OCCASION

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

DISCLAIMER

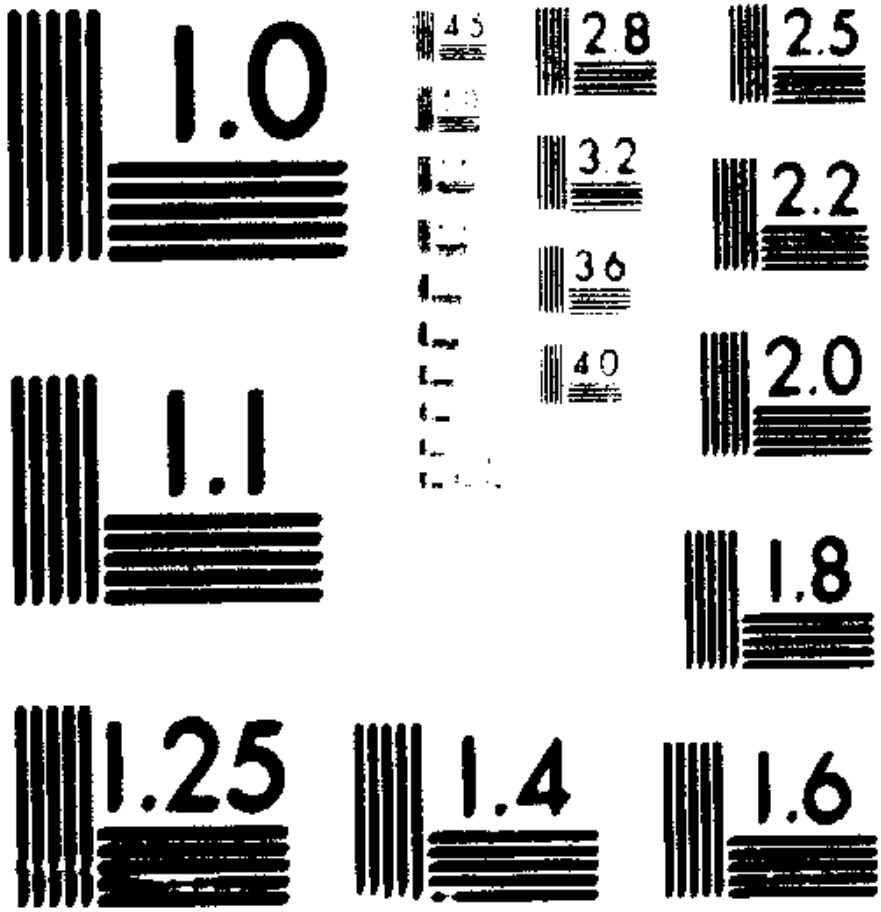
FAIR USE POLICY

CONTACT

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

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

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org



09786

COUNTRY REPORT.

1979

(R) BASIC METAL AND ENGINEERING

INDUSTRIES DEVELOPMENT PROGRAMME.

THE REPUBLIC OF ZAMBIA.

Field Mission.

From

18 December 1978 to 26 December 1978

Prepared by:

Aloke Kumar Mitra
UNIDO Regional Adviser
Joint ECA/UNIDO Industry Division
Economic Commission for Africa.

Addis Ababa
June 1979

M79-2459

ECONOMIC COMMISSION FOR AFRICA

COUNTRY REPORT

OF THE

ECA/UNIDO BASIC METALS AND ENGINEERING INDUSTRY DEVELOPMENT

PROGRAMME MISSION

THE REPUBLIC OF ZAMBIA

TABLE OF CONTENTS

Table of contents (cont'd)

Table of contents (cont'd)

Table of contents (cont'd)

Table of contents (cont'd)

Table of contents (cont'd)

CHAPTER I

INTRODUCTION

Mission Authority and Terms of Reference

United Nations General Assembly resolutions 2626(XXV), 3201(S-VI) and 3202(S-VI); United Nations Economic Commission for Africa resolutions 210(X), 256(XXI), 267(XXI) and 319(XXXI); Declaration on Industrialization in Africa; Principles and Guidelines for Co-operation and Development underlined the importance of developing basic industries in Africa. The basic metal and engineering industries development constitutes the part of the basic industries development programme which was:

- adopted by the Second Conference of African Ministers of Industry held in Cairo, December 1973 1/
- recalled in subsequent meeting of the follow-up Committee on Industrialization in Africa in September 1974 stressed the African countries could no longer follow the policy of trying to meet their economic requirements by way of exports of raw material 2/
- further recommended at its Second Meeting in August 1975, the Follow-up Committee proposed the promotion of a variety of basic industries as priority areas for action in the African region 3/
- reaffirmed agreed conclusions of the Third Conference of African Ministers of Industry held in Nairobi, December 1975 also underlined the importance of developing basic industries in Africa 4/
- recognized in Lima Declaration and Plan of Action on Industrial Development and particularly co-operation among developing countries adopted by UNIDO in March 1975 in Lima 5/
- further reaffirmed on agreed conclusions of Third meeting of the Follow-up Committee on industrialization in Africa held in November 1976 6/
- strongly recommended in agreed conclusions of the Fourth Conference of African Ministers of Industry held in Kaduna in November 1977 7/ underlined the importance of developing basic industries.

1/ Declaration on Industrialization in Africa: Principles and Guidelines for co-operation and Development, 1974, E/CN.14/613 and E/CN.14.INR/208, Part II, Para. A(iv) and (vii) Page 23.

2/ Report on the first meeting of the Follow-up Committee on Industrialization in Africa, October 1974 (E/CN.14/INR/211, Part III, Para. G(xi) Page 11.

3/ Report of the Second Meeting of the Follow-up Committee, August 1975 (E/CN.14/INR/213) Para. 31(3) (i), (ii) and (iii) Page 7.

4/ Report of the Third Conference of African Ministers of Industry in Nairobi 1975 ((E/CN.14/649), Part II, Para. 19,20,21, and 24, Page 21

5/ Lima Declaration and Plan of Action, March 1978, Para. 56 (f,k,o), Page 10 and 11.

6/ Report of the Third Meeting of the Follow-up Committee on Industrialization in Africa, December 1976 (E/CN.14/INR/218) Part II, Par.9(D) Section (a) and (b) Page 8.

7/ Report of the Fourth Conference of African Ministers of Industry in Kaduna, November 1977 (E.CN.14/689) part II, Para 7(c) item (iii) and (iv) Page 12.

Integrated development of basic metals and engineering industries are part of of the basic industries development recommended for establishing in developing countries particularly outlined in Lima Plan of Action 1/, and endorsed as a programme by the Follow-up Committee at its Third Meeting in Addis Ababa in November 1975 on agreed conclusion for Development of Basic Industries in the African Region" with concrete industrial project development, the committee endorsed the following four programmes formulated by ECA as basis for achieving integrated industrialization.

- Basic metal industry development programme;
- Engineering industry development programme;
- Chemical industry development programme; and
- Building materials development programme.

It approved the following action programme

(a) Comprehensive studies in each of the above area to establish the stage of development so far reached in Africa and to determine the linkages among these branches and with the rest of the economy, training needs and steps to be taken to meet these needs.

(b) On the basis of the studies, preparation of integrated comprehensive industrialization policy and a programme of action for implementation.

(c) Organization of an inter-governmental meeting of experts from Ministries of Industry and Planning to consider the industrialization policy and the programme of action.

(d) An invitation to experts from ECA member States and other developing regions to prepare projects, programmes and policy papers for national and multinational implementation within the framework of the agreed strategy, and to provide advice on the rationalization of industrial development, for submission to the Fourth Conference of African Ministers of Industry and later to the OAU Summit" 2/

In line with above agreed resolution, terms of reference and number of isolated projects in the ECA Work Programme for 1976-1981, programme for the development of basic metal and engineering industries in the African developing countries are being planned within the ECA/UNIDO Joint Industry Division (JID).

Outlook of Present Industrial Situation in Africa

Since the decolonization period 1950's and 1960's the majority of the African developing countries are exporting cash crops (processed and unprocessed) and valuable minerals and ores to other regions. In exchange African countries are importing capital, intermediate and consumer goods from those developed countries. This is creating enormous constraints both in the field of deterioration in the balance of payment situation and recurrent multiplication in unemployment figure in majority of the

---

1/ Lima Declaration and Plan of Action, March 1975 UNIDO PI/3 Para. 5.(f),(i) and (ii) Page 10 and 11.

2/ Report of the Third Meeting of the Follow-up Committee on Industrialization in Africa (E/CN.14/INR/21) Part II Para 9 and 10 page 3.

African developing nations, with exception to the African oil exporting countries. Moreover, there is a conspicuous absence of basic industries particularly basic metal and engineering industries sector in the majority of the African developing countries. The major difficulties in recent industrialization policies in African countries clearly indicate excessive external dependency for capabilities in formulating, financing, technology, capital goods, intermediate inputs, management, manpower, designing, developing and implementing the various types of industrial programmes and projects.

There is a tendency to encourage industrialization on the basis of inadequately co-ordinated inter-sectoral policies and search of opportunities for complementarities among large number of small African economies. Past and current industrial policies in the region have led to national industrial structures characterized by hetrogenity, high costs, low value added, unbalanced urban-rural industrial development, absence of internal forward and backward linkages and are, in short, insignificant in their dynamism and structural impact.

In order to comeout from this stalemate of industrial convulsion it is necessary for the African policy makers to look in to the core of the development process which constitutes the development of basic industries. One of the important sectors of basic industrydevelopment requires the development of basic metal and engineering industries. The requirements for the development of basic metal and engineering industries, demand the development of raw material and energy producing industries and infrastructures; adequate, diversified and expanding intermediate products using industries; and both technological and high proportion of management and skilled manpower inputs at all levels of production activities.

In many instances, African countries have no choice but to use the technology, capital and intermediate goods that do not conform to their actual needs. The lack of coherent institutional and organizational structures, that could reflect the inter dependence of economic activity, has retarded the efforts of many countries to develop, determine and carry through fundamental industrial development measures on the necessary scale.

There is also an urgent need to promote multinational industrialization strategy and to enable African countries to develop a common framework for subregional, regional and international co-operation within the context of an integrated strategy to promote and foster self-reliance and self-sustaining development in the African developing reginn.

Within this context the ECA mission visited selected African countries in order to design a moderate guidlines to the policy makers, planners and programmers of African developing nations for an integrated development programme of basic metal and engineering industries.

Objectives of the Mission and Future Guidelines to the Planners and Programmers

The missions main objectives those will be recommended to the selected African developing countries for the integrated development of basic metal and engineering industries can be summerised below:

- to bridge the existing institutional gaps those are being observed by the mission to facilitate the planners and programmers in each country visited to create harmonious institutional support for the integrated development and implementation of priority projects in basic metal and

engineering industries sectors within the framework of the physical and visible constraints existing in each country;

- to facilitate the planners and programmers with concrete plan for the development of managerial and technical skilled manpower programming;
- to design policy objectives for the planners and programmers for
  a. possible expansion of existing industries through the utilisation of internal natural resources in basic metal and engineering products;
  b. identification of new products which the government is not aware of and those which can easily be manufactured within the capacity of the existing plant;
  c. to improve the basic support industries e.g. foundry, forging, heat treatment, machine shop, tool room, repair, maintenance, spare parts in order to improve manufacturing facilities for the balanced growth of this sectors.
- to facilitate the planners and programmers for the creation of a priority programme based on:
  a. the Government's own identified priority projects;
  b. the projects identified during the mission
  c. the projects to be recommended by the mission.
- to assertain projects those are common for the subregional African countries and those projects cannot be implemented without subregional co-operation in the priority sector;
- to advice the member Government, ECA, UNIDO, OAU regarding the implementation of these projects for the accelerated development of basic metal and engineering industries high lighting the need for intra-regional and inter-regional co-operation among the developing countries in line with Lima Declaration and resolution adapted in African Minister of Industry Conferences.

ECA Field Mission Plan (November 1978 - January 1979)

The mission mounted by ECA, visited selected African Developing Countries from 5 November 1978 to 19 January 1979 which includes land locked, islands, small countries and large countries in order to assess the status of these countries within the context of industrial development.

The mission has explored the existing status of the basic metal and engineering industries in:

(a) **Kenya**, Ethiopia, Uganda, Zambia, Nigeria, Ivory Coast, Mali, Senegal consisting of ECA team Mr. A.K. Mitra (Engineering Industries), Mr. Mr. V. Ivanchanko (Basic Metal) and Mr. K.K. Peki (Industrial Economist).

(b) Kenya, Ethiopia, Tunisia, Egypt, Sudan, Mauritious, Lesotho consisting of ECA team Dr. Y.K. Nazhar (Team Leader, Engineering Industries), Mr. Mr. M.K. Mwango (Basic Metal) and Mr. M. Afeta (Industrial Economist).

within the context of the development of basic metal and engineering industries it was planned that the respective team should assess the present performance and activities in the following area of each country mentioned above. Although due to lack of time

the mission was unable to visit in all these areas:

- National Institutions e.g. Ministries responsible for planning, Economic Development, Industry, Research and Development and Finance.
- Parastatal Organizations e.g. Development Corporations, Development Banks, Credit Institutions, Productivity Centres.
- Chambers of Commerce and Industry
- Large Scale Engineering Establishments producing Basic Metal and Engineering Products.
- Medium and Small Scale Industries Producing various engineering products and agricultural implements.
- Industrial Estates which includes ancillary and common services facilities.
- Large Repair and Maintenance Shop, and Railway Workshops
- Technical Training Institutions, Polytechnique and Technical Colleges
- International Organization within the country e.g. UNDP

Activities of the Mission

The activities of the mission in each country where detailed discussion were carried out can be summerised below:

- priority areas where integrated development of basic metal and engineering industries can be achieved with particular reference to the utilization of natural resources, engineering skill and available machinery and equipment within the country. Basic availability of foundry, forging, heat treatment, machine shop tool room etc.;
- rationalization, upgrading and ongoing priority projects those are being undertaken by the Public and Private Sector Industries in basic metal and Engineering Development;
- quantitative and sizeable priority projects those which are being identified by the Government but unable to implement them in these two sectors due to various constraints;
- the sectoral and subsectoral constraints in basic metal and engineering industries sector;
- the major financial constraints jeopardising the projects implementation targets;
- the major constraints in repair and maintenance, and spareparts manufacture within the country;
- manpower planning particularly managerial, technical and engineering skills for the development of basic metal and engineering industries;
- assessment of the level of technology in each country and possible solution for transfering such appropriate technology to the priority industries;
- scope for subregional and regional integration through joint venture, subcontracting in basic metal and engineering industries;
- scope for technical co-operation among the intra-African and inter regional developing countries.

Proposed Follow-up of the Mission Report

The each Country Report visited by the team together with the Regional Rport, will be critically examined by a high level Expert Working Group meeting in Addis Ababa.10/ The final findings and recommendation thereafter to be forwarded to the African Ministers of Industry Conference. The purpose of this expert group meeting will be to bring the African planners and programmers to discuss and pin point the actual priority projects, identify the major constraints and workout a formula for actual implementation of the development programme set out in these two critical sectors of basic metal and engineering industries. The important feature of this group meeting will be to identify how this basic metal and engineering industries development programme should fit in with ECA/UNIDO work programme during 1980-81 and within the framework of Lima Declaration up to the year 2000 A.D.

Composition of Team for the Republic of Zambia

The ECA Field Mission which visited the Republic of Zambia for the Basic Metal and Engineering Industries Development Programme consists of the following team:

Engineering Industries

Mr. Aloke Kumar Mitra (India)
Mechanical and Industrial Engineer
UNIDO Regional Adviser Engineering
and Machine Tools Industries
Joint ECA/UNIDO Industry Division.

Basic Metal

Mr. Vladimir Ivanchenko (USSR)
Iron and Steel Engineer
ECA, Senior Economic Affairs Officer
Joint ECA/UNIDO Industry Division.

Industrial Economist

Mr. Kana Kwala Peki (Zaire)
Industrial Economist
ECA, Economic Affairs Officer
Joint ECA/UNIDO Industry Division.

10/ Report of the Third Meeting of the Follow-up Committee on Industrialization in Africa (E/CN.14/INR/210) Part II, Para. 10(c), Page 3

CHAPTER II

INSTITUTIONS AND FACTORY VISITS

The team arrived in Lusaka on 13 December 1978 and left Lusaka on 26 December 1978.

19.12.78	09:00 hr.	-	UNDP, Lusaka
19.12.78	10:30 hr.	-	ECA/MULPOC, Lusaka
20.12.78	09:00 hr.	-	Ministry of Commerce, Industry and Foreign Trade, Lusaka
20.12.78	11:00 hr.	-	Ministry of Mines, Lusaka
20.12.78	13:00 hr.	-	Roan Consolidated Mines Ltd., Lusaka
21.12.78	09:30 hr.	-	Development Bank of Zambia, Lusaka
21.12.78	12:30 hr.	-	INDECO Ltd., Lusaka
21.12.78	15:30 hr.	-	Ministry of Planning and Fiance; National Commission for Development Planning, Lusaka
22.12.78	10:00 hr.	-	Roan Consolidated Mines Ltd., Lusaka
22.12.78	11:30 hr.	-	Rucom Industries Ltd., Lusaka
23.12.78	09:00 hr.	-	ECA/MULPOC, Lusaka
24.12.78	14:00 hr.	-	UNDP, Lusaka

Brief Report of each Visit

1. Meeting with UNDP Officials on 19.12.78

The team visited the UNDP office in Lusaka and met Mr. William George and UNIDO SIDFA Mr. K.C. Sen. The purpose of the mission was explained to the UNDP officials. It was told that the subregional MULPOC office of ECA will arrange the necessary meetings and visits to the Government institutions and industries. UNDP also pointed out that the missions visit to Zambia at that time was most inappropriate, as the Ministrial and structural changes of the Government departments occuring that time will not help the missions objectives. The UNIDO SIDFA requested that the team should visit again in Zambia when the departmental activities settles down in order to assess the industrial situation.

2. Meeting with MULPOC - ECA Subregional Office on 19.12.78

The team visited subregional ECA MULPOC office and met Dr. P.N. Mwok-Handa, Trade and Development Economist. Dr. Handa made necessary programme of visits with various Ministries, and institutions. A brief coverage was given to the team relating to the Zambian industrial situation particularly deteriorating foreign exchange situation the Government of Zambia was facing at that critical time. MULPOC also suggested that the team should visit again Zambia due to the reorganization of various Ministries those were taking place at that time. Dr. Handa then explained the team about the MULPOC's subregional projects and work programme for the mid-term activities.

3. Meeting with Ministry of Commerce, Industry and Foreign Trade, Lusaka on 20.12.78

The meeting was chaired by Mr. Manyiko, Economist, along with Miss H. Aboongo Junior Economist and Mr. Handa (ZULPOC). The Ministry regretted the situation due to the re-organization of the Government and insisted for the ECA team to stay until mid January 1979. The ECA team pointed out the difficulty for the team to stay for such a long time due to the financial constraints. Mr. Manyiko suggested that ECA should mount the mission again for a thorough assessment of the basic metal and engineering industries sector in Zambia. It was told that a formal request will be required from the Zambian Government in order to mount such a mission in future.

4. Meeting with Ministry of Mines, Lusaka on 20.12.78

The tam visited the Ministry of Mines and the meeting was chaired by Mr. F.A. Cassidy, Chief Mining Engineer, and Miss Haboongo, Junior Economist from the Ministry of Industry. Mr. Cassidy explained that the industrial outlook in Zambia was rather in a critical situation due to the following constraints:

- Lack of experience engineers and staffs;
- Lack of foreign exchange;
- Lack of transportation facilities;
- Lack of availablity of spareparts.

He also pointed out that although there exists a large deposit of iron ores, no iron ores are so far being mined by Zambian Government. TIKA Iron and Steel Company was formed in 1972 to exploit the iron ores. He suggested that the report should be obtained from Ministry of Mines including the market survey report by MINDECO office in Lusaka. He also suggested to visit the following industries:

- SCAW Ltd. (Cast Iron Foundry in copper belt area)
- Vulcan Foundry in Lusaka
- Mechanical Services Branch (MSB) (Maintenance factory in Lusaka)
- Railway workshop at Kabwe
- Northland Engineering Ltd. (Bus body assembly plant in copper belt)
- Layland, Lusaka, (Repair and maintenance factory).

He mentioned that Uranium and Emerald exploration and mining are on the priority list by the Government. IAEA will provide the necessary technical assistance and mining will start from 1982-83.

It is estimated that about 20 years coal deposits exist in Zambia with about 15 per cent to 20 per cent ash content.

5. Meeting with Roan Consolidated Mines Ltd. Lusaka on 20.12.78 and 22.12.78

Two meetings were organized.

Meeting on 20.12.78 was chaired by Mr. E.S. Yobe, Public Relation Officer when the trip to NDOLA copper mines and ZAMEFA was organized for 22.12.78. Unfortunately, the trip was cancelled due to the difficulty in obtaining the air ticket.

Meeting on 22.12.78 was chaired by Mr. F.J. Tremain, Chief Consulting Engineer and Mr. Bryce M.A. Porter, Financial Director of Roan Consolidated Mines Ltd. The main constraints out lined by the officals are as follows:

- difficulty in retaining the skilled personnel due to high local taxation. (Expartriates salary 10,000 to 35,000 K/year) ;
- lack of foreign exchange required for the spareparts requirement in mining machinery. Minimum requirement will be to the tune of 50 million K.;
- lack of transport facilities for copper export;

Present manpower of the copper mines is 25000 in RCM and 28000 in NCCM and out of this 1000 are expatriates. The actual demand for expatriates is 1500.

The comapny has undertaken two important projects:

- New Cobalt Plant - full production will start from April 1979 with an estimated output of 2400 tons/year;
- Selenium Plant.

The MALIBA coliary is run by MINDICO Ltd. The company required immediate foreign exchange of 50 million K. for urgent spareparts of mining machinery and equipment

5. Meeting with Development Bank of Zambia on 21.12.78

The meeting with the Development Bank of Zambia was chaired by Mr. Rainer F.J.Sturm Planning and Promotion Manager and Mr. Situmpeko, Planning Officer. The Bank explained their role in Zambian industrialization and indicated the priority activities in the following sectors:

- manufacturing industries;
- agriculture;
- tourism
- development of rural areas;

Ministry of Finance controls the bank

The following funds are available from various sources for specific projects e.g.

- World Bank's line of credit 15 million US$
- Government of India's line of credit about 10 million K
- Bilateral funds from West Germany, Sweden and Norway
- Funds from African Development Bank.

The immediate requirement of the bank was to identify suitable projects and the necessary planning aspects of such projects for implementation.

In a letter to DCA as follow up the Development Bank of Zambia requested the initial planning information on the following projects on 3 January 1979:

(i) Minimum sized steel work based on indigenous iron ores 20,000 tons/year;

(ii) Steel rolling mill for bars and sections for 20,000 tons/year;

(iii) Agricultural hand tools;

(iv) Staple pins manufacture;

(v) Brass fittings for domestic and industrial products

(vi) Armature for domestic and industrial use;

(vii) Copper tubes, sheets, extruded and other intermediate copper products;

(viii) Aluminium tube manufacture;

(ix) Car tyre recycling;

(x) Lead pencils manufacture;

(xi) Wood distillation (charcoal);

(xii) Fibre board, wafer board and particle board manufacture;

(xiii) Pulp and paper based on pine;

(xiv) Waste paper recycling;

(xv) Cassava processing; and

(xvi) Waste paper

ECA has already furnished most of the basic informations required by the Development Bank on 27 February 1979 and awaiting for further follow-up. The immediate requirements are the preparation of pre-feasiblity study for the above projects. The bank requires pre-feasibility study and project identification experts for 2 years duration preferably from UNIDO.

7. Meeting with INDECO Ltd. Lusaka on 21.12.78

The meeting was chaired by Mr. O.D.Z. Chama, Executive Director, INDECO Ltd. INDECO is the holding company of 35 manufacturing industries in Zambia and a parastatal organization. It has Industrial Division, Chemical Division; Steel, Building materials and Real Estate Division; Brewery Division. RUCOM Industries Division; Management Services Division. The main policy of INDECO is to promote Import substituted industries in priority sectors.

The main constraints facing the INDECO industries are as follows:

- lack of foreign exchange;
- lack of technical and professional manpower due to differential salary structure of local and expatriate staffs. The private industries in Zambia offers much higher salaries to the citizen in respective discipline. (Corporation Salary K9,000 per year, Private company Salary - K12,000/15,000 per year);
- lack of spareparts;
- lack of transport facilities.

Integrated development of iron and steel is a top priority project of the INDECO Ltd.

8. Meeting with Ministry of Planning and Fiance on 21.12.78

The meeting was chaired by Mr. Vladimir Kaigl, UNIDO Senior Industrial Economist, Development Planning Division, Industrial Unit and Mr. Kawana, Assistant Economist. It was told that the Third National Development Plan would be introduced during in 1979. There will be little change in the proposed national development plan and will be in line with the Second National Development Plan 1972/1976.

The priority areas of the Third National Development Plan will be:

- processing of domestic resources e.g. mineral and agriculture;
- backward and forward linkages for industrial integration;
- development of capital and intermediate goods;
- development of small scale sector in rural areas;
- increase of utilization of existing industries for higher production and productivity.

Some of the important projects highlighted were:

- further processing of copper and copper based manufactured products;
- semi manufactured products on copper and brass for tube, pipes etc. UNIDO prepared the feasibility study Project No. TF/ZAM/77/001 titling Feasibility Study for Production of Semi-fabricated and Cast Brass in Zambia. 5000 tons per year for export to Kenya, Tanzania, Malawi and Angola. The products will include sheets, tubes extruded sections, profiles. The investment will be to the tune of US$30 million;
- private sector participation for manufacture of mining equipment and agricultural implements products;
- introduction and manufacture of 15 - 30 HP tractors and manufacture of hand tools and ox-drawn implements;
- manufacture of irrigation equpment and pumps (UNIDO will undertake 4/5 feasibility studies during 1980-81;
- introduction of import substitution committees and planning committees for each sector.

A copy of the Second National Development Plan (1972-76) was handed over to the mission.

9. Meeting with RUCOM Industries Ltd. on 22.12.78

The meeting was chaired by Mr. Ruben L. Bvulani, General Manager and Mr. F.T. Kapansa, Deputy General Manager.

The RUCOM Industries Ltd. were facing the following constraints and major problems e.g.

- Lack of quality control and creative design personnel in technical field;
- Temporary closure of two metal workshops in CHOMA and MANSA due to lack of skilled manpower. The third metal workshop in Lusaka is active and inspected by the mission;
- Lack of iron and steel is the major constraints;

- Lack of finance for Industrial Estates. There is a recent study made by Government of India for the establishment of Industrial Estates in Zambia;
- Immediate requirement of:
  (a) 30 trained persons in RUCOM's metal sector
  (b) 30 trained persons in RUCOM's wood working sector.

RUCOM requires immediate K 2.5 million for the expansion of the Lusaka based metal working workshop for agricultural implements manufacture.

10. Concluding Meeting with ECA LULPOC, Lusaka on 23.12.70

The meeting was chaired by Mr. Handa. It was decided that the mission will have to come back again for a thorough study as the team could not visit a single industrial establishment particularly in the copper belt area.

11. Concluding Meeting with UNDP/UNIDO SIDFA on 24.12.70

The meeting was chaired by Mr. K. C. Sen, UNIDO SIDFA. The mission told SIDFA its findings and particularly the lack of opportunity for factory visits due to the situation beyond the control, owing to re-organization process that took place during the mission's visit in Zambia. It was agreed that the mission will have to visit again in Zambia for a thorough study for integrated development of basic metal and engineering industries.

Mission left Zambia on 26 December 1970.

CHAPTER III

ECONOMIC AND INDUSTRIAL BACKGROUND

General Economic and Industrial Situation of the Country

Zambian economic situation was adversely affected by (a) the low prices of copper (b) the effect of the international recession (c) serious transport problems and (d) lack of foreign exchange required for essential spareparts for the industry as a whole. The economic situation was further deteriorated by the continued provocation by vicious aggression from Rebel Rhodesia when Zambia suffered and left with hundreds of people killed, yet hundreds more injured or maimed for life. 11/

The focal point of Zambian economic crisis is the problem of transport routes and the transportation systems. This problem has increased the current external indebtedness and decrease the production and productivity.

The mining sector still dominates the country's economy. The increasing control over the utilization of the resources generated brought the important gains in Zambia's economic, industrial and social development.

Through this increasing control the Government of Zambia was able to bring about a substantial increase in the range of social services made available to the people, in employment, in the building up of the economic and social infrastructure and in the diversification of the national economy. 12/

The 1977 Economic Report covered the terminal year of the Second National Development Plan and carried a review of the Plan 1972 -1976. The year 1977 had been a very difficult year for the Zambian Economy. 13/ The economy had continued to exprience falling copper prices, foreign exchange shortage, disruptions in industrial production and ricing unemployment particularly in rural areas. It is true that 1977 was another year of disappointing growth for the world economy. The downward drift of the copper prices on the world market and the problems arising out of the hostilities posed by the racist regimes in the south, continued to cast its sombre shadow over the Zambian economy and the overall economic perspective in 1977 was characterised by sever deterioriation in the economic situation. 14/

Gross Domestic Product (GDP)

Zambia's real Gross Domestic Product (GDP) had shown a modest recovery in 1976 and is estimated to have fallen by 4.0 per cent in 1977. This decline was shared by all major sectors e.g. mining, manufacturing, construction and transport. Their contribution to GDP in real terms was lower than in 1976.

11/ Address by H.E. The President Dr. K. Kaunda to the opening of the Parliament on 13 December 1976.

12/ Second National Development Plan 1972/76, Page 1.

13/ Economic Report 1977.

14/ Economic Report 1977.

Gross Domestic Product (GDP) at Current Prices.(Provisional)

(K - million)

Selected Economic Activity	1974	1975	1976	1977
Total Gross Domestic Product (GDP)	1,[illegible]4.2	1,[illegible]12.[illegible]	1,915.2	1,[illegible]94.7
Agriculture,Forestry & Fisheries	191.6	196.5	256.5	260.7
Commercial Sector	59.6	54.5	90.5	91.3
Subsistence Sector	132.0	142.0	166.0	169.0
Copper Mining & Quarring	611.0	20[illegible].6	335.2	241.5
Manufacturing	247.2	276.4	295.3	344.0
Electricity gas & Water	35.0	36.0	39.0	38.0
Construction	125.3	150.[illegible]	1[illegible]1.2	154.0
Transport Communication & Storage	76.1	[illegible]6.[illegible]	95.5	92.0
Financial Institutions	51.[illegible]	6[illegible].5	7[illegible].0	90.0
Industrial Estates	4[illegible].7	57.2	67.5	73.0

WHOLESALE PRICES, 1966 = 100

Year/Month (1)	Total All Commododities	Agriculture, Forestry & Fishing	Mining and Quarrying	Manufacturing	E Electricity	Total Non-Copper
Weight	1,000	[illegible]2	459	443	16	572
1967	99.1	10[illegible].3	93.1	10[illegible].3	111.2	103.9
1968	106.7	10[illegible].4	10[illegible].1	111.[illegible]	109.5	110.4
1969	119.0	112.9	120.6	119.3	96.5	117.4
1970	11[illegible].6	129.1	117.4	121.5	94.5	121.5
1971	111.3	14[illegible].5	[illegible]3.6	126.5	92.[illegible]	128
1972	11[illegible].9	146.6	[illegible]9.5	136.1	92.[illegible]	136.4
1973	13[illegible].0	15[illegible].[illegible]	134.6	140.3	91.0	143.5
1974	155.[illegible]	16[illegible].9	159.0	14[illegible].6	[illegible]7.7	15[illegible].7
1974 July	152.0	19[illegible].1	14[illegible].5	150.5	[illegible]2.0	159.4
August	147.7	12[illegible].6	139.7	150.9	[illegible]1.7	15[illegible].1
September	136.4	16[illegible].	115.1	151.0	[illegible]6.0	15[illegible].1
October	135.3	1[illegible]6.6	112.6	153.4	[illegible]5.2	15[illegible].9
November	13[illegible].[illegible]	1[illegible]4.2	111.6	155.7	91.1	15[illegible].5
December	13[illegible].[illegible]	[illegible]3.7	102.[illegible]	157.1	[illegible]4.1	159.0

(1) Annual figures are averages of monthly figures.
Source: Central Statistical Office, Lusaka.

GROSS DOMESTIC PRODUCT AT CURRENT PRICES

(REVISED SERIES, 1975)

(K'million)

Sector	Former SNA						Present SNA				
	1965	1966	1967	1968	1969	1970	1970	1971	1972	1973	1974
Agriculture Forestry and Fishing	97.4	106.8	109.9	114.1	118.5	120.7	132.0	150.3	156.4	157.0	171.5
Mining and Quarrying (1)	291.8	380.3	380.5	412.7	639.3	450.1	452.4	300.3	324.0	560.0	522.0
Manufacturing	48.0	69.0	86.1	105.8	113.9	127.4	127.4	142.0	182.0	210.0	242.0
Electricity,Gas and Water	5.4	7.4	8.4	12.6	14.2	15.5	15.5	18.2	25.7	30.5	32.0
Construction	49.9	54.8	56.9	62.3	67.5	71.5	82.3	89.4	93.3	97.5	106.0
Wholesale and Retail Trade	80.5	74.5	103.5	124.5	92.4	119.3	119.3	113.7	140.7	155.0	185.0
Hotels and Restaurants	4.0	4.9	5.2	5.8	11.6	10.7	10.8	12.2	13.8	15.0	16.5
Transport,Communication and Storage	32.8	33.3	50.0	48.4	44.1	42.5	52.0	66.1	74.9	82.5	95.5
Financial Institutions abd and Insurance	10.7	11.4	15.9	19.2	30.2	41.8	41.8	40.7	44.1	48.0	60.0
Real Estate	11.6	14.7	16.6	19.9	32.2	37.3	37.3	39.2	38.4	40.5	41.5
Business Services	9.5	8.7	13.4	15.6	13.6	16.7	16.7	15.4	13.7	15.0	16.5
Community,Social and Personnal Services	64.0	70.1	93.7	102.1	108.2	125.8	144.7	174.3	183.4	194.0	208.5
Import Duties	14.5	12.3	15.0	19.0	27.8	27.7	32.1	36.7	41.8	38.0	50.0
Less imputed bank service charges	-	-	-	-	-	-	-15.7	-20.4	-22.3	-23.0	-28.0
Total GDP	711.1	848.2	957.1	1,062.0	1313.5	1215.9	1257.7	1170.2	1528.0	1620.0	1820.0

(1) Smelting and refining are included in this sector

Source: Central Statistical Office, Lusaka

GROSS DOMESTIC PRODUCT AT CONSTANT (1965) PRICES
(REVISED SERIES, 1975)
(K'million)

Sector	Former SNA						Present SNA				
	1965	1966	1967	1968	1969	1970	1970	1971	1972	1973	1974
Agriculture, Forestry & Fishing	97.4	99.5	98.8	99.6	101.6	106.0	109.5	112.0	110.2	114.5	117.0
Mining and Quarrying (1)	291.8	243.5	229.9	222.0	254.9	221.9	223.8	195.1	219.1	211.6	217.2
Manufacturing	48.0	57.5	66.8	72.7	74.2	81.0	81.0	85.6	104.0	115.4	120.0
Electricity, gas and water	5.4	7.3	7.5	10.4	14.5	15.2	15.2	19.5	27.5	26.6	28.7
Construction	40.9	44.8	38.4	34.3	39.9	34.8	40.10	39.5	43.0	42.5	37.2
Wholesale and retail trade	80.5	72.5	84.4	95.4	87.8	89.7	89.7	85.8	97.1	90.4	108.0
Hotels and restaurants	4.0	4.8	4.2	4.4	8.5	8.1	8.1	9.3	9.5	9,5	9.6
Transport, Communication and storage	32.8	30.1	42.5	40.3	35.5	34.6	42.1	50.2	51.7	57.8	63.7
Financial Instituions and Insurance	10.7	12.2	13.3	15.3	15.4	15.9	15.9	15.7	15.1	19.6	22.0
Real Estate	11.6	14.5	18.5	19.8	31.8	33.1	33.1	32.5	31.4	32.0	32.5
Business services	9.5	8.5	10.9	11.9	10.0	12.6	12.6	11.8	9.5	9.5	9.6
Communicy, social and personal services	84.0	88.9	80.0	86.0	82.8	107.5	124.5	134.0	138.4	134.2	132.9
Import duties	14.5	18.0	21.5	23.1	21.5	21.7	25.1	23.0	26.6	22.5	26.2
Less imputed bank services charges	-	-	-	-	-	-	-6.1	-6.7	- 6.2	-7.5	-8.4
Total GDP (Unadjusted)	711.1	802.3	716.7	735.2	758.5	783.1	815.6	808.3	885.9	888.6	924.2

(1) Smelting and refining are included in this sector
Source: Central Statistical Office, Lusaka.

ORIGIN AND AVERAGE INCREASES OF GDP AT CURRENT PRICES

Sector	Former SNA			Present SNA		
	Origin (%)		1965 - 70	Origin (%)		1970 - 74
	1965	1970	Average annual growth Rate (%) (1)	1970	1974	Average annual growth Rate (%) (1)
Agriculture, Forestry and Fishing	13.7	9.9	4.4	10.5	9.4	6.0
Mining and Quarrying	41.-	37.8	9.5	36.0	34.2	7.7
Manufacturing	6.0	10.4	21.6	10.1	13.3	17.4
Electricity, Gas and Water	0.0	1.3	23.5	1.2	1.0	19.9
Construction	5.0	5.9	11.0	5.5	5.0	6.5
Wholesale and Retail Trade	11.2	9.0	0.2	9.5	10.2	11.7
Hotels and Restaurants	0.6	0.9	21.0	0.9	0.9	11.2
Transport, Communication and Storage	4.6	3.5	5.3	4.1	5.2	16.4
Financial Institutions and Insurance	1.5	3.4	31.3	3.3	3.3	9.5
Real Estate	1.6	3.1	25.3	3.-	2.3	3.-
Business Services	1.3	1.4	11.9	1.3	0.9	-0.3
Community, Social and Personal Services	9.-	10.3	14.5	11.5	11.5	9.6
Import Duties	2.-	2.3	13.0	2.6	2.7	11.7
Less imputed bank service charges	-	-	-	-1.3	-1.5	13.0
Total	100.-	100.-	11.3	100.-	100.-	9.7

(1) From data of Table 3.11
Source: - Central Statistical Office, Lusaka
- Own elaboration

COST STRUCTURE OF THE GROSS DOMESTIC PRODUCT AT CURRENT PRICES

	Former SNA						Present SNA				
	1965	1966	1967	1968	1969	1970	1970	1971	1972	1973	1974
Compensation of employees	243.6	281.6	348.2	386.1	394.7	462.4	475.0	563.1	578.0	619.0	700.0
Operating surplus	318.4	376.3	405.4	396.6	541.4	479.6	[illegible]	356.5	[illegible]	562.0	612.0
Consumption of fixed capital	46.6	51.7	61.6	84.3	111.1	109.2	134.4	166.2	150.0	187.0	208.0
Direct taxes	103.1	136.0	149.9	207.0	283.0	199.4	203.8	120.1	110.0	250.0	300.0
Subsidies	0.6	18.1	8.1	12.0	16.6	33.7	18.9	27.7			
Gross domestic product at current purchasers' values	711.1	848.4	957.1	1,062.0	1,313.5	1,216.9	1,257.7	1,170.2	1,311.9	1,628.0	1,820.0
	Percentages										
Compensation of employees	34.2	33.2	36.4	[illegible]	30.1	38.-	37.8	47.8	44.1	38.-	38.5
Operating surplus	44.8	44.3	42.3	37.3	41.2	39.4	36.8	30.3	36.1	34.5	33.6
Consumption of fixed capital	6.6	6.1	6.4	7.9	8.5	9.-	10.7	14.1	11.4	11.5	11.4
Direct taxes	14.5	16.5	15.7	19.5	21.5	16.4	16.2	10.2	8.4	16.-	16.5
Subsidies	-0.1	-2.1	-0.8	-1.1	-1.3	-2.8	-1.5	-2.4			
Total	100.-	100.-	100.-	100.-	100.-	100.-	100.-	100.-	100.-	100.-	100.-

Source: Central Statistical Office, Lusaka
Own elaboration

Status of Mineral Resources in Zambia

The following principal minerals have been discovered in Zambia during recent years.

Minerals of Economic Importance (in order of value of production)

(i) Under exploitation - metallic minerals

Copper - reserves within copper-belt are estimated at 1290 million tons containing 3-4% Cu. Value in 1977 about 550 million kwacha.

Lead-zinc - at Broken Hill, value in 1977 about 20.2 million kwacha

Cobalt - as by-product of copper refining, value in 1977 19 million kwacha

Silver - at Broken Hill (Kabwe), value in 1977 about 2.8 million kwacha

Pyrite - (contained sulfer) at Nampundwe reserves 11 million tons with 16% S and 0.63% Cu, value of production in 1977 about 1 million kwacha

Gold - mainly as by-product of copper slimes, value in 1977 about 0.82 million kwacha.

Tin - (concentrate) in the Choma area, value in 1977 about 0.013 million kwacha.

Non-metallic minerals

Coal - near Sinazongwe south-east of Chama, reserves 30 million tons value of production in 1977 about 13 million kwacha.

Lime and limestone - from different areas, value in 1977 about 3.4 million kwacha

Amethyst - near Kariba Lake and Kalomo, value in 1977 about 0.4 million kwacha

Beryl and Emerald - at Kafub

Gypsum - Kafue River, value in 1977 about 0.13 million kwacha

Foldspar - MINDECO Small Mines, value in 1977 about 0.09 million kwacha

Other minor minerals produced are fluorite, talc, phyllite and some others.

(ii) Under development

Copper - There are two projects to expand copper production at Kansanhi 15,000 tons/year Cu metal (NCCM) and at Chambishi (RCM).

Potential Resources

Coal - at Gwemba reserves 17 million tons, Maze area reserves 10 million tons

Copper - at Lumbana, reserves 200 million tons, 1.0%; at Msandile, Eastern Province and at Munali south of Lusaka

Diamonds - Kimberlite pipes at Luanga Valley and Kafue

Feldspar - deposits at Serenje and Mita Hills

Gemstones - emeralds at Miku

Glass Sand - Kapiri Moshi

Iron ore - deposits in Kasumbalesa and Solwezi. Immediate reserves are estimated at 30 million tons. Total reserves probably 150 million tons.

Limestone - Near Lusaka 21 million tons, 93-94% $CaCn_3$, 3-5% Mg.

Manganese - deposit in Lumpulu province

Nickel - deposits at Munali, southern province and south of Kafue

Tin with Ta-Nb - interesting mineralization in souther province

Uranium - possible commercial deposits in South West Zambia

Role of Minerals in the Country's Economy

Mineral production plays very important role in the country's economic development.

Mining contribution to the country's GDP during 1970-1976 can be seen from the table given below (in K.million).

GDP in producers' values at current prices

	1970	1971	1972	1973	1974	1975	1976*
Total GDP	1379.0	1204.0	1334.7	1616.0	1904.0	1562.0	1793.0
Mining and quarrying	467.7	303.7	326.1	544.7	635.0	156.0	204.5
Mining as per cent of total GDP	36.6	25.2	24.4	33.7	33.4	10.0	11.4

Source: Republic of Zambia, Monthly Digest of Statistics, Vol. XIV, Nos. 6 & 7, June/July 1977.

* Provisional.

At the same time central Government current revenue from minerals was as follows:

(in K'000)

	1970	1971	1972	1973	1974	1975	1976
Total revenue	432 432	309 034	315 226	305 180	647 523	448 338	443 018
Mineral revenue	171 485	37 191	27 702	31 317	252 183	59 446	11 577
Minerals as per cent of total revenue	39.6	8.8	8.8	23.7	38.9	13.3	2.6

Source: Republic of Zambia, Monthly Digest of Statistics, vol. XIV, Nos 6 and 7 June/July, 1977é

As can be seen from the table above a considerable decrease of revenue from mineral sector seriously affected total Government revenue in 1976.

During 1970-1976 the following evaluation of value of mineral production has taken place (in K'000).

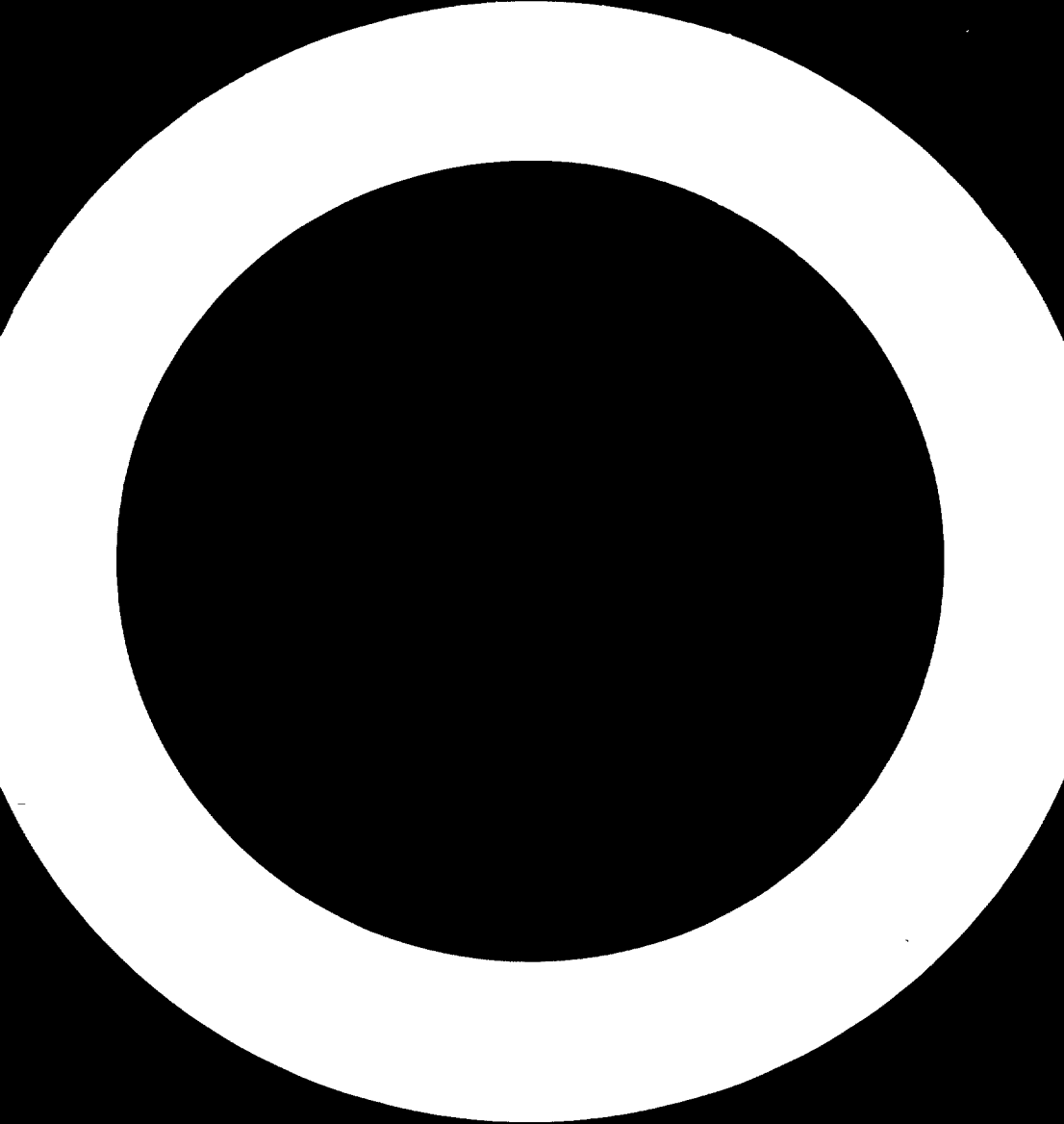
	1970	1971	1972	1973	1974	1975	1976
Minerals total	673 509	466 666	514 562	705 457	936 205	504 356	606 553

The role of minerals in export earnings is exclusively important.

In 1976 mineral exports accounted for about 98 per cent of the total country's exports or 735,500,000 Kwachas of which copper valued 688,600,000 Kwachas.

Employment in the Mining Sector

The mining industries have significant share of the total country's employment. In a state of June 1975 mining and quarrying had 67,760 employees (56,510 Zambian and 10,250 non-Zambian) or about 17 per cent of the country's total employment. The bulk of mining employees was in the private sector, about 55,650.



COPPER CONTENT PRODUCTION AND ITS SOURCE

IN FISCAL YEAR 1974/75 (t)

	Open pit	Underground	Total
NCCM			
Rokana	29,130	90,820	119,950
Chingola	199,310	145,580	344,890
Konkola	-	52,480	52,480
Bwana Makubwa	30,110	-	30,110
Total	258,550	288,880	547,430
	47%	53%	100%
RCM			
Mufulira		131,530	131,530
Luanshya		80,290	80,290
Chambishi	27,100	12,300	39,400
Chibuluma		18,580	18,580
Kalengwa	7,300		7,300
Total	34,400	242,700	277,100
	12%	88%	100%

COMPARATIVE ANALYSIS OF SEVERAL MINING AND RELATED INDUSTRIES

	Number of establishments	Number of persons	Value in 1,000 K of total goods consumed and industrial services rendered	Value of materials and supplies (1,000 K)	Value of repair and maintenance (1,000 K)
Non ferrous ore	19	55,653	133,257	50,445	31,353
Coal and other mines	5	12,237	2,129	1,106	506
Limestone flux and calcarious stone	25	960	978	147	549
Sand: silica and quartz					
Cement and quicklime	3	993	4,614	2,360	65

COPPER RESERVES

NCCM

	Rokana		Chingola		Konkola		Bwana		Total	
	Thousands tons	Copper %	Thousands tons	Copper %	Thousands tons	Copper %	Thousands tons	Copper %	Thousands tons	Copper %
Dully Developed	7,017	2.[illegible]	7,054	4.61	1,017	3.77	?	?	?	?
Partly Developed	20,720	2.33	19,341	5.80	5,075	4.00	?	?	?	?
Indicated & [illegible]	92,090	2.48	225,085	3.18	118,000	3.52	?	?	?	?
TOTAL	119,835	2.44	252,230	3.42	125,093	3.55	3,187	3.53	500,395	3.22

RCM

	Mufulira		Luanshya		Chibuluma		Total	
	Thousands tons	Copper %	Thousands tons	Copper %	Thousands tons	Copper %	Thousands tons	Copper %
Gross reserves	143,392	1.15	136.501	2.56	57,701	3.26	331,594	2.92

Import and Export Statistics

Trade 16/

The situation in the supply of essential commodities to the consumer in Zambia slightly improved in the latter half of the year 1977 in comparison with the continued periods of shortages in 1976 and at the beginning of 1977 although temporary shortages of various commodities did not completely disappeared what the local industry was not able to deliver to consumer trade, was finally acquired through imports at a considerable higher cost to the consumer and the national economy.

On the whole during 1977 the range of consumer goods offered particularly engineering products had been substantially reduced through the strict introduction of import restrictions. This proved beneficial in the sense that it encouraged several parastatal and private companies to introduce the production of a number of products those are never produced in Zambia before e.g. fruit and tomato juice, jams and marmalades, squash, syrup and fruit and vegetable preserves in Zambia.

What constituted the most serious aspect of the situation, was the shortages in the supply of goods for fixed capital formation, hardware and building materials, and particularly spare parts. The worst affected was the motor vehicle which created very lucrative market for second-hand motor vehicles and a critical supply position for spareparts, auto equipment and tyres.

Meanwhile the progress had been made during 1977 as far as the improvement of the distribution network was concerned. The Zambia National Wholesale and Marketing Company Ltd, opened a large central wholesale depot in Labwe and established wholesale depots in several provincial centres as part of a comprehensive programme to be developed further during the Third National Development Programme,

Further achievement was done be Namboard in supplying its rural depots with various farming inputs and implements and in purchasing farm produce from producers to retail in the established retail shops throughout the country.

However, there remained much problems as far as trade in the rural areas was concerned. The reason was the poor performance of the available transport fleet due to the lack of spare parts and insufficient maintenance an and repair facilities in general and rural sector in particular.

16/ Extract from Economic Review 1977.

EXPORTS AND IMPORTS

(K'000)

	Exports			Imports	Export Surplus
	Total	Domestic	Re-exports		
1964	335,518	326,672	8,846	156,438	179,080
1965	380,294	375,096	5,198	210,742	169,552
1966	493,458	490,332	3,126	246,116	247,342
1967	470,009	467,016	2,993	306,350	163,659
1968	544,415	540,744	3,671	325,184	219,231
1969	766,439	754,449	12,040	311,797	454,692
1970	714,964	710,388	4,576	340,711	374,253
1971	485,177	480,011	5,166	399,282	85,895
1972	541,564	536,043	5,521	402,471	139,089
1973	741,955	738,004	3,952	346,367	395,089
1974	905,092	900,650	4,442	507,015	398,077
1975 First Quarter	110,849	110,578	271	145,104	-34,255

Source: Central Statistical Office, Lusaka.

EXPORTS OF PRINCIPAL COMMODITIES

	Copper		Zinc		Lead		Manganese Ore		Cobalt		Tobacco		Maize		Timber
	'000 Tonne	K'000	Tonne	K'000	Tonne	K'000	Tonne	K'000	Tonne	K'000	Tonne	K'000	Tonne	K'000	K'000
1964	601	296.8		9,730	13,354	2,274	26,966	564	1,456	3,494	12,30[illegible]	,664	-	-	816
1965	683	343.2	5,153	9,658	15,645	3,440	32,622	704	1,433	3,639	716	,362	47,270	1,094	910
1966	599	460.6	11,542	8,185	24,650	4,672	26,102	602	1,627	4,266	7,264	4,522	39,091	1,796	684
1967	601	434.0	39,304	8,056	17,[illegible]3[illegible]	2,696	24,710	[illegible]	2,091	5,621	4,449	3,698	190,097	8,749	599
1968	543	516.1	45,017	8,961	16,350	2,738	17,483	399	1,227	3,374	3,841	2,735	63,988	2,838	630
1969	730	724.5	53,576	12,493	25,086	6,061	-	-	1,588	4,[illegible]3	3,768	[illegible] 163	8,441	374	665
1970	584	681.4	50,334	10,961	22,079	4,674	-	-	1,814	6,342	[illegible] 41	2,352	60	-	529
1971	635	450.2	49,453	11,507	23,895	4,557	-	-	1,189	4,125	5,212	3,512	8,590	177	423
1972	711	490.9	50,572	16,368	26,694	5,595	-	-	2,329	8 590	4,[illegible]1	2,737	1,896	100	100
1973	670	698.3	51,115	16,666	20,012	5,411	-	-	1,145	4,662	5,040	4,750	50,006	2,643	5
1974	673.4	836.5	50,227	25,162	18,775	7,150	-	-	1,894	7,926	4,072	5,790	11,212	7,632	-
1975 First quarter	129.5	96.6	14,252	7,351	8,260	2,742	-	-	211	1,148	156	61	16,500	1,430	-

Source: Central Statistical Office, Lusaka

IMPORTS BY S.I.T.C. SECTIONS

(K'000)

	Total	Food	Beverages and tobacco	Crude materials	Electricity and mineral fuels	Oils and fats	Chemicals	Manufactures classified by materials	Machinery and transport equipment	Miscellaneous manufactured articles	Miscellaneous transactions
1964	156,433	14,264	2,090	3,162	17,445	788	16,320	34,444	42,420	21,120	3,534
1965	210,742	16,532	2,004	3,666	20,600	1,294	20,152	49,750	69,590	25,953	396
1966	245,115	19,708	3,025	4,590	19,600	2,530	19,244	55,110	97,935	23,818	366
1967	306,350	21,372	2,127	4,424	31,231	2,348	20,901	65,509	125,331	28,391	3,815
1968	325,104	24,129	2,171	4,406	33,207	1,944	22,645	74,116	134,444	23,955	4,167
1969	331,797	30,411	2,196	4,494	35,531	2,001	22,562	62,791	123,041	25,613	2,227
1970	340,711	30,451	1,175	5,277	35,184	4,456	26,021	74,797	131,716	30,540	1,094
1971	399,202	40,193	1,417	7,629	32,235	4,515	31,688	84,786	160,115	27,257	1,443
1972	402,471	37,130	1,250	7,943	26,523	3,907	33,041	87,918	160,009	35,377	1,365
1973	346,857	24,344	973	5,420	33,285	4,323	35,135	77,339	138,911	25,382	1,753
1974	507,015	43,301	1,133	10,364	61,095	6,770	48,453	129,934	166,068	36,431	2,915
1975 First quarter	145,104	11,343	305	2,234	11,306	3,211	15,103	37,662	54,599	8,743	593

Source: Central Statistical Office, Lusaka

Employment Statistics

As the economy continued to sag, during 1976, the employment picutre became more bleak. The dismal failure by the economy to increase its employment generation capacity had resulted in increasing numbers of redundancies and an alarming rate of unemployment. As recorded in the Economic Report for 1976, the labour force continued to grow at at a higher rate than employment generation.17/

The Population Statistics is shown below:

Population 18/

	1974 in '000	1969/74 growth rate	1969 in '000	1963/69 growth rate	1963 in '000
Total Zambia	4,695	3.0%	4,056	2.5%	3,490
Total Urban Area	1,656	6.8%	1,192	8.9%	715
Total Rural Area	3,039	1.2%	2,865	0.5%	2,775
Percentage of Urban	35.3%		29.4%		20 %

No official employment statistics were available for 1978 but from Monthly Returns for the Labour Department, it is clear that 1977, in terms of employment, had been no better than 1976. 1976 was officially the terminal year for the Second National Development Plan and 1977 was used for the completion of on-going projects before the launching of the Third National Development Plan, than scheduled for January, 1978. There was therefore not much activity. Thus with the completion of projects and cessation of production due to non-availability of raw materials, redundancies continued to be high, may be even, higher than the 9,000 recorded for 1976. Most of these redundancies had been in the manufacturing and construction industries, being those most hit by the economic slump and foreign exchange shortages. Moveover, and not unexpectedly, these two industries had reported the highest number of strikes and man-days lost.

The latest data on wages and earning is not yet available but data on price movements for the period January-August, 1977 suggest continuing rise in the cost of living. The average levels of consumer price index for low and high income groups shot up by 21.4 per cent, 18.7 per cent for January-August, 1977 over the same period in 1976. This has, in part, led to labour unrests over wage demands in Zambia. 17/

17/ Extract from the Economic Review 1977

18/ Source: Central Statistical Office, Lusaka

The economy's greatest hope has been inclined towards the development of the rural sector and Government is determined to provide all the encouragement and incentives for full exploitation of this potential. Therefore the rural development, particularly agriculture, water development, marketing and fooder reads enjoy increased Government support and subsequent establishment of Agricultural Development Bank.

Statistics of Energy: Electricity, Coal and Coke 19/

Energy

The year 1977 showed an increase in domestic electricity production, although there was a decline in the total domestic consumer demand. As a result, there was a larger production surplus in 1977 than in the previous year.

Coal consumption declined and there was slightly more import of crude oil than during the year 1976. While the country continued to depend on imports for supplies of liquid fuels, coal supply came entirely from domestic sources.

Electricity

The total production of electricity in Zambia over the first nine months of 1977 amounted to an estimated 6,504 million Kwh. This compares favourably with a production of 5,092 million Kwh during the same period in 1976.

PRODUCTION AND SUPPLY OF ELECTRICITY IN ZAMBIA

(Kwh million)

Year	Production in Zambia (1)	Supply to consumers in Zambia	Net balances
1,964	n.a	2,725.8	n.a
1,965	n.a	2.919.4	n.a
1,966	n.a	2,904.4	n a
1,967	n.a	3,230.3	n.a
1,968	n.a	3,409.2	n.a
1,969	n.a	3,634.9	n.a
1,970	n.a	3,999.7	n.a
1,971	1,176.2	4,375.9	- 3,199.7
1,972	3,271.7	4,691.5	- 1,416.8
1,973	3,275.2	5,080.6	- 1,805.4
1,974	5,972.7	5,508.2	464.5
1,975 January-July	3,698.2	3,219.8	478.4

(1) Excluding works consumption
Source: Central Statistical Office., Lusaka

19/ Extracts from Economic Review 1977.

Some major power projects were completed during 1977, adding to the electrical generating capacity of the country. The last 150 MW generating unit came into operation at Kariba North Bank, bringing the total capacity of the power plant to 600 MW. Further, construction of Itezhi Tezhi Dam was completed, assuring a more regular flow of water to the Kafue Gorge Power Station. These two plants are also responsible for the current surplus of power in Zambia.

Part of the equipment for the Control Centre was received and erection commenced in 1977. Work on a number of smaller projects was initiated during the year while studies and investigations were carried out on Lusiwasi State III and a Twenty-Year Development Plan prepared.

Satisfactory progress was made on the construction of a 66 KV transmission line from Mongu to Kalabo. Further survey work on the Luwingu-Kasama-Mpika 66 KV line was completed and the erection of towers started in 1977.

Petroleum

Total imports of crude petroleum (including spiced components) amounted to K49.6 million in 1977 as compared to K47.8 million in the first ten months of 1976.

A total quantity estimated at 820,000 tonnes of feedstock was imported at a cost of K70 million in 1977 compared to 800,000 tonnes imported at a cost of K51 million in 1976, reflecting the effects of oil price increases.

As a result of the price increase announcements in November 1976, a decline of about thirteen per cent in the consumption of motor gasoline had been noticed and the ratio of premium to regular had moved perceptibly in favour of regular.

Coal and Coke

There was a decline of dometic coal production which was estimated at 600,000 tonnes as compared with 762,000 tonnes in 1976. Coke was supplied from imports, however, the coke breeze came from the new fine coal plant in Kabwe, based on Maamba coal.

POPULATION: 1963, 1969 AND 1974

	1974 Population ('000)	1969-1974 Average annual growth rate(%)	1969 Population ('000)	1963-1969 Average annual growth rate(%)	1963 Population
Total Zambia	4,695	3.0	4,056	2.5	3,490
Provinces:					
Central	920	5.2	713	5.9	505
Copperbelt	1,046	5.1	816	7.0	544
Eastern	560	2.2	510	1.0	480
Luapula	321	-0.9	335	-1.0	357
Norther	500	1.3	545	-0.6	564
North-Western	256	2.0	232	1.6	211
Southern	540	1.7	496	1.0	466
Western	463	2.5	410	2.1	363
Large Urban Areas:					
Chililabombwe	56	4.5	45	4.7	34
Chingola	134	5.3	103	9.6	60
Kabwe	98	8.2	56	8.9	40
Kalulushi	41	4.9	32	7.2	21
Kitwe	251	4.7	200	8.4	123
Livingstone	58	5.1	45	5.4	33
Luanshya	121	4.7	96	4.2	75
Lusaka	401 b	8.9	262	13.4	123
Mufulira	136	4.8	108	5.0	81
Ndola	229	7.5	160	9.5	93
Total Urban (including small urban areas)	1,656	6.8	1,192	8.9	715
Total Rural	3,039	1.7	2,865	0.5	2,775
Percentage Urban	35.3		29.4		20.5

Source: Central Statistical Office, Lusaka

WAGE EMPLOYMENT: ZAMBIAN (AFRICAN) AND OTHERS

	December 1967		June 1974		1967/74 %
	African Employees		Zambian Employees		
	Persons	%	Persons	%	
1. Agriculture, forestry and fisheries	34,560	12.2	34,680	9.9	0.9
2. Mining and quarrying	48,320	17.1	52,820	15.0	9.3
3. Manufacturing	29,560	10.5	39,710	11.3	34.3
4. Electricity and water	2,540	0.9	4,900	1.4	92.9
5. Construction and allied repairs	64,820	22.9	70,440	20.1	8.7
6. Commerce, restaurarts and hotels	26,210	9.3	32,010	9.1	22.1
7. Transport and communications	17,870	6.3	24,620	7.0	37.8
8. Finance, insurance, real estate and business services	4,580	1.6	12,650	3.6	176.2
9. Social and personal services (1)	54,310	19.2	79.160	22.6	45.8
TOTAL	282,770	100.0	351.190	100.0	24.2
	Non-African Employees		Non-Zambia Employees		
	Persons	%	Persons	%	
1. Agriculture, forestry and fisheries	530	1.8	1,640	4.7	209.0
2. Mining and quarrying	5,420	21.9	11,210	32.0	74.5
3. Manufacturing	2,750	9.4	3,420	9.8	24.4
4. Electricity and allied repairs	430	1.5	570	1.6	32.6
5. Construction and ellied repairs	2,700	9.2	4,220	12 3	60.4
6. Commerce, restaurants and hotels	5,300	18.1	3,730	10.6	-29.6
7. Transport and communications	2,450	8.4	1,830	5.2	-25.3
8. Finance, insurance, ereal estate and business services	2,300	7.8	1,930	5.5	-16.1
9. Social and personal services(1)	6,400	21.9	6,420	18.3	0.3
TOTAL	29,280	100.0	35,080	100.0	19.8

(1) Excluding domestic services
Source: - Central Statistical Office, Lusaka. -- Own elaboration

LABOUR EXCHANGE STATISTICS

	Persons seeking employment		Vacancies	
	New registration	Registered as (1) unemployed	Notified during the period	Filled during the period
1964	52,142	11,120	16,340	12,199
1965	62,107	17,560	26,410	19,290
1966	64,967	16,405	33,630	26,003
1967	54,710	12,254	32,909	24,346
1968	55,706	12,909	27,482	22,262
1969	52,259	15,300	26,050	19,855
1970	56,100	10,250	24,591	17,410
1971	53,821	10,240	30,173	22,549
1972	51,749	12,615	40,190	24,490
1973	45,271	9,205	26,947	21,000
1974	42,237	n.a	36,465	26,852
1975(January--July)	31,837	12,369	23,454	17,411

(1) Yearly figures are averages of monthly data

Source: Central Statistical Office, Lusaka

AVERAGE ANNUAL EARNINGS OF EMPLOYEES, 1 972

(Kwacha)

	African Employees		
	Public sector	Private sector	Total
1. Agriculture, forestry and fisheries	525	277	376
2. Mining and quarrying	-	1,491	1,491
3. Manufacturing	1,115	843	853
4. Electricity and water	737	1,250	769
5. Construction and allied repairs	493	760	674
6. Commerce, restaurants and hotels	691	827	864
7. Transport and communications	1,441	1,953	1,311
8. Finance, insurance, real estate and business services	1,615	1,010	1,031
9. Social and personal services (1)	859	699	831
TOTAL	868	1,004	960
	Non-African Employees		
	Public sector	Private sector	Total
1. Agriculture, forestry and fisheries	5,788	3,955	4,515
2. Mining and quarrying	-	6,971	6,971
3. Manufacturing	4,340	6,256	6,128
4. Electricity and water	5,206	6,854	6,346
5. Construction and allied repairs	3,595	6,424	6,479
6. Commerce, restaurants and hotels	4,218	4,942	5,140
7. Transport and communcations	5,569	5,432	5,553
8. Finace, insurance, real estate and business services	5,594	6,310	5,327
9. Social and personal services (1)	2,877	3,243	2,960
Total	3,777	5,853	5,500

(1) Excluding domestic services
Source: Central Statistical Office, Lusaka

WAGE EMPLOYMENT

	December 1967		June 1974		Total 1967-74		1967-74 as % of 1967
	Persons	%	Persons	%	Persons	%	
1. Agriculture, forestry and fisheries	35,090	11.3	36,520	9.4	1,430	2.0	4.1
2. Mining and quarrying	54,740	17.5	64,030	16.6	9,290	12.5	17.0
3. Manufacturing	32,310	10.4	43,130	11.2	10,820	14.6	33.5
4. Electricity and water	2,970	0.9	5,470	1.4	2,500	3.4	84.2
5. Construction and allied repairs	67,520	21.6	74,770	19.4	7,250	9.7	10.7
6. Commerce, restaurants and hotels	31,510	10.1	35,740	9.2	4,230	5.7	13.4
7. Transport and communications	20.320	6.5	26,450	6.8	6,130	8.2	30.2
8. Finance, insuranee, real estate and business services	6,880	2.2	14,580	3.8	7,700	10.4	111.9
9. Social and personal services (1)	60,710	19.5	85,580	22.2	24,870	33.5	41.0
TOTAL	312,050	100.0	386,270	100.0	74,220	100.0	23.8
I. Sector (1 + 2)	89,830	28.8	100,550	26.0	10,720	14.5	11.9
II. Sector (3+4+5)	102,800	32.9	123,370	32.0	20,570	27.7	20.0
III. Sector (5+7+8+9)	119,420	38.3	162,350	42.0	42,930	57.8	35.9
TOTAL	312,050	100.0	386,270	100.0	74,220	100.0	23.8

(1) Excluding domestic servies

Source: - Central Statistical Office, Lusaka
- Own elaboration

PAY SCALES 1975 (KWACHA/MONTH)

Description	Level	Pay range
Production and General Services		
Crane chaser-General, Workman-Parks and Garden, Attendant-Laboratory, etc.	1	60-90
Courier-Motor Cycle, Pipe Threader, Operator-Band Saw, etc.	2	75-100
Driver-Light Van/Lorry, Mechanic III (all trades), Shunter-Main Line, etc.	3	80-110
Driver-Mobile Crane (up to 10 t), Driver Lorry, Laboratory Operator	4	90-120
Driver-Mobile Crane (up to 15 t), Instructor-Carpentry, Mechanic II, etc	5	100-150
Compressor-Operator, Driver-Bulldozer, Mechanic I, Driver-Mobile Crane (up to 25 t), etc.	6	140-190
Leading Mechinic, Supervisor-Plumbin, Converter Operator-Smelter, etc	7	170-225
Mechanic Supervisor, Section Boss-General Smelter, Rail Traffic Controller, etc.	8	210-270
Senior Instructor, Section Boss-Casting, Section Boss-Stope Drilling	9	240-300
Shift Boss, Shift Foreman-Smelter, Chief Instructor, E etc.	10	290-360
Assistant General Foreman Foreman-Transport, Shift Boss-Shafts, etc	11	330-400
Technical Services		
Microscopist, Sampler-Geological, Tracer-Drawing Office, etc.	1	100-150
Health Assistant, Draughtsman II, Assistant Surveyor, etc.	2	150-210
Artisan (all trades), Soils Analyst, Assayer (Certificated) Analytical Laboratory, etc.	3	210-270
Engineering Draughtsman, Work Study Officer, Laboratory Technologist, etc	4	240-300
Chemist, Geologist, Senior Engineering Draughtsmam, Operational Research Analyst, etc.	5	290-360
Senior Chemist, Project Geologist, Sectinnal Work Study Officer, etc.	6	330-400
Clerical and Administrative Services		
Telephone Operator, Printroom Attendant, Filing Clerk	1	80-110
Receptionist/Telephonist, Clerk-Invoice Matching, Junior Typist, etc.	2	100-130
Typist, Telex Operator, Clerk-Bonus Calculations, etc.	3	110-150
Clerk-Statistics, Clerk-Planned Maintenance, Senior Receptionist, etc	4	140-190
Senior Typist, Assistant Job Analyst, Supervisor-Printroom, etc.	5	170-230
Paymaster, Clerk-Coast Accounts, Supervisor-Home Economics, etc	6	210-270
Job Analyst, Manning Control Officer, Senior Clerk-Stock Control, etc.	7	240-300
Assistant Accountant, Chief Stores Assistant, Assistant Computer Liaison Officer, etc.	8	290-360
Assistant Internal Audit, Statistician-Analytical, Stock Controller, etc.	9	330-400

Source: - Own elaboration.

CONSUMER PRICES

HIGHER AND LOWER INCOMES, JANUARY, 1962=100

Year	Combined index		Higher incomes index		Lower incomes index	
	All items	Food	All items	Food	All items	Food
1963	101.8	100.2	102.1	99.9	101.3	100.6
1964	105.7	103.1	106.2	102.2	104.5	103.7
1965	111.9	109.9	110.7	106.5	113.0	113.2
1966	120.7	120.5	115.3	112.9	124.5	127.8
1967	125.9	126.9	122.2	118.2	130.7	134.4
1968	139.5	138.9	132,7	130.5	144.9	145.7
1969	144.8	142.5	138.5	132.8	148.4	148.0

LOW INCOME GROUP 1969=100

	All items	Food, beverages and tobacco	Clothing, footwear and accessories	Rent and rates, fuel and lighting	Furnishings and furniture, household equipment and operations	All other goods and services
Weight	1,000	647	136	111	65	41
1970	102.6	102.1	102.1	102.7	106.7	104.8
1971	108.8	108.8	108.7	105.9	114.2	111.1
1972	114.6	113.9	117.6	108.8	123.3	117.1
1973	121.9	121.5	126.2	113.0	132.4	122.6
1974	132.1	132.6	137.1	117.3	140.9	134.0
1975						
June	144.9	147.1	147.2	123.3	150.6	150.8

HIGH INCOME GROUP 1969=100

	All items	Food, beverages and tobacco	Clothing, footwear and accessories	Gross rent, fuel and light	Furniture, furnishings and household	Medical care and health Services	Transport and communications	Recreation, entertainment and education	Other goods & services
Weight	1,000	309	79	194	130	13	158	79	38
1970	105.0	103.0	103.5	111.8	104.7	100.1	101.8	103.8	102.2
1971	110.9	109.7	109.4	119.7	109.1	102.9	107.3	110.3	104.2
1972	118.7	119.9	120.0	121.5	118.5	100.4	118.4	113.5	107.7
1973	125.4	128.8	131.9	125.6	125.6	113.2	127.1	119.1	111.4
1974	130.1	144.3	145,1	129.3	139.7	118.7	142.5	129.4	115.7
1975 June	149.7	159.7	150.9	135.5	140.2	125.5	150.9	134.8	121.3

A Source: Central Statistical Office, Lusaka.

CHAPTER IV

PRESENT STATUS OF THE BASIC METAL AND ENGINEERING INDUSTRIES

DEVELOPMENT PLAN

The Republic of Zambia had two consecutive National Development Plan. The First National Development Plan (1967 - 1971) and the Second National Development Plan (1972 - 1976). The process of democratic formulation of the Second National Development Plan was achieved in the following manner.

(a) At National Level(Second National Development Plan)

- for formulating realistic schemes and programmes in the national industrial sector;
- fourteen Development Planning Committees were set up in February 1971;
- each committee was devoted to one subject under the plan: e.g. agriculture, industry, transport and so on;
- each committee was represented by men and women talent from public and private sectors;
- all these committees submitted their recommendation to the Government during February to October 1971.

(b) At the Provincial and District Level (Second National Development Plan)

- in formulating the development plan for regional and rural areas the Government consulted the people in all districts through Provincial Development Committees and the District Development Committees;
- the District Development Committees suggested projects and programmes for regional development.

Zambia's Third National Development Plan has been deffered due to the down ward drift of copper prices on the world market and particularly the problems arising out of the hostilities posed by the racist regimes in the South, continued to cast its sombre shadow over the Zambian economy and the overall economic perspective in 1977 was characterised by severe deterioration in the economic situation. 18/

Crash Economic Programme

In this context the historic address delevered by H.E. The President Dr. K. Kaunda to the National Assembly 11th October 1977 was an event of major national importance and it called for a Crash Economic Programme highlighting:

- stepping up production in order to satisfy domestic demand as well as provide for export.
- creation of new agricultural production capacity.

18/ Source: UNIDO Project Report IS/ZAM/74/020, July 1976

- highest priority to adequate supplies of spare parts for:
  (a) agricultural tools and implements
  (b) transportation equipment for agricultural produce for marketing
- exploitation of non-copper minerals such as uranium and emeralds;
- attraction of foreign investment to boost production based on local materials with a view to generating exports;
- diversion of personnel in over employed Government agencies to work in rural areas.
- creation of a National Economic Council to monitor the country's general economic activities;
- deferment of Third National Development Programme.

The Third National Development Plan(differed for the time being) includes the following important development aspects:- e.g.

- wider development spectrum of economic activities in the rural sector;
- besides agriculture, cover the establishment of small scale and cottage industries;
- development of rural electrification;
- development of feeder roads;
- development of water supply;
- development of marketing, educational and health facilities;
- regrouping of village and so forth;
- maximization of employment opportunities;
- adaption of appropriate technologies and on remedying the distortions which have been caused by the choice of inappropriate capital intensive technology in the past.

Therefore, the proposed Third National Development Plan envisages re-orientation of the whole strategy of development and major shift in country's priorities.

The Medium-Term Perspective of the Third Five-Year Development Plan

The 197[illegible] out look for primary commodities in the world market was highly uncertain, particularly for copper prices did not look promising. Therefore the medium-term perspective envisaged the following important policies and strategies: e.g.

- policy instrument of demand management will have to be more effectively employed,

- budgetary and monetary control measures are to be introduced in parastatals and other public corporations to improve operational efficiencies.

The followings are the major policy and objective in the Mining Sector.

- to reduce the dominance of copper mining;

- to introduce steps to exploit the non-copper mineral resources of the country;

- to promote prospecting, exploration and development of uranium deposits;

- to explore other industrial minerals;

- to promote cutting and polishing of emeralds produced from rough minerals;

- consumption and prestige oriented capital expenditure will be curbed, inefficiency and waste to be eleminated and top security to be made in all government recurrent expenditure;

- measures to be introduced to increase domestic production and export and rationalization on imports to be accelerated;

- adequate incentives will be given to the farmers;

- highest priority will be given to the production oriented programmes in the non-copper sectors;

- export potentialities of non-copper minerals e.g. uranium and emeralds will have to fully explored;

- the incentives for domestic and foreign investors out lined in the Industrial Development Act 1977 will have to be publicised widely in order to attract the investors;

- due to the present difficult foreign exchange situation, the inflow of private foreign capital will have to be supplemented through increased foreign capital inflows designed to provide balance of payments support.

Industrial Plan

The share of manufacturing industry in the total GDP was planned to reach 7.6% during the First National Development Programme. In actual fact the share of manufacturing in GDP was exceeded 9.6% by 1976. This was the manifestation of the vitality of the sector and of the existance of favourable conditions to its fast growth.

Main Objectives of Manufacturing in Second National Development Plan.19/

The Second National Development Plan envisaged the following objectives in the industrial sector. e.g.

- fuller utilization of existing capacities;

- import subsititution of food products;

19/ Source: UNIDO Project Report ID/ZAM/74/020, July 1976

- import substitution of other consumer goods;
- increasing import substitution of certain intermediate and capital goods needed by other sectors. e.g. agriculture, mining, building, transport and by industry itself;
- further processing of raw materials originating from agriculture and mining;
- establishment of small scale industries in rural areas;
- contribution to the creation of additional employment;
- promotion of export of manufacturers.

However, in 1977 the performance of the manufacturing sector was particularly disturbing. 20/ It was the third consecutive year in which industrial production declined as stated below:

Index of Industrial Production
Selected Manufacturing Items

1973 = 100

	1973	1974	1975	1976	1977 (4-months)
Total Manufacturing	100	110.6	105.5	101.6	96
Wood and Wood Products	100	119.5	88.9	69.6	77
Non Metalic Mineral Products	100	110.2	114.4	102.7	107.5
Metal Products and Other	100	103.6	97.1	95.0	
Basic Metal Industries	100	131.6	98.0	100.5	98.7

The average index of production for the first four months (figures are available) was a dismal 96 as against 101.6 for the same period in 1976. The performance in subsequent months is estimated to have deteriorated further. The manufacturing and the construction sectors were worst hit by the foreign enchange crisis. The structural difficulties in Zambian industry can be summerised by:

- the dominance of consumer goods industries;
- lack of industries producing capital goods and intermediate goods;
- dependence of most industries, including those producing consumer goods, on imported raw materials, intermediate goods and spareparts.

20/ Source: UNIDO Project Report IS/ZAM/74/020, July 1976

During the end of 1976 and first half of 1977 there was acute shortage of raw materials and packaging material due to low allocation of import licenses. Due to this precarious condition air lift of essential commodities had to be imported which further strained the balance of payment situation. In continuation of this trend from the previous year, serious shortages of raw materials, intermediate goods, and spareparts, and the consequent poor performance of certain domestic manufacturing enterprises, resulted in a number of cases in the closure of factories and lay-off of workers particularly in the private sector: As a result there was worsening of the employment situation in the manufacturing sector.

The Parastatal Sector

The parastatal sector improved on its financial operations over the previous year. The INDECO Group achieved a turnover of K340 million and recorded a pre-tax profit of K[illegible] million for the year ended 31st. March 1977, as against K300 million and K339,000 respectively in the financial year 1975/76.

Outlook for 1977

All the major sectors of the economy registered decreases in their contribution to the Gross Domestic Product. The contribution of the mining sector decreased both in output and value, due to increased production cost, lower prices of copper and non-availability of spreparts and operational problems.

The manufacturing sector continued to be under strain and recorded a drop of 5.[illegible] per cent. This was the third consecutive fall in output recorded by this sector, having registered declines of 4.1 per cent and 5.5 per cent in 1975 and 1976. The agricultural, forestry and fishing sector registered a minimal increase in output of one per cent.

During the year under review, the gross fixed capital formation, in real terms, fell by 17 per cent. 21/

The Third National Development Plan, expected to be launched at the beginning of 1979, will provide a clear basis for detailed economic and industrial planning for the next five years.

Therefore, the outlook for 1977 was rather uncertain and the prospects for the manufacturing and trade sectors during 1977 envisaged the following important aspects:

- fullest possible utilization of the existing capacities in the industry;
- issuences of import licenses for intermediate goods and spareparts for selected branches of industry;
- issuences of import licenses for raw materials in the priority sectors;
- a concerted move to introduce various measures aimed at raising productivity and operational performance of all parastatal subsidiaries;
- fuller utilization of domestic raw materials and by-products for both parastatal and private sector industries;
- inducement of Industrial Development Act to attaract new investment in priority sector

21/ Source: Annual Report of the Development Bank of Zambia, 31 March 1977

- encouragement of new investment in medium and small scale industries particularly in the rural areas.

Electricity

The total production of electricity in Zambia over the first nine months of 1977 amounted to an estimated 5,504 million Kwh.

Petroleum

Total imports of crude petroleum amounted to K49.6 million in 1977.

Coal and Coke

Total domestic production of coal is estimated at 600,000 tonnes during 1977.

Wage Employment (selected)

	1967	1974
Total Employment	312,050	386,270
Mining and quarring	54,740	64,030
Manufacturing	32,310	43,130
Electricity and waters	2,970	5,470
Construction and allied repairs	67,520	74,770
Transport and communication	20,320	26,450

Institutional Structure

Re-organization of Government Institution December 1978

In order to re-vitalise the economy from its past stalement the government of Zambia has taken the following re-organization measures, 22/ This re-organization measures is expected to streamline the government development activities, offer greater efficiency and will be responsive to economic opportunity.

1. The Prime Minister's Office will be responsible for the National Commission for Development Planning as well as Provincial Administration and Local Government. The Ministry of Local Government and Housing will be abolished. This change will make possible the devolution of Local Government responsibility to the Provinces and Districts.

2. The Defence and Special Divisions of the President's Office will be the responsibility of the Secretary of State for Defence and Security.

3. The Ministry of Public Works will become the Ministry of Works and Supply and will, apart from its present responsibilities, also be responsible for Housing.

22/ Source: Extracts from Zambia Daily Mail Tuesday, 19 December 1978 when the mission was in Zambia.

4. The Ministry of Finance and the Ministry of Technical Co-operation will be merged into the Ministry of Finance and Technical Co-operation.

5. The Ministry of Industry and the Ministry of Commerce and Foreign Trade will be merged into the Ministry of Industry, Commerce and Foreign Trade.

6. The Ministry of Education will now become the Ministry of Education and Culture.

7. Out of the Ministry of Water and Natural Resources and the Ministry of Lands and Agriculture will be created (a) the Ministry of Lands and Natural Resources and (b) the Ministry of Agriculture and Water Development. The Chairman of the Water Affairs Board will be the Director of Water Affairs in the Ministry of Agriculture and Water Development.

8. The Ministry of Labour and Social Services will no longer be responsible for sport.

9. The Ministry of Information, Broadcasting and Tourism will become the Ministry of Information and Broadcasting Services.

10. Two new Ministries will be created. One will be the Ministry of Youth and Sport and the other will be the Ministry of Tourism.

11. The remaining Ministries, namely:

- Health;
- Home Affairs;
- Foreign Affairs;
- Legal Affairs
- Mines
- Power, Transport and Communications will continue as at present.

12. There will be no ministers in the provinces.

Parastatal Organizations

Zambia Industrial and Mining Corporation (ZIMCO)

This state-owned parastatal organization had 12 wholly owned subsidiaries until December 1970. In his opening speach of the first session of the Fourth National Assembly, H.E. Dr. K. Kaunda decleared the re-organization of ZIMCO on 18 December 1970. Within the context of this re-organization the following measures 23/ were directed by the President e.g.

- All the ZIMCO sub-holding corporations except for MINDECO and National Import and Export Corporation (NIEC) were abolished;
- All the subsidiaries of National Hotels Corporation, National Transport Corporation, Zambia National Energy Corporation, FINDECO, MINDECO became direct operating subsidiaries of ZIMCO;

23/ Source: Zambia Daily Mail Tuesday, 19 December 1970, Page 4

- The Nchanga Consolidated Mines (NCCM), ROAN Consolidated Mines(RCM) and Metal Marketing Corporation (MEMCO) previously became direct subsidiaries of ZIMCO;

- The ZIMCO board would be chaired by the Hon. Prime Minister of Zambia, who would nominate the appointment of all Managing Directors, General Managers, or Chief Executives of the subsidiary companies and corporations;

- Zambia Airways, Zambia Railways, The Post and Telecommunication Corporation and The Rural Development Corporation would be the direct subsidiaries of ZIMCO.

Through these re-organization measures it is expected that ZIMCO will make a meaningful contribution to the Zambian economy.

INDECO Company Limited

INDECO Company Limited is a parastatal organization and holding company of several industrial establishments including joint venture with foreign companies in Zambia. INDECO has following divisions:

More than 50% to 100% share
- Industrial Division Controlling 3 Industrial Enterprises;
- Steel and building and Real Estate Division Controlling 8 Enterprises;
- Chemical Division Controlling 6 enterprises;
- Breweries Division Controlling 3 Enterprises;
- RUCOM Division Controlling 5 Enterprises;
- Travel Agency

Less than 50% share
- Associated Companies with 4 Enterprises

INDECO group turnover in 1976-77 was K340 million and 1977/78 was K397.3 million. This improvement in turnover is largely a result of efforts those are being made by the management to maximise profits in the company. INDECO has number of projects on hand. The mission discussed with the INDECO authorities the possible development of integrated metal and engineering industries in Zambia. This report will highlight these projects in chapter IV and VI.

The Development Bank of Zambia

The scope of the Bank's activities is stipulated in the Development Bank of Zambia Act 1972. The primary function of the Bank is to mobilize long-term financial resources in the national and international capital markets and to rprovide financial and technical assistance for parastatal and private development projects in the industrial, agricultural, mining and tourism sectors.

The financial assistance to the projects are carried out by the Bank in accordence with what laid down in the National Development Plan and in the Industrial Development Act. Priority is given to projects which:

- save or earn foreign exchange through import substitution, exports and maximum utilization of domestic raw materials;

- create substantial opportunity for permanent employment;

- promote agricultural and industrial development in rural areas;

- produce intermediate goods which are used by other industries;

- diversify the country's industrial structure;

- improve domestic skills and foster the development of domestic technology.

The financial statement 1977/78 reveals that Zambian Development Bank has made a net profit of K500,535 (an increase of 14% over the previous years). The various projects identified by the mission with Zambian Development Bank is shown in Chapter IV and VI of this report.

The Agricultural Development Bank 24/

This bank will be established during 1979 in order to offer incentives, financial assistance on reasonable terms to farmers who embark on new crops etc.

Commercial Banks

There are number of Commercial Banks in Zambia who operate on strictly commercial terms and conditions.

Industrial Establishments

The existing industrial establishments in Zambia engaged in manufacture basic metal and engineering products can be divided into three categories:

(a) Mining Products;

(b) Metallic Products ; and

(c) Non-Metalic Products.

Most of the industries engaged in mining products are state owned industries. Besides these industries there are large number of small scale industries in metal working and wood working sector. The compilation and present status of these small scale industries are not included in this report.

The following are the INDECO industries:

Lusaka Engineering Company	-	Lusaka	- Metal vehicle body, furniture and construction material fabricators.
Zambia Steel and Building	-	Lusaka	- Importers and merchants of construction materials.
Monarch Zambia	-	Kitwe	- Manufacturers of construction materials.
Kabwe Industrial Fabrics	-	Kabwe	- Twine, rope and bag manufacturers
Consolidated Tyre Services	-	Kitwe	- Tyres, battery sales and repairs

24/ Source: Extracts from Zambia Daily Mail, The President's speech 19 December 1978.

Kasama Vehicle Assemblers	-	Kasama	-	Mercedes and Toyota Commercial vehicle assemblers
Livingstone Motor Assemblers	-	Livingstone		Fiat motor car assemblers
Motor Parts Distributors	-	Lusaka		Motor vehicle parts importers and distributors.
Metal Fabricators of Zambia	-	Luanshya	-	Copper cable manufacturers
Mansa Batteries	-	Mansa	-	Manufacturers of dry-cell batteries
Mucom Industries	-	Lusaka	-	Promoters of small-scale rural enterprises
Zambezi Sawmills (1965)	-	Livingstone		Timber fellers, sawyers and merchants
Dunlop Zambia	-	Ndola	-	Tyre and rubber products manufacturer
Mkwazi Manufacturing Company	-	Kafue	-	Nylon twine, fish net, rope manufacturers
Scaw-Tow Foundries	-	Kitwe	-	Fabricators of metal parts

(a) Mining Products (Basic Metals)

1. <u>Roan Consolidated Mines Ltd., Ndola</u> (Maintenance shop and warehouse)

Type	-	Stateowned industry
Product	-	Repair of small pieces e.g. cast pieces or acid resistante material repair etc.
Raw Material	-	Materials destined to the tank house installation
Capacity	-	Not known
Employment	-	Not known
Machinery and equipment	-	Electrical maintenance shop, Mechanical maintenance shop includes lathe, drill, electric and gas welding etc. Technical office
Turn over:	-	Not known
Constraints	-	-
Investment required		No expansion plan

2. <u>Roan Consolidated Mines Ltd., Mufulira</u> (Maintenance shop underground and warehouse)

Type	-	Stateowned industry
Product	-	Repair and maintenance of shovel (underground)
Raw material	-	Mining material, electrical power and workshop material, concentrator, smelting refractories, general stock. The stock level in 1977 for seven months was amounting to 10 million K.
Capacity	-	Working below the existing capacity.
Employment	-	Machine shop - 30 persons Boiler shop - 40 persons Forge shop - 25 persons Foundry - 3 persons Total 98

Machinery and equipment	-	The machine shop and boiler shop includes Machine shop - lathes, drills Boiler shop Forge shop Foundry Electric shop
Turn over	-	Not known
Constraints	-	Lack of imported spareparts due to adverse foreign exchange situation
Investment required	-	No expansion plan

3. Roan Consolidated Mines Ltd., Luanshya (Maintenance shop and warehouse)

Type	-	Stateowned industry
Product	-	Repairing of shovels and mining machinery, spareparts manufacture and warehousing
Raw material	-	Steel and Iron products
Capacity	-	Not known
Employment	-	Foundry - 16 persons Machine shop - 37 persons Boiler shop - 52 persons Construction shop 30 persons Carpenter shop 30 persons Total 165
Machinery and equipment-		Foundry - Electric furnace 2.5 tons, crucible furnace Machine shop -for repairing shovels and mining machinery. Forge shop and heat treatment shop Workshop milling machine, lathes, boring machine etc. Benders, shears, welding etc. Boiler shop Locomotive repair shop Electrical shop Warehouse value of products 21 million K and 42,000 items of products.
Turn over	-	Not known
Constraints	-	Lack of skilled manpower to manufacture spareparts Lack of facilities for metallurgical quality control, heat treatment etc. 60% of spareparts can be manufactured if facilities are available.
Investment required	-	No expansion plan

4. Roan Consolidated Mines Ltd., (Copper production)

Type - State owned industry

Product - Finished copper production

	1977/78 25/	1978/77
Wire bars (Tons)	134,10[illegible]	175,44[illegible]
Cathodes (Tons)	122,294	70,221
Leach cathodes (Tons)	14,007	15,775
Total	270,4[illegible]9	261,444

Raw materials and capacity - Ores and related materials for the production of copper

Ores removed until 1978 25/

Mufulira	-	165 million tons (3.63% Cu)
Luanshiya and Baluba	-	190 million tons (2.40% Cu)
Chambishi	-	19 million tons
Chibuluma	-	14 million tons (4.36% Cu) (0.21% Cu)
Kalengwa	-	(mining has started)

Ores reserve

Mufulira	-	129 million tons (3.13% Cu)
Luanshya	-	for next 23 years
Luanshya	-	134 million tons (2.40 % Cu)
Baluba	-	70 million tons (2.46 % Cu) (0.15 % [illegible])
Chambishi	-	37 million tons (2.[illegible]3 % Cu) for next 1[illegible] years
Chibuluma	-	7 million tons (4.39 % cu) (0.17 % co) for next 15 years

Employment -

1976	1977	1978
26,290	27,490	25,954

Machinery and equipment - Concentrators - located at each of the operating mines. 7.5 cubic meter flotation machine based on differential flotation process are used in Chibuluma and Baluba concentrators for cobalt + Cu-rich concentrates as well as copper concentrates.

25/ Annual Report of the Company 197[illegible]

26/ Annual Report of the Company 197[illegible]

- Smelters two smelters one at Mufulira and the other at Luanshya. Mufulira smelter has one electric furnace and two reverberatory furnaces. Luanshya smelter has three reverberatory furnaces.

Refineries two electrolytic refineries one at Mufulira and the other at Ndola.

Leach plant and cobalt extraction

Leach plant at Chambishi utilizes roasting, leaching and electrowinning process to recover copper and cobalt. The leach plant is currently being expanded to produce 21,000 tons/year of electrowon copper and 2,400 tons/year cobalt metal. The plant is expected to be fully operational in early 1979.

Turn over - Total Sales revenue

197	1977	1976
K262 million	K309 million	K227 million

Prices realised

197	1977	1976
K975/ton	K1110/ton	K806/ton

Constraints - Large shortage of spareparts due to lack of foreign exchange availability;
lack of skilled manpower;
rate of loss of skilled expatriates;
lack of railway transport.

Investment required Luanshya - Baluba Stage II: total cost of project K30 million
Chibuluma extension: total cost project K29 million
Chambishi underground expansion estimated project cost K57 million.
Chambishi leach plant extension expected project cost K29 million
Mufulira sub-vertical shaft expected project cost K50 million.
Mufulira materials handling expected project cost K1 million.

5. Nachanga Concolidated Copper Mines Ltd., Rokana (Workshop to produce spareparts for mining machinery of NCCM Mines)

Type - State owned industries

Product - Spareparts and warehousing

Raw materials - Various engineering products

Capacity - Not known

Employment - 169 persons

Machinery and	-	Machine shop: lathes, drilling machine etc. Boiler shop Forge shop Foundry - 2 smelting furnaces 1 ton, 1 1 - crucible furnace
Turn over	-	Not known
Constraints	-	Lack of skilled manpower Under utilized machinery
Investment required		No expansion plan.

(b) Metallic Products

1. Zamefa, Luanshya (Non-ferrous metal extrusion)

Type	-	Parastatal company 51% owned by INDECO and 49% USA Private Company
Product	-	Unarmoured PVC cables, armoured PVC cables, cables upto 3KV and 1.5 sq/mm, telephone cables, copper strips and section wire, aluminum sections.
Raw material	-	Copper wire bars, aluminium components for making PVA
Capacity	-	50% capacity was utilized in 1977
Employment	-	356 persons (1977)
Machinery and equipment	-	Extrusion, wire drawing, conductor stranding, insulating, laying up, armouring, final sheathing, testing
Turn over	-	K11,389,000 in 1974
Constraints	-	Lack of transport facilities for export, limited domestic market
Investment required for expansion		500,000 to 550,000K (1977)

2. Scaw Ltd., Kitwe (Steel and copper foundry)

Type	-	Private company with foreign joint venture
Product	-	Steel parts, steel balls, manganese steel parts, copper moulds
Raw materials	-	Scraps, sand, bentonite
Capacity	-	Balls - 36,000 tons/year Manganese steel - 4,000 tons/year Normal steel - 7,200 tons/year Utilization of capacity, manganese steel 50%, Normal steel 25%, (1977)
Employment	-	203 persons (50 are expatriate) in 1977
Machinery and equipment	-	Steel and copper foundry, 5 furnaces distributed as follows:

Capacity/t	KVA
4	1.8
3	1.2
4	1.7
3	3
3	3

Cast iron foundry, two induction furnace 3.5 t, 50 c/s, 1MVA

Turn over - 6.2 million K/year

Constraints - Lack of availability of scrap
Lack of management
Lack of demand

Investment required - 900,000K for expansion.

3. Vulcan Foundry, Lusaka (Smelting of Iron and Aluminium)

Type - Private company

Product - Cast Iron products upto 1.0 kg, which includes access hole or port covers, manhole covers, sump covers etc.

Raw material - Iron scrap, Aluminium, Coke, Bentonite, Moulding sands etc.

Capacity - 1,344 tons/year (under utilized)

Employment - 103 persons (include one expatriate)

Machinery and equipment - Preparation of sands, machining, 15 t/hour mecanized moulding shop with 10 machines. Two smelting pots 1 and 2 t/hour, crucible furnace for smelting aluminium.

Turn over - Not known

Constraints - Scarcity and high-cost of raw materials
Lack of specialized personnel
Deficient smelting facilities
Lack of chemical laboratory
Lack of pattern makers

Investment required - No expansion plan

4. Foundry Engineering Co.Ltd, Luanshya (Casting of bronze, brass and aluminium)

Type - Private Company

Product - Sand castings, case castings, centrifugal casting of different classes of valves etc.
With centrifugal casting the company produces bush bearings 50 mm to 300 mm dia. and 900 mm long.

Raw material - Copper and zinc, lead, aluminium and tin

Capacity - Bronze/Brass - 96 tons/year
Aluminium - 60 tons/year

Employment - 22 persons (1977)

Machinery and equipment	-	2 Crucible furnace 150 and 300 kgs. 1 Electric induction furnace 1 Centrifugal casing machine 1 Sand mixer
Turnover	-	145,000 K/year (1971)
Constraints	-	High cost of raw materials Lack of co-ordination with purchasing services of the mining industries Lack of foundry equipment and testing facilities
Investment requires		No expansion plan

5. Demar, Kitwe (Forge shop)

Type	-	Private company
Product 9	-	Bars, chisels etc.
Machinery and equipments	-	1 Drop hammer

Small scale industry with old installation

6. Tesolin and Darioli Engineering Ltd., Kitwe (Steel fabricators, steel pipes, Grating, Sale of values)

Type	-	Private company
Product	-	Low pressure pipes from 8" to 24", fabricated products
Raw material	-	Steel plates and sheets
Capacity	-	Pipe making capacity 10,000 tons/year company was producing 5,000 tons/year in 1977
Employment	-	Not known
Machinery and	-	Bending machines up to 10 mm thick and 2,500 mm long and 405 mm dia. Cutter for sections up to 13 mm Punching machine, Radial drill, circular saw, travelling cranes for 15, 10 and 20 tons.
Turnover	-	250,000 to 300,000 K/year
Constraints	-	Lack of demand due to unfavourable situation in copper mining.
Investment required		Rather a new establishment

7. Hume, Luanshya (Manufacturer of steel and concrete pipes)

Type	-	Private company
Product	-	Steel pipes 200 to 1200 mm dia.
Raw material	-	Steel plate, flauges, electrodes, oconcrete etc.
Capacity	-	8,400 tons/year steel pipe
Employment	-	369 (50% in steel and 50% in concrete)

Machinery and equipment	-	Steel Pipe Section Roll bending machine Seam welders, Guillotine shear, pipe treatment, Submerged arc welding set, test rigs, shot blast machine, seam form machine. Concrete Products Section Concrete mixer, vihy vibrator, pipe spring benches
Turnover	-	4.70 million K/year
Constraints	-	Lack of export market opportunity
Investment required		Company has planned to make pulleys for conveyors

8. Zambia Steel and Galco Division, Lusaka (Manufacturer of PVC Pipe, Black, and Galvanized Steel Pipe, Corrugated Sheet, Galvanized Window Sections)

Type	-	Private Indian company
Product	-	PVC pipe ½" to 16 dia. Steel pipe ½" to 3" dia.
Raw material	-	Strip steel, sockets and fittings, sheets, PVC materials
Capacity	-	PVC pipe 1200 tons/year Steel pipe 15000/18000 tons/year Corrugated sheet 16000 tons/year
Employment	-	PVC manufacture - 32 persons Steel pipe manufacture - 50 persons Galco division - 100 persons
Turnover	-	Not known
Constraints	-	Lack of market demand Higher cost of material Lack of export
Investment required		No expansion plan.

9. South Wales, Kitwe (Electrical products)

Type	-	Private company
Product	-	Construction and repair of transformers from 100 to 500 KVA with voltage up to 11 KV
Raw material	-	Paper insulated copper wire Magnetic plate and tank latter are subcontracted to copper belt steel.
Capacity	-	Manufacture 390 transformers of various types per year. Repair 2 transformers per week.
Employment	-	47 persons (3 expatriates)
Machinery and equipment	-	Electromagnet preparation shop, Assembly shop, Repair shop, Testing shop.
Constraints	-	Lack of demand due to situation in copper mining Lack of transport facility due to closure of Lobito port Increased cost of imported materials.

Investment required		No expansion plan

10. Cutler Hammer Igranic Ltd., Kitwe (Electrical products)

Type	-	Private company
Product	-	Assembly of electrical panel and electric installations.
Raw material	-	Panels built by refrigerator cables supplied by ZAMEFA, switches, small transformers, electrical accessories in general.
Capacity	-	Not known
Employment	-	53 persons (7 expatriates)
Machinery and equipment	-	Assembly shop with standard machinery
Turnover	-	1.0 million K/year with import value 0.6 million K/year (1977)
Constraints	-	Difficulties caused by import restrictions
Investment required		No expansion plan

11. Diacarb, Ndola (Light engineering products)

Type	-	Private company
Product	-	Manufacturer of sounding drills, diamond fittings, drilling rods, bar couplings, extension rods, repair of drilling machinery.
Raw material	-	Steel, diamonds etc.
Capacity	-	Not known
Employment	-	Not known
Machinery and equipment	-	Diamond fitting shop, forge shop, machine shop, heat treatment shop, production control.
Turnover	-	6 to 7 million K/year
Constraints	-	Restriction of imports Decrease in demand from copper mines
Investment required		No expansion plan

12. Atlas Copco, Ndola (Light engineering repair and maintenance)

Type	-	Private company
Product	-	Sale of Atlas copco machinery and, repair and maintenance of their machinery in Zambia
Raw material	-	different types of materials
Capacity	-	Not known
Employment	-	20 persons in Lusaka 15 persons in Ndola

Machinery and equipment	-	Standard machines for small maintenance shop
Trunover	-	Not known
Constraints	-	Not known
Investment require		Not known

13. SKF, Kitwe (Sales of bearing snd manufact ure of light engineering products)

Type	-	Private company
Product	-	Distribution and sale of SKF bearings, manufacture of agricultural machinery, idlers for conveyor belts, machining and repair of wheel assemblies
Raw materials	-	Rollers, pipes and accessories for idlers, cast wheels, wheels for trailors
Capacity	-	Manufacture of idlers from 13" to 40" - 34,000 units/year Agricultural machinery: trailers and ploughs Machining of wheel assemblies: 960 units/year
Employment	-	101 persons (52 are in shop)
Machinery and equipment	-	Machine shop, fitting and assembly shop, boiler shop
Turnover	-	900,000 K/year(1977) of this amount 30/40% is for imported products
Constraints	-	Limitation of import
Investment required		Planned to invest 50,000 K in 1975 to increase production and the range of idlers.

14. C.P. Engineering Co. Ltd., Kitwe (Light engineering machine parts)

Type	-	Private company
Product	-	Manufacture of machine parts for mining industry as per customers order
Raw material	-	Not known
Capacity	-	Not known
Employment	-	Not known
Machinery and	-	7 - lathes, 1 - turret lathe, 2 - milling machines, drill, planer, sharpening machine
Turnover	-	Not known
Constraints	-	Difficulty in getting skilled workmen Lack of furnace for heat treatment Lack of testing laboratory
Investment required		No expansion plan.

15. Congar, Kitwe (Light engineering spare parts manufacture)

Type	-	Private company
Product	-	All kinds of machined parts for the mining, cement, sugar and textile industries
Raw material	-	Not known
Capacity	-	Not known
Employment	-	50 persons (4 expatriates)
Machinery and equipment	-	12 lathes, 4 milling machines, 1 planer, 1 boring machine a and various standard machinery, heat treatment furnace.
Turnover	-	500,000 K/year (1977) of this value 50% are imported content
Constraints	-	Import difficulties. Inadequate programming co-operation from mining industries Lack of testing laboratory
Investment required		Plan for the incorporation of boiler plant

16. Roan Engineering LECO Ltd., Luanshya (Light engineering workshop)

Type	-	Private company
Product	-	Metallic structure; fibreglass, construction of hydraulic and pneumatic actuating cylinders, pressure valves, boiler parts; repair of compressor motors, etc.
Raw materials	-	Iron and steel products, components for making fibre glass
Capacity	-	Not known
Employment	-	420 persons (32 expatriates)
[illegible] equipment	-	Machine shop, boiler shop, maintenance shop, fibre glass facilities
Turnover	-	4.5 million K/year (import value 2.25 K/year (1977)
Constraints	-	Difficulty of importation High cost of raw materials Difficulty in getting small castings Lack of co-ordination with mining industries
Investment required		No expansion plan

17. Copper Belt Steel Manufacturing Co. Ltd. Kitwe (Light Engineering workshop)

Type	-	Private company
Product	-	Manufacture of arches, medium and heavy boiler works, floor gratings, wire fences, electric assemblies
Raw material	-	Iron and steel products, wire, etc.
Capacity	-	Medium and heavy boiler works 3[illegible]0 tons/year Yielding arches 6000/7200 tons/year Wire fence 1[illegible]00 tons/year
Employment	-	225 persons (25 expatriates)

Machinery and equipment	-	Boiler shop with doublors and curvers for plate upto 11 mm thick and 3000 mm wide, machine shop with lathes, saw, drill, shop for making yielding arches with special machinery, machinery for making wire products.
Turnover	-	2.4 million K/year 1977
Constraints	-	Difficulty in import High cost of iron and steel products
Investment required		Expansion of plant and warehouse for electrical assembly

18. Refrigeration Fabrkators, Kitwe (Ligh engineering workshop)

Type	-	Private company
Product	-	Shaping and forming of thin sheets for electric panels, electric transformer tubes, electric conducts and shields, metal cabinet, steel works.
Raw materials	-	Thin steel sheets and plates
Capacity	-	Not known
Employment	-	70 persons (1977)
Machinery and equipment	-	Shapers, cutting machines, punching machines, welding machines, paint shops
Turnover	-	Not known
Constraints	-	High price of sheets and plates
Investment required		No expansion plan

19. Lenco, Lusaka (Light engineering workshop)

Type	-	60% state owned by INDECO and 40% Italian
Product	-	Sheet metal work: water bowser, bulk cement delivery vehicles, farm trailers, bus bodies etc. Steel work: frames, windows etc. Metal furniture: shelving, office tables, clothes lockers, cabinets, filing cabinets etc. Nails: sizes 2.5 mm to 152.4 mm
Raw materials	-	Iron and steel wires and section, sheets and plates
Capacity	-	Not known
Employment	-	513 persons (30 expatriates)
Machinery and equipment	-	Steel workshop, light boiler shop, nail making shop
Turnover	-	3 million K/year (import value 2.5 million K/year)
Constraints	-	Low market demand High price of iron and steel
Investment required		No expansion plan

20. B.M.S, Lusaka (Light engineering workshop)

Type	-	Private company
9 Product	-	Same as Lenco (item 19 above)
Employment	-	90 persons

21. African Wire Ropes, Kitwe (Light engineering workshop)

Type	-	Private company
Product	-	Manufacture of steel cables Sale of imported cables Excavator cables Cranes, haulage system Lifts and elevators
Raw Material	-	High carbon and high tensile steel wire
Capacity	-	500 ton/year of cable only 50% is utilized in 1977
Employment	-	93 persons (2 expatriates)
Machinery and equipment	-	Diverse lines for braiding wire and cables
Turnover	-	Not known
Constraints	-	Lack of demand Difficulty in getting raw materials Transport problem
Investment required		No expansion plan

22. A.M. Construction, Kitwe (Light engineering workshop)

Type	-	Private company
Product	-	$\frac{3}{8}$" chain made from steel rods Sale of imported chains and hoists Manufacture of slings Repair of hoists
Raw material -	-	Steel wire and rods
Capacity	-	125 tons/year of $\frac{3}{8}$" chains
Employment	-	32 persons
Machinery and equipment	-	Cutting, bending and $\frac{3}{8}$" rod welding machine for chain, chain testing machine
Turnover	-	210,000 K/year (252,000 K/year indigenous turnover) Sales in 1977 42,000 K/year
Constraints	-	Lack of market opportunity Lack import license
Investment required		No expansion plan

(c) Non-Metallic

1. Piggot Naskew, Kitwe (Manufacturer of rubber products)

Type	-	Private company
Product	-	Rubber linings, seals, couplings, hose, sheeting Anticorrosive coatings, tire recapping
Raw material	-	Rubber, neoprene etc.
Capacity	-	Not known
Employment	-	300 persons (20 expatriates)
Machinery and equipment	-	Not known
Turnover	-	3 million K/year (import value 835,000 K/year)
Constraints	-	Difficulty in import of raw materials Lack of transport facilities High charges of transportation
Investment required		Comapny is planning to expand its activities.

2. Prodorite, Kitwe (General plastic product company)

Tupe	-	Private company
Product	-	Plastics: PVC and glass fiber; reinforced (GRP) piping, fittings, tanks, electrical conduct, roof sheets. Bricking: Acid, refractoring, water proofing Anticorrosives: G.R.P., electrolitic cells launders, tanks Adhesive cements: Epoxy, vinyl etc.
Raw material	-	Not known
Capacity	-	80% goes to copper industry and the rest to the construction industry.
Employment	-	Not known
Machinery and equipment	-	Bricking facilities, GRP, PVC Adhesive cements installation and machinery.
Turnover	-	1.5 million K/year
Constraints	-	Lack of import license Lack of receiving imported raw material (bad delivery)
Investment Required		There is plan to double the plant size

Level of Existing Technology

Most of the industries in Zambia are light engineering or traditional industries based on import subsititution, mostly owned by private sector. The product lines, technological processes, the skills and cost of production are regulated by the foreign private enterprises who are in the joint venture process or wholly owned by themselves. The required skills are mostly brought from abroad, and the development of local skills are deliberately evaded to perpetuate the dominance of foreign exterprises and enhance transfer pricing. Nevertheless, the level of technology has improved substantially in Zambia particularly in the private sector and state owned joint venture industries.

Copper belt Industries

Most of the copper belt industries including the repair and maintenance workshops in the mines are adequately improvised with modern machinery and equipment with foundries etc. Relative automation has been introduced in mining industries and welding technology is in advanced stage. Lack of co-operation between the industries is actually jeopardising the rate of growth of technology in these industries. It is noticed that the technology imported from the advanced developed countries are relatively at a higher level. In order to maintain the industrial performance at higher level of technology, Zambia is importing substantial number of expatriates. This influx of expatriates presumably should have increased the higher rate of technology absorption among the indigenous operatives. But in Zambia's case the transfer and absorption of technology is taking space at a lower rate than what has been anticipated. This may be due to the lack of confidence of the multinationals towards the Zambianization policy of the Government. Be that as it may be, it is high time on the part of the Zambian authority to formulate a national technology plan which should provide the Zambian industries with appropriate development and absorption of technology in the various level of industries.

The Present Levels of Manufacturing Technology in Basic Metal Engineering and Allied Metal Working Industries in Zambia

Careful examination shows that Zambian industries adopted wide range of technologies from advanced developed countries particularly in mining and selected engineering industries. The analysis of the industrial establishements as described in the previous section of this chapter clearly indicates the following technological development in Zambian industries:

Iron and Steel Industry (for basic production of iron and steel): There is no industry manufacturing commercial iron and steel based intermediate products. The steel products are imported.

Non-ferrous Metal Extrusion (mainly copper based): Produces various metallic products and technology is at advanced level.

Ferrous Castings: Most of the maintenance and repair shops and number of engineering establishments have foundries with induction and electric furnaces. These establishment have forging facilities too.

Non-ferrous Castings: Predominently crucible furnaces with forging facilities.

Forging: Only one company is specialised in forging activities exclusively. In small scale rural sector manual forging process is popular particularly for the manufacture of agricultural hand tools and implements.

Pipe Manufacture: Advanced technology is used with induction welding process.

PVC and Rubber Products: Raw materials are mostly imported, manufacturing technology is rather advanced.

Electrical Transformers, Electric Panels etc.: Mostly assembly work, majority of parts are imported. Sheet metal forming and bending process has been developed at advanced level.

Spareparts Manufacturing Industries: Mining industries are well equipped to produce spareparts. 50% of spareparts can easily be manufactured in Zambia, if close co-operation among the industries can be promoted.

Chains and Mechanical Ropes: Although the raw materials are imported the technology for manufacturing the chains and rope has been developed to a higher level.

Raw Material Requirement

The perspective of Iron and Steel requirement in Zambia by 1990 can be summerised below:

Country	Estimated based on ECA Report		Estimate derived in Consultant's Report	
	Tons in 1990	Percent of region (12 countries)	Tons in 1990	Percent of regiona (12 countries)
Zambia	241,469	14.8	125,500	11.8
Total of Region (12 countries)	1,633,700	100.00	1,060,500	100.00

Demand at various sources in Zambia 25/

In Tons

Location	Pig Iron	Wire Rod	Rods & Bars	Sections			Seamless Tube
				Light	Medium	Heavy	
1. Demand by existing factories							
Lusaka	1,100	,527	1,650	505	325	412	-
Kitwe	900	513	1,350	495	575	337	-
2. Demand by direct consumers in 1980							
Lusaka	-	103	15,494	5,577	7,740	440	-
Kitwe	-	35	12,677	4,650	6,345	360	-
3. Demand by proposed new projects in 1980							
Lusaka	7,603	25,522	11,475	1,21[illegible]	1,545	3,101	135
Kitwe	6,206	20,964	9,3[illegible]	997	1,264	2,53[illegible]	110
4. Total demand of iron and steel in 1980							
Lusaka	[illegible],703	26,252	27,619	7,500	10,110	3,953	135
Kitwe	7,1[illegible]6	21,552	23,415	6,412	[illegible],264	3,235	110

25/ Figures obtained from the Uganda Development Corporation during field mission in Dec. 1970 for their feasibility study of iron and steel industry in Uganda.

In Tons

Location	Plates	H.R. Sheet & Coil	Skelp	C.R. Sheet & Coil
1. Demand by existing factories				
Lusaka	2,611	2,2?5	-	2,121
Kitwe	2,137	1,?70	-	1,735
2. Demand by direct consumers in 1980				
Ludaka	435	1,?51	16,65?	6,639
Kitwe	354	1,033	13,628	5,434
3. Demand by proposed new projects in 19?0				
Lusaka	5,707	2,906	?65	5,?57
Kitwe	4,670	2,37?	707	4,792
4. Total demand of iron and steel				
Lusaka	?,753	6,452	17,523	14,617
Kitwe	7,161	5,?71	14,335	11,961

Import Substitutions

Zambia's industrialization is primarily based on import substitution. The Second National Development Plan (1972-76) has outlined productive activities in basic metal and engineering industries primarily based on import substitution. Certain projects of this nature will be undertaken by Government and para-statal agencies like IDCC, but many are included to be picked up and implemented by private industries.

Import substitution of intermediate and capital goods

1. A report on metal working industries shows the need for another Cast Iron foundry and to establish a plant producing welded steel pipes;

2. Expansion of existing factory to produce 100 bus bodies per year;

3. To undertake feasibility study for the manufacture of more lorry bodies, trailors and railway wagon;

4. Opertunity exists in Zambia to substitute building materials by local production e.g. metal fixtures, electrical fittings, steel structure and pre-fabricated building elements. Several items of these building materials can be produced by small scale industries;

5. A feasibility study shows that there is ample scope for the manufacture and production of semi-fabricated and cast brass products in Zambai; and

6. Already steps have been taken in ZAMEFA factory in Luanshya to increase the production of copper wires and cables from 2000 tons/year to 6000 tons/year.

Import Substitution in Small Scale Rural Industries

1. RUCOM holdings (INDECO subsidiary) is planning to ecreate 20/30 workshops complexes in rural sector;

2. RUCOM industries have planned in increase in the number of Blacksmiths in rural areas to produce hand tools and farming implements.

Import Substitution of Consumer Goods

1. Creation of two more saw mills based on indigenous timebers to produce sawn timber, and particle boards;

2. Expansion of living stone car assembly plant with an output of 5000 cars per year

3. To undertake studies for the manufacture of refrigerators, electrical appliances, light bulbs and fluorescent tubes;

4. To undertake studies for the manufacture of bicycles and mppeds.

Forecast of Import Substitution [27]

The forecast of import substitution is shown below

PREDICTED IMPORT DEMAND FOR 1980 AND 1985

Description	Unit	Forecast Demand	
		1980	1985
Metallic Products			
Pig Iron and Ferroalloys	-	-	-
Steel Products (67321 and 67341 SITC Code)	t	64,000	78,000
Wire Bar Cores	1,000 K	219 (1)	247 (1)
Copper Products (Wire, Tubes, Pipes, etc)	-	-	-
Extrusion Products	-	-	-

(1) Forecast import substitutions.

27/ Extracted from the Economic Review 1977

Description	Unit	Forecast Demand	
		1990	1995
Casting Products			
Pump Castings	-	-	-
Non Ferrous Metals Cost	-	-	-
Junction Boxes - Elect. (Cast -Alum)	1,000 K	187 (1)	212 (1)
Brake Shoes-Loco/Rolling Stock	1,000 K	94 (1)	106 (1)
Symons Crusher-Liners	-	-	-
Balls (Cement Industry)	t	775	1,100
Liners (Cement Industry and Other)	t	625	900
Cylpebs (Cement Industry)	t	1,125	1,600
Hollow Screw Clamps	1,000 K	187 (1)	212 (1)
Rubber Synthetic Products			
Piping Hose	t	400	540
Retreading of Tyres (62912 SITC Code)	t	3,250	3,575
Rubber Belts	-	-	-
Pump Components-Rubber	1,000 K	427	520
Polyester Resin Products	-	-	-
Underground Support Insulators	1,000 K	117 (1)	132 (1)
Piping			
Pipes (Lancing Pipe)	1,000 K	375 (1)	425 (1)
Alvenious Pipes	1,000 K	1,500 (1)	1,700 (1)
PVC Plastic Rigid Tubes	-	-	-
Electric Components			
Electric Motors	-	-	-
Transformers	-	-	-
Electric Material	-	-	-
Resistances/Electric Locomotives	-	-	-
Electric Light Bulbs	1,000 K	265	300
Cells and Batteries	-	-	-
Assembled Components			
Assembled Steel	t	12,500	15,250
Containers	-	-	-
Wire Products	-	-	-
Nuts (69421 SITC Code)	t	3,300	4,000
Nuts-Non Standard (Large)	1,000 K	44 (1)	50 (1)
Roof Bolts - Expansion Shelf/Studs	1,000 K	470 (1)	530 (1)
Hand Tools (	1,000 K	3,500	4,250
Chains	-	-	-
Conveyour Idlers, Rollers Idler Bases, Pulleys	1,000 K	696	792

(1) Forecast import substitutions

Description	Unit	Forecast Demand	
		1990	1995
Belt Fasteners	1,000 K	280 (1)	320)(1)
Air Cylinders (Pneumatic)	1,000 K	625 (1)	700 (1)
Rock Drill Spares	1,000 K	4,050 (1)	4,600 (1)
Diamond Bits and Crowns	-	-	-
Gyrex Screening	-	-	-
Open Mesh/Grid Flooring	-	-	-
Power Generation Machinery (other than electric) Parts	t	2,250	2,750
Power Generation Machinery (other than electric) Parts	K'million	12.6	15.3
Agricultural Machinery	1,000 K	975	1,125
Machine - Tools	t	705	1,150
Machines for Mining and Construction (Item 71041 to 71045)	K'million	15.3	17.9
Id. Spare Parts (Items 71046 to 71059)	t	11,500	13,000
Id. Spare Parts (Items 71046 to 71059)	K'million	35.3	40.0
Machinery and Machine Parts	K t	6,100	6,900
Machinery and Machine Parts	K'million	21.0	23.7
Pumps and Valves	t	3,625	4,400
Pumps and Valves	K'million	13.6	15.6
Impellers	1,000 K	950	1,075
Gears	-	-	-
Moulds, Dies	-	-	-
Components 150 RB Shovel/32 40 Drill	-	-	-
Components Gyratory Crushers	1,000 K	470	530 (1)
Main Frames-Symons Crushers	-	-	-
Loco/Rolling Stock	-	-	-
Railway Vans, Wagons and Trucks	-	-	-
Others			
Moulds Mash	-	-	-
Refractory Bricks	-	10,500	12,000
Refractory Cements	-	-	-
Heat Insulating Bricks	-	-	-
Grinding Wheels	-	-	-
Explosives	t	..	-
Explosive Accessories	1,000 K	1,550 (1)	1,770 (1)

(1) Forecast import substitutions.

Existing and Pipe Line Projects

Basic Metal Industries

Industry	Item	Description of Project	Source	Project Cost Million K	Remark
Copper	1	Luanshya Baluba Stage II for increase production of copper and cobalt	RCCM	30.0	K 34 million spent 1978
	2	Chibuluma Extension	RCCM	29.0	K 16 million spent 1976
	3	Chambishi Underground Expansion	RCCM	62.0	K 57 million spent upto June 1975
	4	Chambishi Leach Plant Extension for increased production of cobalt	RCCM	29.0	K 26 million spent upto June 1975
	5	Mufulira Subvertical shaft	RCCM	60.0	K 6 million spent upto June 1976
	6	Mufulira Materials Handlines	RCCM	10.0	K 9 million spent upto June 1975
	7	Feasibility study for production of semi fabricated and Cast Brass Project No.TF/ZAM/ 77/001 2500 tons of brass 1 2500 Tons of Brass 1985 5000 Tons of Brass 1995	UNIDO	25.0	Project implementation is in advanced stage in advanced
Iron & Steel	1	Expansion of foundry	Development Bank of Zambia	205.3	K 4.4 million K local currency and K122.5 million from foreign line of credit
Engineering Industries	1	Purchase of farm machinery	Development Bank of Zambia	104.0	
	2	Manufacture of Automobile battery components(MANSA)	Development Bank of Zambia	0.289	Competed
	3	Setting up of Saw Mills	Development Bank of Zambia	0.230	

Industry	Item	Description of Project	Source	Project Cost Million K	Remark
	4	Setting up of a plant for the production of industrial grinding and cutting discs.	Development Bank of Zambia	0.2505	
	5	Setting up a plant for the production of concrete railway speepers	Development Bank of Zambia	5.017	
	6	Bicycle assembly plant	IDEBOO		
	7	(a) 19 rural development workshops (b) 12 rural garages (c) Wire products project (pilot plant)	IDEBOO/RUCOM RUCOM " "	Total allotment 3.115	This figure includes other rual development projects

Projects Identified by the Mission

The following projects are identified by the mission.

Development Bank of Zambia

A. Basic Metal and Engineering Industries Project

1. Minimum size steel work based on local iron ores

Integrated iron and steel plant using solid fuel, that is, coal as reducing agent. Initial planning information has already been transmitted to the Bank 20,000/30,000 tons of iron and steel. A pre-feasibility study is required.

2. Steel rolling mill for bars and sections*

Proposed mini steel plant capacity 20,000 tons/year from scrap and from project item A.(1) as stated above. A pre-feasibility study is required.

3. Agricultural hand tools

This projectt will be interlinked with project A(2) above. Selection of agricultural hand tools and pre-feasibility study is required based on national mechanization policy.

* It is estimated that the iron scrap availability in Zambia is about 30,000 tons/year and most of these scraps are presently being used up by the copper belt industries. Therefore Zambia will have to process the local ores for iron and steel production.

4. Wire products manufacture (Staple pins , gem clips, paper pins etc.)

Sufficient informations have been supplied to the Bank. A combined pre-feasibility study is required.

5. Brass fittings for domestic and industrial products

An outling profile for the brass fittings for domestic and industrial usage is already forwarded to the Bank. A detailed feasibility study is required. A feasibility study for production of semi-fabricated and cast brass manufacture has already been prepared by UNIDO Project No. TF/ZAM/77/001 and UNIDO Contract No. 77/49.

6. Electrical armature for domestic and industrial use

A detailed feasibility study is required.

7. Aluminium tube manufacture

A detailed feasibility study is required.

B. Non-metallic Products

The following projects are identified in the non-metallic product manufacture:

1. Car tyre recycling;
2. Lead pencils
3. Wood distillation (charcoal)
4. Fibre board, wafer board, particle board
5. Pulp and paper-based production (pines)
6. Waste paper recycling

C. Food Processing

Cassava processing.

RUCOM Industries Ltd.

The projects identified in the small scale industries sector:

1. To enlarge the Lusaka based metal workshop for agricultural implements manufacture. The capital required will be K2.5 million.

2. To expand the industrial estates in Zambia (feasibility study and report available from Government of India)

3. Immediate manpower training programme
   - 30 persons to be trained in Metal sector for Rucom (1979-81);
   - 30 persons to be trained in Wood working sector for Rucom (1979-81).

4. Training programme for personnel in technical fields(for quality control and creativity)

5. Reactivate the two metal working centre in CHOMA and MANSA which are closed down for time being.

Sectoral and Sub-sectoral Constraints

The following are the major sectoral and sub-sectoral constraints in Zambian industries:

- due to tight foreign exchange situation Zambian industries particularly those industries based on import substitution, are facing acute shortage in raw materials and immediate spareparts requirements to sustain profitable operations;
- there is acute shortage of trained manpower both at operative level and middle management level;
- majority of the engineering companies are suffering from lack of working capital;
- due to the problems in transport sector, the export of finished goods and import of immediate raw materials are being seriously affected;
- with regard to the new and ongoing projects, the management problems, in most cases, faced by individual projects were ocompounded by the difficult economic conditions prevailing in the country. For instance, limited foreign exchange allocationment that many of the projects could not obtain adequate raw materials and spareparts to sustain profitable development operations;
- the lack of well planned and abankable projects continues to be a serious constraints for the development of the financial institution's activities and the ut lization of the available foreign exchange resources;
- there is a screw constraint in planning and strengthening individual projects. Although the Zambian Government has taken measures to establish a Nation Consultancy Agency, it will be difficult to achieve integrated development unless there is a linkage between this Consultancy Agency and the Fiancial and Industrial Promotion Institutions.

CHAPTER V

COUNTRY CONSTRAINTS

The previous chapter has outlined the existing status of basic metal and engineering industries in Zambia, highlighting the major areas of sectoral and sub-sectoral constraints the industries in general are facing today. Apart from sectoral and sub-sectoral constraints in basic metal and engineering industries, there are many major country constraints the Zambian Government is encountering at national level. Unless the basic constraints are removed it is difficult for the government of Zambia to implement the ensuing Third National Development Plan. The major country constraints can be summerised below:

Institutional Constraints

Examining the present institutional structure Zambia has large parastatal organization the State owned Zambia Industrial and Mining Corporation (ZIMCO). Twelve wholly owned subsidiaries fall directly under ZIMCO. It employes nearly 22,000 peoples in its subsidiaries and head office. INDECO Ltd. is one of the 12 subsidiaries of ZIMCO with 34 subsidiary companies and four associate companies. Apart from these State owned industries, there are large number of private industries in Zambia. There exists large overlapping activities in these giant parastatal organizations. Many engineering activities are being duplicated and interlinked activities within various Ministries are not being adequately threaded for integrated development of basic metal and engineering industries in Zambia. For example the identification of projects and the necessary feasibility studies are carried out by many institutions within ZIMCO and INDECO as well as by Zambian Development Bank. The appropriate decisions and implementations of various interlinked priority projects cannot get the ground owing to the lack of co-ordination among the executing institutions. There is an urgent need for the rationalization of institutional bodies, precedural reformations, interlinkage of ministries and parastatal organizations for effective planning and programming of priority projects within the broad context of industrial development.

The main institutional constraints in Basic Metal and Engineering Industries in Zambia

Constraints in Management Services:

- Weaknesses in implementation and operations for specific industrial projects;
- Lack of technical training programme
- Lack of facilities for project identification, prefeasibility studies;
- Although government has established National Consultancy Agency, a greater interlinkage is necessary to co-ordinate this institution with the operational and financial institutions of the country.

Constraints in Product Development and Design Services:

- Lack of facilities for product adaptation and design facilities particularly in small scale industries sector in Zambia;
- Lack of facilities for product development and design;
- Lack of facilities for prototype design and manufacture;
- Lack of facilities for supply of working drawings.

Constraints in Procurement Finance and Marketing Services:

- Lack of adequate foreign exchange to import essential raw materials and spare parts in priority sectors;
- Lack of procurement facilities for Cast Iron and Steel particularly scrap material, due to acute transport problems Zambia is facing today;
- Lack of facilities for the procurement of appropriate plant and machinery which includes assessment of appropriate machine specification etc.
- Lack of marketing facilities for engineering products.

Technological Constraints

The various technological constraints in Zambia can be summerised below:

Constraints in Technological Advisory Services:

- Lack of facilities for plant layout particularly in small scale sector;
- Lack of facilities for process planning particularly in engineering industries sector;
- Lack of facilities for methods improvement (at present technical institutions do not produce any Industrial Engineers). Industries greatly depend on foreign technology through the expatriates;
- Lack of facilities for the appropriate selection of machinery and equipment;
- Lack of facilities for the improvement of actual production techniques;

- Lack of facilities for the manufacture of jigs,tools and fixtures. (There is possibility to expand a number of existing engineering industries to produce jigs, tools and fixtures for engineering industries)
- Lack of manpower facilities for material and production control;
- Workstudy system i.e. method study and work measurment do not exist even in large industries;
- Inadequate facilities for quality control and particularly metallurgical testing requirement in many industries.

Constraints in Common Engineering Service Facilities:

- Lack of foundry facilities particularly for steel castings;
- Lack of facilities for the manufacture of intermediate goods e.g. steel sheets, plates commercial sections;
- Lack of facilities for precision tool room activities, particularly the manufacture of jigs,tools and fixtures;
- Limited facilities for the manufacture of machinery and transport equipment spare parts;
- Lack of heat treatment facilities;
- Lack of maintenance facilities particularly in transport, engineering industries, water cypply, agricultural machinery industries.

Constraints in Ancillary Industry:

- In order to cultivate an integrated development approach, the development and expansion of ancillary industries are of paramount importance to the Zambian industrial sector; The following ancillary industries do not exist in Zambia or if exist need further expansion:
- Manufacture of brass or bush bearings;
- Manufacture of wide range of hardware;
- Manufacture transmission gears both; for industrial machinery and transport equipment;
- Manufacture of wide range of electrical components;

- Manufacture of automotive accessories;
- Manufacture of wheels and rims;
- Manufacture of domestic and industrial taps, valves, and water fittings;
- Manufacture of agricultural machinery parts (discs, tines, chisels etc.);
- Manufacture of electrical motors and generators (AC & DC) and many other products which are now being imported from foreign countries.

Constraints in Manpower and Training: - This is one of the major constraints Zambia is facing today in all manufacturing sectors particularly in metal and engineering industries. Sizable expatriates are taking out substantial amount of foreign exchange. In copper industries alone, the number of expatriates have touched nearly 1000. Estimated output of engineering technicians and technologist in 1980 is expected to be 514, which will be far too low than the total requirement for Zambian industries. The net output from trade and vocational training programmes in 1980 is estimated to be only 7502 personnel. Therefore to bridge this gap intensive training and manpower development programme is needed in Zambia for the next decade to come.

Constraints in Maintenance and Spare parts Supply:

- Lack of spare parts for existing machinery and equipment. (The mission was told that ROAN Consolidated Mines Ltd. requires immediate K50 million worth of spare parts for mines);
- Lack of preventive maintenance schemes in industries;
- Lack of trained maintenance fitters and engineers;
- Lack of maintenance workshops particularly in the field of engineering industries.

Financial Constraints:

- The unfavourable balance of payment situation has aggravated the natural and sustained industrial growth in Zambia in the recent years. Zambia's most of the engineering industries are import substitution oriented. The value of import content of industrial products has adversely affected the country's balance of payment due to increase cost of assembly components from abroad. Coupled with this episode, the industrial production has gone down due to lack of transport facilities for essential raw materials in priority industries. In order to over come this situation a massive foreign exchange is required to revitalize Zambia's industrial economy. This can only be over come if Zambia concentrates to implement resource based industries e.g. utilization of iron ores, production of brass ingots and intermediate products for export, development of agricultural food production etc.

CHAPTER VI

PROPOSED INTEGRATED DEVELOPMENT OF BASIC METAL AND ENGINEERING INDUSTRIES IN ZAMBIA

PROPOSED INSTITUTIONAL DEVELOPMENT

Unification of Industrial Sector

Previous chapter describes the major country constraints Zambia is facing today. In order to vovercome these constraints Zambia requires institutional structural changes for the development of integrated basic metal and engineering industries whose role and characteristics are important milestone for Zambia's self-reliance and self-sustaining economic growth. The existing structural changes which took place in December 1978 (refer page 46) will no doubt improve the performances and functions of parastatal subsidiary industries and private sector industries in Zambia. But there is a need for interlinking the existing metal and engineering industries and particularly the government institutions in order to formulate a definite pattern of expansion and development for this vital sector of industry.

In order to programme an integrated development of basic metal and engineering industries in Zambia, it is essential that the institutional mechanism should comply interlinked development process within the framework of goverment's policies and strategies those will be clearly outlined in the Third National Development Programme. Therefore, the structural change and rationalization of existing institutions responsible for the basic metal and engineering industries integrated development, envisages the following important considerations.

- development and re-orientation of institutional mechanism;
- identification and rationalization of institutional activities;
- institutional responsibility and clearer identification of work areas;
- interlinkage through horizontal and vertical integration of various institutions responsible for integrated development;
- integration of sectoral and sub-sectoral development programme through restructuring of institutions with minimum duplication and overlapping development activities.

Government Institutions Required for Integrated Development of Basic Metal and Engineering Industries in Zambia

After the re-organization of Ministries during December 1978, the appropriate time has come now to interlink the project activities through the various Ministries and parastatal organization for integrated development of

metal and engineering industries. Therefore, it is essential to identify the relevant ministries and parastatal organization who will be responsible to participate in this integrated development aspects.

Ministries	Prastatal Organizations	Financial Institutions
1. National Commission for Development and Planning (Office of The Prime Minister)	1, ZLICO Sub-holding company - INDECO Ltd. - National Import Export Corporation (NIEC) Subsidiary - National Hotels Corporation - National Transport Corporation - Zambia National Energy Corporation - FINDECO - MINDECO - NCCM - RCM - Metal Marketing Corporation (MEMCO) - Zambia Railways - Zambia Airways - Rural Development Corporation	1, Development Bank of Zambia 2. Agricultural Development Bank (Proposed by Government in December 1976) 3. Commercial Banks 4. Co-operative Banks
2. Ministry of Finance and Technical Co-operation		
3. Ministry of Industry, Commerce and Foreign Trade		
4. Ministry of Land and Natural Resources		
5. Ministry of Mines		
6. Ministry of Power, Transport and Communications		
7. Ministry of Education and Culture		
8. Ministry of Labour and Social Services		
9. Ministry of Agriculture and Water Development		
10. Ministry of Works and Supply.		

A. National Commission for Development and Planning (Office of the Prime Minister)

In this important Ministry and highest policy making organ for industrial development, it is suggested to incorporate a "Planning and Programming Unit" for integrated development of basic metal and engineering industry those will be outlined in the Third National Development Programme.

(a) Zambia Industrial and Mining Corporation (ZIMCO)

This corporation's activities can be broadly divided into two divisional activities e.g.

Development and Promotion Division: All activities related to the project development will be responsible to the National Commission and Development Planning.

Division for Holding Industries: All activities related to the running of existing industries including monitoring of private industries will be responsible to the Ministry of Industry, Commerce and Foreign Trade.

Development and Promotion Division: This division of ZIMCO will work in close coordination with the proposed Planning and Programming Unit of National Commission for Development Planning and should spearhead the development of industrialization in Zambia. The division will closely coordinate with Ministry of Finance and Technical co-operation and financial institutions. The division will have the following sections:

- Project identification and pre-feasibility study section;
- Section for promotion of private and public enterprises including joint venture projects;
- Section for promoting metal and engineering industries which will include:
  - (i) enlargement of common service facilities e.g. foundry, forging, heat treatment, machine shop, tool room etc.
  - (ii) enlargement of ancillary industries;
  - (iii) installation and expansion of industrial estates (RUCOM industries under INDECO should participate here).
- Section for the development of agricultural machinery and implements manufacturing industries;
- Section for the development of transport equipment;
- Section for investment promotion, finance and legal aspects.

Division for Holding Companies (ZIMCO): This division should devote day to day running of existing ZIMCO's subsidiary industries. The division's activities must closely liase with the Ministry of Industry, Commerce and Foreign Trade.

(b) Proposed National Centre for Industrial Research and Development

All existing management and research centres should be amalgamated and fall under the umbrella of this proposed centre. It is suggested that in every district there will be a operational sub-division of this centre.

The proposed new centre will be under National Commission for Development and Planning and executing agency will be ZIMCO. This centre will closely cooperate with Ministry of Education, Ministry of Labour, Ministry of Natural Resources, Ministry of Mines and Parastatal, Public and Private industries.

Such a centre will mainly devote all aspects of development for management, technology, manpower training programme, prototype design and manufacture. Particular emphasis will be given for the adoption, adaptation, absorption and trans transfer of appropriate industrial technology. All existing metal working centres will be under this new Centre. The Centre will devote the following main activities through the following sections:-

- Section for development of management service;
- Section for product development and design service;
- Section for technological advisory service;
- Technology development and transfer of technology section;
- Section for manpower training programme;
- Proposed metal working centres in each districts for prototype manufacture.

B. Ministry of Land and Natural Resources and Ministry of Mines

These two Ministries in close co-operation with (a) National Commission for Development and Planning (b) ZIMCO should be involved in development of basic metals in Zambia. It is important to create the following divisions in these Ministries for integrated development of basic metals e.g.

- Department of Mineral Exploration under Ministry of Land and Natural Resources;
- Department of Mines for the promotion of mining activities;
- Division for the Development of Iron and Steel under Department of Mines and ZIMCO;
- Division for the development of non-ferrous metals under Department of Mines & ZIMCO;
- Division for the development of precious metals under Department of Mines & ZIMCO;
- Division for the exploration of oil-gas-coal and Ministry of Natural Resources.

C. Ministry of Industry, Commerce and Foreign Trade

In order to create improved performance of Zambian Industries, it is proposed to create the following departments to carryout specific activities of this Ministry.

(i) Department of Industry

(ii) Department of Commerce

(iii) Department of Foreign Trade.

(i) Department of Industry

The activities of the Department of Industry will be channeled out through the following sections:

- Section for industrial information;
- Section for monitoring of industry; and collection of industrial statistics
- Issue of licence for new projects and import control;
- Development of small scale industries in close co-operation with RUCOM industries (INDECO)
- Development of handicraft and rural industries in close co-operation with Rural Development Corporation (ZIMCO);
- Central testing laboratory and issuance of Board of Trade Mark;
- Section for liason with ZIMCO for existing industries and Ministry of Finance and Technical Co-operation.

D. Ministry of Finance and Technical Co-operation

The broad activities of the Ministry of Finance and Technical Co-operation will be to co-ordinate the financial, accounts management and technickal co-operation for specific industrial projects (metals and engineering) originating from both Public and Private sector industries. Another important function of this Ministry will be to act as an "watch dog" for all industrial activities particularly financial, technology import, import subsititution, utilization of foreign credit lines and final approval of every projects for releasing of public funds. It should act as a direct Agency of the Government to provide and control financial aspects all projects and industries where public fund has been utilized.

The Ministry should have the following sections required to assist the industrialization in Zambia.

- Treasury Section;
- Industrial Development Banks
- National Bank
- Co-operative Banks
- Financial Institutions
- A special Section for obtaining international financial credits and loans for all major projects
- Merchant banking sections in the commercial banks.

E. Ministry of Power,Transport and Communications and Zambia Railways under ZIMCO

For integrated development of engineering industries in Zambia, it is essential that the development of Power,Transport, Communications and Railway are paramount importance to the national economy. As these sectors are interlinked and heavily dependent on each other, it is suggested that Zambian Railways activities need to be integrated with Ministry of Power, Transport and Communication.

For the development and improvement of efficiency it is suggested that Power,Transport, Communications and Railway individually must have the following sections.e.g.

- Development and Repair Maintenance Section including workshops;
- Traffic and control section for transport and railway activities;
- Operation section.

The Zambia Railway Workshop must play an important role for:

- capital goods and machine tools development;
- training of skilled operatives;
- enlargement of subcontracting to the small and medium scale industries for procurement of parts those are now being imported.

It is necessary that the Railway Workshop should enlarge their tool room activities for all engineering industries in Zambia; particularly manufacture of jigs, tools and fixture and special purpose tooling.

F. Ministry of Education and Culture and Ministry of Labour and Social Services

These two Ministries are important for the manpower development particularly in the field of basic metal and engineering industry ddevelopment in Zambia. These two Ministries should closely liase with the following institutions.e.g.

- ZIMCO and its subsidiaries;
- Ministry of Finance and Technical co-operation;
- Ministry of Industry, Commerce and Foreign Trade.
- Ministry of Land and Natural Resources
- Ministry of Mines.

A comprehensive manpower training programme in envisaged for 1980-1990 and 1990-2000 A.D. Such programme must spell out the sectoral development of manpower training in all manufacturing activities in Zambia.

Technology Development

In order to implement the policy, strategy and measure setout by the National Commission for Development Planning, it is essential that part icular attention be given to the technology development in Zambia.

There is need for the formulation of a National Technology Plan in Zambia in order to achieve a harmonious development of institutional and technological linkage during the industrialization process.

National Technology Plan

The national technology plan needs to be formulated by the National Commission for Development Planning through its proposed National Centre for Industrial Research and Development in close collaboration with the Mini Ministries stated in page 82, ZIMCO and the Development Banks. Such technology plan must clearly spell out:

- various technology requirements particularly in basic metal and engineering industries sector with a view to utilize maximum natural resources through such manufacturing technology well suited under best local conditions;
- the development of indigenous manufacturing technology through adoption, adaptation or through importation;
- the requirements of machinery, equipment, metal working processes and manufacturing facilities required for the expansion of industrial sector;
- comprehensive survey of exisitng technologies being used in sectoral and subsectoral industries as outlined in hapter IV titling Level Existing Technology in basic metal and engineering industries (page 64)
- a definite time target to be introduced in the priority industrial sector for product identification and development of such products through the technology plan available within the country;
- the assessment of the basic manufacturing process of iron and steel making, foundry, forgining, heat treatment, machine shop, tool room and major basic manufacturing and processing requirements in basic metal and engineering industries development programme;
- the accelerated manufacture of indigenous pspare parts and components in vital sectors of industries particularly in copper belt industries;
- the promotion of indigenous subcontracting arrangement through the interlinkage of manufacturing industries;
- the definite plan for the manufacture of capital goods and intermediate goods manufacturing industries with special reference to the the manufacture of selected machine tools;
- a national plan and target for long term requirement of managerial and skilled manpower for Zambian industries through the development of comprehensive training programme for skilled and semi-skilled operatives for the basic metal and engineering industries.

Therefore, the national technology plan will regulate the transfer of appropriate technology and safe guard the Zambian industrial activities through the actual assessment of:

- basic manufacturing technologies;
- the need for machinery and equipment best suited under local conditions;
- absorption of indigenous and foreign technologies where the important parameter will be continuous facilities for industrial training of local development of skills;

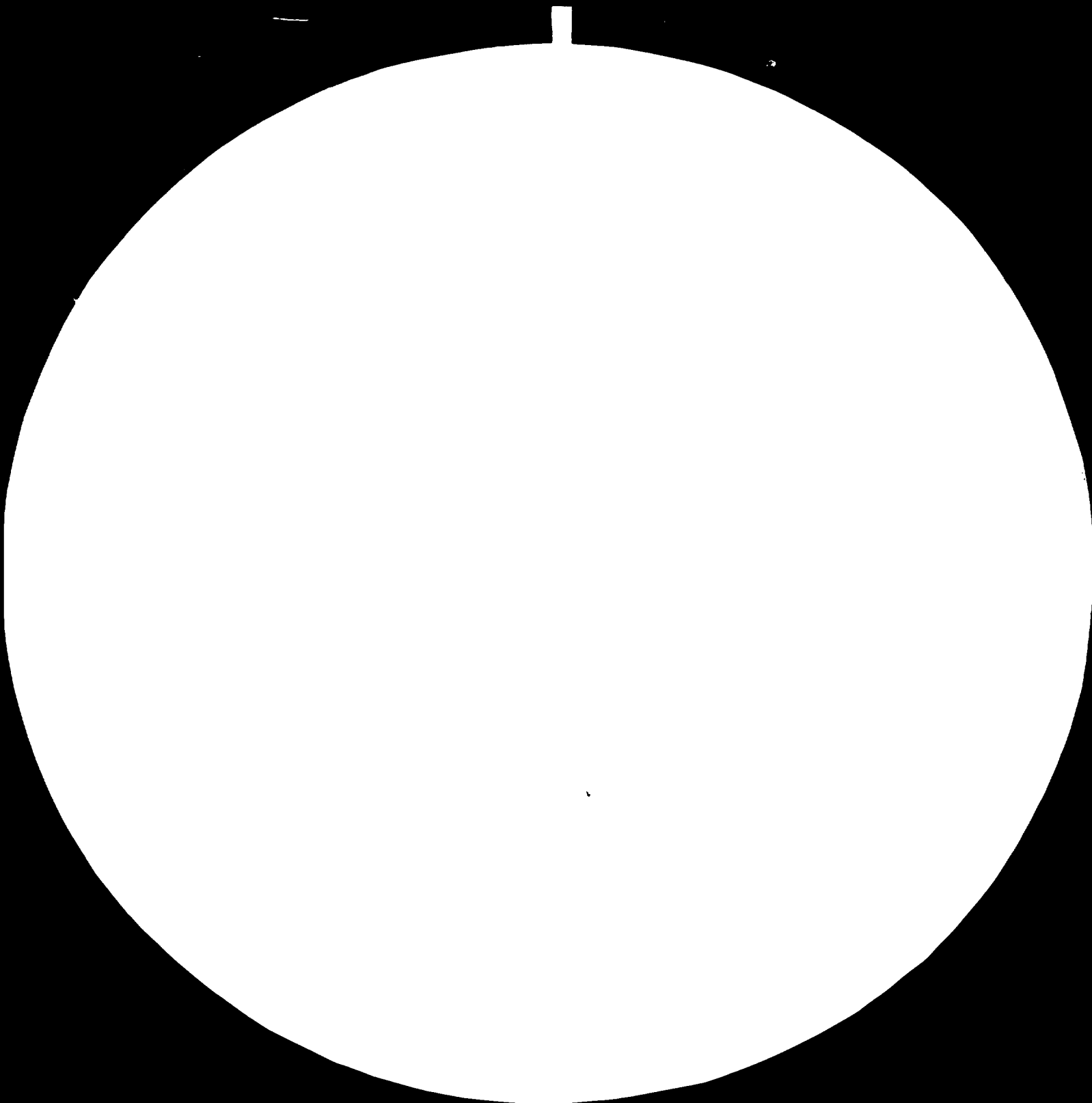
The implementation of technology development and transfer of appropriate technology in Zambia will be carried out through the proposed National Centre for Industrial Research and Development as outlined in page 82.

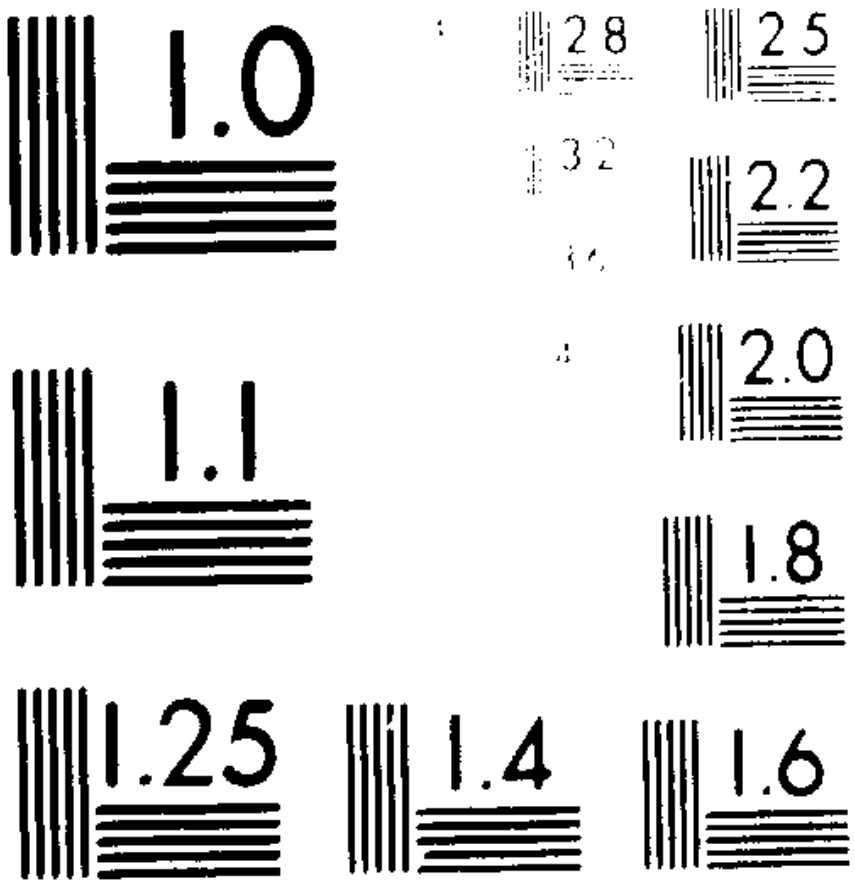
Institutional and Technological Interlinkage for Integrated Development Programme of Basic Metal and Engineering Industries in Zambia.

A. Development of Iron and Steel and Non-ferrous Industrial Development of Ferrous Metal

Development line or phase	Institutional	Interlinkage	Technological
I	National Commission for Development Planning ↓ through Planning and Programming unit (Proposed) ↓	→	Macro-policy and strategy within the context of overall economic development. ↓
II	Ministry of Land and Natural Resources and Ministry of Mines	→	Continous exploration and geological survey of deposits of iron, coal, hydal power, copper, zinc cobalt etc. and all industrial metal and non-metallic exploration. ↓
	Assistance from other units		
III	Proposed National Centre for Research and Development (a) Development of Management services section (b) Technical Advisory service section (c) Technology Development and Transfer of Technology section. ↓	←	Technical development for mining of ores, machinery for mining and spare parts requirement. ↓

Development line or phase	Institutional	Interlinkages	Technological
IV	Proposed Central Testing Laboratory under Ministry of Industry, Commerece and Foreign Trade	←	Testing ores for Commercial use (feed back to the department Mines).
V	Development of Ferrous metal under ZIMCO (Proposed Development Division of ZIMCO)	→	Pre-feasibility study and feasibility study for the manufacture of: (a) Processing of iron ores (b) Liquid steel-pig iron in form of metal pallets. (c) Ferro silicate and ferro manganese. (d) Steel ingots and shape castings (e) Rolled sections.
VI	Zambia Industrial and Mining Corporation (Devlopment Deivision of ZIMCO). Evaluation of studies and necessary action with: (a) Ministry of Finance and Technical Cooperation (b) Ministry of Industry, Commerce and Foreign Trade (c) Ministry of Education (d) Ministry of Labour (e) Ministry of Works and Supply (f) Development Banks.	→	Implementation of projects.
VII	ZIMCO (Development Division) for the promotion of Private and Public sector industries	→	Formation of Iron and Steel complex.
VIII	ZIMCO (Division of Holding Companies)	→	Complex will be handed over after commissioning and trial run.





Development of Non-ferrous Metal

This will be the same as described in above development phases. At the point step VI the activities will fall under existing ZIMCO's subsidiarys e.g. NCCM, RCM and MEMCO for the expansion of non-ferrous metals.

B. Development of Engineering Industries

Development line or phase	Institutional	Interlinkage	Technological
I	National Commission for Development Planning	→	Macro Policy and strategy within the context of overall economic development.
	through Proposed Planning and Programming Unit.		
II	Ministry of Industry, Commerce and Foreign Trade and Zambia Industrial and Mining Corporation (ZIMCO)	⇄	Micro-policy, Strategy and Development Programme
III	ZIMCO (proposed Development Division of ZIMCO) and Department of Industry	→	Expansion of existing engineering industries and establishment of new engineering industries.
	(a) Development of capital goods industry (b) Development of small scale industries RUCOM under INDECO. (c) Development of Handicraft and Rural Industries through RUCOM and Rural Development Corporation under ZIMCO.		
IV	Proposed Development Division of ZIMCO for promotion of industries in cooperation with Ministry of Finance Ministry of Industry Ministry of Education Ministry of Labour Development Banks	→	Project Identifications. prefeasibility studies and feasiblity studies of new engineering industries and up grading of existing industries

Development line of phase	Institutional	Interlinkage	Technological
V	Proposed National Centre for Industrial Research and Development (All sections of this Centre will participate at this stage page 82	→	Design and Development of identified engineering products Technology assessment Transfer of technology and appropriate choice machinery and equipment; manpower training programme.
VI	ZIMCO(Development Division for promotion of public and private sector industries in close cooperation with Ministry of Industry	→	Establishment of engineering industries (a) Capital goods (b) Intermediate goods (c) Consumer goods (Durable Products) (Non-durable Products)
	Enlargement of -Common services facilities -Ancillary Industries -Industrial Estates (with INDECO/RUCOM/ZIMCO)	→	Technology and manufacturing support for integrated development of engineering industries.
VII	ZIMCO(Development Division) and Ministry of Agriculture and Water Development, and Ministry of Industry, INDECO/ RUCOM should play an important role.	→	Manufacturing Programme for Agricultural machinery and equipment
VIII	ZIMCO(Zambia Railways) and Ministry of Power, Transport and Communications	→	Manufacture of Railway equipment and spareparts in Railway Workshops. Manufacture of Transport Equipment in Repair and Maintenance Workshop. Expansion of existing Car Assembly Plant for gradual manufacture of cars.
X	ZIMCO(Central Repair and Maintenance Workshop)	→	Manufacturing programme of spareparts for major industries and projects to be implemented.

Development line of phase	Institutional	Interlinkags	Technological
XI	ZIMCO(Division for holding companies) and Private Industries	→	Manufacturing programme of new engineering industries.

Institutional and technological interlinkage is one of the important aspects of Zambia's plan for integrated development of basic metal and engineering industries. The industrial development pattern at present indicates substantial lack of interlinkage both in institutional and technological activities in Zambia. The existing institutional activities are not well defined and many technological activities are overlapped in various segments of important institutions. Harmonious development in basic metal and engineering industries sector can only be achieved if Zambian Government promotes specific "responsibility oriented" sections within the existing and proposed framework of institutional and technological activities for greater integration of basic metal and engineering industries development programme.

(C) Management and Manpower Development

Zambia's labour employment statistics indicate that total employment in the industrial sector constituted during 1974:

Zambian Nationals	Foreigners [28]
351,190 persons	35,080

The population in Zambia during 1974 was 4.695 million.

In subsectors of industry during 1974, the wage employment constituted:-

	Zambian	Foreigner
Mining and quarrying	52,820	11,210
Manufacturing	39,710	3,420
Construction and allied repairs	70,440	4,220

Totalling - 131,820 persons.

These figures nearly indicate that there is an urgent need for Zambian industry to improve the local skills to fill the expatriate gap which Zambia

---

28/ Central Statistical Office, Lusaka

presently importing in foreign exchange. In order to fill this gap and to develop indigenous manpower development, it is necessary for the Zambian Government to formulate a manpower development plan particularly for the integrated development of basic metal and engineering industries.

The development plan of Zambia clearly indicates the Government priority on Management and Manpower Development particularly in the basic metal and engineering industries sector. Moreover the Government has taken adquate measure for the production of semi-skilled, skilled, and middle and higher technical management cadre personnel. The projected figures are indicated in the next page in tabular form.

Programme for Higher and Middle Management Development

A. Training Courses for Senior Executives

(In order to replace the highly paid expatriate professionals, the time period of the course should be for a minimum period of one to two years).

- To acquire closer experience in economic, social and political factors at macro level which affect the decisions making within an engineering organization.
- Economic analysis for management decision
- Organization structure and behaviour
- Planning and optimising
- Personnel management and industrial relations
- Financial analysis for planning, centrel and reports
- Functional management e.g. materials management, production management, marketing management, public services.

B. Training Courses for Young Managers

(This programme must be on top priority)

This programme will be to increase the efficiency of young Zambian executive to develop their present performance and to augment potentialities for shouldering broader responsibilities in furture. Time period of the ecurse must be at least for two years.

The programme must include the following:-

- the environment in which an engineering enterprises function in a a developing country;
- the analytical tools available for planning and control of production;
- the behavioral patterns of operatives working in an engineering enterprises;

BASIC METAL AND FABRICATED METAL, MACHINERY AND EQUIPMENT INDUSTRIES.

MANUFACTURING ESTABLISHMENTS BY NUMBER OF WORKERS. OCTOBER, 1973

	1-19	20-49	50-99	100-199	200-499	500 plus	Total Establishments	Total workers
Basic metal industries"(1)								
Iron and steel basic industries	1	-	1	-	-	1	3	733
Non-ferrous refineries not included in mining mining	1	-	1	-	-	-	2	66
Total	2	-	2	-	-	1	5	849
Percentage	40	-	40	-	-	20	100	-
Fabricated Metal, Machinery and equipment industries								
Cutlery, hand tools, hardware	1	1	2	-	-	-	4	219
Structural metal products	9	13	10	3	1	1	37	2,634
Fabricated metal products	10	3	7	3	-	-	23	1,320
Engines and trubines	-	1	-	-	-	-	1	43
Welding	-	2	-	-	-	-	2	79
Special industrial machinery	2	3	1	-	-	-	6	193
Electrical industrial machinery	2	6	2	1	-	-	11	536
Electrical apparatus	-	3	1	1	-	-	5	395
Construction engineering	-	1	-	-	-	-	1	21
Other (metal furniture, radio, tv, aircraft repair, motor vehicle assembling, optical instruments, etc.)	26	5	4	2	2	-	45	2,322
Total	50	43	27	15	3	1	140	7,762
Percentage	35.7	30.7	19.3	11.4	2.2	0.7	100	-
GRAND TOTAL	52	43	29	15	3	2	145	8,611

(1) Excluding copper refining.

Source: Ministry of Commerce. Manufacturing and Employment at October, 1973.

ESTIMATED OUTPUT OF ENGINEERING TECHNICIANS AND TECHNOLOGISTS

Programme	1.975	1.976	1.977	1.978	1.979	1.980	Total
Industrial Science Technicians	16	20	15	20	20	20	111
Electronics Technicians	11	10	20	21	21	21	112
Telecommunication Technicians	–	15	15	25	20	25	95
Electrical Technicians	36	73	70	95	105	105	484
Mechanical Technicians	39	54	50	75	60	80	378
Automotive Technicians	–	20	25	25	50	60	180
Structural/Fab.Technicians	27	–	25	25	25	25	127
Process Instrument Technicians	–	22	24	24	24	24	118
Survey Technicians	[illegible]	20	–	–	–	–	28
Architecture/Building Technicians	9	–	–	–	–	–	9
Construction Technicians	–	–	30	30	35	35	130
Mining Technicians	33	16	12	16	16	20	113
Mining Metallurgy Technicians	19	16	16	16	19	22	110
Mining Survey Technicians	23	13	14	16	20	20	106
Mining Ventilation Technicins	7	15	[illegible]	14	15	14	73
Computer Programming Technicians	–	16	20	20	20	25	101
Sub-Total	228	318	344	419	470	496	2275
Mechanical Technologists	15	14	15	25	30	30	129
Industrial Science Technologists	6	11	10	11	12	12	62
Electronics Technologists	–	12	10	10	12	11	55
Telecommunications Technologist	10	–	10	12	15	15	62
Electrical Technologists	13	14	15	15	15	20	92
Process Instrument Technolgist	–	–	–	–	9	10	19
Civil Technologists	–	9	–	–	–	–	9
Survey Technologists	–	–	10	–	–	–	10
Architecture Technologists	–	–	–	–	–	–	–
Building Technologists	7	–	–	–	–	–	7
Architecture/Building Technologists	–	10	–	–	–	–	10
Construction Technologists	–	–	–	15	15	20	50
Sub-Total	51	70	70	88	108	118	505
Grand Total	297	388	414	507	578	614	2,780

Source: Development and Planning Section, Department of Technical Education and Vocation, Training.

OUTPUT FROM TRADE AND VOCATIONAL TRAINING PROGRAMS

TRADE	ACTUAL					PROJECTED				
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agricultural Mechanics	0	0	0	16	32	33	45	45	45	45
Automotive repair	47	66	121	118	165	165	180	180	180	180
Bricklaying and Plastering	67	70	48	75	75	75	45	45	45	45
Carpentry and Joinery	55	76	64	66	90	90	45	75	45	75
Clerk typists	27	16	30	54	43	75	60	40	60	60
Electricity	47	66	60	81	90	90	90	90	90	90
Farm Machine Operators	-	-	-	35	0	0	-	-	-	-
Heavy equipment	-	-	16	0	16	15	15	15	15	15
Machinists and Machinists Fitter	-	25	13	67	44	45	30	30	30	30
Metal Fabrication (Light)	-	9	-	-	0	-	-	-	-	-
Metal Fabrication(Heavy)	-	15	19	34	65	60	60	60	60	60
Office equipment repair	-	-	13	-	8	14	15	-	15	-
Painting and Decorating	8	14	14	15	0	30	0	15	15	15
Panel beating	-	-	20	-	30	0	15	15	30	15
Plumbing	55	58	32	56	75	60	75	60	75	60
Power sewing	-	-	12	14	14	14	15	15	15	15
English as foreign language	-	-	-	36	36	36	36	36	36	36
Radio and T.V. repair	12	23	0	0	28	0	30	-	30	-
Shorthand typists	-	17	15	37	90	90	180	220	120	200
Tailoring	4	1	12	0	14	-	15	-	15	-
Welding	18	31	0	0	0	-	-	-	-	-
Wood Machinists	10	13	14	13	15	15	-	15	-	15
TOTAL	350	491	503	717	935	907	951	956	916	956
Accumulative Total		841	1344	2061	2996	3903	4854	5810	6726	7682

Source: Department of Technical Education and Vocational Training.

- the principle and practice of sound business management;
- expertize in the area of specialization e.g. metallurgical, foundry, forging heat treatment, machine shop, tool room, etc.
- comprehensive functional management, e.g. production management, marketing management, personnel management, and financial management.

C. . Training Courses for Industrial Engineeries

(This programme must be on top priority)
Time period of the course must be at least for two years.

Zambia has very limited number of industrial engineers for all sectors of manufacturing industries. Most of the existing industrial engineers are being hired from the foreign countries. The mission strongly recommend the introduction of an Industrial Engineering Course both at University and at Technical College level.

The programme should include the following important aspects of Industrial Engineering:-

- Productivity and main factors affecting productivity;
- Elemination of waste;
- Principles of organization and general managemunt;
- Method study (70 per cent of the time must be devoted for method study) which should include basic procedure; working condition including safety; selecting the job, recording and examining the facts, developing the best methods; plant layout and material handlings; movement of workers; methods and movements at the work place; selection of speed, feed, depth of cut etc.; application of jigs; tools and fixtures; installing and maintaining the new methods; job specifications.
- Work measurement (15% of the time must be devoted to work measurement) which should include; basic procedures; selection of equipment or equipment used; selecting the job; making the study; rating; examine the study and calculating the standard time; allowances; job description; production studies; synthetic time;
- Wage structure; payment by results and incontive schemes;
- Factory management; e.g. simplication, standardization and specialization of design; production planning and control, quality ocontrol; material control; estimating and casting; plant maintenance;
- Selection of machinery and equipment for specific product; plant layout; job evaluation; merit ratings, etc.;
- Project evaluation, pre-feasibility and fasibility study assessment, product identification; introduction of new product lines;

- Formulation of supervisory and operative training within in-plant activities.

(D) Training Courses for Maintenance Engineers

The programme must be immediately introduced owing to the deteriorating situation in the field of repair and maintenance activities in Zambia's industrial sector.

Time period for this course will be for two to three years.

Lack of maintenance facilities and particularly the requirement of spare parts jeopardising the day to day normal running of Zambia's industrial activities. It is essential that the Government of Zambia should make a closer assessment for the need of skilled maintenance engineers and the volume of spare parts required in the priority industries sector. The increasing complexity and importance of maintenance engineering warrants a marked increased in training of machine operators and maintenance operatives. Efficient and economic production requires plant and equipment to be operated and maintained correctly. When breakdowns occur, rapid diagnostic and remedial action is required. This challenge can only be met by a full understanding and detailed working knowledge of the particular plant and equipment, on the part of qualified maintenance engineers involved.

The course should be designed for:

- Service maintenance training programme.
- Spare parts manufacturing training programme.

These two programmes should jointly includes the following activities:-

- The development of the service engineering function in industry and its integration into the main organizational structure.
- The development of organization, establishment and control for maintenance engineering.
- The development of drawing-office practice which must include:
  (a) Plant identity and layouts appropriate to the maintenance function.
  (b) Methods of projections - dimensioning - limits-fits-tolerances
  (c) Drawing numbering and recording system.
- The development of organization and management for maintenance engineering and jobbing work at workshop level.
- The development of preventive maintenance schemes.
- The training on inspection and maintenance of site plant
- Training for comprehensive practice on purchasing, store keeping and warehousing for industrial plant maintenance.
- Training on Transport and Communication which contributes to the maintenance function.

- Training on costing and finance for maintenance control and accountability.

(E) Other Major Training Programmes to be Organized in particular fields e.g.

- In-plant training programme for graduate, diploma holders, and successful students from the University technical institutes, and technical colleges particularly in the field of mechanical and electrical engineering for two-three years;
- Quality control and inspection courses - six months;
- Courses on machine shop practice - one to three years;
- Courses on tool room work (jigs, tools, fixtures, die making, etc.) - two - three years;
- Ad hoc courses on preventive maintenance and industrial safety - eight weeks;
- Ad hoc courses on industrial designs and tool designs - ten to twelve weeks.

Besides these regular and ad hoc courses, it is necessary for the Zambian University to increase its activities in the field of mechanical and electrical engineering. It will be an added asset if the University includes industrial engineering course at degree level along with existing courses. The mission clearly felt that without substantial numbers of industrial engineers in the industries, it is difficult for the industries to improve its present level of productivity. More so, there are many expatriate industrial engineers running the industries at present. This is costing Zambian Government substantial amount of foreign exchange which could otherwise be utilized if Zambia had facilities for industrial engineering courses.

Manpower Development at Higher and Middle Management Level in Zambia for Engineering Industries

The lack of technical manpower is hindering the planned growth of industries particularly in the field of basic metal and engineering industries in Zambia. The mission feels the introduction of the following programmes at the University and Technical College level will assist the industries considerably. This can be summerized as follows:-

- The basic engineering courses e.g. Mechanical, electrical need to be redesigned to suit Zambia's industrial requirement;
- Introduction of Industrial Engineering course at University level will create a new dimension in the industrial development;
- Mechanical engineering course must include the specialization in Production Engineering I and II i.e. Quantity Production and Quality Production with particular emphasis to machine tools;

- Planned Post Graduate Work/Training Programme for the Graduate/ Diploma/Licence holders to receive practical trainin in the national or subregional industries at least for a period of two to three years in specific field of engineering;
- Such Training Programme must be designed jointly by (a) University and Technical Institutional Authorities, (b) Local Government Agencies e.g. Ministry of Labour, Ministry of Industry, Ministry of Education, National Commission for Development Planning, Ministry of Finance and Technical Co-operation; and (c) Industries in Zambia both public and private sectors.
- The pappprenticies undergone to such work/training programme must be remunerated either by the Government or by the industries or by both on a sharing basis;
- The work progress of each apprentice should be recorded and needs to be fed back to the relevant authorities;
- Where industrial training facilities are inadequate, the training programme will have to be carried out on a regional and subregional co-operation basis;
- Every medium and large-scale industries must have a training cum maintenance section.

Manpower Development at Skilled Technician/Workers Level in Engineering Industries

Zambia has a substantial shortage of engineering skilled technician and workers. The Third National Development Programme has already envisaged a Manpower Development Programme in addition to regular training programmes so as to raise the required manpower in the shortest possible time. Meanwhile, the Government has been endeavouring its efforts to fill the manpower gaps through external technical assistance; but it is recognized that external technical assistance cannot solve the countries basic skilled manpower requirement on a long term basis.

The manpower development programme will be implemented by the existing:-

- Zambia Institute of Technology in Kitwe and Luarshy a (Diploma in Technilogy);
- The Northern Technical College (Certificate or Diploma of Technology level);

  Trades Training Institutes (Eight centres);
- Technical Teacher Training Institute to be built at Kitwe;
- Nkumbi International College (Offer operative and mechanical courses);
- University of Zambia.

The mission feels that the manpower development at skilled technician/ workers level should include the following training courses:

- General machinist e.g. turner, borar, miller, shaper, grinder, etc.
- Fitters, welders, fabricators, etc.
- High skilled tool room operatives particularly in manufacturing of jigs, tools and fixtures;
- Quality control e.g. viewers and inspectors;
- Skilled maintenance operative particularly in machine tools, transport equipment, railways, power generating equipment;
- Maintenance technicians for heavy industries e.g. rolling mills, mining equipment, etc.

The above training activities require at least two to three years comprehensive training programme in each particular trade mentioned above. The mission proposes the above training activities need special consideration and mobilization of all internal resource and particularly the full utilization of maintenance and repair shops, Zambia railway workshop and the existing training centers where in-plant training programme can be established.

Projects Recommended by the Field Mission

In line with the basic metal and engineering industries development programme in Zambia and with further reference to the Second and Third National Development Plan's recommended activities, the field mission recommend the following important projects to be included in national implementation programme for basic metal and engineering industries development. Therefore, it is recommended to include these projects either in existing public and private sector industries or to carryout new feasibility studies on project by project basis as indicated below:

A. Basic Metal Industry

Projects	Requirement	Country
1. Development of iron and steel complex at sub-regional level.(Zambia/Uganda/Tanzania/ Kenya) for the manufacture of: - Mild steel ingots; - Electrode quality carbon st l; - Forging quality carbon steel; - Hardening and tempering quality carbon steel; - Carbon, carbon-manganese and silico-manganese quality spring steel;	Survey and prefeasibility study and comprehensive dialogue with the countries.	Sub-regional

Projects	Requirement	Country
- Carbon tool steel; - Case-hardening quality carbon sulphur steel etc.		
2. Manufacture of brass ingots (whole series of Cu and Zn alloys) (Subregional countries Zambia, Uganda, Kenya, Zaire, Nigeria)	Pre-feasibility study and net sub-regional requirements must be explored.	Sub-regional
3. Manufacture of fire bricks of and refractory materials (Uganda, Zambia, Kenya, Tanzania)	Pre-feasibility study and net subregional requirements need to be estimated.	Sub-region
4. Further exploration of coal and coal based materials in order to utilize potential iron ores utilization.	Survey and exploration	Zambia
5. Setting up welding electrode manufacturing unit (this can be possible after the installation of steel complex as indicated in (1).	Pre-feasibility study is required particularly for construction and copper belt industries	Zambia
6. Setting up of small foundries for Cast Iron and brass shape castings at least two in each districts.	These foundries will help the rural industries. Feasibility study is required.	Zambia
7. Integrated Iron and Steel complex at National Level for production of: - Pig Iron - S.G. Iron - Malleable Cast Iron - Steel ingots Steel production should include: - Forging quality carbon steel - Hardening and tempering - quality carbon steel - Carbon manganese and silico-manganese quality spring steel. - Case hardening quality carbon sulphur steel - Bright bars (for machining) - Free cutting quality carbon sulphur steel.	A comprehensive pre-feasibility study is required. As Zambia has substantial deposit of good quality iron ores and coal it is possible to implement such project with initial capacity of 20,000/ 30,000 tons iron and steel production.	Zambia

Projects	Requirement	Country
(All these steels are input to engineering and agricultural implements manufacture)		
8. If the project identified in item(7) is implemented it is possible to include the following production line in the integrated iron and steel complex. e.g. hot (cross) rolled sheets (average up to 5 mm thick and 430 to 700 mm width for agricultural parts and construction and fabricating industries).	Detailed study is required including sub-regional countries requirement.	Zambia

B. Engineering Industries

Manufacture of Capital Goods, Intermediate Goods and Durable Consumer Goods by End Products

Project	Requirement	Country
9. Manufacture of simple machine tools in existing Railway Workshop and parts procurement from existing metal industries and parts import: - Simple shearing machine - Simple Bending machine - Double ended grinder - Horizontal lathes upto 2HP - Shaping machine 1HP - Simple wood working machines.	Survey and feasibility study is required. particularly the expansion of existing Railway Workshop in Zambia.	Zambia
10. Manufacture of Ferrous (malleable) die-cast components for pipe fittings e.g. bend, elbow,tee,socket,hex-nipple, cross, plug, cap, locknut, flange, union, socket reducing, hex-bushing, elbow reducing.	Pre-feasibility study is required. Existing metal working industries can be expanded	Zambia
11. Manufacture of non-ferrous die-cast components for water fittings, spare parts, pumps impellers, railway application household requirement.	This study should be carried out in conjunction with item 10 above.	Zambia

Projects	Requirement	Country
12. Manufacture of animal drawn and simple power operated agricultural machinery.e.g. cultivators, tillers, planters, seeders, reapers etc.	Feasibility study is required(Please refer item 7 in page 101)	Zambia
13. Manufacture of automotive ancillary parts and spare parts - radiators, exhaust pipes, brake lining, clutch facings, automotive brake slack adjusturs, brake drums.	Market study and feasibility study is required some of the these products can be included in the manufacturing programme of existing companies.	Zambia
14. Manufacture of hardware e.g. wire nails, nuts and bolts, screws, locknuts, machined screws, pins, split pins.	Market study and feasibility study is required.	Zambia
15. Forged mechanical hand tools e.g. pliers, drills, hammers, clamps hacksaws, screw drivers, vices, wrenches, pincers, tin cutters, and msmall tools.	Feasibility study is required. Export market opportunity exists in sub-region	Zambia
16. Manufacture of agricultural and industrial pumps, (a) Agricultural pumps: - Monobloc,Deepwell, submersible - Deepwell vertical. (b) Industrial pumps: - Horizontal split case - Centrifugal and Rotary pumps - Vertical and horizontal pumps	Feasibility study is required. Many brass parts can be consumed when copper is a basic production material available in Zambia.	Zambia
17. Manufacture of kitchen utensils, cooking ware and ho hospital and canteen equipment. - Stainless steel cutlery - Aluminium or stainless steel pots, pans etc. - Hospital, carteen and industrial equipment in Aluminium/stainless steel.	Feasibility study is required.	Zambia
18. Manufacture of metal cans for food industries including extruded tubes(for tooth paste, and food industries)	Feasibility study is required	Zambia

Projects	Requirement	Country
19. Manufacture of table fans, electric irons, small cookers, stores, kerosine lanterns etc.	Feasibility study is required.	Zambia
20. Manufacture of electical accessories; switchgear, plugs and sockets, thermostats, contactors, lugs, junction boxes, lamp fittings etc.	Feasibility study is required.	Zambia
21. Manufacture of razor blades.	Feasibility study is required.	Zambia

Integrated Development Programme of Priority Projects in Basic Metal and Engineering Industries for Zambia.

Proposed sequence of programming of projects in Basic Metal and Engineering Industries Development in Zambia.

No	Project Source	Page	Abbreviation
1	Rationalization projects: i.e. Projects Operational/Under study by the Zambian Government.		PRU (existing)
2	Projects Identified by ECA/UNIDO mission in December 1978 during the meeting with Government Agencies.		IU (proposed)
3.	Projects recommended by ECA/UNIDO mission to achieve Integrated Development of Basic Metal and Engineering Industry.		PNU (proposed)

Sequence of Programming

A. BASIC METAL DEVELOPMENT PROGRAMME (NATIONAL LEVEL)

No	Project Title	Refer page	Source of Origin of Project as shown in page	Government Implementating & Co-operating Agencies. (Refer page)	Period of Development
	Iron and Steel				
1	Proposed visit of ECA/UNIDO diagonistic study team for integrated pre-feasibility study for iron and steel (see page 72)	72	PIU (Proposed)	NCDP, MLNR, MOM, NCDP, ZIMCO MEMACO DBZ.	1979
2	Requirement of geological survey for iron and coal	100	PNU (Proposed)	MLNR MOM ZIMCO	1980-82
3	Study of tranportation and processing of iron ores	100	PNU (Proposed)	MPTC MLNR MOM ZIMCO	1980-81
4	Expert assistance for the development of road, water supply and electricity	100	PNU (Proposed)	MPTC MAWD MWS MOM ZNEC ZIMCO	1980-81
5	Project to set up a training centre for iron and steel with metallurgical laboratory		PNU (Proposed)	ZIMCO MOM MLNR MFTC	1981-82
6	Exploration and mining of iron ores	72 & 100	PNU (Proposed)	MOM ZIMCO MLNR DBZ	1982-83
7	Feasiblity study of integrated iron and steel manufacture (mini steel plant)	72 & 100	PNU (Proposed)	NCDP MFTC MLNR MOM ZIMCO DBZ	1980-81

No	Project Title	Refer page	Source of Origin of Project as shown in page	Government Implementating & Co-operating Agencies. (Refer page)	Period of Development
8	Establishment of integrated iron and steel complex (mini steel plant)	100 & 72	PNU PIU (Proposed)	ZIMCO MOM MICFT MLSS MPTC DBZ	1983-84
9	Extension of Rolling Mills for intermediate goods	72	PIU (Proposed)	ZIMCO DBZ	1985
10	Manufacture of fire bricks and refractory material	101	PNU (Proposed)	ZIMCO MLNR RUCOM	1983
	Copper & Cobalt				
11	Luanshya Baluba stage II for increase production of copper and cobalt.	71	PRU (existing)	ZIMCO RCCM	1978-79
12	Clibuluma extension	71	PRU (existing)	ZIMCO RCCM	1978-79
13	Chambishi underground expansion	71	PRU (existing)	ZIMCO RCCM	1978-79
14	Chanbishi leach plant extention for increase cobalt production	71	PRU (existing)	ZIMCO RCCM	1978-79
15	Mufulira sub vertical shaft	71	PRU (existing)	ZIMCO RCCM	1978-79
16	Mufulira materials handling	71	PRU (existing)	ZIMCO RCCM	1978-79
17	Implementation of the project of semi-fabricated and cast brass project No.TF/ZAM/77/001 (UNIDO assisted feasibility study)	71	PRU (existing)	ZIMCO & P	1980-81
18	Establishment of Central Testing Laboratory for testing of materials, industrial and consumer products and issuence of "Board of Trade Mark".	84	PNU (Proposed)	MICFT	1980-81

B. BASIC METAL DEVELOPMENT PROGRAMME (SUB-REGIONAL)

No	Project Title	Refer page	Source of Origin of Project as shown in page	Government Implementing & Co-operating Agencies. (Refer page)	Period of Development
19	Development of iron and steel complex at sub-regional level.(as out lined in page	100	PNU (Proposed)	Zambia Uganda Kenya Tanzania	1980-85
20	Manufacture of brass ingots (whole series of Cu and Zn alloys)	101	PNU (Proposed)	Zambia Zaire Uganda Nigeria Kenya Tanzania	1980-84
21	Manufacture of fire bricks and refractory materials	101	PNU (Proposed)	Zambia Uganda Kenya Tanzania	1980-82

C. ENGINEERING INDUSTRY DEVELOPMENT PROGRAMME (NATIONAL LEVEL)

22	Proposed visit of ECA/UNIDO mission to discuss with Government of Zambia regarding the survey and pre-feasibility study of priority projects for engineering industry development programme		PNU (Proposed)	NCDP MFTC MICFT MPTC MEC MLSS ZIMCO INECO RUCOM DBZ ZR	1979
23	Expansion of existing foundries and setting up of small foundries for cast iron, brass, aluminium shape castings at least two in each districts.	71	PRU (existing) and PNU (Proposed)	ZIMCO RUCOM DBZ MICFT RDC	1979-82

No	Project Title	Refer page	Source of Origin of Project as shown in page	Government Implementing & Co-operating Agencies. (Rever page)	Period of Development
24	Development of mining machinery and equipment and possible local manufacture.(UNIDO prepared feasibility study 15/ZAM/ 74/020 July 1976).		PRU (existing)	NCDP ZIMCO MICFT MOM	1980-85
25	Setting up of welding electrode manufacturing unit	101	PNU (Proposed)	ZIMCO (P)	1981
26	Manufacture of agricultrual hand tools (expansion of existing plants and introduction of new projects)	72	PIU (Proposed)	ZIMCO INDECO RUCOm DBZ (P)	1980
27	Brass water fittings for domesting and industrial use (Refer project 17 above)	72	PIU (Proposed)	ZIMCO DBZ (P)	1980
28	Setting up a plant for the production of industrial grinding and cutting discs.	72	PRU (existing)	DBZ P	1979
29	Proposed bicycle assembly and manufacturing plant	72	PRU (existing	INDECO P	1979-80
30	Manufacture of simple machine tools in existing Railway or large repair and maintenance Workshops	102	PNU (Proposed)	NCDP MFTC MPTC ZIMCO ZR RUCOM DBZ	1980-84
31	Project for the manufacture of ferrous (malleable) die cast components	102	PNU (Proposed)	ZIMCO INDECO RUCOM P	1981
32	Project for the manufacture non-ferrous die cast components	102	PNU (Proposed)	ZIMCO INDECO RUCOM P	1981

No	Project Title	Refer page	Source of Origion of Project as shown in page	Government Implementing & Co-operating Agencies. (Refer page)	Period of Development
33	Project for Aluminium tube manufacture	73	PIU (Proposed	ZIMCO DBZ P	1980-82
34	Project for the manufacture of animal drawn and simple power operated agricultural machinery	103	PNU (Proposed)	NCDP MAWD ZIMCO RUCOM DBZ	1980-83
35	Manufacture of automotive ancillary parts and spare parts.	103	PNU (Proposed)	ZIMCO INDECO RUCOM ZR P DBZ	1981-85
36	Manufacture of forged mechanical hand tools	103	PNU (Proposed)	P RUCOM ZIMCO DBZ	1982-84
37	Manufacture of agricultural and industrial pumps	103	PNU (Proposed)	P RUCOM ZIMCO DBZ	1982-85
38	Manufacture of kitchen utensils and cooking ware	103	PNU (Proposed)	P INDECO RUCOM DBZ	1980-82
39	Setting up of a plant for concrete railway slippers	72	PRU (existing)	P DBZ ZIMCO ZR	1980
40	Manufacture and repair of of electric armature for domestic and industrial use with possible future manufacture of fractional HP motors up to 1 HP motors.	73	PIU (Proposed)	P ZIMCO DBZ	1980-82
41	Manufacture of metal cans for food industries etc.	103	PNU (Proposed)	P INDECO DBZ	1980-82

No	Project Title	Refer page	Source of Origion of Project as shown in page	Government Implementing & Co-operating Agencies (Refer page)	Period of Development
42	Manufacture of consumer products electric iron, cookers, stores, lanterns et etc.	104	PNU (Proposed)	RUCOM INDECO P DBZ	1980-85
43	Manufacture of electrical accessories and components.	104	PNU (Proposed)	RUCOM P DBZ	1980-85
44	Manufacture of razor blades	104	PNU (proposed)	RUCOM INDECO DBZ P	1980-82
45	Manufacture of wire products for staple pin, gem clips etc.	73	PIU (Proposed)	RUCOM DBZ P	1980-81
46	Car tyre recycling plant	73	PIU (Proposed)	RUCOM P DBZ	1980
47	Manufacture of lead pencils	73	PIU (Proposed)	RUCOM P DBZ	1980
48	Wood distillation (charcoal) project	73	PIU (Proposed)	P DBZ	1980-81
49	Plant for manufacture of fibre board, water board and particle board	73	PIU (Proposed)	P DBZ	1980-81
50	Manufacture of pulp and paper based production (pines)	73	PIU (Proposed)	ZIMCO P DBZ	1980-81
51	Waste paper recycling project	73	PIU (Proposed)	P DBZ	1980
52	Getting up saw mills	71	PRU (existing)	DBZ P	1980
53	Establishment of 19 rural workshops	72	PRU (existing	INDECO RUCOM	1980-82

No	Project Title	Refer page	Source of Origion of Project as shown in page	Government Implementing & Co-operating Agencies (Refer page)	Period of Development
54	Establishment of 12 rural garages	72	PRU (existing)	INDECO RUCOR	1980-82
55	Setting up of bi-cycle assembly plant	72	PRU (existing)	INDECO RUCOR	1980

D. ENGINEERING INDUSTRIES DEVELOPMENT PROGRAMME (SUB-REGIONAL LEVEL)

56	Manufacture and assembly of railway locomotives and rolling stock	PNU (Proposed)	Zambia Uganda Kenya Tanzania	1980-85
57	Assembly and manufacture of machine tools in existing railway workshop(manufacture through development of sub contracting)	PNU (Proposed)	Ethiopia Zambia Kenya Tanzania Uganda	1980-85
58	Manufacture of telephones and telecommunication equipment	PNU (Proposed)	Zambia Tanzania Kenya Uganda	1980-85
59	Manufacture of industrial and domestic boilers	PNU (Proposed)	Zambia Tanzania Kenya Uganda	1980-85
60	Manufacture of railway tracks and slippers with accessories	PNU (Proposed)	Uganda Zambia Kenya Tanzania	1980-85
61	Manufacture of buses, trucks and lorries	PNU (Proposed)	Uganda Zambia Kenya Tanzania Ethiopia	1980-85

2. EDUCATION, TRAINING AND MANPOWER DEVELOPMENT FOR BASIC METAL AND ENGINEERING INDUSTRIES DEVELOPMENT PROGRAMME

No	Project Title	Refer page	Source of Origin of Project as shown in page	Government Implementing & Co-operating Agencies (Refer page)	Period of Development
52	Programme for Higher and Middle Management - Training Courses for Senior Executives - Training courses for young managers - Training courses for Industrial Engineers - Training courses for maintenance engineers.	92) 96) 97)	PNU (Proposed)	ZIMCO ZEC ZICFT ZLSS	2 years —
53	Post graduate training programme for graduate engineers/Diploma holders	98	PNU (Proposed)	ZEC Zambia Unv. Zambia Ins. of Technology	2 years
54	In-plant quality control inspection courses	98	PNU (Proposed)	ZIMCO Zambia Ins. of Technology	1 year
55	In-plant courses on machine shop practice	98	PNU (Proposed)	ZIMCO Institute of Technology Trades Training Inst.	3 years
56	In-plant courses on tool room work	98	PNU (Proposed)	ZIMCO Zambia Inst. of Technology	4 years
57	Ad-hoc courses on preventive maintenance	98	PNU (Proposed)	ZIMCO Trades Training Institutes	6 months
58	Ad-hoc courses on Industrial Design and Tool Design	98	PNU (Proposed)	ZIMCO Zambia Institute of Technology	6 months

No	Project Title	Refer page	Source of Origin of Project as shown in page	Government Implementing & Co-operating Agencies (Refer page)	Period of Development
69	Introduction of Industrial Engineering at University/ Technical College Level	96	PIU (Proposed	Zambia University	2 years
70	Introduction of special courses for engineering design and draughtsmanship	98	PIU (Proposed)	Zambia University Zambia Instituteoof Technology	2 years
71	Skilled technician/ workers training courses - General machinist - Fitters, welders, fabricators - High skilled tools room operatives - Quality control- viewers/inspectors - Skilled maintenace operatives - Skilled operatives for forging and heat treatment - Maintenance technicians for heavy industries.	99	PNU (Proposed)	ZIMCO Trades Training, Zambia Institute of Technology, Northern Technical college.	6 months to 1 year

ABBREVIATION (Government Institutions)

Ministries

NCDP - National Commission for Development and Planning
MFTC - Ministry of Finance and Technical Co-operation
MICFT - Ministry of Industry, Commerce and Foreign Trade
MLNR - Ministry of Land and Natural Resources
MOM - Ministry of Mines
MPTC - Ministry of Power, Transport and Communications
MEC - Ministry of Education and Culture

MLSS	-	Ministry of Labour and Social Services
MAWD	-	Ministry of Agriculture and Water Development
MWS	-	Ministry of Works and Supply

Parastatals

ZIMCO	-	Zambia Industrial and Mining Corporation
INDECO	-	
NIEC	-	National Import and Export Corporation
NTC	-	National Transport Corporation
ZNEC	-	Zambia National Energy Corporation
FINDECO	-	Financial Development Corporation
MINDECO	-	Mining Development Corporation
NCCM	-	Nchanga Consolidated Copper Mines Ltd.
RCCM	-	ROAN Consolidated Copper Mines Ltd.
MEMCO	-	Metal Marketing Corporation
ZR	-	Zambian Railways
ZA	-	Zambian Airways
RDC	-	Rural Development Corporation
RUCOM	-	Rucom Industries Ltd.

Financial Institutions

DBZ	-	Development Bank of Zambia
ADB	-	Agricultural Development Bank

Private Industries

P	-	Private

The Role of ECA/UNIDO/OAU in Programming These Projects Accourding to ECA Work Programme (1980-81)

The programme for Industrial Development by Joint ECA/UNIDO Industry Division envisages development of basic industries in Basic Metals and Engineering Industries sectors. The objective of this programme will be to assist the African developing countries in identifying and formulating sectoral policies, strategies, targets, plans, programmes and priority projects and in the promotion and implementation of projects, creation of relevant institutional machineries and manpower development taking into account inter-sectoral and inter economic linkages and maximum encouragement on resource based and import substitution industries.

Zambia imports capital, intermediate and consumer goods against either cash crops exports or export of copper and minerals and thereby completely depend on developed countries for her industrial development. The aspiration for self-reliance and economic development of Zambia calls for the development of basic engineering and metal industries. The development of basic metals and engineering industries improv productivity and production not only of its own sector but also of other important economic sectors e.g. agriculture, transport, mineral exploration and very many interlinked industries.

Therefore, the roll of ECA/UNIDO/OAU will encourage Zambia to improve and expand these two vital sectors of industries through an integrated development based on fundmentatl needs for basic development (the parameters of these development these are outlined in Chapter VI are reflected in the Mid-Term Programme individual activities during 1980-81).

These activities are as follows:-

(a) Evaluation survey on policy, strategy planning, technology and training development in selected African countries;

(b) Expert working group meeting to finalize the areas for development particularly in the priority sectors as indicated in (a);

(c) Evaluation mission to assess the potential development of basic steel production, foundry, forging, and related resources based on industries development;

(d) Formulation of a market survey and pre-feasibility study mission based on 'c' for the possible manufacture of spare parts, accessories, agricultural tools and power generating parts;

(e) Assist the countries on technical manpower development through seminars;

(f) Mounting another evaluation mission to explore the possiblity of local manufacture of machine tools in existing railway workshops or large repair and maintenance workshops with reference to (c) and (d);

(g) A workshop to examine and to set plan of action of integrated development of basic metals and engineering industries projects, in basic steel production, foundry, forging, machine tools, spare parts and technical manpower development required in these two sectors.

Therefore, ECA/UNIDO/OAU will greatly participate in assisting the Government in formulating these programme which are already highlighted in this report. (Chapter)

CHAPTER VII

SUMMARY AND RECOMMENDATIONS

As mentioned in Chapter III, the Zambia's economic situation has been adversely affected by the low prices of copper (main foreign exchange earner) effect of international recession, serious transport problems and deteriorating foreign exchange reserve which has greatly jeopardised the procurement of essential spare parts from abroad for day to day running of vital industries particularly in copper belt areas. The economic situation has further been deteriorated by the continued provocation and agression by Rebel Rhodesia and racist South Africa in cultivating continued disruptions in industrial production and productivity and rising unemployment in rural areas due to uncertain conditions.

The recent reorganization of Ministries, parastatal bodies and financial institutions during December 1978, will no doubt plough a new furrow into the future industrialization process in Zambia, It is expected that a general recovery of the economy may occur during 1979/80 due to the appropriate measures and administrative changes those are being implemented by the Zambian Government.

The policy, strategy and measures set out by the Zambian Government includes the integrated basic metal and engineering industries development. Many aspects of such development programme, it is told, have already been reflected in the Third National Development Plan. This report mainly highlights the priority areas for such development in basic metal and engineering industries sector. The Government's mandate clearly illustrates the development plan for non-copper based dindustries. Fortunately, Zambia has substantial deposits of iron ores and reasonable deposits of coal for future iron and steel production.

This report mainly highlights the development of institutiona, technological and manpower requirements for the priority projects in order to implement an integrated development of basic metal and engineering industries in Zambia.

The Chapter III has reviewed the economic and industrial situation in Zambia in recent years with particular reference to the industrial and manufacturing sectors.

In the sameway the Chapter IV has examined the present status of basic metal and engineering industries in Zambia. The Chapter further highlights the existing functions of Government machinery, level of technology Zambia has achieved so far, with a brief coverage on specific priority projects in basic metal and engineering industries identified by the Government and ECA/UNIDO mission. The sectoral and subsectoral constraints in metal and engineering industries are also examined in this section of the report.

The Chapter V has reviewed the country constraints those are hindering the natural growth of the basic metal and engineering industry sector. These constraints are lack of institutional co-ordination, overlapping re responsibilities of the institutions, lack of product development and design facilities, lack of common service facilities and ancillary industries development and finally the lack skilled manpower in the vital sectors of industry.

In order to overcome all these country constraints and set the economy in right prespective, the report suggests in Chapter VI an integrated approach for basic metal and engineering industry development programme for Zambia. The report identifies the government institutions those are responsible for the implementation aspects for such development programme and proposes a national technology plan in order to interlink the institutional and technological aspects for integrated development of metal and engineering sectors. The management and manpower development will be the backbone of this interlinked development process. Within this framework the report suggests the government of Zambia to establish a comprehensive sequenced development programme for basic metal and engineering industries as suggested in this report which includes:

- projects those are identified by the Zambian government;
- projects those are identified by the ECA/UNIDO mission during their discussion with the Government;
- projects those are recommended by the ECA/UNIDO mission.

Finally, the report highlights the role of ECA/UNIDO/OAU to assist the Government of Zambia in implementing this development programme for basic metal and engineering industry.

In line with the foregoing discussion this report suggests the following important recommendations to the Government of Zambia for their consideration and action for integrated development of basic metal and engineering industries.

The recommendations are as follows:

1. It is recommended to formulate an integrated sequenced programme for basic metal and engineering industries as out lined in proposed programme in Chapter VI, pages 105 to 111

2. It is recommended to interlink the institutions those are responsible for the development of basic metal and engineering industries as out lined in Chapter VI, pages 80 to 85

3. It is recommended to formulate a National Technology Plan as ddscribed in Chapter VI, pages 86 to 87

4. It is recommended to interlink the institutional and technological activities as described in Chapter VI, pages 87 to 91

5. It is recommended to set up a National Centre for Industrial Research and Development which must have a section for the development and transfer of technology as described in Chapter VI, pages 82 to 83

6. It is recommended to implement the management and manpower development programme for basic metal and engineering industries as out lined in Chapter VI, pages 91 to 100.

7. It is recommended to introduce with immediate effect an Industrial Engineering Course as suggested in Chapter VI page 96 at University and Technical Institute level.

8. It is recommended to organize in-plant training courses, ad-hoc courses in selected engineering disciplines as out lined in Chapter VI, pages 112 to 113

9. It is recommended to implement the projects identified by the ECA/UNIDO mission as listed in Chapter IV, pages 72 to 73

10. It is recommended to consider the projects these are necessary within the context of integrated development of basic metal and engineering industries as suggested in Chapter VI, pages 100 to 104

11. It is recommended to consider the subregional projects these are identified by the mission as out lined in Chapter VI, pages 107 and 111

12. It is recommended that an early mission to be sent from ECA/UNIDO Joint Industry Division to discuss with Zambian Government for future actions to be taken for integrated development of basic metal and engineering industries projects as out lined in the report.

A N N E X

LIST OF PERSONS VISITED

1.	Mr. William Gerge	- UNDP Lusaka - 19.12.78
2.	Mr. K.C. Sen	- UNIDO SIDFA, Lusaka - 19.212.78
3.	Dr. P.N. Mwale-Banda	- MULPOC(ECA), Lusaka - 19.12.78 (Trade Development Economist)
4.	Mr. Manyiko	- Ministry of Industry, Commerce and Foreign Trade, Lusaka - 20.12.78 (Economist)
5.	Miss K. Aboongo	- Ministry of Industry, Commerce and Foreign Trade, Lusaka - 20.12.78 (Jr. Economist)
6.	Mr. F.A. Cassidy	- Ministry of Mines, Lusaka, 20.12.78 (Chief Mining Engineer)
7.	Mr. R.F.J. Sturm	- The Development Bank of Zambia Lusaka - 21.12.78 (Planning and Promotions Manager)
8.	Mr. Situmpeke	- The Development Bank of Zambia Lusaka, 21.12.78 (Planning Officer)
9.	Mr. O.D.Z. Chama	- INDECO Ltd. Lusaka - 21.12.78 (Executive Director)
10.	Mr. V. Kaigl	- National Commission for Development Planning, Lusaka - 21.12.78 (UNIDO Industrial Economist)
11.	Mr. Kawana	- National Commission for Development Planning, Lusaka - 21.12.78 (Asst. Economist)
12.	Mr. E.S.Yobe	- Roan Consolidated Mines Ltd. Lusaka - 20.12.78 (Public Relation Officer)
13.	Mr. F.J. Tremain	- Roan Consolidated Mines Ltd. Lusaka, - 22.12.78 (Chief Consulting Engineer)

14. Mr. Bryce M.A. Porter - Roan Consolidated Mines Ltd. Lusaka - 22.12.78 (Financial Director)

15. Mr. Ruben L. Bvulani - RUCOM Industries Ltd. - 22.12.78 (General Manager)

16. Mr. F.T. Kapansa - RUCOM Industries Ltd. - 22.12.78 (Dupty General Manager)

17. Dr. P.N. Handa - MULPOC (ECA) Lusaka - 23.12.78 (Trade Development Economist)

18. Mr. K.C. Sen - UNIDO SIDFA, Lusaka - 24.12.78