field of specialisation. Additional post-graduate training and/or experience determine the level of the professional officer.

A Director is normally responsible for the administration and management of a specific department. Each department may have, in turn, specialized Units, under the management of an Assistant Director. Each Unit will then be staffed with qualified professionals with training and experience in the relevant responsibilities of the respective unit.

The Director is primarily responsible for interpretation of the Government policy framework within which the activities of the specialized units are elaborated. It is within this Government policy framework that areas of technical co-operation are identified.

In general, technical co-operation personnel, such as experts, consultants, advisors, and so on, are attached to the specialized units, consistent with the objectives of the technical co-operation programme or project.

The formulation and preparation of actual technical co-operating programmes, however, presents some difficulties. Whereas the identification of needs does not present undue difficulties, this is not the case for the formulation and preparation of strategies and activities to address the needs identified. Past experience has shown that departments have had to rely on external experts or advisors to formulate and prepare programmes and obtain the agreement of the departments.

The Director and the Assistant Director are normally responsible for the evaluation of the effectiveness of programmes carried out in each unit, and in the department as a whole. Typically, this takes the form of annual reports produced by each department and submitted to the Permanent Secretary. In principle, all professional staff in the department are expected to contribute to the preparation of these annual reports.

(b) Assessment

Most Government ministries have established structures for effective preparation, monitoring, control, and evaluation of their specific programmes and projects. However, the following have been identified as problem areas that require strengthening:

- (i) Availability of professional staff: There is a critical shortage of professional staff in most Government ministries. Available staff are usually overburdened and are unable to devote adequate time to any one activity. Over the past few years, there has been a reduction in the real incomes of civil service employees, especially at the higher professional levels. A newly qualified professional with a PhD engaged in a government department would not receive a salary of around the equivalent of US\$ 65 a month. This has made it difficult to attract or retain trained and competent personnel.
- (ii) Programme and project management: There is need to strengthen the capabilities in Government for programme and project formulation and management. The scheduling, monitoring and control of activities in the execution of programmes and projects needs strengthening.
- (iii) Resources: Most Government ministries do not have adequate resources for execution of programmes and projects. This is attributed, in the main, to inadequate financial resources for the procurement of equipment and for the maintenance of existing equipment. Organisational arrangements for maintenance and repair of equipment also needs to be strengthened.
- (iv) Working morale: As a result of reduced real incomes in the civil service, there is evidence of reduced working morale and performance of the professional staff in the civil service. However, the Government is currently working on proposals to improve the working conditions of the civil service which, it is hoped, will improve the operation of Government ministries.

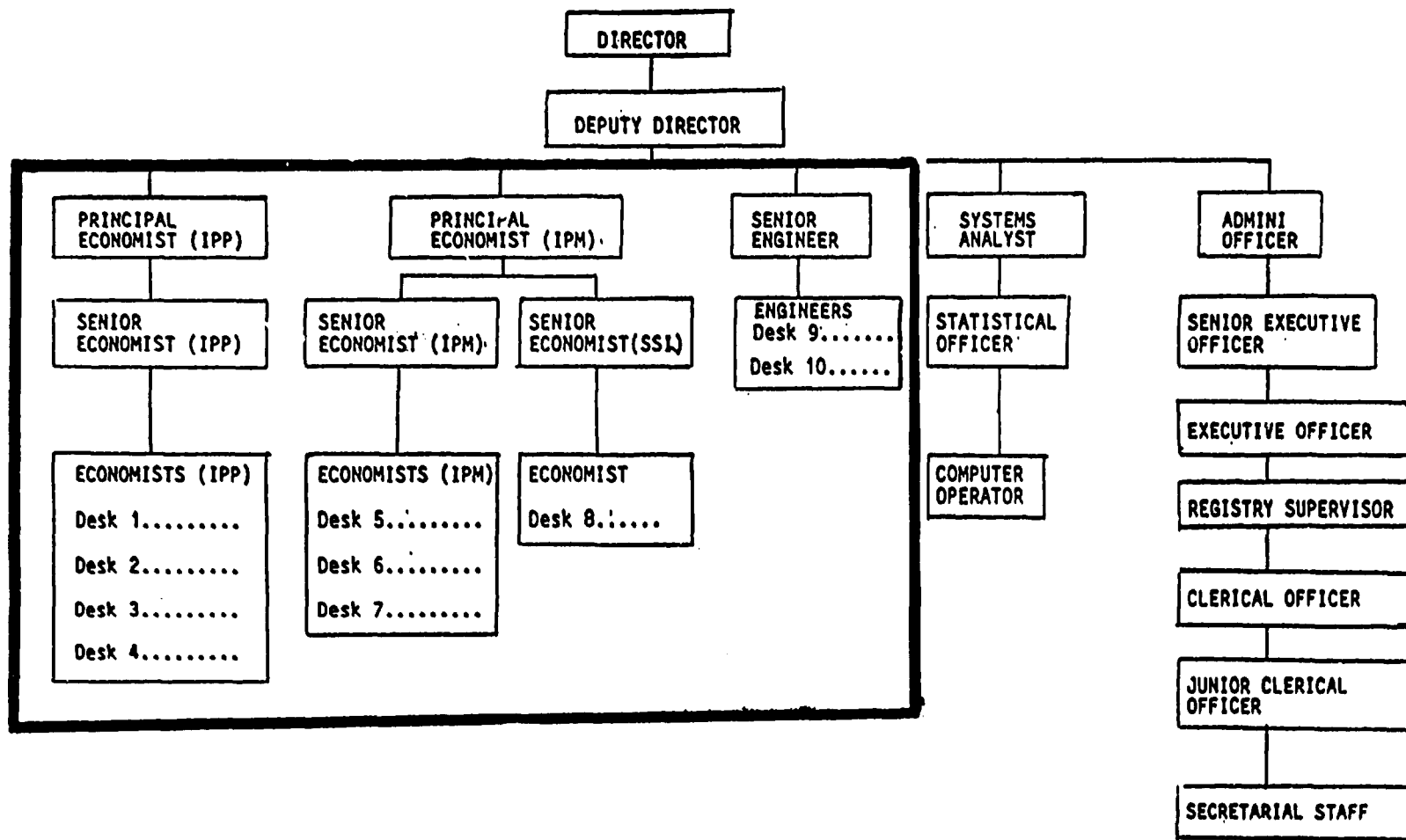


Figure 1.1: Organizational structure

## 1.10 Summary and conclusions

Zambia is a land-locked country with a small population, low population density. The country is also heavily urbanised. The economy generates low-income levels and has a relatively small agriculture sector and a large industrial sector. There is heavy dependence on copper mining in the industrial sector and for export earnings. Levels of social indicators for health, education and the position of women and children are among the best in the SSA.

Economic performance has been extremely poor since 1965, with GNP per head continuously falling, and resource mobilization, trade volumes and inflation well below the average for SSA.

The industrial sector faces structural changes with the anticipated decline in the copper sector. Studies show that other mining activities as well as several subsectors of manufacturing have good prospects.

Economic policies have been characterised by considerable government intervention, regulation, control and ownership, which have contributed to poor economic performance. The government is currently committed to a comprehensive programme of liberalising and other economic reforms.

The industrial sector faces new challenges with the anticipated expansion of trade links in the Southern African region resulting from political developments in South Africa. Manufacturing which relies on processing of Zambian produced agricultural, forest and mining products are expected to prosper. Manufacturing which involves skill-intensive, high quality, sophisticated processes, or large economies of scale are expected to find competition from South Africa and Zimbabwe particularly severe.

Although, the Government's assignment of high priority to agriculture is justified, it is important to stress that agricultural growth will be limited if it is not balanced by appropriate industrial expansion.

The Government has drafted proposals for a social action programme to assist low-income groups, those disadvantaged by liberalising reforms and to restore health, educational and basic infrastructure provision.

There is a lack of ability to implement policies due to shortages of adequately trained professional staff, weakness in programme and policy management, inadequate maintenance and general shortages of equipment, and poor working morale.

## CHAPTER 2

# GOVERNMENT PRIORITIES AND PLANS FOR THE INDUSTRIAL SECTOR

### 2.1 Introduction

In the context of this report, Government priorities in the industrial sector need to be considered from two perspectives. First, in terms of how priorities have changed - particularly which objectives have been added and which have been discarded - in order to assess the implications of these changes. Second, to examine the relationship between donor priorities and those of the Government.

The view of the government with regard to priorities has undergone some modification from the formulation of the Third National Development Plan (TNDP) which commenced in 1980, the Fourth National Development Programme (FNDP) published in January 1989, the Economic and Financial Policy Framework (EFPF) of August 1989 to the Public Investment Programme (PIP) of April 1990. In broad terms, there is a recognition that resources for investment are limited, and that emphasis needs to be placed on projects which will do the most to improve the productive capacity of the economy and to relieve the circumstances of those in the most distress. Most of the projects considered involve rehabilitation or modest expansion of existing capacity. The progress of three such projects which were the subject of UNIDO's 1988 survey of the rehabilitation needs of Zambian manufacturing industry is reviewed in Appendix 1.<sup>1/</sup> There is now much less concentration on issues such as self-reliance and self-sufficiency, indigenisation of the workforce and international initiatives to improve the general economic environment for Third World countries. The approach to development is more open, with the government more prepared to take advantage of the opportunities provided by international trade and foreign investment. Nevertheless, the impact of development on the environment is recognised in the FNDP, and specific measures are proposed to begin the task of providing a framework that will allow rapid growth without debilitating long-term environmental costs. Many of the longer-term considerations relating to exploration, training, the environment, and establishment of standards, however, are not reflected in the PIP. The specific priorities in each of the four industrial subsectors are considered in turn.

### 2.2 Mining

Priorities in the mining subsector have been set in the context of declining prospects for the core activity of copper mining. At current rates of exploitation, almost all of Zambia's copper mines will have exhausted their ore reserves by the year 2010. While the FNDP suggests programmes for exploration and surveying, import substitution of fertiliser raw materials and diversification of the sector, the PIP concentrates on maintaining the capacity of the most productive activities in the copper sector. Fifteen higher priority projects are identified, and they are directed toward rehabilitation of existing copper processing facilities, and cautious extension of capacity to exploit already discovered deposits. There are some

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1/ UNIDO 1988, The regeneration of Zambian manufacturing industry with emphasis on agro-based industries. Special reports on industrial rehabilitation No.1, PPD/R.19.

funds allocated to small-mine development, although over the period 1990-93 only 0.13 per cent of total mining public expenditure is directed to small-mine promotion or development of gem stone production. The attention given to health and safety of mine workers and training of the workforce in the FNDP is not reflected in the PIP.

### 2.3 Manufacturing

In the FNDP, manufacturing is seen as the hub of productive activities. It is anticipated that the sector will pursue the objectives of greater usage of local raw material, concentration on exports, better capacity utilization and further indigenisation. The plan goes on to emphasize support for small- and medium-sized industries, particularly in the rural areas. A further objective is the desire to ensure adequate protection of the environment from the effects of manufacturing activities.

The PIP lists the completion of seven existing projects among its high priority group, and four of these involve rehabilitation of existing capacity. The PIP stresses that the rehabilitation projects are all in economically efficient units. One project is to expand an existing operation and two are to complete projects already underway. Four new projects feature in the high priority list. Two are rehabilitations, one is an expansion of existing capacity, and only one item relates to a new project. It is in line with the general principle of the government that the two new projects, one partly completed and the other proposed, have both been the subject of financial feasibility studies which indicated that they should be financially viable. Small-scale enterprises are dealt with under the Social Action Programme (SAP) in the PIP, and there are six measures planned, but they are considered to have no significant budgetary costs. They involve simplified registration; an awareness campaign; training; marketing; suitable input provision; and delivery of financial services.

The provisions for women's issues in the PIP contain some proposals for informal sector promotion of appropriate technologies; industrial estates; literacy; soil and fuel-wood conservation; environmental education; and day-care centres to help women in employment. These items comprise only 0.2 per cent of the total PIP expenditures for 1990-1993.

### 2.4 Electricity and water

Electricity: The emphasis in the FNDP for the electricity sector is on expansion whenever economic considerations make it cost effective to do so. It is recognised that appropriate energy pricing policies are necessary if supply is to meet demand. Furthermore, there is concern to encourage developments (such as electric hotplates for cooking instead of charcoal stoves) which will have beneficial environmental effects (by reducing fuelwood demand).

These proposals are in contrast to the plans in the TNDP, which laid great emphasis on self-sufficiency in the energy sector. The possible economic cost of such a policy in the context of ever-tighter budgetary constraints is responsible for the change in priorities.

The PIP concentrates on rehabilitation projects, of which there are four in the high priority group. The only non-rehabilitation project is the electrification of a farm-block in Mkushi, a high potential agricultural area where electricity supplies are inadequate for current irrigation requirements. This project is consistent with the Government objective of according agriculture high priority, although there may be some trade-off with declared social objectives as the region is mostly devoted to large-scale commercial farming. There is a feasibility study, but the PIP does not indicate whether this is financially or economically viable. The environmental concerns expressed in the FNDF do not feature in the expenditure plans of PIP.

Water: The TNDP had the objectives of providing effective conservation and pollution control measures, as well as plans for establishing appropriate legislation to enforce national water standards. In broad terms, the FNDF objective is to supply 100 per cent of urban areas and 50 per cent of the rural areas with safe water by the end of 1993.

Water provisions are dealt with in the SAP proposals in the PIP. Urban and rural water supply (and sanitation) projects comprise 2 per cent of the PIP expenditure proposals. Environmental, conservation, planning and training issues do not have any expenditure allocation.

## 2.5 Construction

Three main subsectors are identified. They are design, which is mostly undertaken by the public sector; assembly, which is predominantly private; and manufacture and supply of building materials, which is largely parastatal. The FNDF has comprehensive proposals for each of the subsectors which embrace training of craftsmen and professionals; research into materials; Zambianization of the workforce; use of local supplies; and improvements in credit delivery. On the whole, these proposals are more comprehensive than those put forward in the TNDP, and are a response to poor performance in the sector (see Chapter 1).

In the PIP, there is no provision for investment in the construction sector as such. Many projects requiring construction are detailed in sectors such as agriculture, education, health, roads and water supply. Given the poor performance of the construction sector, there must be some doubt as to whether the sector will be able to meet these demands without direct measures to increase its capacity.

## 2.6 Summary and conclusions

Policy development in the 1980s has taken the form of concentration on more narrow growth priorities at the expense of self-sufficiency, indigenisation and international initiatives. Industry sector priorities now comprise rehabilitation of existing capacity and cautious expansion where studies indicate financial viability.

Long-term considerations relating to mineral exploration, training, conservation, pollution control, environmental monitoring and the establishment of standards receive little emphasis in current investment plans. These still remain important issues for the donor community, however, which is concerned that the immediate demands of stabilization and structural adjustment do not impair prospects for future growth or incur heavy costs through neglect of environmental issues.

## CHAPTER 3

### ASSESSMENT OF THE SOCIO-ECONOMIC POTENTIAL

Although this document is focused on the technical co-operation issues required for further development of the industrial sector, a number of inter-related subjects must be assessed in the light of their importance to the development of industry. They are all indispensable in an overall assessment of the general environment for industrial development and in formulating the programme for future technical co-operation. The following sub-sections attempt to highlight the opportunities that exist for development and expansion of industry in Zambia, and deficiencies which are likely to be constraints to development should suitable measures not be exercised.

#### 3.1 The industrial sector

The industrial sector in Zambia is relatively diversified as compared with many other developing countries. It is dominated by a large public sector with enterprises in different subsectors and branches, but small industrial enterprises are being established in increasing numbers. Some essential background data on the Zambian industry has been given in sections 1.3 to 1.7 of Chapter 1.

The three major subsectors of industry dealt with here, manufacturing, mining and construction, are mentioned in the order of their importance.

##### (a) Manufacturing

The manufacturing sector was expected to take a leading role in the restructuring of the Zambian economy through utilization of local raw material in its production. These objectives have not yet been achieved, mainly due to lack of training (inadequate human resource development), finance and foreign exchange, with poor capacity utilization as a result.

In an effort to achieve the objectives spelt out in the FNDP, the Government had the following strategies for the manufacturing subsector:

- Establishing and encouraging development of in-house design capability in industry;
- Establishing small-scale and local resource-based industries which have significant multiplier effects in the economy;
- Promoting and encouraging the processing of raw materials locally;
- Encouraging the establishment of industries the imports of which would be inputs specially geared for processing products for exports;
- Increasing and encouraging long-term financing by the banks and other financial institutions in an effort to mobilise funds for the rehabilitation and establishment of industries in the country.



Inadequate maintenance and lack of spare parts is a general reason for gradual deterioration of manufacturing output in quantity as well as quality. Efforts to rehabilitate plants and installations have only been partly successful, mainly as a consequence of insufficient financial resources, particularly foreign exchange, but also due to inability to prepare the necessary pre-project studies essential for procurement of finance, whether from donors or commercial lending institutions.

The strategy for reconstruction of the Zambian manufacturing industry gives priority to rehabilitation and updating of technologies and manufacturing methods used. However rehabilitation of a large number of enterprises is not a matter of physical rehabilitation only. There is an identified demand for financial reconstruction, improvement of management and management procedures in addition to strengthening of middle management and training of various categories of employees. Only a multi-disciplinary/multi-dimensional approach will give a satisfactory result.<sup>1/</sup>

Given that the manufacturing sector is rehabilitated in line with the Government priorities and plans, and following the above integrated approach to rehabilitation, future prospects are bright, providing a number of closely related shortcomings are overcome in the near future. These include policy adjustments which are discussed further in Chapter 4; strengthening of the educational subsector focused at this stage with respect to primary and secondary education and vocational training, discussed in section 3.2 (a) below, and finally substantial improvement of health services including nutrition dealt with in section 3.2 (b).

#### (b) Mining

The mining sector, particularly copper, has been the major money earner in the Zambian economy even before independence.

Copper mining is gradually becoming less important as the deposits are being depleted, or less accessible, hence too costly to mine. Other minerals, further discussed in Chapter 3.4 (b) are also mined, although not nearly to the same extent as the copper. Table 3.1 shows the production of minerals in 1980-88.

In addition to external difficulties in the past, such as periodic market constraints due to reduced international demand for copper and the impact of foreign exchange constraints on the Zambian economy, the mining subsector has been beset with problems due to inadequate maintenance, frequent breakdowns, and shortages of essential, skilled manpower.

Taking into account the difficulties that do exist in the mining subsector rehabilitation, new investments and manpower training are vital elements in order to utilize the substantial potential in the mining subsector.

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1/ For a detailed discussion of such a multi-disciplinary/multi-dimensional approach, see the UNIDO integrated approach to rehabilitation in Africa, PPD.168, 5 July 1990.

Table 3.1: Mineral production

Year	Copper '000 MT	Cobalt '000 MT	Lead '000 MT	Zinc '000 MT	Selenium MT	Coal '000 MT	Gold KG	Silver MT
1980	609.6	3.31 <sup>a/</sup>	18.04	32.8	22.585	573	323	22.703
1981	560.2	2.57 <sup>a/</sup>	9.87	33.3	21.700	575	323	22.219
1982	584.0	2.45	14.65	39.2	25.754	552	456	30.391
1983	574.8	2.41	14.57	37.9	42.621	559	515	38.064
1984	521.7	3.47	8.82	29.2	20.764	483	380	23.919
1985	479.4	4.29	8.87	22.8	12.672	510	248	18.869
1986	459.2	4.34	6.41	22.0	22.001	512	270	25.103
1987	483.0	4.49	7.97	21.0	26.950	512	351	27.872
1988	473.0	5.03	6.1	20.6	n.a.	581	n.a.	n.a.

Source: FNDP, New Economic Recovery Programme.

a/ ZCCM cobalt production figures were stripped metal, not finished.

Non-metallic minerals are becoming more and more of interest as an area for generating capital and employment opportunities. In particular, gem stone mining by small enterprises and individuals have increased in numbers lately. Parastatals, through ZCCM, have been established for gem stone mining such as the Reserved Minerals Corporation (RMC) and Kagem, and a number of joint ventures, of which Kariba Minerals Ltd. with Lonrho (Zambia) Ltd. is directly involved in mining of gem stones.

According to Zambia's Gemstone & Precious Metals Association there are over 200 registered small-scale miners in the Copperbelt, in Lundazi in the Eastern Province, and in Kalomo in the Southern Province. In addition there are reportedly many more illegal mining operations. At the present time, however, "the Zambian gem stone branch is in a stagnant, if not retrogressive state as compared with previous years and it's own estimated potential".<sup>1/</sup>

A number of constraints accounts for the decline in production, but the major problem lies in the lack of available heavy machinery and spare parts for existing equipment.

The purchase and marketing of gem stones is monopolized and handled by two parastatal enterprises, Zambia Emerald Industries Ltd., and RMC. A general mutual mistrust between the gem stone miners, on the one hand, and the monopolized dealers on the other, creates numerous problems. Small-scale miners invariably lack knowledge of international standards, supply and demand fluctuations and general evaluation grades. This puts them at a disadvantage when selling to one source, at least without the prior evaluation by an

<sup>1/</sup> Export Market Development for Zambian Gemstone Interim Report, 16 November - 19 November 1989.

independent expert. RMC, who is the commission agent for marketing of all coloured stones, except emeralds and amethysts, has been offered only low grade aquamarine from the mines, suggesting that high-quality stones are finding other buyers. This puts RMC at a severe disadvantage in the open market and gives Zambian aquamarines a bad reputation.

The monopsonized system, with all its negative consequences for the individual miner, is an encouragement to sell outside the legal channels. According to the reports on gem stone market development (referred to earlier) and personal interviews, these stones appear to be lost to the Zambian gem stone industry, a potential employer and earner of foreign exchange, which could be quite considerable.<sup>1/</sup> The gem stone industry, properly organized, in all aspects, could earn US\$ 100 million to US\$ 300 million per year.<sup>2/</sup>

Although some incentives have been introduced by the Government to encourage legal trade, it is important for the Government to seriously consider other avenues to get the gem stone industry properly organized and the mining sector motivated to expand the Zambian gem stone industry to its full potential.

Apart from being an export earner, increased gem stone mining will contribute to rural development by providing income opportunities in rural areas, through self-employment, or employment in small- to medium-sized gem stone mining enterprises. Secondary gem stone industries may be located in urban areas where specialized skills in cutting and polishing will have to be developed. This will require technological transfer and acquisition of the appropriate processing equipment.

Studies with recommendations on legislation and administration, marketing, human resource development and technical co-operation for the gem stone industry has been carried out with the assistance of the International Trade Centre (ITC), Geneva.

### (c) Construction

The construction subsector of industry is small and under-developed and appears to have little, if any, ability to expand in the present economic environment. This is the result of low building activity in the public sector over a long period of time, and the prevailing very low investment in private housing.

For the period 1985-87, the construction subsector showed an average decline of output of 4.2 per cent per annum. At the beginning of the 1980s, the total labour force was over 43,000. By mid-1980, it fell to around 34,000. By 1989, the labour force dropped to 20,840.

The stagnation of the construction sector and its very low profile in the economy, is also the result of lack of interest in research and the development of technologies and systems and materials adapted to local requirements and to the Zambian economy in general. There is still heavy

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1/ See, in particular reference the report on the gem stone industry given on page 30.

2/ Ibid.

import dependence for a wide variety of building supplies despite the stated Government objectives of self-reliance during the 1980s. Shortage of professional manpower such as architects, engineers and surveyors is a serious problem which also applies to skilled workers in different trades.

A capable and well-functioning construction subsector is an essential support in a growing economy. Reconstruction of the Zambian economy cannot be effectively pursued, if construction of storage facilities for maize and oil seeds, housing, factories, roads, bridges and so on is not part of the programme. The Government recognizes the essential need to regenerate the construction subsector and has accordingly established priorities to inter alia, improve supply of professional manpower; intensify research into development of locally available materials; encourage the use of locally available materials; and periodically review the building standards to permit flexibility in order to minimize costs. However, it is clear from the performance of the construction sector during the 1980s that these priorities have not been pursued nor are they reflected in the PIP of April 1990.

(d) Standards and quality assurance

Lack of standardization of products is a considerable impediment to the manufacturing industry. In addition, quality assurance is vital for any expanding economy, in particular when the development and expansion of industry is aimed at the export market.

The Zambia Bureau of Standards (ZABS) is governed by Act No. 22 of 1982. At that time, ZABS had eight staff members. Since then the total number of staff has increased and is at present 29, out of which 11 have a technical background. Three of these have industrial experience, and one of them is also versed in laboratory work. During the 1980s there has been very little, if any, change or development of the ZABS infrastructure which is inadequate for performing its obligations. As a consequence, ZABS has not been very effective in maintaining standards and quality control due to lack of laboratory facilities.

In 1982 there were 22 national standards as compared with about 90 at present. From the beginning, Zambia adopted the British BSI standard, but over the years some industries have been using American or German standards. In the last few years ZABS has adopted the policy to use, as much as possible, the standards of the International Organization for Standards, the ISO norms, for the metal manufacturing and construction industry. Codex Alimentarius, the FAO/WHO food standards serve as a basis for the Zambian food industry norms, and the British or US Pharma Copea standards are applied in the pharmaceutical industry.

An important obligation of the ZABS is to promote standards in industry and make manufacturers as well as civil servants aware of the importance of industrial standards in manufacturing. The larger metal manufacturing enterprises have reasonably good facilities for standardization and quality control of their products, especially those serving the mining industry, and quite a few food industries and pharmaceutical enterprises tend to have laboratories of their own. But there are large enterprises who do not have any means of testing materials such as Zambia Steel and Building Supplies Ltd. They have to rely entirely on information and specifications provided by the seller of material and products. This is obviously not satisfactory.

ZABS is also responsible for the provision or arrangement of calibration of weights and measurements. Development in this area is currently being done with UNIDO assistance (DP/ZAM/88/009).

For the purpose of co-ordination with standards in other countries, ZABS is a member of two expert groups, PTA and SADCC. The Zambian delegate to African Regional Standards Organization, ARSO, based in Nairobi, is at present Vice President of the organization.

At a time when Zambian industry, and agro-based industry in particular, is intended to take a leading role as an exporter and earner of foreign exchange, the importance of a well-functional national standards institution is a key issue for success on the international market. To be effective, however, the standards must also reach industries at present manufacturing for the domestic market only and prepare them in time for the quality conscious international market. The lack of infrastructure at ZABS makes it impossible for them to provide the required standard and quality tests, and monitor future changes and development in this area. With reference to the priorities of the industrial sector, and need for the construction subsector to be regenerated (see section 3.1 (c)), ZABS needs to be expanded with four test and control laboratories in the following areas:

- Food and chemical
- Packaging material
- Leather and textiles
- Materials testing.

In addition, as detailed in section 3.6, ZABS is well suited to assume responsibility for performing tests and analyses related to pollution control and monitoring. There are, therefore, strong grounds for providing ZABS with a fifth laboratory specialising in environmental control.

### 3.2 Human resource development issues

Zambia has a total population estimated at about 8.3 million which is currently increasing at a rate of 3.7 per cent per year. More accurate figures will be available after the forthcoming new census which is to take place between 22 August - 22 September 1990.

According to current estimates 45 to 48 per cent of the population are under 15 years of age and 60 per cent are less than 20 years old. This puts a heavy pressure on Zambia's educational system and underscores the importance of the creation of viable employment in the Zambian economy.

In 1988, 53 per cent of the population lived in urban areas. The rate of urbanization, at present 5.5 per cent, has declined compared with 7.6 per cent during the period 1960-88.

Table 3.2 gives an overview of the size of the labour force for selected years 1969-95 and some statistics regarding unemployment.

Table 3.2: Size of labour force and unemployment, selected years 1969-95

Year	Labour force million A	Unemployed million B	Reg. job seekers '000 C	Vacancies notified '000 C	Vacancies filled '000 C
1969	1.221	0.404	n.a.	n.a.	n.a.
1975	1.479	n.a.	n.a.	n.a.	n.a.
1980	1.761	0.556	44,052	27,608	21,792
1985	2.104	0.353 (1986) <sup>a/</sup>	34,567	19,983	15,841
1989	n.a.	0.262 <sup>b/</sup>	28,235	39,947	22,319
1995	3.294	-	-	-	-

Source: A = CSO projections

B = Price, Incomes, Wages and Employment, Third National Convention  
1986

C = Ministry of Labour, Labour statistic Unit

a/ = Labour Force Survey 1986

b/ = NCDP Economic Report 1989

One needs to be cautious about the official figures given in Table 3.2. They illustrate a drastic increase of the labour force but the unemployment statistics do not appear to reflect the actual situation due to hidden unemployment in the agricultural sector. Also, the system of 'employment exchange' through the National Employment Service (NES) does not seem to be very effective in reducing unemployment: the figures show a substantial decrease in job seekers while an estimated number of 120,000 are currently added to the labour force per year. From anecdotal evidence, it seems that confidence in NES, as a means of getting a job, has declined over the years.

#### (a) Education

The economic situation in Zambia during the late 1970s and the 1980s has also adversely affected the educational system. Budgetary allocations have been reduced in real terms, and the cost burden for learning materials, and to some extent school fees, has been moved to family budgets. Maintenance of schools and equipment, and the provision of teaching material has suffered. As a consequence, schools and teaching materials are in a poor state of repair offering an inferior environment for teaching. A number of schools have recently been closed due to unacceptable hygienic conditions to prevent epidemics such as cholera.

Table 3.3 shows the decline of expenditures on teaching materials in recent years and to some extent also on general expenses. The capital expenditures for selected years are presented in Table 3.4

**Table 3.3: Percentage of distribution of public recurrent expenditure by level of education and type of expenditure (selected years 1970-86)**

	1970	1975	1980	1985	1986
<b>Primary schools</b>					
Personal emoluments	78.0	84.3	92.2	95.6	96.5
Teaching materials	22.0	9.8	2.8	1.7	.0
General expenses		5.8	5.0	2.6	3.5
<b>Secondary schools</b>					
Personal emoluments	55.5	64.3	64.8	51.0	57.0
Teaching materials		5.4	4.6	8.8	.0
Boarding costs	44.5	22.4	22.5	35.1	37.8
General expenses		7.9	8.2	5.0	5.2

Source: Kelly M.J. (1987) The financing of education in Zambia.

**Table 3.4: Capital expenditure on primary and secondary schools (selected years 1975-84, million Kwacha)**

	1975	1978	1980	1982	1984
Primary schools	4.05	2.26	2.08	1.08	0.44
Secondary schools	8.13	2.30	0.93	3.30	11.43

Source: Ministry of General Education, Annual reports 1974-84.

The working conditions for the teachers are becoming less attractive with inadequately staffed schools and chronic lack of teaching materials. This, and the salary structure, is currently causing unrest among teachers and a drainage of teaching capacity to other countries in the region.

Table 3.5 shows the number of pupils enrolled at primary and secondary schools.

Table 3.5: Number of pupils enrolled in primary and secondary schools

	1970	1975	1980	1985	1986
<u>Primary schools</u>					
Boys	476.0	554.5	713.0	731.3	749.8
Girls	396.3	487.4	635.6	660.2	697.0
Total	872.3	1,042.9	1,348.6	1,391.5	1,446.8
<u>Secondary schools</u>					
Boys	47.9	61.3	82.8	91.0	n.a.
Girls	25.0	33.2	48.5	54.1	n.a.
Total	72.9	94.5	131.3	145.1	-

Source: Ministry of General Education.

At primary level the enrolment of girls has remained at slightly over 45 per cent with an upward trend. The corresponding figures for the secondary level is about 35 per cent, also with a very small increase of 0.15 - 0.20 per cent per annum.

A tremendous improvement has been realized in education since independence. In 1964, 72 per cent of the rural population, and 52 per cent of the urban population, had no schooling and 25 years later, in 1985, of the total adult population, only 24 per cent was illiterate.

However, this general progress masks some specific deficiencies. While the increase in population is 3.7 per cent per year, the increase of enrolment at primary school in the second half of the 1980s has been about 1.6 per cent, on average. This shows that a substantially smaller portion of the children eligible for primary education are in fact enrolled. In the light of the achievements in the 1960s and early 1970s, it is of considerable concern that some districts are now unable to provide full education to more than 20 per cent of the school-going children and that there are only about 31,000 teachers available for 34,000 classes at the primary school level. Moreover, the publishers of teacher and student textbooks are unable to supply the necessary quantities. There is a chronic shortage of textbooks in all languages and subjects all over the country.

It is concluded that primary and secondary education is declining both as regards to quantity (less enrolment in relation to the number of children in these age groups) and quality (larger classes on account of larger age groups, and insufficient number of teachers in addition to degrading educational facilities).

Vocational training currently receives little attention from the Government. Various ministries and authorities are engaged in vocational training within their own sphere, but there is no national system of co-ordination and efforts directed towards vocational training appear to be very fragmented.



The Ministry of Labour, Social Development and Culture is considering assigning the responsibility of creating a country-wide system for vocational training to the National Employment Services (NES). NES is now engaged in registration of employment seekers on a voluntary basis. This will hopefully improve the availability of well-trained, skilled workers for industry in the future, but there is as yet no detailed plans as to how this will be implemented.

University education is, to a large extent, focused on providing government institutions with civil servants of various categories. By the beginning of the 1970s universities were meeting the needs of the country in administration, agriculture, education, engineering, law and natural science through its degree programmes on offer. The system, however, favoured a small minority who were believed to be the most able academically, at the expense of the vast majority of others.

Professionals from Zambia have been, and are still, competitive in neighbouring countries and elsewhere. This has resulted in a 'brain drain'. This is widely acknowledged, but there is no material readily available to assess the extent of lost professionals. Superior salaries and conditions of work in other countries are quoted as the two main reasons for the brain drain.

The loss of qualified human resources is not confined to academically educated people. Skilled workers of various trades and categories, and in significant numbers, are reportedly applying for employment in neighbouring countries.

This loss of qualified personnel, regardless of branch of occupation, is a serious constraint for industrial development in Zambia.

University studies appear to have a pronounced theoretical nature. This makes graduates less useful in industry until they have acquired substantial practical experience. Review of the course curricula should be considered to adapt the studies more to the requirements of industry. There is also need for a system which enables an employee to advance in the organizational structure by participation in adult education, promotion courses for technical staff, accountants and so on.

(b) Health and nutrition

The medical services in Zambia have also suffered from the generally poor economic performance during the 1980s. Although about 600 medical doctors have graduated since independence from the Faculty of Medicine at the University of Zambia, only 150 are currently working within the country. The situation regarding qualified nurses is reportedly similar. The reasons for this are unsatisfactory salary structures, poor working conditions and housing problems. The result is that qualified doctors and nurses have an incentive to seek employment outside of Zambia where better overall employment conditions are offered.

Attempts to reduce government expenditures have also impacted adversely on the funds available for health services. Medical care is no longer free of charge. The strain on family budgets has increased and the change is likely to make people reluctant to consult the medical institutions and doctors for diagnoses and treatment of different ailments. In the long term, this will have a detrimental effect on the quality of the labour force and also on the level of education.

AIDS is becoming a serious threat to Zambia's population and therefore to the human resources available to industry. It has not been possible to obtain any documentation on the incidence of AIDS, but only about one-third of deaths caused by AIDS are reported according to UNFPA. Other sources claim that 15 to 17 per cent of the urban population have contracted AIDS, mostly at the intermediate management level.

The situation is further aggravated by increased poverty. It is estimated that, in 1980, there was approximately 100,000 poor and very poor urban households in Zambia. A recent UNICEF<sup>1/</sup> study has estimated that "inflation for the poorest households ranges from 93 to 122 per cent from June 1988, with urban formal employment at approximately 360,000 compared with the urban pool of 1.2 million; therefore salaries have declined in real terms. And since the informal sector has been actively discouraged the current level of ultra poor has increased."

Other reports estimate that at least 33 per cent of the population live below the poverty line. This translates to 200,000 households or 2-3 million people.

Although the human resources in Zambia are considerable as compared to the size of its economy, there are good reasons for concern about the future. This is because:

- Reduced quality and quantity of education will in a comparatively short period seriously hinder the development of the human resources at a time when this is needed to achieve development objectives. In the longer term, the paucity of academic and polytechnic level courses for management, research and development of industry may become a serious constraint.
- Loss of qualified white collar and skilled workers to neighbouring, and other countries, due to unsatisfactory salary structure and conditions of work in Zambia.
- Reduced level of health services, for whatever reason, has a detrimental effect on the availability of human resources for both manual and intellectual work. The effects are particularly serious among the lower age groups, among poor people, and in densely populated urban areas which negatively affects the workforce of tomorrow. Malnutrition resulting from poverty will have serious long-term detrimental effects on large groups of people who will have difficulties in absorbing education and training.
- An increasing number of poor, and very poor people, who live below the poverty line.
- The alarming rate, at which AIDS is spreading, is likely to take a heavy toll in urban areas and particularly at middle and lower management levels.

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<sup>1/</sup> See, UNICEF Country Programme Preparation 1990, Background Document No. 0013.

In summary, the inadequate level of education, health services and nutrition in Zambia causes long-term waste of human resource potential.

There is a common awareness of the seriousness of the situation. The Government is launching a Social Action Programme as an integral part of its overall adjustment strategy and is strongly committed to accelerate the implementation of the comprehensive measures in this programme. The Social Action Programme incorporates actions to improve health; food security and nutrition; education and training; water and sanitation; roads, marketplaces and public transport; household energy apart from initiatives to generate employment. Given that the programme is implemented as envisaged, the present depressed outlook on the future human resource base for industry could be much brighter.

However, there has been no improvement so far during the current development plan, and education and health sectors receive only 5.8 and 4.3 per cent respectively in PIP (Table 5.1). Considering how much there is at stake for the future development of Zambia, the priorities for government expenditure should be reconsidered.

### 3.3 The financial sector

Zambia has an extensive commercial banking system including foreign-owned banks (Standard Chartered, Barclays, Grindlays, Bank of Credit and Commerce, Citibank), domestic private banks (Meridian, Finance, Capital and the state-owned Zambia National Commercial Bank). Lima Bank specializes in agricultural credit. There are two investment banks, Manifold Investment Bank and the Development Bank of Zambia. Long-term lending is also provided by the African Development Bank and by the Commonwealth Development Corporation. There are various other financial intermediaries providing both long- and short-term credit, most notably the Zambia National Building Society, Zambia National Provident Fund, National Saving and Credit Bank and the Agricultural Finance Corporation.

The strength of Zambia's financial sector lies in the fact that there is considerable competition between domestic, foreign and state-owned intermediaries for deposits and in lending operations. Large industrial enterprises report few problems in provision of credit other than those presented by current monetary restrictions, the effects of which are discussed further in chapter 4, section 4.7. Small enterprises are constrained by lack of credit, however, and these issues are discussed in chapter 4, section 4.8.

### 3.4 Raw material resources

Zambia is endowed with a wide range of raw material resources. Copper ore is the main resource that has been systematically and substantially exploited. The revenues from copper provided the funds during the 1960s and 1970s for financing investments in industry and social development.

Future industrial development will, to a large extent, be based on raw materials from the agricultural sector and on mineral resources. Both sectors have the potential to produce or provide quantities of raw material for processing.

The natural resources available in Zambia such as natural reserves and parks, wildlife and scenery are essential for tourism. Tourism has a considerable potential but has to be developed to contribute significantly to foreign exchange earnings. In this connection, the industrial sector can play an important supporting role by providing the required infrastructure.

(a) Agriculture

The total arable land in Zambia is estimated by the Ministry of Agriculture to be 4.5 million hectares, with a potential arable land area of 45 million hectares. However, these estimates do not appear to be based on a detailed national land use plan and should be considered as indicative only.

In 1984, 669,450 hectares were planted as compared with 1,489,160 in 1988. At present, about 26,000 hectares are irrigated, 50 per cent are large-scale units. The potentially irrigable farm land is estimated by the Ministry of Agriculture at 500,000 hectares. But it is not clear as to how this has been determined since a national water resource plan has not yet been elaborated.

The numbers of farms categorized as small-scale, emergent, or commercial and institutional are detailed in Table 3.6.

Table 3.6: Number of farms in different categories

Category	Size, hectares	Numbers	Per cent of total
Small-scale	less than 5	582,271	88.9
Emergent	5 - 20	66,777	10.2
Commercial	over 20	3,055	0.5
Institutional	n.a.	2,849	0.4
Total		654,952	100.0

Source: Ministry of Agriculture, Reference Manual 1990.

Small-scale farms produce about 70 per cent of all maize. The target for 1993 is 80 per cent. Emergent farms are using slightly improved farming practices, including oxen-drawn implements, whereas the commercial farms are mechanized. This category of farms has hitherto been focused on cash crops such as wheat and soyabeans.

(i) Field crops

Table 3.7 gives a general overview of planted area and production for 1984-85 and 1988-89 respectively:

Table 3.7: Comparison between planted area and production  
of agricultural crops, 1984-85 and 1988-89

Crop	1988/89			1984/85		
	'000 HA	yield MT/HA	Prod. '000 MT	'000 HA	yield MT/HA	Prod. '000 MT
Maize	905	2.05	1,861	582	1.93	1,122
Soyabeans	22	0.97	21	10	1.49	14
Sunflower	46	0.38	17	62	0.67	42
Groundnuts	77	0.34	27	31	0.46	14
Paddy rice	13	0.93	12	10	1.05	11
Mixed bean	19	0.64	12	8	0.67	5
Sorghum	51	0.71	37	25	0.82	20
Wheat	0.3	1.87	0.6	2	5.00	11
Seed cotton	85	0.62	53	46	0.66	30
V. tobacco	2	0.69	1	0.6	0.82	0.5
Millet	46	0.57	26	22	0.87	19
Cassava	111	n.a.	1	n.a.	n.a.	n.a.
<b>Total</b>	<b>1,377.3</b>			<b>798.6</b>		

Source: Ministry of Agriculture, Reference Manual 1990.

Overall production has increased for some commodities. For example, the output of maize and soyabeans have increased from 1.12 million and 14,700 tonnes respectively in 1984-85 to 1.86 million and 21,200 tonnes respectively in 1988-89. Other crops show a decline during the same period. For example, the output of sunflowers dropped from 42,400 tonnes in 1984-85 to 17,800 tonnes in 1988-89.

Substantial variations in production may occur from one growing season to another depending on the rains during the season and availability of inputs, especially fertilizer. The areas planted may also vary a great deal partly due to weather conditions, and the relationship between producer prices relative to prices of seed, fertilizer and other inputs.

Current demand for maize is about 1.5 million tonnes for one year. In view of population growth this figure will increase to about 1.8 million tonnes by the mid 1990s. This growth is within the projected production of maize in 1993 shown in Table 3.8. This table gives the FNDP targeted areas to be planted in 1989 and at the end of the plan period in 1993. Table 3.8 may be compared with the areas actually planted in 1984-85 and 1988-89 shown in Table 3.7.

Table 3.8: Production targets for selected crops

Crop	1989		1993		Increase MT
	'000 HA	'000 MT	'000 HA	'000 MT	
Maize	760	1,440	923	1,900	460,000
Wheat	11.1	53.1	23	110	46,900
Paddy rice	9.4	9.6	11	13	3,400
Cassava	73.9	88.6	89.8	107	18,400
Sunflower	47.7	16.9	62.5	22.1	5,200
Millet	46.3	30.0	56.3	36.5	6,500
Sorghum	49.7	37.9	60.5	46.1	8,200
Groundnuts	85.9	39.5	104.4	48.0	8,500
Soyabans	12.0	6.5	20.0	10.8	4,300
Cotton	81.0	67.0	104.0	115	48,000
Kenaf	0.45	0.37	1.9	1.54	1,170
Tobacco	n.a.	5.6	n.a.	10.5	4,900
Sugar cane	n.a.	158	n.a.	169	11,000
Total HA c:a	1,177			1,456	

Source: FNDP.

Given that the plan targets are accomplished, the increase, less on-farm consumption, are guideline figures for the amounts of different field crops which can be used in expanding agro-based industries via processing for the domestic market and some export.

(ii) Horticultural crops

Horticultural crops on a commercial scale, focused on export, are relatively new to Zambia. According to FNDP, the hectareage under vegetables is expected to increase to about 44,000 hectares by 1993. This will, according to the FNDP, increase the production of vegetables by 48 per cent from 310,000 tonnes in 1989 to nearly 460,000 tonnes in 1993. Of this 460,000 tonnes, 1.5 per cent is targeted for export. The actual figures, considering the prevailing difficulties, will most certainly be much lower for both production and export alike.

However, if the horticultural subsector is capable of producing sufficient quantities of good quality products, this would be an excellent source of raw material for an export-oriented food processing industry. Whether or not this is likely to be the case will have to be subject to detailed study.

(iii) Livestock

The livestock subsector is not very big in relation to the size of the country and its population. Gradual expansion of existing processing industries and establishment of new meat processing enterprises will be necessary.

Table 3.9 gives Ministry of Industry estimates of the livestock population. The figures are calculated with a constant, assumed annual growth.

Table 3.9: Livestock population estimates

	1985	1986	1988	1989
<u>Cattle, million head</u>				
Traditional	2.072	2.107	2.177	2.297
Commercial	0.393	0.413	0.455	0.477
Total	2.465	2.520	2.632	2.744
<u>Sheep and goats, '000 head</u>				
Traditional	424.36	453.72	519.98	557.31
Commercial	456.56	489.12	562.79	604.45
Total	880.92	942.84	1,082.77	1,161.76
<u>Pigs, '000 head</u>				
Traditional	156.04	162.86	177.86	186.16
Commercial	177.60	186.57	206.52	217.73
Total	333.64	349.43	384.34	403.89

Source: Ministry of Agriculture.

Other data from the Ministry of Agriculture show that the cattle population was 2.48 million head in 1985 and 2.46 million in 1986. These figures also include draft oxen, which account for about half of the number of cattle in the traditional farming community. The targeted annual slaughter is to be increased from 7 to 10 per cent during the plan period (1987-93). Excluding draft oxen, the estimates of the annual slaughter is approximately 200,000 head per annum by 1993. The FNDP, however, has envisaged that 99,300 head of cattle will be slaughtered by 1993.

Statistical information available on the stock of slaughtering animals for meat processing is unreliable. It is therefore imperative that comprehensive studies be undertaken to ascertain the short- and long-term stock of available slaughtering animals before major additional investments are made in the meat processing branch.

(iv) Forestry

Forests cover about 60 per cent of Zambia's land area. The figure is a fairly rough estimate since there has been no national forestry inventory. Indigenous forests of varying quality are predominant but there are also forest plantations of exotic pine and eucalyptus.

Widespread uncontrolled cutting and illegal settlements are severe threats, and major reasons for the depletion of the natural forests, especially in areas close to large urban population centres.

Proper forest management and planning must be based on reliable data regarding quantity and quality of available forest resources. Efforts in this field are included in the development strategy for the Zambian forestry subsector.

Agro-forestry has hitherto received limited attention, although combination agriculture and forestry exist in some areas. The combination is considered favourable by the authorities and makes the farmer less vulnerable during years of drought.

It is believed, however, that introduction of properly planned agro-forestry programmes in suitable areas would form a valuable additional raw material base for a future prosperous pulp and paper industry. Agro-forestry, as part of a production scheme for emergent farms, would be a complement to conventional cropping in terms of distribution of labour demand and regular income once the programme arrives at the cutting stage. This would be after 10 to 15 years, depending on overall growing conditions and species used for planting. The introduction of agro-forestry would be one suitable measure to reduce soil erosion in critical areas. The detailed production potential would have to be looked into and co-ordinated with the build-up of the necessary resources: institutional, manpower training and means of finance.

(v) General constraints

The targets in earlier development plans for agriculture have not been achieved and some of the objectives still remain crucially important for agricultural development. The main constraints to increased output from the agricultural sector is the general lack of resources; finance, equipment, inputs; the use of traditional methods with low productivity per unit of labour; inadequate institutional support in terms of education, training, extension services and credits, an unsatisfactory marketing system, and inappropriate pricing policy. As industrial development gains momentum, it is essential that agricultural production per unit of labour input is increased. If this is not realized now, the income gap between people working in industry and agriculture is going to widen. This is an unacceptable development and not in line with the Government intentions. Hence, a strategy for increased



productivity of the agricultural sector is not only a matter of ensuring an adequate supply of agricultural products for industrial processing, but also for promotion of economic and social equality between workers in agriculture and industry.

Current government priorities and plans incorporate actions to improve the shortcomings, but there is still an open question as to what extent they will materialize or be effective.

Since agriculture is the number one priority sector in the FNDP, there is no doubt that concerted efforts are being made, but there are signs of inability to tackle the problems in a constructive manner so as to provide incentives for improved production. One example is the price structure of farm products and the lack of a seasonal pricing mechanism. Another is that whereas much efforts are made to increase production of food grains and oil-bearing seeds, efforts to construct grain storage facilities are far from adequate. Large sums of money, probably of the order of K 500 million or more, are lost every year due to post-harvest losses and most of this as a result of lack of storage. The construction of storage facilities for maize and other farm commodities would be consistent with the Government's objective to "minimize post-harvest losses". In order to tackle this problem, the construction subsector needs to be regenerated.

Agro-industrial development rests entirely with the availability of raw material farm produce. As a consequence, if agriculture fails to meet the targets required for industrial expansion, exports will suffer. If industry is to assume the role as the motor for economic recovery, it is not only reasonable, it is essential, that industry receives adequate supplies of good quality raw material from agriculture. This pressure on agriculture suggests that a revised strategy for agriculture be adopted and efforts made to substantially improve productivity. In this connection, it is vitally important that farmers be given every incentive to increase the supply of good quality products.

(b) Mineral resources

Zambia is endowed with a considerable number of other minerals which are not at present being exploited. Prospecting and exploration, which are essential ingredients in a long-term mining investment programme, were affected by the financial constraints during the 1980s. However, considerable achievements have been made despite these difficulties. Appendix 3 gives an overview of identified mineral deposits including some information on the extent of the deposit and quality of the minerals.

Geological surveys have been carried out over large areas and geological maps prepared at 1:100,000 and 1:250,000 scale covering about 75 per cent of the country.

Iron has not been mined so far, but is presently being seriously considered in conjunction with the establishment of a sponge iron plant. The deposits are estimated at 50 million tonnes and the iron content has been determined to range from 53 to 62 per cent.

A systematic evaluation of major sedimentary basins of Zambia for hydrocarbon has been carried out to identify oil and gas accumulation. Two international oil companies, Placid Oil Company and Mobil Oil Company, have undertaken seismic surveys, source rock analyses and other detailed programmes including the drilling of two exploration wells, both of them to a depth of approximately 3,000 meters. To date no oil or gas deposits have been indicated from these explorations.

The identified deposits of agricultural lime is of considerable interest in the context of renewed efforts to boost agricultural production. Depending on the type of soil, the application of lime is essential to maintain or improve fertility. The deposits are located in various regions of Zambia, with the largest deposits in the North-Western Province.

Coal is mainly supplied from Maamba Collieries in the Southern Province. This colliery produces largely between 500,000 and 600,000 tonnes per year, which is slightly in excess of present demand. Given that the coal mining installations are rehabilitated, an annual output of 750,000 tonnes is possible. Other deposits have not yet been exploited.

Gem stones, previously discussed under 3.1 (b), mining, and a number of other non-metallic minerals have been identified. Depending on the quality and colouring of the marble, this could be exploited for use as building materials and also in small-scale handicraft industries. Other industrial raw materials of particular interest are clay, talc and potash.

### (c) Natural reserves and wildlife

Natural reserves, wildlife and scenery are valuable in their own right for Zambia, but they are also essential ingredients for the tourist industry which at present is not very well developed. Much can be done to increase foreign exchange earnings from tourism which is estimated by the Travel Association of Zambia to be US\$ 500-600 million per annum.

Increased earnings from tourism can only be achieved if tourist infrastructural facilities and supporting services such as accommodation, catering, roads and transport are substantially improved in terms of capacity and, in particular, quality. Such investments are, in fact, included in the macro-economic and financial framework of the FNDP.

Hotels and lodges have to be built and the road network upgraded and extended initially, in critical areas. Here is an important linkage to industry. The construction subsector in particular, could be a major basis for industrial expansion. For this to happen, there would have to be increased output from industries producing building materials, installations such as sanitary ware and electrical appliances, furniture and so on.

### 3.5 Energy resources, electricity

By far, the most important source of energy in Zambia is electricity. This is mainly generated in ten hydro-electric power stations. In addition to the hydro-electric power stations, there are four gas turbine stations, two thermal power stations and 15 diesel power stations to supply electric power to areas far away from the national power transmission lines. Some of these other power stations are now redundant since the national transmission system of hydro-electricity is in a constant process of being extended to new areas.

Zambia Electricity Supply Corporation Limited, ZESCO, is a parastatal with the responsibility for the construction, maintenance and operation of the entire national electric network. It supplies over 90 per cent of the electric power consumed in the country.

In addition, ZESCO has a recently established directorate of production, which will be engaged in domestic manufacturing of electric insulators and appliances to reduce import dependency and create new jobs.

Table 3.10 gives a general survey of Zambia's national electric generating capacity.

Table 3.10: Installed generating capacity, MW, 31 March 1988

	Hydro		Gas turb.		Therm.		Diesel		Diesel not operating	
	A	B	A	B	A	B	A	B	A	B
Interconnected system	3	1,608	-	-	1*	15	-	-	1	0.5
Isolated systems	4	23.7	-	-	-	-	8	3.8	6	4
Generating stations (mines)	2	38	4	80	1	20	-	-	-	-
Total	9	1,669.7	4	80	1	35	8	3.8	7	4.5

Source: ZESCO.

A = number of stations

B = installed capacity, MW

\* = not in use

Total available capacity amounts to 1,773 MW. The domestic consumption of electrical power approaches 950 MW, about 75 per cent (approximately 700 MW) of which is supplied to the mines. Nitrogen Chemicals uses 50 MW and peak electrical consumption in the Lusaka region is quoted at 130 MW. The remaining, approximately 70 MW, is then distributed to other power consumers in the country.

Electric energy is currently exported to Zimbabwe, Malawi, Namibia and Tanzania. In the near future, Botswana will be the fifth importer of electricity from Zambia. Total exports are around 400 MW, leaving a margin of some 420 MW. Given that at least 240 MW is earmarked as an operative reserve, there is about 180 MW generating capacity available for industrial or other uses.

The export of electric power to Zimbabwe and Malawi may terminate when the circumstances permit Mozambique to supply electricity from the Cabora Bassa hydro-electric power station. When this is a reality, an additional approximately 400 MW will be available to Zambian industry.

The average domestic price at present is quoted at K 0.33/kWh while the export price is K 0.44/kWh. In the first and second quarter of 1989, the cost of generating electricity ranged between K 0.01547 and K 0.003/kWh exclusive of depreciation costs and debt service.

According to the ZESCO Corporate Plan 1990-95, tariff increases will be kept within the national level of inflation. Rural electrification will be given higher priority, partly to promote rural-based industries.

Construction of new hydro power stations have been envisaged in regions such as Kafue Lower, Batoka Gorge, Itezhi tezhi, to mention some possible expansion options. However, the need for these additional power stations needs to be carefully assessed, especially as Zambia's exports of electricity may diminish with the increased capacity of neighbouring countries to generate their own electricity.

It is concluded that the domestic use of electricity can increase about 20 per cent if present conditions regarding export and extent of the operating reserve remains the same. Should exports to Zimbabwe and Malawi cease domestic use can increase by about 60 per cent as compared with the present situation, and most of it would be available to industry. Energy costs may therefore be comparatively low in Zambia. Zambia may thus have a comparative advantage in energy-intensive industries. However, whether this potential comparative advantage can be realized should be the subject of detailed examination.

### 3.6 Environmental considerations

The Government is keenly aware of the need to safeguard the environment, as indicated by the Government's moves to form the National Environmental Council (NEC). NEC, which is in the process of formation, is the result of fusion between the Environmental Protection and Pollution Control Board Bill proposed by the Ministry of Industry and Commerce, and the Environmental Control Bill proposed by the Ministry of Water, Lands and Natural Resources. NEC should have strong wide-ranging support.

The environmental impact of different development measures are intended to be subject to Environmental Impact Assessment (EIA). This is at present conducted through NCDP. All actions and activities will be studied by an environmental planner at NCDP to assess the environmental consequences and to define options to avoid the detrimental effects on the environment. EIA will be applicable to inter alia industrial projects where effluent or emission of pollutants occur, or may occur, water schemes and so on. However, the legal framework as a tool to enforce necessary environmental protection measures still remains to be prepared.

All industries, existing and new, for instance chemical industries, tanneries, food processing industries like abattoirs, metal manufacturing industries, and so on, will eventually be subject to EIA. This is a sound approach to curb pollution in time before serious damage with long-lasting detrimental consequences occur.

To be effective, the appropriate regulations have to be elaborated and co-ordinated with the legal framework. This is a complicated and delicate task since it involves additional investment costs which will pay off only in the longer term. From this point of view, it is essential to make all Zambians aware of the long-term danger to the environment if precautions with effective pollution control are not taken now.

Finally, it is important to state that there is some uncertainty as to what extent the Government will be able to pursue the objectives of environmental control through the system which is in the process of being established. There is, for instance, neither budgetary provisions in the FNDP nor legal framework established. It is an open question whether the required manpower resources are available.

### 3.7 Summary and conclusions

Development efforts in industry are hampered by lack of financial resources and also insufficient supply of adequately trained human resources.

After agriculture, government priorities are focused on expansion and development of industries. Industrial production should be based on locally available raw material and preferably be export-oriented. Hence, agro-industries will play an important role in Zambia's future industrial expansion. Mineral-based processing industries will also be important for future industrial expansion.

The construction subsector is particularly weak. A substantial regeneration of this subsector is essential for rehabilitation and expansion of industry as a whole, for building of storage facilities to reduce post-harvest losses of food grains and oil seeds, for improvement of infrastructure for transport and tourism, and for the construction of housing as the living standards are increased.

The ZABS is poorly equipped to be able to function as a testing and quality control institution for industry, and also to execute pollution monitoring and control. Without adequate testing facilities to assure the quality of industrial products, a vital support to the export industry will be missing. The prevention of industrial, and other sources of pollution, cannot be successfully pursued without appropriate laboratory facilities.

Zambia has vast human resources in quantitative terms but there are reasons for concern about the future availability of qualified manpower at all levels. This is due to:

- inadequate education at primary and secondary level in particular, and inadequate vocational training;
- losses of qualified professionals and skilled workers to neighbouring and other countries;
- degrading of health services and under-nourishment of a significant part of the population due to poverty with detrimental effects on, among others, education and quality of workforce.

The raw material base in terms of agricultural products is not limited by the availability of arable land. Variations in output per year will prevail due to climatic conditions. Extended irrigated areas for production of cash crops as industrial raw material is one option which should be considered when a National Water Use Plan has been elaborated. The main constraints to substantially increased agricultural output are:

- inadequate finance, equipment and inputs;
- use of traditional methods with low productivity per unit of labour;
- inadequate institutional support in terms of education, training, extension services, and credit systems;
- unsatisfactory marketing system and pricing policy.

Government plans and objectives include major actions necessary to come to terms with these constraints but there is a proven inability to implement an acceptable part of the plans.

Increased crop production according to the FNDP would probably provide sufficient raw material to support existing agro-industries, if capacity utilization is increased from current levels, frequently below 50 per cent, to an acceptable level of between 70 to 80 per cent. One exception is the maize milling branch, where additional capacities would be necessary, both small-scale village industry and larger maize mills in urban areas.

Fruit and vegetables from the horticultural subsector could become a supplier of raw materials to industry. However, available background information is insufficient for a realistic assessment to be made and competition on world markets for processed vegetable is fierce.

An overall international market survey would be necessary to determine product type, and volumes, before plans are made for investments in horticultural-based processing industries and the subsequent planning of structure and extent of production of fruit and vegetables in Zambia. Potential comparative advantages will have to be fully identified and assessed.

The livestock subsector of agriculture will likely only be able to supply marginal quantities of raw material to a growing agro-based processing industry.

Forestry could play an important role as supplier of industrial inputs, round logs and pulp wood in particular, in addition to supplying wood for charcoal production. Institutional support in accordance with the Government's plans is essential.

In summary, if agriculture is to be the future supplier of raw materials to industry, the agricultural sector as a whole must be given the opportunity to expand and to increase productivity. This will require improved means of financing including credits and the introduction of better technology in an attempt to lift productivity implying also better trained manpower at all levels.

It is highly questionable, however, whether agriculture will be capable of supplying a growing food processing industry, geared for export, with sufficient quantities of raw material of the required quality. This issue should be examined in detail and, if necessary, be a reason for reconsidering the present strategy for agricultural development.

The use of non-metal mineral resources has future potential as a supplier of rough stones for export but especially for an emerging domestic gem stone industry processing. This subsector needs to address the marketing problems it faces which hamper the growth of the subsector. Recommendations for this has been prepared by ITC [see section 3.1 (b)].

Natural reserves and wildlife are a good resource base for tourism. In order to fully exploit these possibilities, the tourist infrastructure has to be upgraded. This is an area where the construction industry is the obvious partner.

Of the four main sources of energy, electrical power, coal, oil and charcoal, electricity is the most important source for industry. The generation of hydro-electricity is sufficient for domestic use and some export. There is still a margin at present with scope for further hydro-power exploitation, if required. The availability of electricity in quantities at a low cost suggests that Zambia may have a comparative advantage in energy-intensive industries.

Environmental pollution has hitherto not been a serious problem in Zambia. The Government has taken the initiative to establish institutional means to impose appropriate environmental protection regulations for industry, agriculture and other activities.

## Chapter 4

### POLICY ISSUES IN THE INDUSTRIAL SECTOR

#### 4.1 Introduction

The policy environment of the industrial sector has undergone a profound change with the EFPF of August 1989. This chapter reviews the nature of the changes, and makes assessments of the impact they are likely to have on the industrial sector.

#### 4.2 Tariffs

The study of tariff protection undertaken by the World Bank (1984) indicated a wide variation in effective protection, that is the degree to which domestic costs of resources used in production can be higher than those of imported goods, and still remain competitive. Consumer goods, particularly consumer-durables had the highest levels of effective protection, followed by light intermediate goods. Heavy intermediate goods had about half the average level of effective protection, and capital goods had the lowest at one quarter the average rate. When imports are subsidized or price controls set domestic prices below competing import prices there is negative effective protection, and this was found for several food products, some heavy intermediates, and a few items of agricultural and industrial machinery.

Although the logic of a market-based economic strategy would suggest that free trade would lead to the most efficient use of resources, it is accepted that some tariffs are necessary as they are an important source of government revenue (25 per cent in 1989) in an economy with a poor base for levying income taxes. Income levels are projected to remain fairly static in the medium term, and copper reserves are expected to begin a secular decline, (the other major sources of tax revenue). Although, as indicated in the EFPF, the Government is considering broadening the tax base by expanding the coverage of income, sales, excise and company taxes, there is still expected to be a limit to the degree to which tariffs can be reduced, if the Government is to reduce the budget deficit and still make provision for basic health, education and infrastructure.

Under these circumstances, it is desirable that tariffs do not discriminate between sectors, subsectors and branches, approximating a uniform rate of effective protection as far as possible. The tariff system was subsequently reformed along these lines, reducing maximum tariffs and eliminating most exemptions. The EFPF commits the Government to maintaining the minimum tariff levels consistent with revenue needs. The tariff commission is currently reviewing the tariff structure with a view to further equalizing rates of effective protection in the 1991 budget.

The import licencing system, by effectively reducing imports can afford effective protection to domestic protection in excess of that provided by any tariffs. The EFPF plans to end import licencing. This issue is discussed in the next section.



Taken on their own, the tariff reforms will help those products that previously had low or negative rates of effective protection. These include edible oils, grain mills, bakery products, fertilisers, cement and non-metallic minerals. Products that will suffer as a result of the tariff reforms are expected to be confectionery, soft drinks, garments, paper, electrical goods and motor vehicle assembly.

#### 4.3 Foreign exchange controls and exchange rates

Zambia has maintained an over-valued currency, for most of the post-independence period. This has discriminated against sectors which produce exports and which produce goods that compete with imports. The way in which this has occurred is explained in more detail in Chapter 1, section 1.5.

From June 1989, the Government began a series of adjustments to the exchange rate which are designed, according to the EFPP, to bring the official exchange rate for the Kwacha in line with its market valuation not later than the middle of 1992.

The adjustment process is designed to be spread over, at maximum, a three year period. In mid-1990, a variety of ad hoc measures have contributed to a substantial devaluation of the currency compared with the rate of K 10.81 = US\$ 1 in mid 1989.

There is a window set at approximately K 29 = US\$ 1 for which priority goods can be imported, but for which import licences need to be obtained from the Foreign Exchange Management Committee (FEMAC). As foreign exchange is scarce, not all these applications are met. Earnings of the state-owned copper sector are converted to domestic currency at this rate to limit money supply expansion. There is a second window at approximately K 40 = US\$ 1 for a specified list of imports. The aim is to supply foreign exchange without rationing for these goods, and as foreign exchange supply increases, to add goods from the first window priority list to the second window list.

Other foreign exchange provisions effectively allow for two other windows. The first arises from allowing import of goods to Zambia which are purchased with foreign exchange not obtained from official sources, that is, from the Bank of Zambia. Importers who have foreign exchange held outside Zambia can import goods and are able to sell them at prices which are close to the current parallel market exchange rate of K 60-K 70 = US\$ 1.

The other window arises from the provision which allows exporters to retain 50 per cent of their earnings in foreign exchange. Some of these exporters need to purchase inputs, spares and replacement machinery for their enterprises. To the extent that they are able to do this within the limits of the 50 per cent retention, they have effective access to an unrestricted foreign exchange market. This has encouraged several private sector manufacturers to move into exporting to ease their foreign exchange constraint. Although foreign exchange must be kept with the Bank of Zambia, retained earnings can be sold to another importer at a price determined by the contracting parties. The rate in such transactions is currently in the parallel market range.

The developments in the foreign exchange market can be expected to benefit industrial products with good export prospects. Of current production, these are the goods with DRC ratios below one, as indicated in Chapter 1. They are food products, wood and wood products, some textiles and fabricated metal products. All industry subsectors examined, however, produced some goods with DRCs less than one.

Goods which compete with imports are subject to two opposing influences under a programme of general liberalizing reforms. Tariff reduction increases competition, while exchange rate devaluation provides protection. If both reforms are fully implemented, the best guide to the products and sectors that will benefit is their DRC ratios. Thus, enterprises producing goods competing with imported foods, wood products, some textiles and fabricated metal products might be expected to flourish.

To the extent that tariffs will not be reduced to zero, the list of viable import substituting sectors will be wider, extended to include products with DRCs just above one.

The ending of licencing of foreign exchange should lead to higher rates of capacity utilization and reduce labour effort expended in making applications and lobbying. These factors should lower DRCs and again extend the list of viable import substituting industrial goods.

#### 4.4 Price controls

An extensive system of controls has set prices for agricultural producers, goods classified as essential and some parastatal products, and all other prices have been subject to review by the Prices and Incomes Commission (PIC). The system which attempted to set prices on a cost-plus basis did not encourage cost-cutting efficiencies nor did it allow price signals to attract firms into profitable areas. Smuggling, parallel markets and speculative hoarding became features of the markets for many goods. Delays in allowing prices rise justified by cost increases have caused financial problems for both public and private sector firms.

In 1982, the Government gave up setting prices for all goods except maize meal, wheat products and candles, although the PIC retained its reviewing role, and parastatals required administrative clearance before altering the prices of certain goods. There was subsequently a re-introduction of controls for the prices of twenty-three commodities. However, in June 1989 all prices except maize meal were decontrolled. The EFPF commits the Government to maintaining decontrolled prices, and to gradually raising the price of maize to eliminate the current subsidy, which in the early 1980s was equivalent to around 15 per cent of all government spending and 40 per cent of the budget deficit.

In January 1989, the Government tripled the price of maize meal, and in July and August there were further rises. Prices had in fact risen fivefold within a year. In general terms, it is argued that low maize meal prices discriminate against agricultural producers, low income groups, and in favour of urban consumers, a higher income group. It is also considered that higher consumer prices will allow higher producer prices thus evoking a greater supply response; reducing Zambia's dependence on imported cereals, which ran at 150,000 tonnes in 1986, roughly 10 per cent of total consumption.

In an effort to alleviate the social effects on the poorer urban groups, a coupon system was introduced to target food subsidies toward poorer households. In June 1990, the maize meal price again increased by more than 100 per cent in an effort to adjust for inflation and eliminate the remaining element of subsidy. The price rise provoked riots, looting and a coup attempt in Lusaka, but the Government refused to rescind the rises, as in 1986, although it has raised the value of the coupons. These are now worth 40 Kwacha, and one coupon per month is allocated to a household for each family member up to a total of six, provided household income is below 20,500 Kwacha a year. A household of six members would thus qualify for less than one 269 Kwacha, 25 kilo bag of breakfast mealie meal a month. Such a family would require 3 to 4 bags a month, so the current level of subsidy is around 25 per cent for the poorest families, who would spend over 40 per cent of total household income on the basic staple. The social implications of this pricing reform is, therefore, considerable and have been intensified as it is reported that bureaucratic problems have prevented the issue of coupons to eligible households.

Trade liberalization will limit the scope for monopoly tendencies, with the ending of price controls although there must be some anxiety over natural monopolies such as water, electricity, posts and telecommunications. Small- and medium-sized enterprises in the private sector with flexible production strategies can be expected to benefit. Thus the price decontrol measures will favour the food, textiles, wood and other manufacturing subsectors, although there are small enterprises in all subsectors with the exception, perhaps, of basic metals.

#### 4.5 Export promotion

The Industrial Development Act of 1977 allows exporters exemption from duties and taxes on imported machinery; income tax relief; adjustment of taxes; exemption from import duties on inputs; projected access to import licences for inputs. However, the Ministry of Commerce and Industry has discretion over extending all of the measures to producers. Exporters require a licence, and it is often refused. The procedures are in any case administratively cumbersome and a considerable disincentive.

The EFPF promises to streamline export licence procedures and the import duty drawback scheme, which refunds tax paid on imported inputs used in exports as well as introducing new drawback schemes for import licence fees and sales taxes on intermediate goods. As things stand, the ineffectiveness of the duty drawback scheme is a major problem for producers hoping to use Zambia's cheap labour force to process imported raw materials. Footwear, textiles, electrical goods assembly are export activities of this type which have spear-headed industrialization in Asian economies.

Institutional support includes the establishment of the Export Board of Zambia, which provides advice to exports and promotes Zambia's non-traditional exports, that is, all products apart from copper, lead, zinc and cobalt. The Board is empowered to set up an Export Revolving Fund to provide credit to exporters, particularly in the form of foreign exchange for imported inputs. As yet, this fund is not operational. One of the most effective incentives to exporters has been the foreign exchange retention scheme, and the freedom to sell and retain foreign exchange (see section 4.3).

#### 4.6 Parastatal sector

The publicly-owned enterprises produced over half of manufacturing GDF and were responsible for over half of manufacturing employment. There are two opposing views of the industrial sector parastatals. One is that parastatals have been constrained by price controls, political pressure to expand employment and expand into areas for reasons other than commercial viability. The other is that parastatals are endemically inefficient as they lack appropriate incentives, and where these inefficiencies do not show up in operating deficits, it is because they are masked by transfer pricing within the parastatal holding companies, by exercise of monopoly power, preferential access to cheap imported inputs, tax exemptions, or subsidized capital costs.

The Government, in the EFPF is preparing to take a fairly pragmatic course. Parastatals have, along with other enterprises, had pricing controls removed. Those producing tradeables will be subject to increased competition through the ending of import licencing and tariff reductions. Access to licences for imported inputs will no longer be a factor if the exchange rate reflects the market value of the currency. Parastatals managements will be instructed to make reasonable returns on the value of their assets. Tax provisions will be the same as for private sector enterprises. Budget transfers, subsidies and guarantees will be discontinued. The Government plans to encourage joint ventures and will dispose of, or liquidate, financially unviable parastatals.

In June 1990, the President announced that 40 per cent of utilities and 49 per cent of other parastatal enterprises would be sold to private interests. Whether this will involve selling 40 per cent and 49 per cent of the equity in enterprises, with the state maintaining a controlling interest, or whether just under half the enterprises will be sold in their entirety, has yet to be clarified by a special committee set up to decide the form of privatization.

In 1988, a new category of state-owned enterprise was established, that of a Self-Managed Enterprise (SME). Two parastatals were chosen to undergo this change in status, and a further six are planned to become SMEs. The intention is to introduce a measure of employee control and thus democratic decision-making to the enterprise. It does not appear to have resulted in the SMEs having management autonomy, and they are still subject to control by the NCDP. In particular, the SMEs do not have the ability to extend their operations as they see fit. There is more discussion of these issues in Appendix 1 which deals with the rehabilitation of an SME, Zambia Pork Products (ZAPP).

The measures planned for the parastatals hold out the prospect that there will be some liquidations and staff retrenchments as parastatal managements endeavour to improve their operating positions by reducing costs. The vulnerable parastatal enterprises will be those with high DRCs, manufacturing refined oils, soaps and detergents, plastic and polypropelene bags, glass, vehicles and basic industrial chemicals.

#### 4.7 Private sector

The private sector has operated in a climate that has involved substantial regulation particularly of prices and access to imports. Many incentives licences are at the discretion of the authorities.

To the extent that unfair competition from the parastatal sector is curtailed, the private sector will benefit. Investment capital for the sector, a major constraint on expansion, will be eased if the Government is successful in establishing a stock exchange, and if the regulations concerning foreign investment aid are brought into line with those elsewhere in the world. Currently, arbitrary intervention by government has made foreign investment extremely difficult, if not impossible. An enterprise which planned to service its foreign loans from the export foreign exchange retention scheme was thwarted when an export licence was refused.

The EFPF announces that the 1986 Investment Act is to be revised. The conditions for foreign investment in the new code need to be at least as attractive as those in countries competing with Zambia for investment in agricultural and mineral processing. Furthermore, the code needs to ensure that investors are confident that there will be no scope for capricious decision-making because of the discretion accorded ministries or other agencies.

#### 4.8 Financial sector

The financial sector has lending rates fixed by the central bank, the Bank of Zambia, and these are currently 33 per cent for agricultural loans and 35 per cent otherwise. With inflation estimated at over 100 per cent a year in the first half of 1990 real interest rates are negative and provide a considerable disincentive to savers. The main concern of the Bank of Zambia is to reduce the rate of inflation thereby introducing positive real interest rates and stabilizing the market value of the currency on the foreign exchanges.

To this end, strict public sector spending limits are envisaged by the EFPF, with no finance of the budget deficit from domestic banks envisaged by 1991. In the meantime, the Bank of Zambia has curtailed domestic lending by raising the reserve ratio and overall liquid assets ratio, and several commercial banks report that they have frozen lending in the first half of 1990.

In the short period there is a severe shortage of working capital, and in enterprises where this is an important input, such as purchasers of agricultural products for food or industry, credit has fallen in real terms. There is concern that the imposition of such tight monetary policies will reduce inflation but at a considerable cost in terms of reduced economic activity.

As commercial banks are favouring their larger borrowers, it is the larger end of the small-scale sector, engaged in food, garments, wood products and other manufacturing, which relies on credit and is reported worst affected.

#### 4.9 Small firms and village industries

Zambian enterprises consist of micro, mostly one person informal enterprises, at one end of the scale, and large parastatal operations at the other. The small- and medium-sized enterprises are not nearly so prominent as they are in industrialized countries.<sup>1/</sup> The dearth of small enterprises is

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<sup>1/</sup> See chapters 1, 5 and 6 in World Bank 1989, From Crisis to Sustainable Growth, Washington, D.C.

attributed to the distortions in factor pricing which have made capital cheap (negative real interest rates, tariff exemptions on imported capital goods, exchange rate over-valuation) encouraging capital-intensive, large-scale units offering limited employment. An expansion in the number of small formal sector enterprises are seen as a means whereby limited capital resources can make the maximum contribution to incomes and employment. Furthermore, small enterprises are viewed as dynamic and flexible, well able to respond to changed market conditions, and fast-growing in a liberal economic climate.

It is envisaged in the FNDP, that the sector will be further encouraged by promotional bodies, business associations, training and credit schemes. There are several bodies undertaking these activities, the Small Industries Development Organization (SIDO), Village Industry Services (VIS), and the Small Scale Industries Association of Zambia (SSIAZ), and Small-scale Enterprises Promotion Ltd. (SEP).

A credit scheme is operated through SIDO and VIS who appraise loan applications with cash-flow forecasts. If the application is approved, an advance can be made by a commercial bank with 75 per cent of the loan guaranteed by the Bank of Zambia. To date there has been a low rate of participation in this scheme. Except where credit has been through hire-purchase of equipment, SIDO and the commercial banks report high default rates. SEP is concerned with larger small businesses, and helps arrange finance through the Development Bank of Zambia.

#### 4.10 Incomes policy

There has been a dramatic fall in real cash earnings in the formal sector in the 1980s, with these, in 1988, having fallen to 15 per cent of their 1980 level. The total remuneration package for employees will typically involve substantial fringe benefits such as accommodation, transport, goods, and an overall assessment of real incomes in the formal sector needs to take these fringe benefits into account.

The EFPF document commits the Government to free collective bargaining in the private sector. In the public sector, incomes policy will allow some reversal of the narrowing of salary differentials that has occurred since independence.

The proposals can be expected to strengthen the parastatal industrial sector where one of the constraints has been the inability to attract and retain skilled manpower in the face of higher salaries in the private sector or in neighbouring countries.

#### 4.11 Taxation

The Government has outlined in the EFPF a series of changes to the tax system by broadening the tax base, strengthening incentive for exports and growth and improving the efficiency of collection.

The implications of tariff and export incentives have been discussed in previous sections. The broadening of the tax base by including the value of fringe benefits in taxable income will intensify the need to restructure salary differentials if skilled staff are to be attracted and retained.

The UNIDO 1988 rehabilitation report on agro-based industries argues that the 40 per cent rate of tax on company income is high, and severely limited the ability of enterprises to finance rehabilitation and expansion from retained profits. This source of finance is likely to be particularly important in the short term in Zambia as the current credit squeeze attempts to bring down inflation. The manner in which banks are operating their credit shortage, by concentrating on larger borrowers with proven records as reliable recipients of loans, new and small private sector enterprises in the industrial sector will be most disadvantaged. In the formal sector, firms producing plastics, garments machinery and other manufacturing tend to be small.

#### 4.12 Summary and conclusions

Tariff reforms; moving toward a uniform rate of around 20 per cent on all imports will assist edible-oils, grain mills, bakery products, fertilisers, cement and non-metallic mineral producers.

Exchange rate adjustment will benefit food producers, wood and wood products, some textiles and fabricated metal products, as well as some goods in other industry branches.

The decontrol of prices will assist small private sector enterprises which are predominantly in the food, garments, wood and other manufacturing branches, provided they are able to survive the current credit squeeze.

The Government is committed to streamlining procedures and extending duty drawback schemes to encourage exports. At present the arbitrary nature of export licencing discourages all industrial exporters outside the copper sector. The current ineffectiveness of drawback procedures hampers footwear, textiles, garments, and electrical goods.

Reform of the parastatal sector can be expected to threaten the financial viability of refined oils, soaps and detergents, plastic and polythene bags, glass, vehicle assembly and basic industrial chemicals enterprises in public ownership.

The private sector will be considerably assisted if the regulatory climate in which it operates is liberalized and the scope for discretionary intervention by the authorities reduced. This will particularly assist smaller enterprises in food, garments, wood-products and other manufacturing sectors.

A liberalizing revision of the investment code together with efficient implementation of its measures can be expected to be an extremely important stimulus to the private sector of industry, although it will still take some time before investor confidence is restored.

The implementation of a tight credit-policy in the short term is expected to have an adverse effect on small enterprises in food, garments, wood and general manufacturing as well as purchasers of agricultural products for food and industrial processing.

Problems of extending credit to small enterprises still remain despite efforts by special bodies and a loan guarantee scheme.

Relaxing the incomes policy which restricted salaries of skilled and professional employees in the public sector will ease the recruitment and retention problems in the parastatals.



## Chapter 5

### IDENTIFIED PRIORITY INDUSTRIAL SUBSECTORS

In the Government's general policy declarations, it is acknowledged that Zambia has favourable conditions for substantially improved production of agricultural produce, suitable for further processing and the subsequent export. The agro-based industries are intended to substitute for metals as the latter declines. The importance of the copper industry will gradually decline but the potential in other mineral deposits have not yet been used to any larger extent. Small mining operations are seen as one area with good potential, especially gem stones. Agriculture and industry are expected to become the focus of economic growth and provide employment and income opportunities for a growing labour force.

#### 5.1 The Government's subsector priorities

The present low efficiency of the Zambian economy and the continued relative scarcity of foreign exchange has prompted the Government to give highest priority to investments to rehabilitate and refurbish existing production capacity rather than to create new capacity. It is also recognized that there is a critical need to develop the country's manpower base and to protect the environment. The structural and sector policies are geared to shifting growth toward more labour-intensive activities, including small-scale industries in both rural and urban areas.

In the Public Investment Programme (PIP) for the period 1990-93, 5.8 per cent is earmarked for the manufacturing sector whereas mining, and transport and communication receive 14.6 per cent and 24.8 per cent respectively. Table 5.1 gives a detailed account of the allocation of foreign and local funds to the various sectors.

The priorities in PIP do not seem to reflect the stated objectives for industry to take the lead in the economic recovery programme. Agriculture is certainly very important from the point of view of job creation, to produce more food to an increasing population, and to produce raw material for industry. There is a red thread throughout the strategy implying shifting growth to more labour-intensive activities. This is well understood, but there must also be a strong focus on increased productivity, in agriculture in particular. Only through improved productivity is there a hope for a better standard of living in the rural areas. Increased productivity would also be required to produce sufficient quantities of agricultural products to a growing food processing industry geared for export.

Since human resources are the absolute foundation for all production activities, this should have been reflected in the sector investment programme. Without well-developed human resources, Zambia will continue to be highly dependent on donor technical assistance and financial contributions. If human resource development, in all its facets, is neglected, the ability to adopt, develop and disseminate technologies in all areas of society will be very limited. It is also important to remember that efforts to boost both agricultural and industrial output are unlikely to be successful in the longer term if human resource development does not receive top priority.

Table 5.1: Public investment programme, 1990-1993

sector investment programmes  
(millions)

	Foreign content \$	Local cost K	Total cost K	Percentage
Agriculture	326.9	5,490.2	13,662.6	27.6
Mining	139.6	3,728.8	7,218.8	14.6
Transp. & Comm.	348.4	3,547.8	12,250.7	24.8
Energy	139.1	630.0	4,142.0	8.3
Manufacturing	90.0	646.5	2,888.1	5.8
Education	85.9	721.7	2,855.8	5.8
Health	67.8	449.9	2,144.1	4.3
Water, sanitation, Public works	79.7	606.5	2,598.7	5.3
Women in Dev.	6.7	73.2	243.9	0.5
Non-traditional exports	19.8	959.4	1,454.5	2.9
TOTAL <sup>a/</sup>	1,303.9 (65.9%)	16,854.0 (34.1%)	49,442.5 (100.0)	100.0

Source: PIP, April 1990.

a/ Numbers may not add because of rounding.

It is common knowledge that public health, nutrition and education leaves much to be desired in Zambia. And yet, the need for adequate allocation of funds for future investment in these areas does not appear to be sufficiently appreciated.

The Zambian economy will require an efficient manufacturing sector which is focused to a large extent on the export market. Quality assurance and standardization are essential for a growing Zambian manufacturing sector to be competitive both on the domestic market and in particular, on the markets in PTA and elsewhere. The shifting of structural policies towards small-scale industries using more labour-intensive methods is expected to lead to more export-led growth of the private sector. Moreover, it is important to stress that the labour-intensive methods must be linked to increased productivity. If not, it will have significant negative repercussions on Zambian comparative advantages as an exporter and for socio-economic development.

Privatization of parastatals have also become a question of urgency to improve the efficiency of operation and to ease the bureaucratic burden. The guidelines for a future privatization of public-owned enterprises are still not formulated, nor are there any statements indicating whether any particular subsector of industry would be subject to privatization. This issue has been discussed in more detail in Chapter 4 where the Self-Management Enterprise (SME) concept is also highlighted.

The establishment of SMEs appears to be still in the pilot stage with the future overall structure of SMEs, including the financial structure not yet determined. In fact, the two current pilot firms have completed one full year of operation. Future plans include the addition of a further six enterprises to the programme. The inclusion of the six additional enterprises to the programme is to provide a wider basis for assessment. The current SMEs are both in the agro-based subsector, but this is not believed to indicate that companies in this subsector are considered especially well suited for this type of enterprise structure.

The Public Investment Programme for the manufacturing sector 1990-93 is shown in Table 5.2, and Table 5.3 gives the amounts for the highest priority projects.

Table 5.2: Public investment programme, 1990-93  
manufacturing sector

Subsector	Foreign US\$	Local K	Total K
Agro-based	40.7	383.0	1,392.5
Building materials	4.8	26.4	146.4
Chemical	72.2	438.8	2,243.4
Metallic minerals	34.0	422.9	1,272.9
Metal manufacturing	3.6	132.7	222.7
Non-metallic minerals	3.8	31.9	126.9
Others	27.0	451.0	1,126.0
Total	186.1	1,886.7	6,530.8

Source: PIP, April 1990.

The cost of the projects of highest priority in the PIP is estimated at US\$ 115.6 million, of which US\$ 90 million is required in foreign exchange. Donors are requested to contribute about US\$ 61 million of this amount.

Table 5.3: Highest priority projects, by subsector

Subsector	Number of project(s)	Foreign US\$	Local K	Total K	% of total investment
Agro-based	5	9.4	48.6	275.6	9.5
Building materials	1	4.8	26.4	146.4	5.1
Chemical	4	72.2	438.8	2,243.4	77.7
Metal manufacturing	1	3.6	132.7	222.7	7.7
	11	90.0	646.5	2,888.1	100.0

Source: PIP, April 1990.

Within the group of highest priority subsectors, the chemical industries have the largest allocation. They have also strong forward linkages to agriculture (nitrogen), to the metallic mineral subsector (caustic soda), to the health subsector (pharmaceuticals, glycerine). About 86 per cent of the foreign currency component and 80 per cent of local currency requirements are related to rehabilitation. Rehabilitation of national nitrogen manufacturing account for by far the largest investment and two-thirds of the total demand for foreign exchange.

The agro-based industries subsector is second in importance in terms of investments, covering four rehabilitation programmes and one for extension within the meat processing branch. The rehabilitation efforts are focused on the flour milling branch in particular, and the stock feeds branch. The building materials and metal manufacturing subsector investments are of the same magnitude where the former is related to rehabilitation and the second new investments for electric motors manufacturing using primarily domestic input supplies.

The establishment of private sector industries are largely focused on small-scale industries for food-processing, forestry-based industries such as furniture, handicraft and manufacture of charcoal. The latter is especially important since charcoal provides practically all energy for cooking in the rural areas and about 80 per cent in urban areas. An efficient charcoal manufacturing industry, using improved technology in the charcoal burning process and more fuel-efficient stoves, would also be a valuable tool in reducing the environmental problems associated with depletion of forestry resources in the neighbourhood of larger cities and towns.

Textile industries using locally produced cotton, and possibly other domestic natural fibre, are included among the subsectors promoted by, for instance, Ministry of Labour. This subsector is seen as a potential exporter of specialized cloth, garments and possibly other products.

Small-scale enterprises in the chemical subsector would primarily produce soap and candles at low cost which low income groups could afford.

All these small-scale industrial activities are expected to create self-employment, in particular, but also for family members and others both in urban and rural areas.

According to the Ministry of Labour, Social Development and Culture, over 80 per cent of employment in the manufacturing sector is in small-scale industries and 86 per cent of these are located in rural areas. In addition, small-scale industry at the family, or village level is to a very large extent - about 64 per cent - owned and run by women. There is no reason why future development of these types of industrial activities will not continue to have a large female involvement.

As agriculture expands and develops, especially family farms on a small commercial scale, there will be an increased demand for hand tools, ox-drawn carts and implements, simple processing facilities for village level and larger enterprises. Hence, the metal manufacturing subsector, with varying degrees of sophistication is an important area for entrepreneurship. Some

tools and equipment are currently manufactured in Zambia, but future demand is expected to be substantial, given that agricultural policies related to pricing, quality issues, and so on are conducive to accelerated agricultural expansion.

Finally, a subsector which is considered of particular importance in rural areas is gem stone mining. It is believed that small-scale mining operations for gem stones can contribute significantly towards greater numbers of self-employed and also employment in larger firms. The size of a gem stone mining enterprise and the technological level used may vary significantly. The options are almost without limits and can be tailored to the personal qualifications and financial resources of the individual entrepreneur. Since this applies to most small-scale enterprises, it leaves the door open for expansion and improvements as the capability and experience of the entrepreneur grows. Although the gem stone industry as a whole is important for employment creation, rural development and as an export earner, the future potential should not be over-emphasized. Further studies are necessary to evaluate its future role in Zambia's economic recovery programme.

The subsequent processing of gem stones, amethyst, aquamarine, emerald, garnet and tourmaline is a labour-intensive speciality requiring skill and perfection. This is a second requirement for this subsector which together with gem stone mining forms an integrated programme for industrial development.

Small- and intermediate-scale industrial development must be properly planned. Credit facilities must be available at acceptable terms. A substantial training component is also essential and so is sufficient capacity to provide consultancy services before, during and after establishment of an enterprise. Unless a conducive environment is created for small and intermediate industries they are unlikely to be successful.

The importance of the construction sector, also mentioned as a priority in the FNDP, the building materials manufacturing and the gem stone industry as vehicles for development have been discussed in Chapter 3. The establishment of a viable metal manufacturing sector for production of agricultural machinery and for import substitution is part of the strategy for economic recovery. This is not reflected in the current investment programme. The large allocation of funds in the chemical industry may be due to the fact that substantial credits have been extended. Nevertheless, it seems extraordinary that 39 per cent of total fund allocations for the manufacturing industry are directed to the chemical sector, whereas the building materials and metal manufacturing industry together have to be satisfied with 4.5 per cent. No allocation is made to the construction sector. The inevitable question is first, to what extent the allocation of funds are in fact in line with the objectives and priorities in the development plan and second, to what extent do the benefits due to investments and linkage effects have an influence on government expenditure.

## 5.2 Priorities by donor agencies

The overwhelming part of the contributions towards Zambia's development is through grants, and only about 12 per cent of total disbursements of US\$604 million in 1989 were soft loans or interest free loans (see Appendix 4). Table 5.4 gives a breakdown by sector of how the funds were used.

The distribution of funds reflects, in general terms, the priorities given by the donor community to different sectors. However, the donor funds also appear to be partly channelled to areas which are given priority by the Government. Some of the country contributions included in the 1989 disbursements, are referring to total project costs distributed over a number of years, for instance, some water supply schemes, health programmes and transport (roads) projects. Nevertheless, it is concluded that agriculture is the number one priority, both in terms of number of donors who have committed themselves, and the total amount of money. Transport and communications come second.

Table 5.4: Donor funds' disbursement 1989

Sector	Agencies		Allocation		UN	Allocation US\$
	Number	%	US\$	%		
Agriculture	14	19.7	257.74	42.6	1	0.55
Natural resources	5	7.0	335.10	5.8	-	-
Energy	4	5.6	50.71	8.4	1	0.37
Health	6	8.5	24.52	4.0	2	6.07
Education	10	14.1	26.95	4.5	-	-
Mining	2	2.8	9.72	1.6	1	0.06
Trade and industry	6	8.5	23.12	3.8	1	0.02
Transport and communications	10	14.1	146.02	24.1	-	-
Government administration	1	1.4	0.39	0.1	-	-
General development issues	9	12.7	30.39	5.0	1	0.04
Finance	4	5.6	0.16	0.1	-	-
Total	71	100.0	604.82	100.0	7	7.11

Source: Economic Report 1989.

Within agriculture a broad spectrum of areas have been subject to donor assistance including, for instance, support to construction of grain storage, US\$10.2 million, and agro-industry such as rice milling and oil crushing, US\$18.8 million.

Out of the allocation to the transport and communication sector, more than US\$90 million is used for new investments in roads, US\$67 million for the railways and telecommunications. Some of these programmes are financed by soft loans and may from that point of view be weighted differently, since they may be largely associated with material supply from the contributing country.

The energy sector is rated third in terms of cost but one major project, absorbing more than half of the total budget includes electricification and irrigation. Hence part of the project cost could just as well have been included under the agricultural sector.

As far as sectors like health and education are concerned, it is more appropriate to consider both the number of donor agencies involved and related

funding. If there is a greater number of donors giving priority to a certain sector, there should be scope of obtaining more money, admittedly at the expense of other sectors, than if the total donor contributions are static. These very important sectors are given a reasonably high priority by the donor agencies and the funds allocated are of the order of US\$ 25 million for each.

Bilateral assistance for general development issues include two programmes for human resource development, sponsored by CIDA and USAID. The total amount for these programmes are approximately US\$ 2.6 million. A total of US\$ 20.8 million is allocated as commodity grants. In addition, there is bilateral aid not included in the above-mentioned document.

Whether or not the 1989 donor contributions, and the priority sectors during that period, will be valid in the future is not known. It is, however, reasonable to assume that the Zambian Government, to an increasing extent, will be able to direct the support to the most urgent areas. A pre-condition for this is that the various ministries are capable of preparing the appropriate sector programme applications supported by the necessary documentation for justification. This issue is discussed further in Chapter 6.

The general priorities given above, resulting from an analysis of primarily the Economic Report 1989, is supported by information received from various donor agencies.

In addition, there is bilateral aid not included in the Economic Report 1989, which is the basis for the earlier discussion in this section. It includes programmes or projects channelled through the Africa Fund formed by the group of Non-Aligned Countries. Manpower training is an important contribution offered to Zambia, including, among other things, scholarships to India for 1-12 months courses in industrial areas such as, textile, small industry, standardization methodology, food-industry and milling technology, industrial engineering, and industrial management. Future technical co-operation programmes may incorporate the assignment of two or three Indian experts in textiles or leather training to Zambia.

The Soviet Union also gives priority to human resource development by offering scholarships in agriculture, health, building and building construction. These courses are university courses, some of them for post-graduate students.

A vocational training institute is being established in Chipata through the Africa Fund. The centre is planned for 400 students and is expected to undertake its first course in 1995. Different areas of industry are included in the curricula: agricultural mechanics, sanitary and water supply engineering, motor mechanics, metal work and tool making, refrigeration, and finally, wood machining and furniture manufacturing.

### 5.3 Conclusions and assessment

The Government priorities for industry are centred on agro-related industries which include processing and manufacturing industries making farm machinery, equipment and tools. Other metal manufacturing industries and gem stone mining and processing are also included.

Donor contributions for the mining sector are not focused on the gem stone branch and this is one example where the donor community has not responded to government priorities. Administration support to the Government is not directly associated with any industrial sector, but is indirectly contributing to the development of government priority areas.

Of major importance is the technical co-operation and donor funds available for health and education contributing to all government priority areas. Despite the fact that the donor community priorities largely coincide with the government priorities, it is quite obvious that the combined efforts in nutrition, health and education are inadequate. There is still a wide gap to be filled in order to stem, let alone reverse, the present decline of these sectors.

There is also clear evidence to show that the efficiency of donor contributions can be greatly improved, if the recipient ministries are better equipped and prepared to administer and absorb available donor funds. Drastic improvements here are likely to lead a long way towards reaching the objectives of the efforts towards overall development.

In order to assess the future development options of industry, in the light of Government priorities and plans, the priorities of the donor agencies, and the overall resource base in Zambia, an assessment of the scope of agriculture to supply raw material for industry must be made. Manpower resources and other resources which are available but inadequate, for one reason or another, must also be discussed.

In the following, the resource base is evaluated in two categories: 'available at present with no reservations' and 'those which are deficient'.

The following resources are available:

- arable land
- minerals
- energy (electricity)
- natural reserves, wild life (for tourism).

In addition, there are other resources at least as important but which are not satisfactory from the point of view of quality, performance capacity or volume. These include:

- human resources (manpower)
- agriculture
- construction sector
- institutional issues
- finance.

In order to achieve a dynamic industrial development, these five essential components areas must be upgraded. Manpower resources can only be developed through improved nutrition, health services and education, in particular, primary and secondary education and vocational training. The agricultural development strategy needs to be reviewed in the light of past, unsatisfactory development performance. Emphasis must be focused also on



productivity where motivation and incentives are fundamental elements. A viable and flourishing agro-industrial subsector will have difficulties in emerging with no proper planning of raw material inputs. The system, with contract farming, whether cash crops, horticultural crops or livestock needs to be explored and adapted to Zambia's specific conditions.

The construction sector has been striving for a decade or more. Given that manpower resources are available at all levels and conducive investment climate is created, the construction sector will develop and grow under its own steam. But to gain momentum, actions can be taken by the Government to provide incentives for launching construction schemes or projects. One option is to attract foreign investments in tourism by building hotels, lodges, and possibly other recreation facilities. The validity of this option rests largely with the new Investment Code yet to be adopted. Storage facilities could be built for agricultural commodities to drastically reduce the post-harvest losses. As an example to illustrate the orders of magnitude involved, if we assume that national losses of grains and oilbearing seeds amount to K 500 million/year and that the annual cost for storage is 15 per cent in real terms for investments, construction works to the tune of K 2.0 to K 2.5 billion would provide a net profit. This example indicates that the appropriate feasibility studies to assess the viability of storage facilities have to be made in one and every case.

A third option which could be used as a vehicle to get the construction sector going is public works primarily designed to create employment. But these would only be an additional benefit if the public works programme simultaneously helped the construction sector to take off. In parallel, the building material industry would have a chance to expand and develop products of local origin.

The institutional issues relate to improving the investment environment and to attracting domestic and foreign investment. Expectations are currently focused on the new Investment Code which will hopefully contain substantial investment incentives, essential to launch a wave of entrepreneurship in industry and elsewhere. Indeed, entrepreneurship in industry and business must not be curtailed by regulations preventing exports and essential imports.

Finance is usually available providing the investment climate is right. Once the business climate is sufficiently attractive, the wheels start turning.

Tying these different components together result in an integrated approach to development where the bottlenecks are eliminated to the mutual benefit of all areas.

A number of issues must be addressed to improve the prospects for galvanizing the industrial sector into dynamic development and expansion:

First, divert resources from other sectors to nutrition, health and education to ensure that human resources are developed and not wasted; comparative analysis methods should be employed to assess fully the impact of required changes.

Second, identify suitable agro-based products on the international market which could be grown successfully in Zambia and can be competitively processed under local conditions.

Third, review the strategy for development of agriculture directed toward diversified agro-industrial expansion geared for export.

Fourth, determine options for government to regenerate the construction sector in preparation for a dynamic expansion of industry; cost-benefit analyses should be employed to evaluate the consequences of alternative actions.

Fifth, establish a programme for exploitation of the gem stone mining and processing industry.

The above strategy is predicted on the assumption that the new Investment Code will prove capable of creating an overall investment climate conducive to both domestic and foreign investments.

## Chapter 6

### TECHNICAL CO-OPERATION IN INDUSTRY

#### 6.1 Introduction

There is a need to ensure that the allocation of technical co-operation between industry and the other major sectors, and within the industry sector, reflects priorities with regard to the Zambian economy.

This chapter, therefore, begins by looking at technical co-operation in the context of development assistance to Zambia, and then focuses on technical co-operation in Zambian industry. Next, an examination is made of the distribution of technical co-operation among the various subsectors and branches of industry, and other special categories. Finally, the chapter offers some observations on the constraints affecting technical co-operation in Zambian industry.

#### 6.2 Development assistance, technical co-operation and industry

Table 6.1 summarizes development assistance to Zambia in the five years 1984-1988. Two features are noticeable. Total development assistance to Zambia has fallen, and in US dollar terms in 1988, was only 60 per cent of its value in 1984. On the other hand, technical assistance has shown an increasing trend (with a dip in 1988), and in 1988 was over 60 per cent greater than in 1980. Technical co-operation has grown from 16 per cent of all assistance to 43 per cent in 1988, and this has largely been at the expense of capital assistance, which in 1988 was running at a quarter of its 1980 level. These trends are a reflection of the feeling among donors in this period that without economic reforms, much capital assistance would not yield significant returns. With the reform programme outlined in the EFPF of 1989, it is expected that the declining trend in development assistance will be reversed.

Table 6.1: Development assistance to Zambia  
(US\$ million)

	1984	1985	1986	1987	1988
Technical co-operation (% of total in parentheses)	101 (16)	90 (15)	124 (22)	193 (47)	167 (43)
Capital assistance	455	388	400	158	119
Commodity assistance	77	103	42	64	97
Total	633	581	566	415	384

Source: UNDP, Development Co-operation report for Zambia, 1987 and 1988.

The funds allocated to technical co-operation in industry are shown in Table 6.2. The sums involved are very modest, well under 1 per cent of total development assistance in all years except 1986. The percentages of total technical co-operation spending going to industry are also very small, at most 6 per cent, and do not reflect the importance of industry in the economy, where it is responsible for 36 per cent of GDP.

Table 6.2: Technical co-operation to Zambian industry

	1984	1985	1986	1987	1988
Industrial technical co-operation (US\$)	1.0	2.7	7.4	2.5	2.3 <sup>a/</sup>
Percentage of total technical assistance	1.0	3.0	6.0	1.3	2.0 <sup>a/</sup>

Source: UNDP, Development Co-operation Report for Zambia, 1987 and 1988.

a/ Excludes British technical co-operation.

The numbers of ongoing technical co-operation projects by industry subsector and branch (as well as for some special categories) are shown in Table 6.3. Disbursements on these projects are shown in Table 6.4. Some of the projects involve experts being supplied to Zambia without the donor itemising the cost, and this leads to projects being listed in the tables although no disbursements are recorded.

Table 6.3: Technical assistance: ongoing projects 1984-1988

	1984	1985	1986	1987	1988
2 Mining	-	-	-	-	-
3 Manufacturing					
- 31 Food	3	5	4	3	4
- 32 Textiles	2	2	-	-	3
- 33 Wood	-	2	-	-	-
- 34 Paper	-	-	-	-	-
- 35 Chemicals	3	3	2	3	2
- 36 Non-metallic minerals	-	-	-	-	1
- 37 Basic metals	-	-	-	-	1
- 38 Metal products	2	1	-	2	2
- 39 Other	1	1	-	0	2
4 Electricity, gas, water	-	-	2	3	3
5 Construction	-	-	-	-	-
General	3	4	5	4	7
Small-scale and rural	3	6	5	4	6
Private sector	-	-	1	1	1
Women	-	-	-	1	1

Source: UNDP, Development Co-operation Report for Zambia, (various years).

**Table 6.4: Technical assistance: disbursements 1984-1988**  
(US\$ thousands)

	1984	1985	1986	1987	1988
2 Mining	-	-	-	-	-
3 Manufacturing					
- 31 Food	10	262	4,146	545	35
- 32 Textiles	11	10	-	-	13
- 33 Wood	-	-	-	-	-
- 34 Paper	-	-	-	-	-
- 35 Chemicals	260	192	178	243	168
- 36 Non-metallic minerals	-	-	-	-	780
- 37 Basic metals	-	-	-	-	50
- 38 Metal products	-	4	-	777	17
- 39 Other	3	46	-	-	20
4 Electricity, gas, water	-	-	1,288	90	1
5 Construction	-	-	-	-	-
General	656	844	444	346	490
Small-scale and rural	229	522	184	316	166
Private sector	-	-	41	174	246
Women	-	-	-	-	2

Source: UNDP, Development Co-operation Report for Zambia, (various years).

The categories that dominate are food, chemicals, general programme projects to strengthen capacity in ministries and agencies, and small-scale and rural projects. It is particularly noticeable that there are no projects in mining or construction. In the branches of manufacturing, there are no projects in paper and wood. Basic metals and non-metallic minerals appear to have been neglected until 1988. Given the concern about women's issues, it is noticeable that only two projects are devoted to this subject.

### 6.3 Constraints on industrial technical co-operation

Although this paper is focused on the industrial sector, the assessment of technical co-operation must have a broader approach since the success or failure of this sector is the result of the performance of other sectors as well.

Experience of technical co-operation in Zambia has been gained over many years. The objectives and strategies of various donor agencies have been different, but the ultimate goal appears to be the same: to assign an

increasing responsibility for development programmes to the Zambian Government. This is in conformity with United Nations Resolution 44/211 where "Governments should formulate, in accordance with their own development plans and priorities, integrated national programme frameworks setting out co-operation requirements from the United Nations system." It is against this background, and based on the experience of the donor community, that the present assessment is made. Moreover, improvement of the performance of the common development efforts calls for continued, extended, and co-ordinated actions where the United Nations system, bilateral and multilateral agencies are pooling their contributions and co-ordinating their actions geared towards Zambia's national goals and objectives.

The basis for support for technical co-operation from donors is shifting from a focus on projects to programmes. This involves the formulation of a programme by the Government for a sector such as industry, with stated objectives and strategies. This will later be expressed in terms of a series of projects, again formulated by the Government, leading to eventual release of funds by the donor.

The ministries do not appear to have the capacity to handle the task of preparing programmes adequately. The situation regarding programme monitoring and evaluation is similar.

Donor technical co-operation programmes on projects frequently involve several ministries or governmental bodies with one acting as the executing agency. It is a common experience that co-ordination, liaison or reporting to other authorities is weak or non-existent with detrimental consequences, and in many cases fail to reach the objectives. There is a widespread inability to act promptly causing serious delays, which again has a negative effect on associated programmes and follow-up activities.

There are examples, such as with Swedish aid allocations, where up to 50 per cent of the total annual grant has not been used and a major reason appears to be inability to absorb the available funds. Important development components are delayed and the effects frequently reduced.

The assumption of greater responsibility by the Government for programming, monitoring and appraisal must be thoroughly upgraded to avoid serious complications and breakdown of the system. The ambition must be to strengthen the competence and also the motivation of government cadres to be able to administer integrated national technical co-operation programmes. During a transitory period of time, technical assistance is necessary in order to comply with United Nations Resolution 44/211.

The extent and nature of technical co-operation in this respect, including a substantial training component, will need to be subject to detailed studies and proposals for consideration by the Government.

#### 6.4 Summary and conclusions

Total development assistance to Zambia has fallen in the past five years, but technical co-operation has increased, and is now over 40 per cent of total assistance.

Technical co-operation in industry is small. For most years it is under 5 per cent of total technical co-operation spending, and this does not reflect the importance of industry in the Zambian economy.

Within industry, technical co-operation is predominantly in food, chemicals, general projects and small-scale and rural projects. In the subsectors of industry, there have been no projects in mining or construction. Comparatively neglected are paper, wood, basic metals, non-metallic minerals and women's issues.

The major constraint in increasing technical co-operation to the industry sector is the lack of capacity in ministries to formulate appropriate programmes within which technical co-operation projects can be planned.

## Chapter 7

### TECHNICAL CO-OPERATION PRIORITY AREAS IN THE INDUSTRIAL SECTOR

This chapter deals with the main elements considered essential for the development of industry in the context of a programme approach, while giving due emphasis to social dimensions, the position of women in development, and environmental issues.

#### 7.1 Assistance for key government institutions

- (i) Strengthening the institutional capacity of the Ministry of Commerce and Industry and the NCDP.
- (ii) Strengthening the capability for broad strategic thinking, particularly the wider consequences of decisions, in the Ministry of Commerce and Industry.
- (iii) Strengthening the statistical information services and documentation at the Ministry of Commerce and Industry.
- (iv) Consolidating the capacity of NCDP to undertake financial and economic feasibility studies, and extending this capability to the Ministry of Commerce and Industry.
- (v) Investigating the options to divert resources from other sectors of the Zambian economy to nutrition, health and education to ensure that the human resources are developed and not wasted; comparative analysis methods should be employed to assess fully the impact of required changes.
- (vi) Considering alternative measures to be adopted should the new Investment Code not prove capable of creating an overall investment climate conducive to domestic and foreign investment alike.

These major components for a strategy for building up of the institutional capacity of the Ministry of Industry in (i), (ii) and (iii) above are currently in the process of being established, through a technical assistance programme launched in May 1990 (DP/ZAM/89/002) due to be completed in 1990. The strengthening required of the organizational structure of the Ministry of Industry is quite substantial, with industrial programming and monitoring, establishment of a qualified statistics and data unit comprising the major components.

The capacity of NCDP to undertake financial and economic feasibility studies needs to be strengthened. Projects included in PIP and SAP have not been presented with enough detail to support their viability for rapid donor commitment of support. Currently there are two economists and one engineer with the capability to use COMFAR for feasibility studies. Six financial and two economic feasibility studies have been proposed, although the PIP lists 203 high priority projects for donor consideration. The major problem arises from an inability to update the accounting ratios necessary for economic feasibility studies. With continual adjustment of the exchange rates, rapid domestic inflation and regular revisions of commodity price forecasts, some permanent capability to update accounting ratios should be maintained at NDCP, with an economist and assistant able to undertake the work. Initially, there is a need for technical co-operation to undertake an update and to establish routines for maintaining these ratios by the Zambian staff.



The Ministry of Commerce and Industry should also have the capability to undertake feasibility studies. It is a legitimate role of the government sector to improve information within the context of a market economy, and these financial feasibility studies are important for encouraging both domestic and foreign investment. Where special incentives are involved, economic feasibility studies should be undertaken.

## 7.2 Priority areas for industrial development

- (i) Formulation of a plan for regeneration and expansion for the construction subsector, and the building materials supply branches including training; cost benefit analyses should be employed to evaluate the consequences of alternative actions.
- (ii) Establishment of institutional links with intermediate technology groups already established in other countries, such as the U.K., India, Kenya and elsewhere.
- (iii) Formulation of streamlined procedures for: (a) duty draw-backs for exporters, (b) export licencing and documentation.
- (iv) Evaluation of credit delivery systems for small-scale industries, and recommendations for improvement.
- (v) Identification in detail of the requirements for laboratory facilities to cope with industrial standards and quality control work for: a) food and chemical industries, b) textiles and leather, and c) for material testing.
- (vi) Identification of appropriate small-scale industrial equipment, in particular vegetable oil crushing units, and low speed stationary vegetable oil powered engines, for testing in Zambia and the subsequent manufacture in Zambia should the tests be favourable.
- (vii) Identification on the international market of agro-based products which can be grown successfully in Zambia and can be competitively processed under local conditions.
- (viii) Review of the strategy for development of agriculture directed toward diversified agro-industrial expansion geared for export.
- (x) Establishment of programme for exploration of the gem stone mining and processing industry.

The priority areas for promotion of industrial development include two areas to be dealt with in Phase 2 of its exercise. Four programmes, or projects are better handled separately since they are either technically complicated or require substantial expertise. These inputs are not readily available to be included and completed within the time limits in the follow-up activities of this survey.

### 7.3 Social dimension of adjustment

- (i) Assessment of the extent of the brain-drain and migration of skilled labour from Zambia, and the short- and long-term consequences for industry; suggestions for actions to stem or reverse the situation.
- (ii) Determination of the need for studies on the impact of the secular changes in the copper industry resulting in the reduction of employment and consideration of how training provisions can absorb the labour force elsewhere in the economy.
- (iii) Determination of the need for studies to assess the loss of employment in other parastatals as a result of reforms, consideration of how training provisions can absorb this labour force elsewhere in the economy.
- (iv) Evaluation of the employment and income-generation implications of various public works schemes, and assessment of the value of their contribution to water, sanitation, roads, market places and school construction, so that the most cost-effective public works schemes can be chosen.

### 7.4 Women in development

- (i) Formulation of ways to constructively increase the participation of women in education in general, but particularly in vocational training related to industry sector employment.

Improved education, both regarding number of girls enrolled at primary and secondary level schools and at the university is vital for increased women participation in (industrial) development in the medium to long term. Vocational training is seen as a vehicle to make women more competitive for industrial employment, also in the short term.

### 7.5 Environmental issues

- (i) Formulation of alternative policies in dealing with industrial pollution in the context of a general strategy for environmental issues related to the whole economy, so that the most cost-effective measures can be employed; preparation of the legal framework to make the protection of the environment effective.
- (ii) Elaboration of an effective code of standards for acceptable levels of waste emission, and a suitable monitoring system.
- (iii) Establishment of an environmental control laboratory within ZBS.

The environmental issues are included among the priority areas according to the FNDP although there are no budgetary allocations. In the PIP there are no programmes or projects devoted to protection of the environment. It is felt important, however, that a sound integrated approach is made at this stage. Steps have been taken by the Government to establish the institutional preconditions for protection of environment. The three sub-projects enumerated here would facilitate the implementation of management and monitoring of environmental issues before substantial planning and investments are made in industry.

## 7.6 Follow-up of rehabilitation projects identified in 1988 UNIDO survey

### 7.6.1 Zambia Pork Products Ltd. (ZAPP)

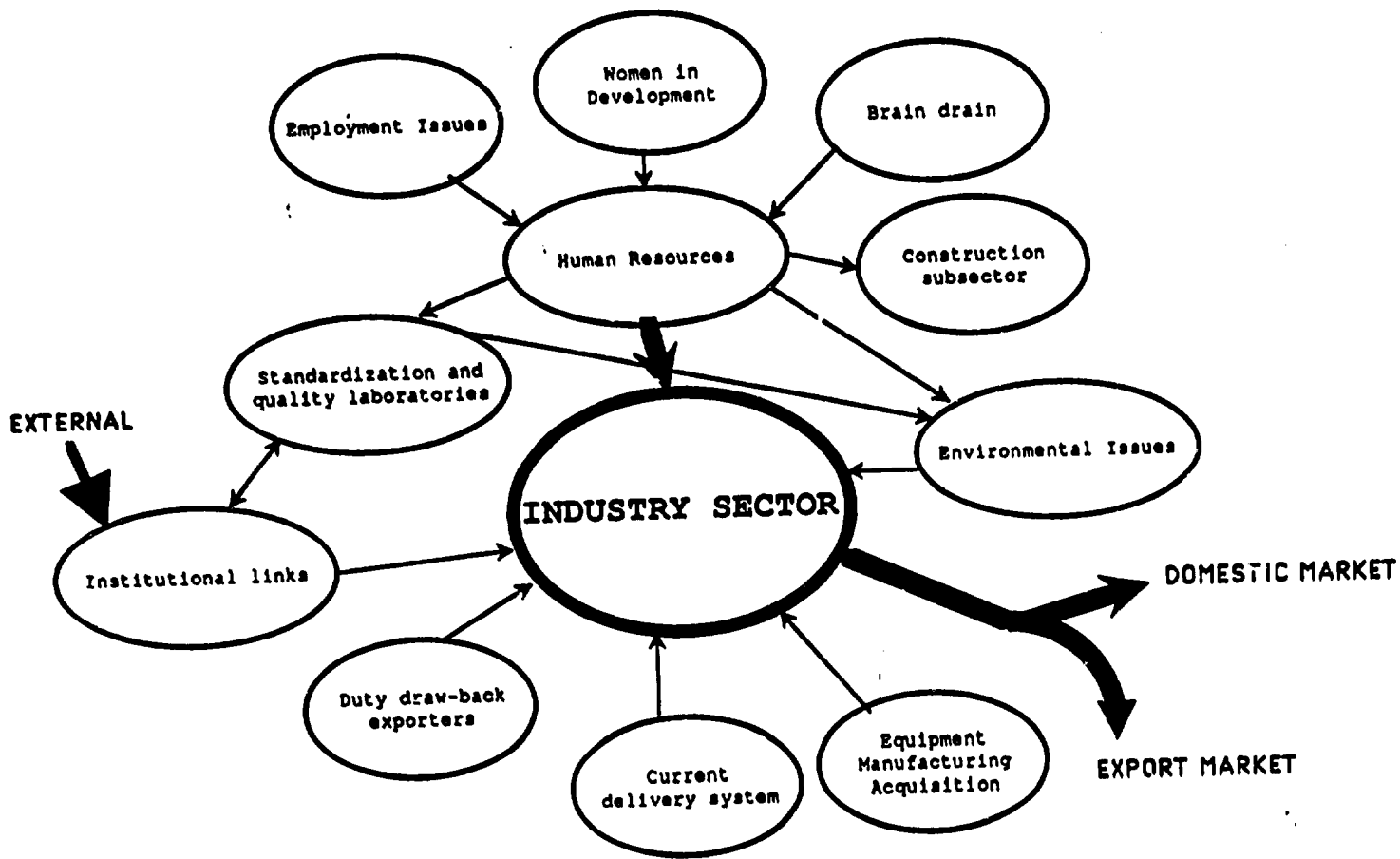
Technical assistance to prepare a techno-economic feasibility study for the physical rehabilitation of the enterprise and expansion of the industry according to current requirements.

### 7.6.2 ZATCO Stockfeeds Ltd. (ZATCO)

- (a) TC for determining suitable range of laboratory equipment for programmed, routine sampling and analysis of ingredients and finished products.
- (b) Training of personnel:
  - (i) Assistant production manager in production scheduling and planning, plant management;
  - (ii) Production (engineer) quality control;
  - (iii) Mechanical maintenance personnel (4 numbers); leithing and machine tooling. The candidates have 12 grade basic education and craftsman level certificate but lack exposure to modern techniques and experience.

## 7.7 Conclusions and recommendations

The technical priority areas for the industrial sector presented here form a network where the human resources, standardization/quality assurance and environmental issues are major components. However, all other programmes, schemes and projects presented here are integral parts of industrial development. Some of the programmes listed in this chapter are illustrated in Figure 7.1. The elimination of one or several of the identified schemes has a detrimental impact on industry but to a varying degree. For instance, 7.2 (vi) equipment manufacturing acquisition has lower priority than 7.3 (i)-(iv). But 7.2 (vi) could be successful in the acquisition of a combustion engine capable of using reasonable, domestically available fuel, vegetable oil. The engine could probably be manufactured in Zambia on licence and be used for pumping water, hammer milling, oil crushing and so on. The machine would hence be valuable for rural development, small-scale and village industries in addition to providing a base for metal manufacturing.



Promotion of industrial development

Figure 7.1

## Appendix 1

### RECOMMENDATIONS ON FOLLOW-UP ACTIVITIES TO THE 1988

### INDUSTRIAL REHABILITATION SURVEY<sup>1/</sup>

This Appendix 1 contains follow-up reports from ZAPP, E.C. Milling and ZATCO. Due to civil circumstances during the mission's stay in Zambia, it proved impossible to cover also the fourth company, Kabwe Industrial Fabrics Ltd. (KIFCO). However, Kabwe has been subject to a feasibility study for rehabilitation of the pile line.

#### ZAMBIA PORK PRODUCTS LTD.

#### 1. Events of importance since the 1988 UNIDO rehabilitation survey

- 1 March 1989, Company assumes status as self-management enterprise (SME).
- March 1989, Government/UNIDO Round-table meeting in Lusaka as a follow-up of the 1988 survey.
- August 1989, ZAPP notified by letter from Government that the Nkumba Farm, a subsidiary of Zambian Agricultural Development Ltd. (ZADL) was to be handed over to ZAPP to serve as their nucleus farm for supply of slaughtering pigs to the slaughterhouse, and of breeders to private pig farms.
- August 1989, visit by UNIDO representative, Mr. P. Wiedemann.
- September 1989, ZIMCO informs ZAPP to suspend take-over of the Nkumba Farm for the time being.
- September 1989, Managing Director attends trade fair in Novisad, Yugoslavia, after invitation from UNIDO, for presentation of project proposals for expansion of ZAPP.
- February 1990, letter from ZAPP to UNIDO, Vienna regarding animal by-products processing plant.
- March 1990, ZAPP receives copy of letter from UNDP Resident Representative to NCDP, dated 7 March, regarding XP/ZAM/90/037, "Opportunity Studies for the Production of Bone Meal for Animal Fodder"; attachment "Project Document" dated 5 October 1989.
- May 1990, ZAPP receives copy of letter from UNDP Resident Representative to NCDP, dated 8 May, concerning XP/ZAM/90/037 expert candidates.
- May 1990, ZAPP informed by letter that the Nkumba Farm piggery will not be handed over to ZAPP.

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1/ UNIDO 1988, The regeneration of Zambian manufacturing industry with emphasis on agro-based industries. Special reports on industrial rehabilitation No.1, PPD/R.19.

2. Initiatives by ZAPP for rehabilitation and expansion

(a) Elaboration of outline projects presented in Yugoslavia in September 1989 including:

(i) animal by-products processing plant, capacity 30,002 kg/day:

-	estimated total project cost	US\$ 500,002
-	local currency component	25 per cent
-	foreign currency component	75 per cent
-	estimated return of investment	40 per cent recoverable by end of first year operation

(ii) canning plant adopted to a maximum slaughtering capacity of 22,800 kg/8 h; canning capacity not specified:

-	estimated total project cost	US\$ 800,000
-	local currency component	40 per cent
-	foreign currency component	60 per cent
-	estimated annual turnover	US\$ 4.0 million
-	estimated operating cost	US\$ 2.5 million
-	estimated margin before tax	US\$ 1.5 million

(iii) bakery unit (commercial pie production), based on a slaughtering capacity of 3,000 tonnes/year (approximately 10 tonnes/day); plant profile not specified:

-	total project cost	US\$ 300,000
-	local currency component	30 per cent
-	foreign currency component	70 per cent
-	expected annual turnover	US\$ 1,000,000
-	estimated operating cost	US\$ 550,000
-	estimated margin before tax	US\$ 450,000

(b) Presentation of plans for rehabilitation and expansion, with the intention to attract financial and technical support, to NORAD and to the commercial attaches of United Kingdom, Canada, Denmark, Federal Republic of Germany, Finland, Japan and the USA, and finally to CDC.

The presentation was supported by a letter giving explanations and preliminary cost estimates.

	Estimated cost US\$
- plant rehabilitation	500,000
- transport vehicles	750,000
- manpower training, technical assistance	50,000
- animal by-products plant	600,000
- canning plant	1,500,000
- bakery unit (pie production)	750,000
- hamburger/beefburger meat unit	150,000
- laboratory	600,000
- pig breeding unit	<u>1,000,000</u>
Estimated total	US\$ 5,900,000

(c) Submission to NCDP, before the end of June 1990, a request for government support as follows:

- (i) the physical reconstruction, upgrading and modernization of buildings, machinery and installations;
- (ii) the complete replacement of ZAPP's transport fleet;
- (iii) the complete take-over of Nkumba Farm Piggery Unit in order to have guaranteed source of the main raw material input - pork.

The minimum injection of capital is estimated at K 10 million plus a recommended government grant of K 7.786 million, to be made available for the urgently required rehabilitation and modernization programme.

### 3. Performance of the company

Zambia Pork Products (SME) was officially launched on 1 March 1989 as one of two Zambian companies chosen by the Party and its government to pioneer the concept of self-management in the country.

Some operational data of ZAPP for the first year as a SME is summarized in the following.

<u>Raw material</u>	<u>Budget</u>		<u>Actual</u>	
	<u>1989/90</u>	<u>1988/89</u>	<u>1989/90</u>	<u>1988/89</u>
<b>Pigs</b>				
number	10,800	8,400	9,231	8,554
CDW, tonnes	720	504	684	580
value, '000 K	30,690	8,484	28,684	10,002
<b>Beef</b>				
CDW, tonnes	360	495	154 <sup>a/</sup>	203
value, '000 K	13,590	8,700	5,802	3,585
<b>Production</b>				
products, tonnes	1,020	972	955	856
value, '000 K	-	-	59,594	25,973
Sales <sup>b/</sup>	45,252	-	37,487	-

Source: ZAPP.

a/ Estimate from HDW less 2 per cent.

b/ April-December, 1989.

Plant capacity utilization is calculated at 30 per cent, on average, for the year.

The table below gives an overview of the financial result for the period 1985-90.

<u>Year</u>	<u>Turnover</u> '000 K	'000 K	<u>Result</u> US \$	ER
1985	7,478	-2,143		
1986	4,628	-3,081		
1987	7,877	- 207		
1988	10,462	+ 388	48,500	8
1989	20,546	+2,100	131,250	16
1990	50,718	+3,000	120,000	25

#### 4. Comments and recommendations

The production of ZAPP has increased by about 10 per cent in quantitative terms during 1989-90 as compared with the previous year. Capacity utilization, however, has remained unacceptably low at 30 per cent. In monetary terms the situation is more difficult to assess. Taking inflation into account, the margin before tax is almost the same. One reason for the improvement since the period before 1987 is that the cost consciousness of the new management is now paying off. The recommendations for rehabilitation of ZAPP included, in general terms, the refurbishing of the plant and modernization with the appropriate laboratory facilities. In addition, arrangements were to be made to ensure an acceptable supply of pigs, with scope of substantial increase in the long run. It should be pointed out here that the pig supply programme also had an important social rural development element incorporated. Expansion of the company was to come as a second phase in the overall programme.

The management has clearly adhered to many of the recommendations of the 1988 UNIDO report. In addition, considering that no physical rehabilitation, or investment in new equipment has been made, due to lack of funds, the management and its personnel have performed well.

It is evident from section 2 above, that the management has taken numerous initiatives in an effort to gain assistance from various sources for rehabilitation of the production facilities, and reach an acceptable solution to ensure a long-term supply of raw material.

It is apparent that ZAPP has not been able to obtain the assistance of either the Government or the international community to transform the company into a viable enterprise within the two-year period that has elapsed since the rehabilitation survey was carried out. Moreover, the important issue of an integrated approach to rehabilitation seems to have been neglected.

Although the animal by-products processing plant (XP/ZAM/90/037) is important in itself, it is but one component in the rehabilitation efforts of ZAPP. Many major problems still need to be addressed.



If ZAPP is to survive as an SME and become a profit-making enterprise, which can also exploit the export opportunities that exist, the following actions are essential, subsequently followed by implementation:

1. Planning and design for rehabilitation of buildings and structures, equipment and installations; cost estimates including cost/benefit analyses; plan of execution to allow for maximum continued operation; time schedule for implementation.
2. Acquisition of funds.
3. Actions, primarily on the part of the Government, to facilitate the development of a ZAPP pig supply programme, basically in line with the suggestions in the report from the 1988 survey; the transfer of the Nkuma Farm to ZAPP would be one constructive solution.

Items (1) and (2) above calls for vigorous and prompt action to show clearly that the rehabilitation study is in fact a first step towards rehabilitation of selected enterprises. In this regard, UNIDO could play a lead role.

It is suggested that avenues for direct communication between UNDP/UNIDO and ZAPP be established. This might be possible now when ZAPP has become a SME.

It should be stressed that ZAPP is well managed and efficient within the constraints under which it has to operate.

There seems to be three main constraints hampering ZAPP from development and expansion.

First, an inability to take measures to increase the supply of pigs.

Second, an inability to raise money for rehabilitation of existing production facilities for current production.

Third, an inability to raise money for expansion in processing lines with profitable production also for export.

Since the company, due to prevailing policies and regulations, cannot decide on investments for development of the company, the autonomy of a SME must be considered inadequate and a rethinking of the financial structure of the company is essential.

## E.C. MILLING

### 1. Present situation

In the period since the rehabilitation survey was carried out in 1988, the following actions have been taken towards rehabilitation:

- (i) Strengthening of the organization
- (ii) Improvement of maintenance routines and acquisition of general spare parts
- (iii) Preparatory work for physical rehabilitation

#### (i) Strengthening of the organization

The improvement of the organization includes recruitment of a financial accountant at an intermediate level, upgrading of the personnel section into a department with recruitment of one Head of Department and one Personnel Officer, who will commence his duties on 1 July 1990, and establishment of a Purchasing Department with a Purchasing Manager. A supervisor for mechanical engineering matters has been engaged in the Engineering Department implying that this department now has two sections, one mechanical and one electrical, which offers greater flexibility and easier delegation of responsibilities.

The responsibilities of the Personnel Administration Department includes the arranging of training courses for employees at various levels, heads of departments as well as skilled workers. The Production and Sales Managers, for instance, have participated in a seminar in the Republic of South Africa (RSA).

In the near future a Cost Accountant will be recruited to facilitate better monitoring of the costing of products. As production increases in the future a stock feed specialist, well versed in animal nutrition, will be attached to the Sales Department.

#### (ii) Improvement of maintenance routines and acquisition of general spare parts

A planned maintenance programme has been introduced with a set programme for every week. Although not focused on preventive maintenance, it may in practice work to that effect. General spares such as V-belts, nuts and bolts, etc. have been procured and are kept in stock. An unspecified list of essential spare parts have been supplied from Complan (Zambia) Ltd., a subsidiary of China National Plant Export Corporation in Taiwan, and from RSA, and installed in the plant.

As a result of this, the breakdowns have reportedly been reduced.

#### (iii) Preparatory work for physical rehabilitation

Following the Round-table meeting in Lusaka in March 1989, the INDECO Evaluation Unit was assigned to study the preconditions for, and the scope of rehabilitation of, E.C. Milling. Reference was made to the UNIDO proposals in the 1988 report and Complan was subsequently requested to carry out a plant assessment of their own, as a basis for a quotation. This is in line with the suggestions in the UNIDO report, according to the Management. The offer has been submitted to E.C. Milling and evaluated. The two parties are in general agreement, but the documents are not yet completely processed and the final negotiations still remain.

The documents include:

- The offer;
- Terms of contract;
- Terms of payment;
- Attachments, including e.g. technical documents, obligations of the Supplier and of the Buyer, insurance conditions, guarantees (12 months), commissioning procedures, time schedule for implementation.

It does not appear as if sufficient attention has been paid to elaborate a work programme for implementation to permit continued operation of the plant with short, temporary stops in production only. It is suggested that this matter be examined closely and a detailed programme, with penalty clauses in case of diversion from the programme incorporated, to ensure that the losses in production are minimized.

The quotation for the supplies, installation of equipment and supervision of civil works amounts to a lump sum cost of US\$ 1.8 million (K 54 million). The foreign exchange component is K 35 million and the rest, K 19 million, would include all civil works which is the responsibility of the buyer.

The tentative time for the project is 15 months from ordering of the equipment till completion. Delivery of supplies is estimated to be finalized within three months from the date of ordering.

The E.C. Milling obligations include construction of site office and accommodation for the installation crew from the Supplier. These buildings will later be used as offices for the administration.

## 2. Performance of the company

The below compilation gives an overview of production and sales for 1988/89 and 1989/90 respectively.

	<u>1989/90</u>		<u>1988/89</u>	<u>1987/88</u>
	Actual	Budget	Actual	Actual
<u>Production, '000 MT</u>				
Stockfeeds	15,309	28,968	19,318	11,916
Maize meal	19,807	19,702	18,002	18,576
<u>Sales</u>				
Stockfeeds	15,434	29,128	19,177	n.a.
Maize meal	19,752	20,317	18,002	n.a.

The production of stockfeeds and maize meal alike has remained relatively constant. Plant utilization is low by any standard, 50 per cent of installed capacity for maize meal line and 15-20 per cent for the stockfeed line. Based on available capacity, the figures for 1989 was 80 per cent, and 33 per cent for the maize line and stockfeed line respectively. The result would have been less acceptable had there been no other constraints but the mechanical condition of the plant.

The total turnover for 1988/89 was K 70.442 million and for 1989/90 K 130.725 million, with a profit before tax of K 8.052 million for 1988/89 and K 16.652 million for 1989/90. Considering the devaluation of the Kwacha the results for the two years appear to be comparable in constant prices.

3. Comments and recommendations supported by UNIDO through direct technical assistance and ad hoc advice in economic financial and technical restructuring of the company (UC/ZAM/S9/128)

E.C. Milling is well on its way towards rehabilitation. Although the contract documents are drafted and the parties are in a general agreement, it may still take some time before all formalities are finalized and the equipment ordered. UNIDO's contribution was highly appreciated; it had broadened the concept of rehabilitation and provided a firm platform for the actions which have taken place after the Round-table meeting in Lusaka in March 1989. No action is required on the part of UNIDO. However it is suggested that UNIDO, through its Country Representative, maintain periodic contacts with E.C. Milling.

## ZATCO STOCKFEEDS LIMITED

1. The following events and actions have taken place and plans made since the 1988 rehabilitation survey was completed:

(a) Personnel

- 1988 autumn, accountant requested to leave due to dishonest conduct; company losses K 106,000; new accountant recruited.
- 1989 March, mechanical engineer recruited.
- 1989 July, new accountant had to leave due to incompetence.
- 1989 September, mechanical engineer requested to leave due to dishonest conduct (over-invoicing); position is still vacant.
- 1990 September, start of technical assistance from the Netherlands for a period of two years (vegetable oil processing expert from UNILEVER).
- 1990, recent employment of assistant production manager, a graduate from Zambia College of Agriculture, animal nutrition, 25 years of age. He is considered by the management to be very receptive but has no earlier experience of feed processing and should receive qualified training, preferably in Europe, to gain exposure to a technology slightly above current ZATCO technology.

2. Physical rehabilitation action

(a) Equipment

Investment (K)

1988, purchase of second-hand boiler to be installed; old boiler to be reconditioned and retained as stand-by	39,000 n.a.
1989, purchase of horizontal paddle mixer for (new) concentrate line, local manufacture, Gameco	90,000
1989, start of rehabilitation of existing cooker-expeller; spare parts repair installations	106,000 n.a.
1988, procurement and installation of a third expeller, cap CA 20MT/24h, Taiwan manufactured supplied by Unified Chemicals Installation costs	600,000 50,000
1989, purchase of second-hand leith	360,000
1990 April, ordered, and approved by FEMAC, one soya bean extruded, Instapro, cap 5MT/h, GBP 8000	480,000

In the pipeline, procurement of equipment with forex through ZAMS (Zambia Agricultural Marketing Support); 1st window exchange

Seed cleaner, de-linter	n.a.
Quotations requested from minimum five suppliers in UK, USA and FRG. Offers expected before end July 1990	
Lorry (Leyland assembled in Lusaka)	<u>n.a.</u>
Total cost rehabilitation equipment per July 1990 K (excl. reconditioned boiler unit and repairs of expeller)	1,725,000
(b) Civil works	
Personnel facilities and canteen completed	n.a.
Four warehouses for raw material; total storage area 2,060 m <sup>2</sup> ; height at eaves 12 m; steel super structure, corrugated steel roof, concrete block walls. Quotation SAR 102,000 (ER15)	1,530,000
Expected to be completed 1990 (K 742/m <sup>2</sup> )	

### 3. Raw material supply

There has always been a shortage of sunflower seed. In order to attract commercial firms to grow and supply sunflower seed, the Bank of Zambia was approached and agreed to a producers assistance scheme. This includes supply of sunflower seed, extension services, supply of empty bags, collection of the farm product at the farm and payment on delivery. Farms producing a minimum of 4,000 bags (360 tonnes) of sunflower or maize, or 1,000 bags (90 tonnes) of soya beans and sell it to ZATCO receives US\$ 0.50/bag in foreign exchange. The programme now includes yellow maize.

In 1989, sunflower seeds worth K 1.3 million was supplied to contract firms (K 29/kg-total 45 tonnes) and it is expected that the value of the crops to be bought back in 1990 will be about K 40 million.

The budget for purchase of sunflower seeds and maize in 1990 is K85 million. This will be financed through a Barclays Bank 12 months credit of K 30 million and the rest from own resources. Rate of interest 35 per cent. In 1988, the crop purchase credit was K 8 million and in 1989 K 12 million.

Once the de-linter is installed, ZATCO will start processing cotton seed. The introduction of cotton in the processing will make it possible to substitute some of the sunflower cakes, which is in scarce supply for cotton cakes and earn foreign exchange through export of cotton cakes to RSA. The cotton oil will be supplied to Zambia Oil in Kabwe, where investments are currently made in a refinery for cotton oil.

4. Performance of the company

In addition to problems associated with personnel, ZATCO experienced major difficulties in the milling department throughout 1989. Only about 20 per cent of installed hammer milling capacity was available. This obviously must have hampered the performance as a whole.

However, in order to obtain a firm grip of all operations, revised management guidelines were introduced from December 1989. Each individual department submits detailed monthly reports including:

- personnel; turnover, recruitment requirements, disciplinary matters, training requirements;
- production; for each line, problems, performance related to minimum acceptable performance, raw material requirements;
- maintenance; breakdowns and remedies, dates of scheduled maintenance programmes, spare parts requirements.

The prevention maintenance programme introduced in December 1989 has two main components (i) general maintenance every seventh day (Sundays) and (ii) thorough check-up of individual machines after a pre-determined number of running hours. The incident of production stops have decreased drastically since introduction of these routines.

Stockfeed processing (cap 8h/day 23 day/month - 690 tonnes/month)

1990	Target tonnes	Production tonnes	Capacity utilization per cent
April	580	582	84
May	683	680	98
June	715	580	84 (market constraints)

Cooking oil (capacity 460 tonnes/month)

1990	Target tonnes input	Product tonnes input	Crude oil litres	Capacity utilization per cent
April	157	173	32,000	38
May	"	189	35,000	41
June	"	195	36,000	42

Production	1987/88	1988/89	1989/90
<u>Stockfeed</u> '000 MT	8,678	3,583 (April-Sept)	6,880
Average/month	723	597	573
<u>Cooking oil</u> , litres	n.a.	n.a.	379,492

The total production in 1989/90 is considerably less than the 1987/88 season. This reflects the very low available capacity in the milling department. It also reflects, to some extent, the change in product range. Eight formula feeds have been excluded due to low sales whereas five concentrates have been added in the list. In the 1989/90 season, a total of 11.6 tonnes of dairy concentrates were processed and sold to dairy farms.

White maize and No. 3 meal in particular has been in short supply periodically due to lack of adequate transport.

The economic situation of ZATCO Stockfeeds is illustrated below:

Million Kwacha

	<u>1988/89</u>	<u>1989/90</u>
Trading, net profit	1,965	1,475
Sales	18,068	38,822
Finished stocks, balance	-0,191	0,936
Net profit	1,689	4,255
(in US\$) <sup>1/</sup>	(105,000)	(170,000)
Net current assets	3,610	7,134
Long-term loans	-	0,316

1/ Rate of exchange 1988/89 K 16  
1989/90 K 25

5. Need for technical co-operation

In addition to the technical assistance which will be received from the Netherlands, the following requirements are identified:

- (a) TC for determining suitable range of laboratory equipment for programmed, routine sampling and analysis of ingredients and finished products.
- (b) Training of personnel:
  - (i) Assistant production manager in production scheduling and planning, plant management;
  - (ii) Production (engineer) quality control;
  - (iii) Mechanical maintenance personnel (4 numbers); leithing and machine tooling. The candidates have 12 grade basic education and craftsman level certificates but lack exposure to modern techniques and experience.

6. Comments and recommendations

The 1988 survey had clearly identified the weaknesses in the company and pointed out areas and actions which could improve overall performance of the enterprise. There were high expectations following the Round-table meeting



in March 1989. Subsequently, no funds appear to have been attracted for the rehabilitation of ZATCO.

It is clear, therefore, that appropriate follow-up action still needs to be elaborated.

ZATCO Stockfeeds has initiated the rehabilitation on its own and are progressing reasonably well. Actions have been taken largely in line with the 1988 rehabilitation report. Support in terms of UNIDO TC is important at this stage. A work plan to ensure raw material supply has been launched and seems to function well with the financial support from Barclays Bank in particular. Technical assistance in vegetable oil processing is secured for a two-year period.

It is recommended that technical co-operation from UNIDO be considered as described in section 5 above.

## Appendix 2

### TERMS OF REFERENCE FOR PHASE TWO OF THE FORMULATION OF A TECHNICAL CO-OPERATION PROGRAMME FOR ZAMBIA

#### Purpose

The aim of the second phase of the mission is to assist the Government to formulate the Technical Co-operation Programme on the basis of the report, prepared by the first mission.

Phase 2 of the programme will require the following approach. First, an interim appraisal of the on-going programme in the Industrial Planning Unit of the Ministry of Commerce and Industry. An assessment should be made of the extent that the Industrial Planning Unit can assume the role of a programme managing, monitoring and appraising agency at the onset of 1991.

Second, the preparation of Terms of Reference and Guidelines for each priority programme. These documents will form the basis for detailed planning where the programmes are broken down into projects as appropriate. Each programme requires different expertise to tackle the issues in a professional manner.

Third, the preparation of project profiles within identified priority areas for technical assistance to be provided by UNIDO.

#### Outputs

Outputs of the second phase will be:

1. An appraisal report of the ongoing programme for strengthening of the Ministry of Commerce and Industry and NCDP's resources pertinent to industrial development with special reference to:
  - (i) Assessment of progress in implementing the proposals contained in the programme:
    - recruitment of staff
    - performance of unit
    - residual problems, if any
    - success in meeting budgetary objectives
  - (ii) Evaluation of performance.
2. Programme preparation guidelines for Technical Co-operation priority areas in the industrial sector identified by the first mission:
  - (i) Assessment of the extent of the brain-drain and migration of skilled labour from Zambia, and the short- and long-term consequences for industry; suggest actions to stem or reverse the situation.

- (ii) Determination of the need for studies on the impact of the secular changes in the copper industry resulting in the reduction of employment and consider how training provisions can absorb the labour force elsewhere in the economy.
- (iii) Determination of the need for studies to assess loss of employment in other parastatals as a result of reforms, and consider how training provisions can absorb this labour force elsewhere in the economy.
- (iv) Evaluation of the employment and income-generation implications of various public works schemes, and assess the value of their contribution to water, sanitation, roads, market places and school construction, so that the most cost-effective public works schemes can be chosen.
- (v) Exploration of ways how to increase the participation of women in education in general, and in particular, in vocational training related to industry sector employment.
- (vi) Formulation of a plan for vitalization and expansion of the construction subsector as well as the building materials supply branches including training.
- (vii) Establishment of institutional links with intermediate technology groups already set up in other countries such as the UK, India, Kenya and elsewhere.
- (viii) Formulation of streamlined procedures for: (a) duty drawbacks for exporters and (b) export licencing and documentation.
- (ix) Evaluation of credit delivery systems for small-scale industries, and recommendations for improvement.
- (x) Identification of the detailed requirements for laboratory facilities for industrial standards and quality control for: (a) food and chemical industries; (b) textiles and leather; and (c) for material testing.
- (xi) Identification of appropriate small-scale industrial equipment, in particular vegetable oil crushing units, and low speed stationary vegetable oil-powered engines, for testing in Zambia and the subsequent manufacture in Zambia, should the tests be favourable.
- (xii) Identification of agro-based products which can be competitive on the international market, can be grown successfully in Zambia and can be locally processed.
- (xiii) Review of the strategy for development of agriculture directed toward diversified agro-industrial expansion geared for export.
- (xiv) Determination of options for Government to regenerate the construction sector in preparation for a dynamic industrial expansion; cost benefit analyses should be employed to evaluate the consequences of alternative actions.

- (xv) Elaboration of a programme for exploration of the gem stone mining and processing industry.
- (xvi) Formulation of alternative policies dealing with industrial pollution in the context of a general strategy for environmental issues related to the whole economy, so that the most cost-effective measures can be employed; preparation of the legal framework to make the protection of the environment effective.
- (xvii) Preparation of an effective code of standards for acceptable levels of waste emission, and a suitable monitoring system.
- (xviii) Establishment of an environmental control laboratory within ZBS.

Each guideline should address the following problems:

- (i) Personnel
    - UNIDO staff, number of experts, qualifications and background experience.
    - Counterpart staff, number of counterpart staff, qualifications, background experience.
    - Whenever possible, schedule clear demarcations of division of responsibilities between the UNIDO consultant(s) and the counterpart(s), with the objective of maximizing the involvement of the counterpart(s) in the programme/project, and hence ensure most effective skills transfer.
  - (ii) Responsibilities of the appropriate UN agency and the Zambian Government.
  - (iii) Terms of reference; special considerations, where applicable.
  - (iv) When appropriate, directions to consultants regarding procurement of documentation and current price lists for equipment, prior to the mission.
  - (v) Major topics to be covered in the report.
  - (vi) Time requirement.
  - (vii) Cost estimate, including any exceptional expenditures.
3. Project profiles covering identified areas for technical assistance to be provided by UNIDO.

### Composition of the mission

The mission should be composed of the following experts with previous experience of Zambian economy, institutions and technical co-operation issues:

- An industrial economist/development finance expert who will provide economic assessment of the technical co-operation priority areas with emphasis on the appraisal of the on-going programme in the Industrial Planning Unit of the Ministry of Commerce and Industry as well as will co-ordinate the preparation of guidelines for Technical Co-operation priority areas identified by the first mission.
- A human resource development expert who will prepare programme preparation guidelines related to the outputs (i) to (v) mentioned above.
- An industrial engineer/agro-based industries specialist who will address the outputs (x) to (xiii).
- An industrial engineer/mineral processing industries specialist who will address the outputs (vi) and (xiv) to (xviii).

### Preparatory supportive action by UNDP office in Lusaka

- (i) In co-operation with the Ministry of Commerce and Industry, arrange initial appointments with concerned parties as scheduled in Appendix 5 well in advance of the mission's arrival.
- (ii) Provide full-time secretarial services, as required, during the mission's stay in Zambia.
- (iii) Provide one computer to the team for the duration of the field mission.
- (iv) Provide one car and driver to the mission for the duration of the mission's stay in Zambia.

### Preparatory supportive action by the Ministry of Commerce and Industry

- (i) Appoint, at an early date, two suitable local counterparts to participate in the phase 2 mission on a full-time basis; the counterparts should be relieved from all other commitments for the duration of the mission in order to be given the opportunity to contribute significantly to the work and become fully familiarized with the proceedings and routines and hence benefit from the training component. The national experts should have the following qualifications:
  - One economist, experienced in Ministry administration work;
  - One technical co-operation specialist whose main obligations include liaison and co-ordination with NCDP and contacts with the other co-Ministry.
- (ii) In co-operation with the UNIDO Country Director, arrange appointments with concerned parties, as per Appendix 5, well in advance of the mission's arrival in Zambia.

Duration of the mission

Two international experts will be briefed at UNIDO headquarters, Vienna, two days prior to the commencement of the mission in the field:

- the international industrial economist/development finance expert; and
- the international engineer/agro-based industries specialist.

Together with the local economist and local technical co-operation specialist, they will work closely for a duration of three weeks in Zambia and thereafter, will spend ten days at UNIDO headquarters finalizing the study.

- The international experts covering the areas of human resource development and mineral processing industries will work in Zambia together with the team, one followed by the other, for a duration of 10 consecutive days each.

Scope of the mission

The mission is expected to work in Lusaka most of the time, but a number of field trips may be necessary for urgent coverage of issues involved.

### Appendix 3

Table A.1: Exploration progress by mines and geological survey 1980-88

Mineral	Location/district	Province	Reserves (tonnes)	Grade	Comments
Phosphate	Chilembwe-Petauke	Eastern	1,600	11.5% P205	Ready for mining
	Sugar Leaf-Mumbwe	Central	200	11.0% P205	Small deposit
	Kaluwe-Luangwa	Lusaka	7,000	3.2% P205	Feasibility study completed
	Nkombwa-Isoka	Northern	220,000	4.6% P205	Needs further research
Serpentine	Muloba-Mkushi	Central	1,000	32.8% MO	Ready for mining
Agricultural lime	Mpongwe-Ndola rural	Copperbelt	240	----	Ready for mining
			14,000	----	Other deposits
	Lusaka Environs	Lusaka	50,000	----	Estimated
	Mstanda-Manaa	Luapula	Adequate	----	Not estimated
	Solwezi	North-western	240,000	----	Adequate
	Kabompo	North-western	2,200	----	Not estimated
	Lunkunyi-Zambezi	North-western	4,000	----	
	Hofmeyer-Petauke	Eastern	50,000	----	Adequate
Macha-Mapanza-Choma	Southern	---	----	Substantial	
Dolomite marble	James Daka Quarry	Lusaka	33,700	----	Mine operating
	Chinika Quarry	Lusaka	7,700	----	Ready for mining
	Kafue Quarry	Lusaka	7,200	----	Ready for mining
Coal	Luano Valley-Mkushi	Central	---	----	Poor quality
	Kahare-Kaoma	Western	---	----	Needs further investigation
	Siambalala-Gwembe	Southern	---	----	High ash content

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Table A.1: Exploration progress by mines and geological survey 1980-88  
(continued)

Mineral	Location/district	Province	Reserves (tonnes)	Grade	Comments
Salt	Kaimbwe-Kasempa	North-western	---	----	Operating on small scale
	Kaputa	Northern	---	----	Operating on small scale
	Chiengi-Nehelenge	Luapula	---	----	Saline spring
Bentonite clay	Kuano Valley-Mkushi	Mukushi Central	---	----	Sub-economic with known technology
Graphite	Kaumba-Chima Old Mkushi-M	Eastern	4,000	27 % C	Ready for mining
		Central	---	15 % C	
Potash	Luangwa	Lusaka	---	15 % K20	Unworkable with present technology
Aquamarine	Lundazi Area	Eastern	---	----	Mining in progress
	Msoro-Chipata	Eastern	---	----	Deposits known
	Serenje Area	Central	---	----	Deposits known
Tourmaline	Nyimba-Petauke	Eastern	---	---	Mining in progress
Amethyst	Kabanga-Kalomo	Southern	---	----	Mining in progress
	Siavonga-Gwembe	Southern	---	----	Substandard
Emeralds	Kafubu-Ndola	Copperbelt	---	----	Mining in progress

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Table A.1: Exploration progress by mines and geological survey 1980-88  
(continued)

Mineral	Location/district	Province	Reserves (tonnes)	Grade	Comments
Talc	Lilayi-Lusaka	Lusaka	0.3 million	----	Mine operating
	Chipapa-Lusaka	Lusaka	1.3 million	----	Mainly pyrophyllite
	Bwana Mikubwa-Ndola	Copperbelt	---	----	Under assessment
Clay	Serenje	Central	---	----	Brick clay
	Lukanga-Kabwe	Central	---	----	Further investigations needed
	Bangweulu-Samfya	Luapula	---	----	Ceramic clay, further investigations needed
	Masuku-Choma	Southern	---	----	Some ceramic clay
	Mkushi	Central	---	----	Some ceramic clay
	Chingola	Copperbelt	---	----	Some ceramic clay
Barite	Chasefu-Lundazi	Eastern	4,000	----	
Iron ore	Nambala-Mumbwa	Central	20 million	62 % Fe	Feasibility study completed
			30 million	53 % Fe	
Gold	Matala-Mumbwa	Central	3,400	2.0g/t Au	Tailings
	Dunrobin-Mumbwa	Central	42,300	1.0g/t Au	Tailings
	Chakwenga-Lusaka	Lusaka	16,300	3.7g/t Au	Tailings
	Jessie-Lusaka	Lusaka	10,200	3.5g/t Au	Tailings
	Chumbwe-Lusaka	Lusaka	2,600	1.32g/t Au	Tailings
	Sasare-Petauke	Easter	11,780	1.06g/t Au	Tailings
Gold/ tungsten	Chiyunyu-Lusaka	Lusaka	---	----	Drilling completed

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Table A.1: Exploration progress by mines and geological survey 1980-88  
(continued)

Mineral	Location/district	Province	Reserves (tonnes)	Grade	Comments
Tin	Serenje	Central	---	----	Work in progress
	Masuku-Choma	Southern	---	----	Work in progress
Zinc copper Silver	Karenda-Mumbwa	Central	---	----	Uneconomic
Zinc silver	Excelsior-Lusaka	Lusaka	---	----	Zinc uneconomic
Maganese	Mansa	Luapula	---	----	Mine operating
	Kanona-Serenje	Central	---	----	Geochemical anomalies investigated

Source: New Economic Recovery Programme FNDP 1989-93, January 1989.

## Appendix 4

### Donor agencies contribution grants

<u>Sector</u>	<u>Bilateral agencies</u>	<u>UN agencies</u>
<b>AGRICULTURE</b>		
Disbursed 1989		
Number agencies	14	1 (UNDP)
Total US\$, Million	257.74	0.55
Planned 1990		
Number agencies	14	1 (UNDP)
Total US\$, Million	54.69 <sup>a/</sup>	
<b>NATURAL RESOURCES</b>		
Disbursed 1989		
Number agencies	5	0
Total US\$, million	35.10	0
Planned 1990		
Number agencies	3	0
Total US\$, million	2.33	0
<b>ENERGY</b>		
Disbursed 1989		
Number agencies	4	1 (UNDP)
Total US\$, million	50.71	0.37
Planned 1990		
Number agencies	4	1
Total US\$, million	1.28	n.a.
<b>HEALTH</b>		
Disbursed 1989		
Number agencies	6	2
Total US\$, million	24.52	6.07 (WHO, UNICEF)
Planned 1990		
Number agencies	6	2 (WHO, UNICEF)
Total US\$, million	13.24	4.63

<sup>a/</sup> of which soft loans US\$ 17.00 Million

Donor agencies contribution grants  
(continued)

<u>Sector</u>	<u>Bilateral agencies</u>	<u>UN agencies</u>
<b>EDUCATION</b>		
Disbursed 1989		
Number agencies	10	0
Total US\$, million	26.95	0
Planned 1990		
Number agencies	7	0
Total US\$, million	10.32	0
<b>MINING</b>		
Disbursed 1989		
Number agencies	2	1 (UNDP)
Total US\$, million	9.72 <sup>a/</sup>	0.06
Planned 1990		
Number agencies	0	1 (UNDP)
Total US\$, million	0	n.a.
<b>TRADE AND INDUSTRY</b>		
Disbursed 1989		
Number agencies	6	1 (UNDP)
Total US\$, million	23.12 <sup>b/</sup>	0.02
Planned 1990		
Number agencies		1 (UNDP)
Total US\$, million	3.57	n.a.
<b>TRANSPORT AND COMMUNICATION</b>		
Disbursed 1989		
Number agencies	10	0
Total US\$, million	146.02 <sup>c/</sup>	0
Planned 1990		
Number agencies	9	0
Total US\$, Million	55.90 <sup>d/</sup>	0

a/ of which soft loans US\$ 8.77 Million

b/ of which soft loans US\$ 2.17 Million

c/ of which soft loans US\$ 38.94 Million and interest free loans  
US\$ 3.24 Million, other loans

d/ of which interest free loans US \$31.35 Million

Donor agencies contribution grants  
(continued)

<u>Sector</u>	<u>Bilateral agencies</u>	<u>UN agencies</u>
<b>GOVERNMENT ADMINISTRATION</b>		
Disbursed 1989		
Number agencies	1	0
Total US\$, Million	0.389	0
Planned 1990		
Number agencies		0
Total US\$, million		0
<b>GENERAL DEVELOPMENT ISSUES</b>		
Disbursed 1989		
Number agencies	9	1 (UNDP)
Total US\$, million	30.39	0.04
Planned 1990		
Number agencies	9	1 (UNDP)
Total US\$, million	7.83	n.a.
<b>FINANCE</b>		
Disbursed 1989		
Number agencies	4	0
Total US\$, million	0.16	0
Planned 1990		
Number agencies	3	0
Total US\$, million		0

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Source: Economic Report 1989.

## Appendix 5

### LIST OF AUTHORITIES, AGENCIES & PERSONS CONTACTED

Bank of Commerce and Credit	Mr. Nawabbas (Managing Director)  Mr. Hassan (Assistant to Managing Director) Mr. M. Imukusi (Credit Manager)
Bank of Zambia	Mr. Jacques A. Bussieres (Governor) Mr. Sakala (Research Director)
BATA Shoe Company	Mr. Alex Livermore (General Manager) Mr. C. Siulapwa (UNIDO National Expert)
Cabinet Office	Dr. J. Mwanza (Principal Secretary) Mr. Siakalenge (Official)
Central Office of Statistics	Dr. Z. W. Kmietowcz (ODA Adviser) Mrs. J. S. Mulenga (Information Officer)
Commonwealth Development Corporation	Mr. R. Kerr (Finance Executive)
CIDA	Mr. Bob Pim (Representative)
DANIDA	Mr. P. Christiansen (Representative)
EC Commission	Ms. Anne Bucher (EC Adviser)
EC Milling	Mr. A.H. Hojane (General Manager) Mr. Musenge (Production Manager)
Export Board of Zambia	Mr. R.S.K. Manyika (Acting Director) Mr. A. Mwanakasale (Economist) Ms J.M. Mwamlina (Manager, Trade Information)
FAO	Mr. F.G. Livingstone (Representative)
INDECO	Mr. S.K. Tamele (Executive Director)
Indian High Commission	Dr. Balakrishnan (Deputy High Commissioner)
International Trade Centre UNCTAD/GATT	Mr. G. Aboagye (Project Co-ordinator)
Japanese Embassy	Mr. Tkahiro Jonishi (First Secretary, Economic Co-operation)
Meridian Bank	Mr. K. Wotela (Marketing Manager) Mrs. S. Ross (Assistant Marketing Manager)

Ministry of Commerce and Industry	Hon. R. Chongo (Minister of Industry) Mr. Zulu (Deputy Permanent Secretary) Mr. Kancheya (Director of Industry) Mr. Nasir (CTA, Industrial Planning Unit) Mr. M.C.J. Kunkuta (Registrar)
Ministry of General Education	Mr. Mlewa (Permanent Secretary) Mr. M. Sikuyuba (Acting Assistant Director, Planning)
Ministry of Labour	Mr. C.M. Chisense (Acting Permanent Secretary) Mr. E.L. Siwkala (Acting Deputy Permanent Secretary) Mr. E.J. Nyirenda (Acting Labour Commissioner) Mr. R.R. Mtonga (Senior Economist) Mr. M.M. Hampango (Acting Assistant Secretary) Mr. J.M. Chitunami (Assistant Commissioner) Mr. R.D. Harawa (Acting Assistant Commissioner) Mr. C.B. Mazunda (Acting Assistant Labour Commissioner)
Ministry of Mines	Mr. Chiwenda (Permanent Secretary) Mr. Sitali (Official)
Ministry of Water and Natural Resources	Mr. M. Makatu (Official) Mr. L. L. Mbumwae (Deputy Director, Water Affairs) Mrs. I. Simuunza (Official)
NCDP (Permanent Co-operation)	Mr. M.M. Liswaniso (Secretary - Technical) Mr. W. Kawana (Permanent Secretary - Planning) Mr. S. Sianga (Human Resource Planning Dept) Mr. K. Chambwe (Economist) Mr. M.S. Kasongo (Economist)
NORAD	Mr. Glommi (Representative)
ODA	Mr. W. Stump (Representative)
PTA Secretariat	Mr. Max Nomvete (Secretary General) Mr. Mwencha (Director of Industry) Mr. A.M. Salah (Industry Expert) Mr. J.A.A. Cepio (Senior Industrial Expert)
SIDO	Mr. A.S. Chapewa (Finance Manager) Mr. M.C. Kaumba (Manager Extension Services) Mr. R. Sanyikosa (Manager/Project Director)
Small Scale Industries Association of Zambia	Mr. M. Chilwesa (National Secretary)
Standard Chartered Bank	Mr. C.J. Green (Managing Director)
Swedish Embassy	Mr. T. Wetterblad (Senior Economist, Development Co-operation Office)

UNDP	Mr. A.M. Sallah (Resident Representative) Mr. M. Bosotti (Deputy Resident Representative)
UNFPA	Mr. Moses Mukasa (Country Director)
UNICEF	Ms. L. Ismail-Khan (Programme Office)
UNIDO	Mr. E. Taylor (Country Director) Mr. E. Kjerstad (Junior Professional Officer)
US Agency for International Development	Mr. B.A. Kosheleff (Assistant Director)
USSR Trade Office	Mr. N.N. Danilehko (Deputy Trade Representative)
Village Industry Service	Mrs. Joyce Mapoma (Chairman) Mr. Felix Chibuye (Assistant Project Officer)
World Bank	Mr. Khan (Country Representative Director)
ZACCI	Mr. Bernard Chisanga (Acting Chief Executive) Mr. J. Dee (UNIDO Consultant)
Zambia Bureau of Standards	Mr. S.H. Mwambazi (Director) Mr. Hakan Kallgren (CTA) Mr. D. Mesa (Chief Standard Officer)
Zambia National Commercial Bank Limited	Mr. R.C. Ndhlovu (Managing Director) Dr. M. Banda (Manager, Research and Corporation Planning) Mr. S. George (Advisor to Managing Director)
ZAPP	Mr. F. Simenda (General Manager) Mr. B. Warmsley (Production Manager)
ZATCO Stockfeeds Limited	MR M. J. Kasaru (Managing Director)
ZESCO	Mr. Kaluzi (Managing Director)



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