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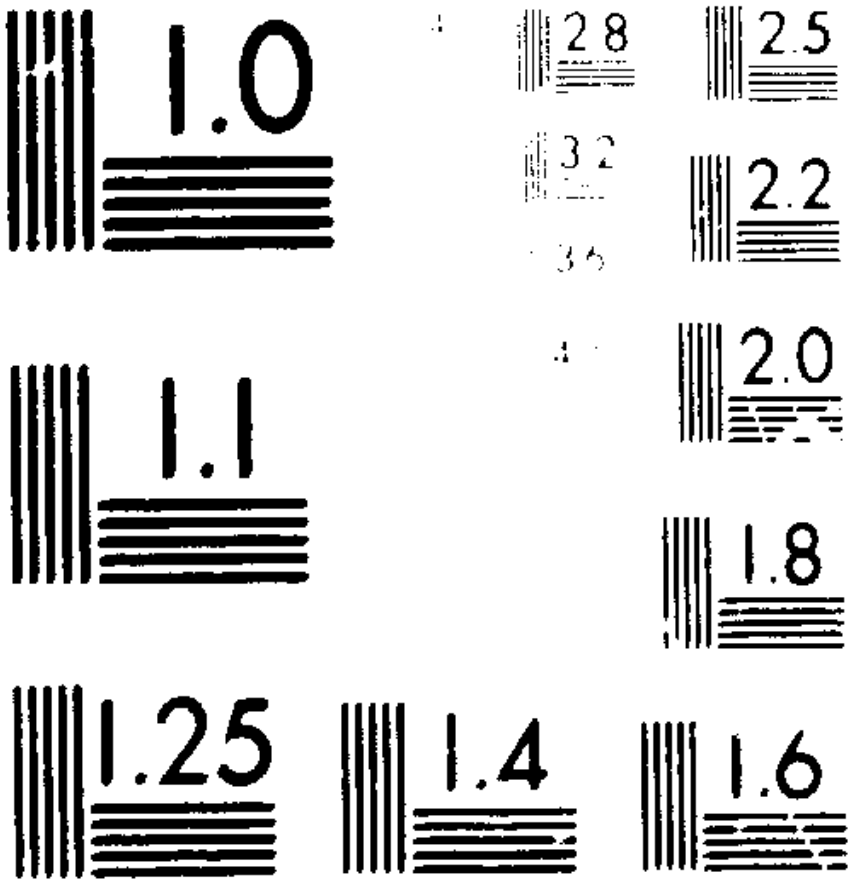
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COUNTRY REPORT

(R) BASIC METAL AND ENGINEERING INDUSTRIES DEVELOPMENT PROGRAMME

1979

THE REPUBLIC OF UGANDA

Field Mission

From

12 December 1978 to 18 December 1978

Prepared by
Aloke Kumar Mitra
UNIDO Regional Adviser
Joint ECA/UNIDO Industry Division
ECA

Addis Ababa
February, 1979

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ECONOMIC COMMISSION FOR AFRICA

COUNTRY REPORT
OF THE
ECA/UNIDO BASIC METAL AND ENGINEERING INDUSTRIES DEVELOPMENT PROGRAMME
THE REPUBLIC OF UGANDA

TABLE OF CONTENTS

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 218(X), 256(XXI), 267(XXI) and 319(XXXI); Declaration on Industrialization in Africa; Principles and Guidelines for Co-operation and Development:

- adopted by the Second Conference of African Ministers of Industry held in Cairo, December 1973 1/
- 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/
- 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/
- 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/
- 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/
- agreed conclusions of Third meeting of the Follow-up Committe on Industrialization in Africa held in November 1976 6/
- agreed conclusions of the Fourth Conference of African Ministers of Industry held in Kaduna in November 19777/ underlined the importance of developing basic industries.

1/ Declaration in Industrialization in Africa: Principles and Guidelines for co-operation and Development, 1974, E/CN.14/613 and E/CN.14INR/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(a) (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 ;9,20,21,24. Page 21.

5/ Lima Declaration and Plan of Action, March 1978,Para.58(f,k,o) Page 10&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 Para. 9(D) Section(a)&(b) Page 8.

7/ Report of the Fourth Conference of African Ministers of Industry in Kanduna, November 1977 (E.CN.14/68?) Part II, Para. 7(c) item (iii) and (iv) Page 12.

Integrated development of basic metals and engineering industries are part of the basic industries development recommended for establishing in developing countries particularly outlined in Lima DPlan of Action 8/, and endorsed as a programme by the Follow-up Committee at its Third Meeting in Addis Ababa in November 1976 in agreed conclusion for Development of Basic Industries in the African Region for concrete ind ustrial project development, the committee endorsed the following four programmes formulated by ECA as basis for achi.ving integrated industri.alization:

- 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 an 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 frame work 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 9/

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)

8/ Lima Declaration and Plan of Action, March 1975 UNIDO PI/38 Para. 58(f) (i) and (ii) page 10 and 11.

9/ Report of the Third Meeting of the Follow-up Committee on Industrialization in Africa (E/CN.14/INR/218) Part II Para. 9 and 10, Page 8.

Outlook of Present Industrial Situation in Africa

Since the decolonization period 1950's and 1960' the majority of the African developing countries are exporting cash crops (processed and unprocessed) and valuable minerals and ores to foreign developed countries. 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 African developing nations, with exception to the African oil exporting countries. Moreover, there is a conspicuous abscence 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 inadquately 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 come out from this stalemate of industrial convolution it is necessary for the African policy makers to look into the core of the development process which constitutes the development of basic industries. One of the important sectors of basic industry development 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 ocountries 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-relience and self-sustaining development in the African developing region.

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.

Objective of the Mission and Future Guidelines to the Planners and 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 sector 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 utilization 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 sector;
- 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 sub-regional 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/December 1978)

The mission mounted by ECA, visited selected African Developing Countries from 5 November 1978 to 17 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. 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. Mazhar (Team Leader, Engineering Industries), 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 areas 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 industor;

- 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 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 Report, will be critically examined by a high level Expert Wroking Group meeting in Addis Ababa 10/. The final findings and recommendation thereafter to be forwarded to the Fifth African Minister 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 upto the year 2000 A.D.

10/ Report of the Third Meeting of the Follow-up Committee on Industrialization in Africa (E/CN.14/INR/218) Part II Para 10(c) page 8.

Composition of Team for the Republic of Uganda

The ECA field mission which visited the Republic of Uganda 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

CHAPTER II

INSTITUTION AND FACTORY VISITS

The team arrived in Kampala on 12.12.78 and left Kampala on 18.12.78.

13.12.78 - 14:00 hrs.	UNDP, Kampala
13.12.78 - 15:00 hrs.	Ministry of Industry and Power, Kampala
14.12.78 - 09:00 hrs	Ministry of Industry and Power, Kampala
14.12.78 - 15:15 hrs.	UGMA Steel and Engineering Corporation, Lugazi
14.12.78 - 18:00 hrs.	Jinja Steel Factory, Jinja
15.12.78 - 10:00 hrs. (National Holiday)	Uganda Technical College, Kampala
16.12.78 - 08:00 hrs.	Industrial Planning Unit, Kampala
16.12.78 - 10:30 hrs.	Uganda Steel Corporation
16.12.78 - 12:00 hrs.	Ministry of Industry and Power Kampala
16.12.78 - 15:00 hrs.	UNDP, Kampala
17.12.78 - 10:30 hrs.	Uganda Steel Corporation, Kampala

Brief Report of Each Visit

(a) UNDP, Kampala (meeting 13.12.78)

The opening meeting with UNDP, Asst. Resident Representative had been extremely helpful and the team received the following documents from UNDP:

- Country Programme Management Plan(July 1978 to June 1979)
- Proposed Draft Country and Inter Country Programming and Projects for the period 1977 1981. The country programme is awaiting for formal approval.

UNDP explained that the country programme mainly worked out in accordance with the Government Action Programme and will broadly be based on:-

- to rationalize and up grade the existing industries;
- to increase the volume of agricultural output;
- to supply adequate transport and storage facilities;
- to introduce vigerous manpower training programme;
- to reduce the current level of inflation by increasing productivity.

(b) Ministry of Industry and Power, Kamplal(meeting 13.12.78)

The meeting was chaired by the Paramouent Secretary and the offical/ of the Ministry. The meeting focused the need for integrated development of Basic Metal and Engineering Industries with particular reference to the major country constraints Uganda is facing today. The Ministry outlined the broad Government policies and stratigies for the development of these two sectors within the framework of the existing Action Programme. It was catigorically explained that Uganda's main policy is to rehabilitate the exisiting industries in shortes possible time. However the main country constraints highlighted were:

- considerable shortage of raw material particularly steel scrap;
- lack of trained and skilled manpower;
- inadequate maintenance facilities and lack of spare parts supply in vital sectors of industries;
- lack of facilities for project identification and feasibility studies;
- non-availability of foreign exchange creating delay in rehabilitating existing industries and pipe line projects.

The Ministry also expalined the plan for:

(i) Integration of Jinga Steel Factory into a Steel complex;

(ii) Separation of UGMA Repair and Maintenance factory from the existing sugar factory and to integrate UGMA Workshop into a multipurpose production and repair shop.

The Ministry also explained the immediate need for the following expert assistance:

- product identification in the vital sectors of Engineering Industries;
- feasibility studies;
- training of manpower is invital sector of industries particularly iron and steel and repair and maintenance.

The Ministry prepared a programme for the ECA mission.

(c) Ministry of Industry and Power MKampala (meeting 14.12.78)

The meeting was chaired by the Under Secretary of the Ministry who explained the historic events those took place between 1970 1975 created a great impact on economic and social structure of the country.

These events were:

- the Nakivubo Pronouncements, May 1970;
- the change of Government, January 1971;
- the Economic War, August 1972.

The Ministry reiterated the present difficulties in obtaining spare parts and skilled manpower in almost all sectors of industries.

(d) Steel Manufacturers of East Africa Ltd. of Ugma at Lugazi (Factory visit 14.12.78)

Steel manufacturers of East Africa Ltd. of Ugma at Lugazi is a subsidiary of Uganda steel corporation was visited by the team. A meeting was chaired by the Manager along with the Chief Engineer(Pakistan) and the Production Superintendant(India) who explained the present status of this industry. Ugma engineering plant at Lugazi was originally established to supply the spare parts for the Uganda Sugar Works. It has the capacity to cast large parts and at present has a production lines for hoes, pick axes, and spades. The company is now producing sugarcane squizers, fabricated tower and vary many parts for other industries. It has a large machine shop. The Government intends to expand this plant for the manufacture of capital goods, intermediate goods and number of specific products including repair and maintenance of diesel engines. The disicion is now being taken to separate this company from the Uganda sugar works.

The main constraints the company is facing are:

- lack of steel scrap and raw material;
- lack of skilled manpower;
- lack of coke and fuel oil;
- lack of ferromanganese components for melting.

(e) Steel Manufacturers of East Africa Ltd. Jinga (Factory visit 14.12.78)

Steel manufacturers of East Africa Ltd. at Jinja, a subsidiary of Uganda Steel Corporation Ltd. is the biggest Steel Works in Uganda. It is owned by Government and is capable of producing 30,000 tons of reinforcing sections round, squar, angles and flats bars from ingots produced by refining ferrous scraps. In a brief meeting chaired by the General Manager of the company with his senior executives, the team was told that the company is facing many technical and economic difficulties and at present just breaking even the financial commitments. The main constraints the company is facing at present can be summerised below:

- shortage of raw material mainly scrap
  production capacity: melting furnace - 24,000 Tons of ingots/year
  rolling mill 30,000 Tons/year
  preheating capacity 12 Tons/hour
  present production is only 8000 to 10,000 Tons/year
- non-availability of refractory material for furnance
- lack of inter-country transport facilities
- reduced rate of efficiency of the labour force
- lack of trained technical manpower particularly metallurgist and chief engineers posts are vaccant.

  lack of foreign exchange for the immediate expansion of the plant and to purchase immediate spare parts
- lack of repair and maintenance staff.

The factory was visited by the team. Two important aspects were discussed:

(a) The induction furnace 5 Tons/charge situated at Ugma factory is not operative for six years. Ugma management is now reconsidering to repair this unit for production of Cast Iron. It is suggested by the team, wheather the furnace can be shifted to Jinja factory for the manufacture of ferro-alloy production of steel. This is inline of Ministries thinking to make Jinja steel plant as the centre hub of steel manufacture in Uganda.

(b) The team pointed out wheather the refractory bricks for the furnaces can be manufactured in Uganda. A pre-feasibility study is required. At present the company is importing this material from UK with a delay in delivery for as much as six months. The team also suggested wheather the company should contact the manufacturing companies in Kenya for refactory materials where such materials are produced locally.

Both of these suggestions were welcomed by the company management. These points were also discussed during the closing discussion with Ministry of Industry and Power and the Uganda Steel Corporation authority. The company wants to expand the production to 60,000 to 70,000 tons of steel per year.

(f) Uganda Technical College (visit 15.12.78)

The team visited Uganda Technical College and a meeting was organized with the Principal, Registrar, and Vice Principle of the College. The College produces student for higher diploma, diploma and certificate courses in Civil, Mechanical and Electrical Engineering including a certificate course for Technical Teachers Education. Various other courses are included in the activity of this college.

There is an ongoing UNESCO Project UGA/73/006 with four UN advisers devoted to train the technical teachers. The team suggested wheather the technical college has any plan for the introduction of Industrial Engineering Courses in Uganda as there is a growing need for Industrial Engineers in all sector of industries, the college authority requested the UNIDO Regional Adviser to suggest a moderate course for industrial engineering which must be upto the level of diploma standard. It is agreed that such proposal must be included in the country report (Refer. Page 74). The main constraints the college is facing at present:

- Lack of accommodation for student 400 additional student accommodation is required. It is expected that the new hall of residence will be completed by September 1979;
- Lack of facilities for Technical and Engineering books.

The following are the future requirements of the College:

- Introduction of Industrial Engineering courses at least to train 20 industrial engineers per year for vital sectors of industries;
- Introduction of special courses for engineering draughtsmanship training;
- Proposal for the installation of a surge generator in the electrical power transmission laboratory with power stablizing equipment.

(g) Industrial Planning Unit - Kampala(meeting 16.12.78)(Under MIP)

The team met the UNIDO Industrial Planner/Adviser within Ministry of Industry and Power. The development plan was still under consideration therefore the copy of the plan was not available. A detailed list of projects was being prepared by the Adviser which was promised to be sent to ECA by UN Pouch.

He explained the policy of expansion of UGMA repair and maintenance factory and particularly pointed out the products to be manufactured in this factory during the next expansion period. ECA has already cabled the Ministry to obtain this copy of the project list. The adviser emphasised the need for more technical manpower in Uganda and increased facilities for maintenance and spare parts manufacturing programmes. It was mentioned that the present quality of the graduates in engineering needs to be improved upon by the Uganda University. The team also brought this issue during the closing discussion with the Ministry Officials on 16 November 1978.

The team suggested the Adviser that a greater study is required at the UGMA factory for steel production. As far as Cast Iron production is concerned the UGMA should specialised on Grade 14, 17 castings and malleable castings if possible. It was suggested that the existing induction furnace situated at UGMA should be transferred to Jinja steel plant for the production of alloy steel. As the price of the coal is very expensive in Uganda e.g. Ush. 5000/ton it is suggested that the two cupola furnaces should gradually be scraped 11/ and the addition of two more Arc furnanes 5 tons/ charge capacity will be adequate for this factory. The adviser did not share these views and the meeting ended without conclusion.

(h) Uganda Steel Corporation Kampala(meeting 16.12.78 & 17.12.78

The team visited the Uganda Steel Corporation a parastatal body instituted in November 1974. The General Manager chaired the meeting along with the Operation Manager of the Corporation. Uganda Steel Corporation highlighted the future proposal for the manufacture of iron and steel in Uganda. The experiment that the Hungarian Company KGYV carried out shows the Kigezi iron ores can be directly reduced from the ores state to the pig iron within the 2% carbon content in pig iron. The estimated deposits in Kamena, Kyanyamuzinda and West's House after being surveyed indicates a reserve more than 30 million tons mainly heamatite 12/. The corporation further explained the following states of development for the manufacture of steel in Uganda.

11/ The team came to know from the Uganda Steel Corporation, that the Hungarian Delegation requested the scrap these to cupola furnance in UGMA. The team finds it difficult to understand why these two out dated cupola should be rennovated by Spanish credit which will be a total waste and expensive.

12/ Report of the Second Hungarian Delegation to Uganda Steel Corporation. 13.10.76 Page 5.

Stage I - will be to rehabilitate and expand the steel manufacturers of the East Africa Ltd. of Jinja 13/ and to introduce steel foundry that will produce cast iron and steel and other castings which are currently draining away the foreign exchange.

Stage II - will be to establish an integrated iron and steel complex based on the existing iron ores, the best of which has been found at Kashenyi, South Kigezi Destrict.

The corporation further mentioned that the Government has accepted the first stage of development and accorded it highy priority.

At present the Uganda Steel Corporation has signed a contract with Hungarian Company KGYV to install a 2000 ton/year steel foundry and 30,000 ton/year steel producing plant, and will be located in Jinja.

The Corporation has identified the following assistance from UNIDO/ECA:

(i) A diagonostic study team for 6 months to prepare an integrated feasibility study for Cast Iron and Steel manufacture in Uganda;

(ii) A feasibility study on transport of ores from mines to the proposed location of the plant or to Jinga;

(iii) Expert assistance required for the development of road;

(iv) A metallurgical training Centre within Jinja complex.

Finally, the Corporation told the team that it has recommended Uganda Government to award the contract for Jinja mini-steel plant to Hungary becuase of their involvement for last three years. The second stage of development for integrated iron and steel complex, Uganda steel corporation desires technical and financial assistance from Soviet Union and India 14/

(i) Ministry of Industry and Power Kampala(Concluding meeting 16.12.78)

The concluding meeting was organized by the Ministry of Industry and Power and chaired by the Permanent Secretary of the Ministry along with the Chief Economist. The major issues were highlighted within the context of

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13/ Report on Uganda Steel Corporation delegation to Hungary, Iran and India. Ref. USC/OM/9 dated 23.2.78, Page 1.

14/ Report on Uganda Steel Corporation delegation to Hungary, Iran, and India. Ref: USC/OM/9 dated 23.2.78, Page 7.

integrated development of basic metal and engineering industries in Uganda. The team categorically mentioned the authorities that Uganda has a great reserve of good quality iron ores. The integrated approach what has been taken by Uganda Steel Corporation is highly commendable. What Uganda needs at this stage possible further exploration for coal or natural gas. Without this Uganda will have to import fuel for iron ores reduction. It was also suggested wheather subregional co operation could be extended with coal or natural gas producing countries. The mission further suggested to integrate Jinja and UGMA factories in the following manner:

- Jinja steel plant should be the centre hub of the steel production and steel casting in Uganda;
- UGMA Repair and Maintenance factory should produce Cast Iron and malleable castings and all capital goods, fabricated engineering products and spare parts manufacture with repair and maintenance activities for Ugandan Industries;
- The induction furnace situated at UGMA should be shifted to Jinja Factory for alloy steel production for casting and forging material;
- The two out dated cupola furnace should be scrapped and two are furnaces for Cast Iron production should be added;
- There must be a closed link with the propose Railway Workshop, which should get adequate parts from these two factories.

The Permanent Secretary stressed the great need for technical assistance and finance for the following two areas which are jeopardising Ugandan's industrialization e.g.

- Assistance for Feasibility Study;
- Assistance for Identification of Projects.

The mission promised that these views of the Government will be reflected in the country report.

(j) UNDP, Kampala (meeting 16.12.[illegible])

The mission met the Assistant Resident Representative of UNDP and discussed the main findings of the mission during various meetings with the government.

Difficulties and Constraints During Field Mission

The mission could not visit the following institutions in Ugada due to in adequate time e.g.

- Ministry of Planning and Economic Development (MPED)
- Ministry of Transport, Communication and Works
- Wood Industries Corporation
- Ministry of Finance, Development Bank
- Chamber of Commerce
- Uganda Development Corpration
- Technical Institute
- Uganda University
- Industrial Estates and Small Scale Industries.

CHAPTER III

ECONOMIC AND INDUSTRIAL BACKGROUND

Basic Information

The Republic of Uganda Capital - Kampala

(i) Population:
- Total (1978 estimate) 12.8 million
- Rural: 90%
- Rate of Growth (1973) 3.3%
- Economically active 5.9 million
- Population (estimated 1975)
- Wage Employment (1975) 369,000

(ii) Area:
- 241,139 square km.
- Total land area: 197000 sq. km.
- (82% of which is cultivable, forest resources - 7.6% of total land area)

(iii) Infrastructure: Landlock country using Mombasa (Kenya) as major outlet to sea.

Roads - 2,301 kms. tarmac/bitumen
25,933 kms. gravel
6,852 kms. access roads

Railway - 1,237 kms.

Airport - 1 - international
12 - domestic

(iv) Natural Resources

The present natural resources of Uganda are coffee, cotton, tea, copper, cement, tobacco, sugar, animal feeds, hides and skins.

Recent mineral exploration shows Uganda has a great deposit of iron ores estimated to be over 30 million tons. Deposits at Kilembe also contain cobalt, sulphur and iron. These have been stockpile in the form of pyrite at Kilembe copper belt. The Government is actively progressing to exploit these reserves.

(v) Gross Domestic Product, 1970 - 1974

Selected Sector

Ugandan Shilling (million)

Selected Areas	1970	1971	1972	1973	1974	Growth Rate 1970/74 % p.a.	Plan III Target % p.a.
Crop processing	114	99	95	92	72	- 9.6	4.8
Miscellaneous manufacturing	456	482	482	454	467	0.7	
Electricity	92	100	99	99	97	1.4	
Construction	92	95	77	67	78	- 3.0	6.6
Transport and communications	276	323	332	298	317	3.9	

Basic Economic Informations

The share of manufacturing sector in total GDP - 15%

The gross domestic product (1974) - Shs. 7,437 million

Growth Rate 1970/74 - (-0.5) % per year

Growth rate during plan target 1977/78 - 1979/80 5.0% per year .

External Trade

Uganda's export trade is based on four principal commodities. e.g. coffee, sugar, cotton, tea and copper. Uganda imports capital goods, chemical products, transport and telecommunication equipment and wide range of durable and non-durable consumer products from the industrialized countries. Because of exportation of primary products and importation of finished goods, Uganda is facing an adverse balance of payment situation due to the stiff competition on primary goods prices in international market.

General Economic Situation of the Country

The recent economic development in Uganda can be summerized within the context of three important social-economic changes which took place during 1970-75.

- The Nakivubo pronouncements which took place in May 1970 by which the then Uganda Civilian Government increased its participation in the private sector by acquiring 60% majority share of capital in number of private companies including banks, insurance and other important firms.

- Change of Government by Military take over in January 1971. The Military Government in May 1971, decided to reduce from 60% to 49% state participation in some 11 private companies affected by the Nakivubo pronouncements included the Government taking over of all Commercial Banks, insurance and manufacturing companies. Further the Military Government decided to delete the rest of the companies specified in the schedule of participation drawn by the previous administration.

- Economic War in August 1972 is a set of measures which were intended to bring the control of the economy in the hands of Uganda citizens. This policy triggered off a mass exodus of non citizens, some of whom constituted the countries main source of high level and intermediate manpower, thus creating a manpower gap in a number of professional, managerial and technical fields. There were also immediate drastic reductions in the capital and technical assistance originating from almost all the traditional bilateral assistance donors.

The foregoing combination of factors resulting in managerial and technical deficiencies had adverse effects on the shortage of domestic production savings and foreign exchange. As a result, there were drastic drops in agricultural and industrial production and a serious depletion of the transport infrastructure, as well as decrease in tourism and many other services of the industry.

One third of Uganda's total output originates from the non-monetary sector which has been registering modest growth in recent years. The monetary sector, on the other hand, has been declining steadly since 1972. Production in the monetary economy has shown sharp falls in practically every sector except for Government services which have been expanding. Thus, from a steady rate of annual growth in GDP (at 1966 constant prices) of an average of 4.5 per cent during the second Five Year Plan (1966/67-1970/71) period, Uganda's economy registered negligible growth in real terms between 1972 and 1975. 15/

Given the population growth rate of around 3.3 per cent per year, per capita income has been falling steeply since 1972. With the exception of the first year 1971/72 of Uganda's Third Five Year Plan, the growth of the countries economy has been sluggish ever since.

The per capita income has declined steeply primarily because of significantly reduced levels of production in virtually all sectors coupled with a high population growth rate. The drop between 1972 and 1975 is of the order of 11.8 per cent.

15/ Country Programme for the Republic of Uganda Draft I (March 1978). The period 1977-1981.

General Industrial Situation of the Country

The Uganda's industrial sector comprises about 850 establishments employing ten or more people and a much larger number of cottage industries and small workshops scattered throughout the country.

The larger establishments are essentially light, import substitution oriented industries.

The following are the main sectors of the industry:

Crop processing; textiles and weaving apparels; leather and footwear; manufacture of food products; brewing; electricity; metal and non-metallic products; basic industrial chemicals; processing of mineral products; glass and clay products; wood products; paper and paper products.

The industrial sector, like most of the others in the economy, declined sharply between 1972 and 1975. The production of major commodities reflected this downward trend, especially after 1973, when the production of even such high growth industries as spirits, beers and cigarettes fell drastically. This will be discussed in the next Chapter.

Engineering and Allied Metal Products Industries in Uganda

In Uganda, the broad group of engineering and allied metal products industries constitute light steel works, copper smelting, agricultural implements and hand tool manufacture and substantial number's of blacksmiths and carpenters at cottage and small scale level. The following engineering industries are worth mentioning:

- Steel manufactures of East Africa Ltd. (Jinja Plant) produces liquid steel from scrap, reinforcing round rods, square, angle and flat section. Blister copper production from copper smelting.

- Steel manufacture's of East Africa Ltd. (Ugma plant at Lugazi) producing ferrous and non-ferrous castings, spare parts for sugar and paper industries, hoes, pickaxes, and spades, fabricated parts for sugar and textile industries.

- Uganda Hoes Ltd. produces hoes and hand tools.

- Uganda Baati Ltd. at Kampala Aluminium hollow ware, galvanized corrugated iron sheets.

- Uganda Steel Ltd. at Tororo produces galvanized corrugated iron sheets.

- East Africa Steel Products Ltd. produces conduit pipes, steel furniture and exhaust pipes.

There are number of private investors engaged in steel industries e.g, manufacture of nails, steel doors and window frames, barbed wires, small foundries, etc.

Small-Scale Industries

There are thousands of small-scale industrial establishments in Uganda. These are located in the private sector and include pottery, woodwork, leather craft, handicraft, iron and steel, textiles, weaving apparels, grain millings and food processing.

Engineering Production Statistics (1975-1977) - 1977 being estimated

Description	Unit	1975 Quantity	1975 Value Ug.Sh. '000	1976 Quantity	1976 Value Ug.Sh. '000	1977 Estimated Product in Quantity
STEEL METAL & ELECTRO PRODUCTS						
Total for the sector				45,107		
G.C.I. Sheet	Ton	783	4,964	527	4,628	3,600
Steel Karais (earth pans)	"	—	—	1	120	—
Steel Wool	"	—	560	13	590	30
Hoes	000 pcs	76	12,646	274	3,571	1,000
Conduit pipes & tubes	Met	—	—	73,132	1,711	253,200
Picks	pcs	10,425	248	—	—	—
Shovels	"	9,532	191	4,650	—	—
Sanitary fittings	Ton	—	—	143	2,860	—
Bolts & nuts	Ton	30	121	27	250	108
Nails	Ton	645	4,417	3,040	3,881	800
Barbed Wire	"	60	751	3.8	32	50
Steel bars, trappings billets	"	7,040	28,161	4,624	19,528	—
Vehicle bodies & trailers	pcs	66	660	—	—	—
Grinding & shelling mills	"	61	1,051	2	11	—
Spare parts for ginneries	000Sh	—	—	—	228	—

Description	1975 Unit	1975 Quantity	1975 Value Ug.Sh. '000	1976 Quantity	1976 Value Ug.Sh. '000	1977 Estimated Product in Quantity
Steel furniture & joinery	pcs	5,998	413	—	4,234	3,640
Exhaust pipes & silencers		5,500	1,165	—	—	—
Tanks & other storage containers	pcs	262	1,654	4	2	
Blister copper	Ton	8,278	84,759	—	—	—
Aluminium circles	Doz	—	—	—	—	—
Aluminium bolloware	Doz	812	—	—	—	—
Enamelware	"	—	—	—	—	—
Spring matresses	pcs	4,300	986	3,000	932	8,000
Tins and cans	000 pcs	130	782	137	638	—
Brake linings & clutch facings	pcs	1,073	394	1,337	439	7,500
Gas & electric cookers	"	64	150	2	73	—
Refrigerators freezers & coolers	"	380	1,363	24	84	—
Electric fans	"	—	—	—	—	—
Electric cables	000Sh	—	1,229	—	—	—
Dry cells batteries	000 pcs	—	—	—	—	—
Auto mobile batteries	pcs	11,282	3,215	3,584	1,148	—
Radio sets & radio-grams	"	—	—	666	337	24,000

Index of some selected Engineering Products 1973 as Base

Description	1973	1974	1975	1976
Hoes	100	170	166	52
Ball point pens	100	49	20	45
Nails	100	155	542	592
Barbed Wires	100	210	600	275
Billets and angles	100	61	60	105
Vehicles bodies & Traillers	100	147	44	-
Exhaust pipes & silencers	100	54	85	-
Tanks & other storages	100	82	203	-
Aluminium hallow ware	100	52	152	135
Brake linings	100	68	86	158
Gas & Electrical coolers	100	95	26	90
Refrigerators	100	49	83	247

Value of Fixed Assets and New Investments of End 1976 (U. Sh. '000)

		All Industries	Steel, Metal and Electro
Total	Closing Value	723,624	38,878
	Add Value	47,801	524
Machinery and Equipment	Closing Value	338,494	24,146
	Add Value	33,833	12
Factory Building	Closing Value	254,474	8,656
	Add Value	2,634	77
Motor and other Vehicle	Clsoing Value	46,209	1,890
	Add Value	6,785	264
Furniture, Fixtures and Other Assets	Closing Value	84,447	4,186
	Add Value	4,549	171

Raw Material Statistics

RAW MATERIAL INPUTS IN VALUE (U.SH '000) AND PERCENTAGE, 1976

Branch of Industry	TOTAL		LOCAL		FROM E.A.		OUTSIDE E.A.	
	Value	%	Value	%	Value	%	Value	%
Total	221,807	100	125,728	57	24,855	11	71,224	32
Food Industry	15,468	100	14,582	94	779	5	107	1
Beverages and Tobacco	23,481	100	9,664	41	879	4	12,938	55
Textile	118,693	100	89,298	75	3,301	3	26,094	22
Leather and Shoe	789	100	255	32	282	36	252	32
Wood Industry	—	—	—	—	—	—	—	—
Paper, Printing and Publication	12,857	100	4,308	34	2,926	23	5,623	43
Chemical	16,978	100	402	42	7,322	43	9,254	55
Non-Metallic Minerals	5,383	100	2,217	41	1,496	28	1,670	31
Steel, Metal and Electro	28,158	100	5,002	18	7,870	28	15,286	54

IMPORT STATISTICS (Selected Basic Metal and Engineering Products) 1970 - 1975

(U. Sh. Million)

Site Code	Description of Import	1970	1971	1972	1973	1974	1975
	Totla Intermediate Goods	344.6	460.6	291.6	324.1	436.4	355.4
25	Metaliferrous Ores and Metal Scrap	2.5	2.6	1.7	0.8	0.2	—
41	Transport Equipment	43.9	53.1	25.5	33.6	43.8	55.9
	Total Equipment	256.7	489.8	315.0	212.0	303.3	355.7
31	Industry	105.6	167.8	153.2	89.4	95.8	124.2
34	Transport Equipment and Other	90.2	216.9	65.6	64.5	133.9	170.2

STATISTICS OF LABOUR EMPLOYMENT AND WAGES (1973 - 1976)

	1973		1974		1975		1976		Total Wage Bill 1976
BRANCH OF INDUSTRY	No. of Persons	No. of Est.	No. of Persons	No. of Est.	No. of Persons	No. of Est.	No. of Persons	No. of Est.	(Sh. '000)
TOTAL	30,464	182	26,987	145	25,987	126	24,534	107	157,583
Food Industry ——	7,719	59	9,906	34	4,343	34	5,129	27	17,065
Beverages and Tobacco ———	1,941	11	1,805	9	1,987	9	865	5	3,407
Textile ———	11,198	20	8,612	18	10,625	15	12,388	16	88,812
Leather and Shoe -	806	7	679	3	532	3	522	3	7,914
Wood Industry ——	640	11	276	3	308	4	—	—	—
Paper, Printing and Publishing ———	1,113	16	724	17	771	11	887	11	5,842
Chemical ———	1,997	21	1,701	27	1,822	22	1,005	12	6,177
Non-Metallic Mineral	3,305	11	1,013	7	1,132	7	1,793	4	15,286
Steel, Metal and Electro	1,745	26	2,271	27	4,467	21	1,945	29	13,080

CHAPTER IV

PRESENT STATUS OF THE BASIC METAL AND ENGINEERING INDUSTRIES IN UGANDA

Development Plan

Since the end of colonial rule in 1962, Uganda has had three national five year development plan; 1961/62 - 1965/66, 1966 - 1971 and 1971/72 - 1975/76. The perspective during the period 1971/72 - 1975/76 mainly describes Uganda's economic, social and institutional changes within the country. Three important social-economic changes occured during 1970 to 1975 and these are as follows:

- The Nakivubo Pronouncements, May 1970.
- The change of Governments, January 1971.
- The Economic War, August 1972.

These events maily cultivated the following important changes in economic and social conditions,[16], e.g.

- Redistribution of income and the attendant change in demand pattern.
- An increase rate of organization which has imposed severe strain in urban amenities.
- An inflating demand for urban employment and food supply beyond what the rural areas can supply.
- Difficulty in marketing the traditional cash crops.
- A shift in rural production.
- The extended role of state in the economic life of the country.
- An extension dictated by the need to fill the manpower-gap in private sector.
- Reorganization of the Administration of 1973.
- The Land Reform Decree of June 1975.

The Action Programme (National Plan 1977/78 - 1979/80)

In order to overcome the difficulties in the economic field the Government of Uganda has set out an Action Programme by way of Three Year Economic Rehabilitation Plan. The broad perspective of the Plan is as follows:

The Objectives of the Action Programme

The overall objective of the Action Programme will be to rehabilitate the

16/ Page 3, the Action Programme. A Three Year Economic Rehabilitation Plan 1977/78 - 1979/80. The Republic of Uganda.

important sectors of the economy so as to increase the production and productivity and put the economy in a sound footing, e.g.

- To increase the production of primary and secondary sectors for domestic consumption and surplus for export.
- To restore better economic performance through raising the level of managerial, technical and other skills and capabilities.
- To restore an adequate and efficient transport system.
- To develop and harmonise economic development throughout the country.
- To curb inflation and to stabilize the domestic prices.
- To promote employment and standard of living.
- To encourage and promote better climate for investment.

The Strategy of the Action Programme

The basic strategy of the Action Programme will be directed towards the allocation of resources through optimizing the utilization of the available resources in the key areas of the economy. The areas must include the number of following important aspects.

- commodity producing;
- include previous development in the form of physical installation and the necessary infrastructure in order to rehabilitate high and sustained level of out put;
- economise on imports and generate secondary development in other sectors as suppliers or users of raw material;
- products should have good export aspects in order to earn sufficient foreign exhcnage;
- projects should mature in a short time and be capable of generating revenue and employment.

Strategy of the Manufacturing and Processing

Increased production in these sectors will be promoted by:

- the rehabilitation or replacement of antiquated plants;
- providing fund for regular and adequate foreign exchange to procure machinery, spare parts, raw material and other requirements for the continuity of production;
- facilities for the procurement of machinery through guaranted bank credits to Ugandian business men who has financial constraints;

- stepping up training of skilled and managerial manpower and immediate adoption of an appropriate machinery for appointment and retention of suitably qualified managerial and skilled staff.

Strategy of Transport Development

Transport plays a strategic role in the Action Programme. Appropriate foreign exchange will be allocated for importation of petrol, road trucks, buses, ambulances, passenger cars, bicycles and spare parts. Priority will be given to commercial and public transport and ambulances.

The Policy of the Action Programme

Uganda is a mixed economy in which Government, co-operatives, and private entrepreneurs are free to participate. Government will continue to provide a number of basic undertakings in the following areas:

(i) Government Participation

- generation and distribution of electric power;
- provision of water supplies;
- marketing of major exports;
- provision of the road infrastructure;
- exploration and exploitation of major mineral resources;
- production of iron and steel;
- participation in financial institution which have foreign capital;
- participation with the partner states in the previous East African Community.

(ii) Private Participation

Ugandan Government will promote private participation in the economic activities in the private sector.

- Government will encourage private Ugandan businessmen by restraining administrative intervention in the economic activities of the private sector;

- Government will continue to welcome foreign investors who bring into the country convertible currency for fixed investment;

- In joint venture between local and foreign investors, the percentage shares will be determined on a case by case basis;

- Foreign investments (protection) act safeguards the interests of the foreign investors;

- Government has specific policy for Technical Co-operation and Investment between Uganda and other nations and supports the role played by the United Nations system, East African Community and Europian Economic Community.

The other important policies set out in the Action Programme are as follows:

- Financial and monetary management policy;

- Pricing policy.

Policy Measures

The following are the policy measures adopted by the Ugandan Government.

-

- to waive statutory price control of all locally produced industrial commodities and agricultural produce;

- to concentrate effort on increasing the supply of goods and services by channeling local and external resources to the productive sectors of the economy;

- Government will continue to control the prices of essential imports and protect the consumer;

- to issue license private buyers to buy produce directly from the farmers and to allow selling on open market to suppliment the effort of the co-operatives and the produce marketing board;

- to establish statistical unit in the Ministry of Commerce so as to monitor both local and international prices as a guide to sound price determination.

Financing of the Action Programme

It has been categorically mentioned in the Action Programme Uganda is facing shortage of financial resources, especially foreign exchange in current

economic difficulties. 17/ Out of estimated total investment cost of Ug.Sh. 11,331.9 million during the action programme, Ug.Sh. 8,601.8 million or 79.9 per cent is in foreign exchange. The investment on high priority projects alone is estimated to Ug.Sh. 10,063.2 million over the programme period.

Action Programme Capital Expenditure

Serial No.	Sectors (corresponding to Action Programme Chapters)	Total Cost Shs. million	High Priority Shs. million	Medium Priority Shs. million	Low Priority Shs. million
1.	Rural and Community Services	2,306.3	2,096.6	121.8	87.9
2.	Industry	2,029.3	1,906.2	63.1	60.0
3.	Tourism and Wildlife	153.6	57.6	25.0	71.0
4.	Geological Surveys and Mining	17.7	17.7	-	-
5.	Fuel and Power	253.7	253.7	-	-
6.	Water	334.1	325.3	2.5	5.3
7.	Housing and Construction	612.0	555.0	54.0	3.0
8.	Transport and Communication	4,285.0	3,388.7	140.5	255.8
9.	Education and Manpower Development	390.4	241.1	149.3	-
10.	Health	373.1	360.1	13.0	-
11.	Public Security and other Services	566.7	350.2	104.5	112.0
	Total - Action Programme	11,331.9	10,063.2	673.7	595.0

17/ The Action Programme 1977/78 - ;979/80, Page 66.

Industrial Development Plan

As mentioned in the previous chapter the Uganda's industrial sector comprises about 850 establishments employing 10 or more people and a much larger number of cottage industries and small workshops scattered throughout the country. The larger establishments are essentially light, import substituting industries.

The following are the main sectors of the industry:

Crop processing; textiles and wearing apparels; leather and footwear; manufacture of food products; brewing; electricity; metal and non-metal products; basic industrial chemicals; processing of mineral products; glass and clay products; wood products; paper and paper products.

The Government's plan for the development of the industrial sector during the Action Plan Programme will be t. rehabilitate the existing industries in order to achieve the output level prevailing in 1972. The Government will give high priority to the following industrial sectors which:

- manufacture consumer essentials;
- produce capital goods and intermediate inputs required by other local industries;
- earn or conserve foreign exchange;
- generate revenue to the Government;
- produce construction and building materials;
- strengthening of the repair and maintenance capabilities in the industrial sector;
- new industrial projects will only be undertaken in exceptional circumstance during Action Programme;
- manufacture metal castings and spare parts in existing industrial workshops.

INSTITUTIONAL STRUCTURE AND MECHANISM TO IMPLEMENT ACTION PROGRAMME

The institutional framework or machinery which is set up for the implementation of the Action Programme through the Planning Authority. The national planning authority in Uganda is the Cabinet Central Economic Committee. The Ministry of Planning and Economic Development is the secretariat of this authority. The responsibilities[18] of the Cabinet Central Economic Committee include:

- determination of national policies, within the framework of broad objectives and priorities governing public investment expenditure and utilization of other development resources;

18/ The Action Programme, the Republic of Uganda, 1977/78 - 1979/80.

- co-ordination of all Government projects;

- ensuring the implementation of Government development projects in all the provinces so as to promote balanced regional development of Uganda;

- co-ordination of and following up on co-operation with foreign countries in economic, financial and technical fields;

- promotion and dissemination of the objectives, strategies, and policies of national development plans;

- appraisal and approval of major economic and social development measures emanating from various agencies and ministries.

Machinery for Co-ordinating and Financing the Action Programme

The structure of the machinery is as follows:

- The Planning Authority (Cabinet central economic Committee);

- The Ministry of Planning and Economic Development is the Secretariat of the authority;

- Sectoral Planning Units;

- Provincial Planning Teams and District Planning Committees;

- Technical Assistance Committee within Ministry of Planning and Economic Development undertakes external technical assistance programme.

Industrial activities are covered by two main ministries and relevant parastatal corporations, e.g.

- Ministry of Planning and Economic Development.

- Ministry of Industry and Power.

There are about 23 parastatal corporations within various ministries. These corporations are running about 250 enterprises. The major corporations 19/ are:

Uganda Development Corporations running 73 enterprises;

Uganda Steel Corporation running 10 enterprises;

19/ The Action Programme 1977/78 - 1979/80, Page 4.

Wood Industry Corporation running 19 enterprises

Produce Marketing Board running 80 enterprises

Uganda Tea Authority running 25 enterprises

Lint Marketing Board running 17 enterprises

Uganda Advisory Board of Trade running 8 enterprises

Institutions for the Development of Industry

The following are the important institutions responsible directly or indirectly for the development of basic metal and engineering industries in Uganda.

		Function
1.	Uganda Development Corporation (UDC) (established in 1952 as a parastatal organization)	- responsible for facilitating the industrial and economic development in Uganda, promoting and assisting in the financing, management and establishment of new undertakings and schemes for better organization and modernization of industrial and commercial enterprises including development of research into the industrial and mineral possibilities
2.	Uganda Steel Corporation (USC) (Established in November 1974)	- The main function of USC is to run the Steel and Copper factories in Uganda. One of the important task of this Corporation is to develop iron and steel production of this country by utilizing indigenous raw material.
3.	Ministry of Industry and Power (Industrial Planning Unit UNIDO assisted project	- The main function of this Unit is to assist and recommend the upgrading and expansion of engineering establishments. Those are State controlled in conjunction with Ministry of Planning and Economic Development
4.	Geological Survey and Mining Department	- The mineral explorations are being carried out through this department and most of the projects during action programme time will be executed jointly by this Department and Ministry of Planning and Economic Development and Ministry of Land and Water Resources

5. Ministry of Education Ministry of Planning and Economic Development Ministry of Labour Ministry of Industry and Power Management Training and Advisory Centre	-	These Ministries are responsible for the development of manpower for industrial sector. Uganda Government has launched a Crash Manpower Development Programme during the Action Programme period.

Financial Institutions

The Bank of Uganda, it is owned by the Government of Uganda. The bank act as a banker to the commercial banks and other credit institutions, accepting deposits from them, making payments on their behalf and providing inter-bank clearing.

The remaining banks are the subsidiaries of the foreign banks with Government share holding.

- three British Banks
- two Indian Banks
- one African Bank
- Libyan Arab Uganda Bank.

Institutions for Technical Training

Uganda has given a vigorous drive to produce adequate technical manpower during the Action Programme period and within the long-term objectives of industrialization.

Technical Schools

These schools formerly known as Rural Trade Schools and farm schools offer three year courses at craft level after Primary Seven. The trades taught are, Carpentry, Electrical Installation, Motor Vehicle Machanics etc. During the Action Programme, total enrolment in these schools is expected to reach 2,000.

Technical Institutes

There are five technical institutes (Elgon Kiewamba, Masaka, Lira and Kisubi) who have reached senior four level. Estimated intake in 1976 is 900. Expected output will be 1,000 during programme period.

Uganda Technical College and a Uganda University

(a) Enrols students for Ordinary and Higher Diploma courses in Civil, Electrical and Mechanical Engineering. Student population full-time - 300, partime 400 at present.

(b) University produces graduates in Mechanical, Electrical and Civil Engineering.

INDUSTRIAL ESTABLISHMENTS

Basic Metal and Engineering Industries

(a) Steel Industry

1. Steel Manufactures of East Africa Ltd. Jinja

A subsidiary of Uganda Steel Corporation. The Company started in 1962 (Public Sector industry).

Products: Iron ingots, reinforcing round and square bars, angle iron and flats, bailing hoops in coiled condition.

Process: The main inputs for manufacture is steel scraps. The ingots are produced by melting the steel scrap in electrical furnace. The ingots are preheated and subsequently transformed to various section by rolling mills.

Capacity: Installed capacity is as follows:

24,000 tons of ingots/year
30,000 tons of rolled steel bars/year.

Present Production: 8,000/10,000 tons of steel bar/year

Existing Manpower: 550 persons
Engineers: 2 (Local Electrical & Mechanical Engineers)
Expatriate: 1 - Tool Maker

Plant and Machinery: The mill has 10 tons/charge Electric and furnace with 5 MVA transformer, with a preheating furnace for ingots and mini-rolling mill. It has well equipped repair and maintenance workshop. The Unit has an ancillary plant for the manufacture of bailing hools from steelware. 1978 turnover was U.sh. 35 million

Turnover: Lack of scrap material, lack of intercountry transport facilities, low level labour efficiency, lack of maintenance skill and spare parts, prolong delivery time for refractory materials being imported from U.K.

Immediate Requirements: Possible location of supply of scrap. One chief Engineer for the Company, one Metallurgist.

Manpower Development: The Company carries out its inplant training programme.

- One student is being trained in Sheffield, U.K. as Metallurgist

- One student is being trained in U.K. as Electrical Engineer

Wages: Skilled worker receives U.Sh. 2,000/month.

Expansion Programme: As a hoding institution Uganda Steel Corporation at present involved for the expansion of this Company. The expansion programme indicates:

- 2,000 ton/year steel foundry

- 30,000 ton/year steel producing plant.

Composition of furnaces will be as follows:

13,000 ton/year ore reduction furnace of steel/pigiron

one 10/14 ton capacity electric Are Furnace to produce 30,000 ton/year steel partly from liquid pig-iron/carbon content not higher than 2%, partly from solid steel serap.

Total cost of these plant including mining equipment will be to the tune of US$0 million.

The schematic diagram for proposed integrated steel complex by Uganda Steel Corporation is shown in page 38.

(b) Foundry (cast iron, non-ferrous) & Engineering Industries

There are number of small foundries in Uganda, but the larg foundry is located in Uganda factory in Augazi.

2. UGMA Steel & Engineering Corporation Ltd., Lugzi

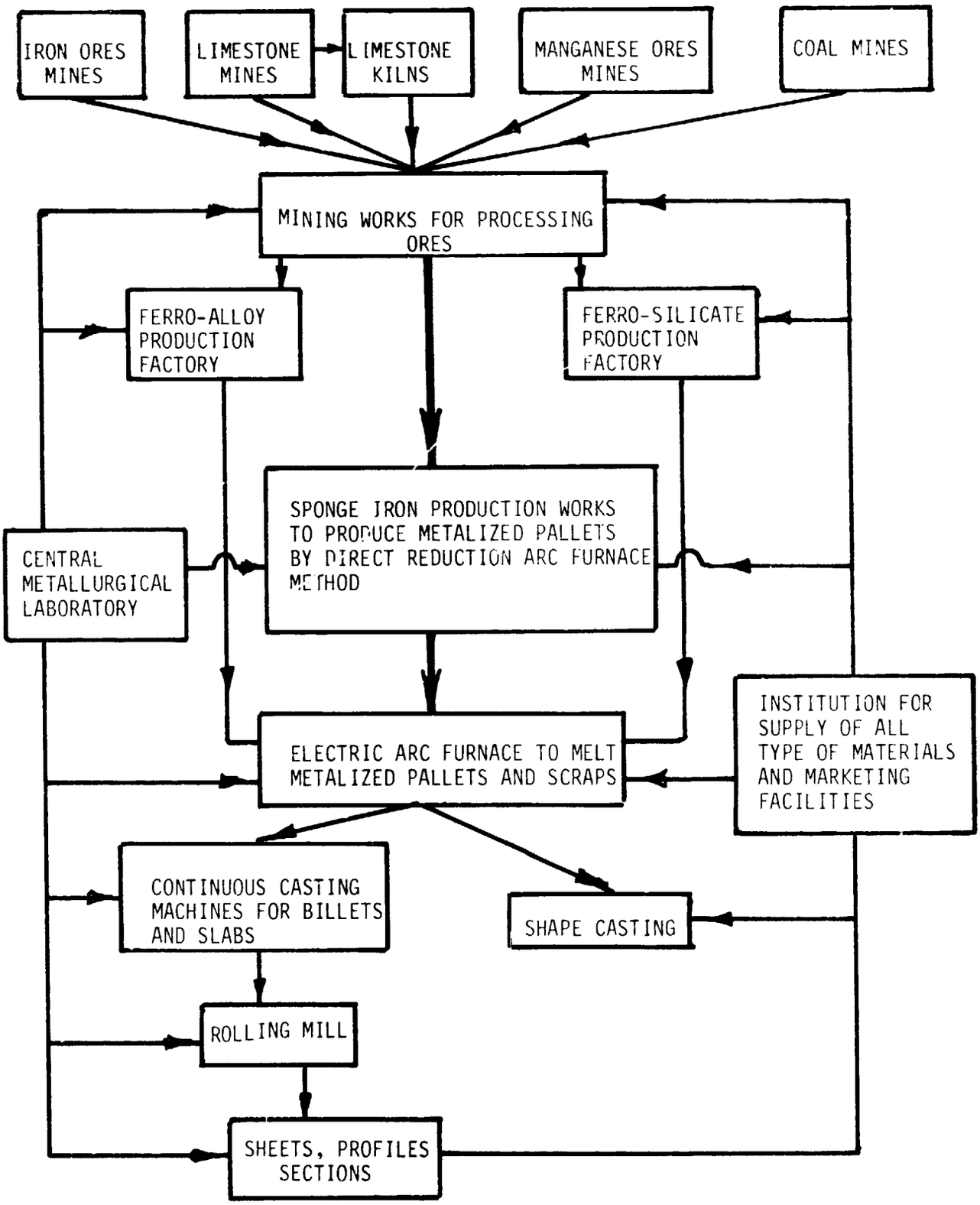
This is a large repair and maintenance shop and a subsidiary of the Uganda Sugar Factory Ltd. At present the Government plan is to separate the UGMA Steel and Engineering Corporation Ltd. from the sugar factory and bring the enterprise under Uganda Development Corporation as an independent company. UNIDO/UNDP will assist in modernizing this plant and the present proposal is to rename the company as Industrial and Repair Maintenance Shop. The existing company started in 1960.

Product: Ferrous and non-ferrous castings (cast iron, brass, aluminium) spareparts for textile, cotton ginneries and sugar mills, fabricated parts and production lines for hoes, pick axes, and spades.

Process: Shape castings production from melting pigs and cast iron seraps by capola furnaces, non-ferrous castings from crucible pit type furnaces. The basic facilities for welding, forging, machine shop, tool room, heat treatment facilities are available.

Capacity: Two capola furnaces 500 mm dia with an installed capacity of 1.3 ton/hour each furnace.

PROPOSED PLANNING OF INTEGRATED STEEL COMPLEX BY UGANDA DEVELOPMENT CORPORATION



Present Production: The present output of the foundry is very low 40 to 70 ton/year i.e. 480 to 840 ton/year.

Existing Manpower: 313 persons (June 1978) which includes:
Total Management Staff - 54 (This includes two expatriates engineers and five local engineers)

Total Foundry Workmen - 75
Total Production Personnel - 134.

Plant and Machinery: Extremely wide range of machinery from drilling, shaping boring, tunning, forging, welding including heavy duty types are available. Tool room for dies, pattern shop, metallurgical laboratory etc. indicates a good prospects for manufacturing all kinds of fabricated and spareparts manufacturing facilities. Foundry includes 2 number 1.3 ton/hour cupola furnace, one 5 ton/hour induction furnace (which is not in operation at present), pit type crucible furnace for non-furrous castings.

Constraints: Lack of raw material particularly pig iron with carbon content 3.5 %, lack of skilled manpower, particularly in pattern shop, lack of coal and fuel oil (particularly in high price of coal), lack of spare parts, lack of ferro manganese material, continued purchase of brake shoes (railway) from abroad by the Government.

Immediate Requirement: Availability of serap iron and pig iron; immediate repair of cupola furnace, spare parts.

Manpower Development: Company cairies out its own inplant training. During the expansion programme another 100/150 skilled men need to be trained.

Expansion Programme: The expansion programme as outlined by UNIDO Industrial Planner consists of two major important activities within UGMA factory.

(a) Industrial Repair Maintenance Activities

(b) Manufacture of capital goods and standard engineering products.

As described in Hungarian report the proposed expansion of Cast Iron (flake, graphite structure) castingswwill be increased in the following manner:

(a)	Small and medium sized castings of 10 kg/piece	- 1,800 ton/year
(b)	Rollers for sugar factory big casting of 10 ton /piece	- 900 ton/year
(c)	Moulds for Jinja Steel Mill	- 585 ton/year
(d)	Castings for railway and agriculture	- 715 ton/year
	Total	4,000 ton/year

3. Uganda Baati Ltd. Kampala

Uganda Steel Ltd. Tororo

The two enterprises supply bulk of the need for galvanized and corrugated iron sheets from local manufacture. There is an acute shortage of these materials in the country and prices have gone up considerably. The Government wants to rehabilitate these two companies at an estimated cost of U.Shs. 12.0 million all in foreign exchange.

4. Uganda Hoes Ltd.

Uganda Hoes Ltd. produces hoes and various hand tools used in the agricultural sector. It has a capacity to produce 1.5 million hoes annually. The production has dropped since 1973 due to lack of availability of raw materials e.g. hot rolled steel flats, and the advanced age of machinery and equipment. During the action programme the government intends to spend for the renoration/expansion programme U.Shs. 9.6 million in foreign exchange in order to increase the production up to 2.5 million hoes per year.

5. East African Steel Product Ltd.

This company manufacture conduit pipes, steel furniture and exhaust pipes. The pipes are mainly for structural purposes. The main expansion of the company during the Action Programme will be to produce Galvanised Water Pipes. A galvanising plant will be added to this unit. The cost of expansion will be U.Sh. 19.0 million, with U.Sh. 15.0 as foreign exchange components.

6. Various Metal Products

These products mainly nails, steel doors and window frames, barbedaries are in the private sector. Government intends to improve this sector by way of foreign exchange allocation.

7. Copper Industry

Copper in Uganda is minced at Kilembe, western Uganda and started mining from 1950's. The treated ores at Kilembe railed to Jinja for smelting before being exported in the concentrated form of blister copper.

Smelting Capacity at Jinja	- 1,500 tons of blister copper/month.
Present Production at Jinja	- 400 - 600 tons of blister copper/month.

This deterioration in production is due to the severe constraints e.g. wornout plant and equipment in the copper mines, ore treatment plant, and the copper smelter at Jinja, lack of main furnace and spareparts contributed greatly to this low production level. Another major constraints is lack of qualified technicians.

During the Action Programme period the following improvement will take place.

- Kilembe Copper Mines U.Sh. 10.0 million will be invested in rehabilitating the equipment for mines and ore treatment plant all in foreign exchange.

- Copper smelter at Jinja U.Sh. 25.0 million in foreign exchange to renovate the copper smelter to increase the production.

8. Cobalt/Sulphur Project

The copper deposits at Kilembe also contain cobalt, sulphur and iron. These have been stock piled in the form of pyrite at Kilembe. The cost of the study estimated by Uganda Government for theextraction of these valuable minerals will be U.Sh. 3.0 million out of which U.Sh. 2.0 million in foreign exchange.

The Status of the Existing Basic Metal and Engineering Industries

During 1976 the following is the status of engineering industries in Uganda.

As in 1976	Basic Metal and Engineering Industries 1976	Total Manufacturing Industries 1976	%
No. of industries	29	107	27.1
No. of person employed	1,945	24,534	7.9
Wages U.Sh. (million)	13.080	157.583	8.3
Raw material inputs U.Sh. (million)	28.158	221.807	12.7
Production (sales in value) U.Sh. (million)	52.502	845.333	6.2
Fixed asset (U.Sh. million)	38.878	723.524	5.4
New Investment (U.Sh. million)	0.524	47.801	1.09

The above figures merely indicate that the engineering industries are not playing a substantial role in the manufacturing sector. The performance both investment and production wise did not create a major impact on the economy.

It is interesting to note here that the institutions structure and administrative mechanism although have developed considerably in Uganda, the engineering capabilities both in terms of manufacturing output and labour deployment played a very minor role in the manufacturing sector. Most of the engineering industries are not interlinked in their activities. The Action Programme envisages a more integrated development plan which not only require the dynamism on the part of Uganda existing industries, but also needs a greater level of technological development and particularly the assessment of appropriate technology which should match the rehabilitated industries and the integrated linkages of these industries for greater output and expansion of the engineering industries sector.

General Outlook of Technology Level

Iron and Steel Sector

The level of technology attained in these two sectors of manufacturing industries are:

- Cast iron products from scrap generally for the spare parts manufacture. Quality of cast iron castings are up to Grade 14 using standard cupola furnaces. Although an induction furnance is available in Ugma plant, so far no alloy steel castings are produced in Uganda.

- Steel ingots are produced in Jinja factory with the Arc process of melting. The Government has proposal for the manufacture of sponge iron bydirect reduction process. If this plant is implemented, Uganda will come to a higher level of technology in steel making. The inducation furnace situated in Ugma can be transferred to Jinja factory for the production of Alloy Steel mainly needed for the steel rollers of the rolling mill and various other castings for the industrial sector.

- The level of technology observed in the fabrication and process shops needs furth improvement. Present level of fabrication, press and welding processes do not attain at a high level of technology. For instance CO_2 welding or submerged - arc weldings were not encountered in the welding processes. In fabrication, jigs, fixtures and sophisticated tools are rarely used.

- Heattreatment techology is developed for case hardening and through hardening of steel. Level of induction hardening so far is not incorporated in any process.

  The heattreatment technology development is also limited due to the lack of metallurgical laboratory and qualified manpower facilities.

- Forging technology has developed reasonably in Uganda. Most of the forging in large industries are carried out by electric forge and swaging hammer press. Compound forging tools and dies are rarely used. In small-scale sector at blacksmith level most of the forging are done mannually.

- Uganda has limited facilities for metal surface coating e.g. nickel-chromplating, phosphating etc. Only technology developed so far is galvanizing particularly for the corrougated sheets production.

In general the technology level developed so far in Uganda primarily in Level I and II. A summary of existing technology level achieved in Uganda is shown in the next page.

Assessment of Existing Technology Level in Basic Engineering Industries

Summary

(Level indicates the relative development of technology)	Level I	Level II	Level III
1. Cast Iron and Steel Production from ores		Proposed for manufacture of CI & Steel from direct-Arc-reduction process	-
2. Foundry (Ferrous)			
(a) Cast - Iron Casting	Small foundry technology with cupola furnace in small-scale sector	Cupola furnace technology in Ugma for Cast Iron production	-
(b) Steel Billets		Arc furnace technology for steel ingots in Jinja	-
(c) Steel & Alloy Castings 20/			
3. Foundry (non-ferrous)			
(a) Brass	Pittype crucible furnace and floor casting technology	-	-
(b) Aluminium	Pittype crucible furnace and floor casting technology	-	-

20/ If the induction furnace in Uganda can be transferred to Jinja factory for the manufacture of alloy steel castings (say Cr. V. Mete)Uganda can enter in the higher technology.

		Level I	Level II	Level III
4.	Forging			
	(a) Manual	Manual forging technology generally in small-scale sector	-	-
	(b) Mannually operated forge	-	-	-
	(c) Mechanical or pneumatic forge		Technology has developed including the manufacture of die	
5.	Heat Treatment			
	(a) Case Hardening	-	Technology exists in Ugma factory	-
	(b) Through Hardening	-	Technology exists in Ugma factory	-
	(c) Induction Hardening	-	-	-
6.	Machining			
	(a) Conventional machining with Lathee, Grinding, Drilling, Boring etc.	Technology developed in small-scale sector	Technology has developed in Ugma and many industries	-
	(b) Semi Automatic e.g. Capstan, Turret etc.	-	Technology exists in Ugma and Jinja factories	
	(c) Automatic e.g. Bar or chuck Auto, special purpose machines and technique	-	-	-
	(d) Usage of Jigs, tools, fixtures	Technology does not exist in small-scale sector	Limited technological application in large industries	-

		Level I	Level II	Level III
7.	Fabrication			
	(a) Manufacturing with welding facilities	Technology exists in family type establishments	-	-
	(b) Semi automatic processes with welding facilities	-	Technology exists in medium size industries	-
	(c) Automatic machines with CO_2 welding Argon welding etc.	-	-	-
	(d) Usage of Jigs, tools fixtures	-	Limited technology in development in medium size industries	-
8.	Tool Room			
	(a) Conventional tool grinding technology	Only tool grinding technology has developed	-	-
	(b) Tool manufacture technology		-	-
	(c) Simple Jig and Fixture Manufacture technology	Limited in large industries	-	-
	(d) Complex Jig, fixture and tool manufacture technology	-	-	-
	(e) Jig Boring and Precision machining technology	-	-	-

		Level I	Level II	Level III
9.	Metal Coating			
	(a) Galvanizing technology	-	Reasonable technology has developed	-
	(b) Ni-Cr. plating technology	-	-	-
	(c) Phosphating technology	-	-	-
	(d) Anodising technology	-	-	-

Requirement of Raw Material

The demand for iron and steel in Uganda can be summarized as stated below:

	Present output	Installed capacity	Expansion of existing factories	Demand
Cast Iron				
(a) Large Industry				
Scrap +	480 to 840 ton/year	2,500 ton/year	4,000 ton/year	10,000 ton/year
Pig (3.5% Carbon)				
(b) Small foundries 21/ 4/5 exists in Uganda	to to 80 ton/year	-	-	-
Steel				
Large Industry				
Liquid Metal from Scrap	8,000 ton/year	24,000 ton/year	30,000 ton/year	
Steel Billets and Rolled Sections	8,000 ton/year	30,000 ton/year		70,00 to 80,000 ton/year

21/ This is only a verbal enquiry and no actual information is available.

Total Iron and Steel Demand 1980 22/

Pig Iron	10,000 ton/year
Wire Rod	1,600 ton/year
Rods and Bars	12,000 ton/year
Sections	10,000 ton/year
Light - 4,700 ton/year Medium - 4,000 ton/year Heavy - 1,300 ton/year	
Seamless tube	1,200 ton/year
Plates	7,200 ton/year
H.R. Sheets and Coils	2,900 ton/year
Shelp	9,100 ton/year
C.R. Sheets and Coil	31,400 ton/year
Total	85,400 ton/year

Resources based on Import Substitution

The strategy of the Action Programme in Uganda clearly indicates of developing industries and projects which are indigenous resources based. Such type of resources based industries should reduce the imports, capable to generate revenue and employment and earn foreign exchange through shortest period of implementation programme. It is important to note that most of the existing industries in Uganda were established on import substitution basis. The rehabilitation programme does not envisage any new establishment unless it is of national importance. Due to the lack of raw material availability particularly steel scraps and billets, the engineering sector is badly affected. The import content of these import-substituted industries has badly affected the country's balance of payment. Therefore, unless there is a proper guideline on import substitution policy on the part of the Uganda Government, it will be difficult even to rehabilitate the existing engineering establishments those were originally installed on import substitution theory.

If Uganda processes the existing iron ores transformed into pigs and steel products, Uganda may be able to expand and install number of industries in engineering field through minimum import content provided further attention be given to promote the basic engineering ancillary industries.

22/ The figures approximately furnished by Uganda Steel Corporation Estimate of Demand 1980

An adequate guideline for resources based import substitution for manufacturing basic metal and engineering products will definitely assist the expansion in the industrial sector.

Rationalization and Upgrading Projects Initiated by the Uganda Government

Project Operational/Under Study

High Priority Projects During Action Programme Period 1977/78 - 1979/80

Project Title	Implementing Institutions	Total Cost U.Shs. (million)	Foreign Exchange U.Shs. (million)
Basic Metal			
1. Exploration of iron ores in Kashenyi and South Kigezi District	USC	*	*
2. Integrated steel manufacture at Jinja	USC	*	*
3. Integrated Iron and Steel Complex (Govt. is examining the Hungarian proposal)	USC	*	*
4. Modernization of Kilembe Copper Mines	MIP	10.0	10.0
5. Modernization of Copper Smelter at Jinja	MIP	26.0	26.0
6. Cobalt/sulpher Project (Feasibilitystudy)	MPED	3.0	2.0
Engineering Industries			
1. Ugma Steel and Engineering Corporation Ltd. 23/			
(a) Integrated Industrial Repai. and Maintenance	MIP	36.419	20.40
(b) Manufacture of standard products including capital and intermediate goods			
(c) Feasiblity study of Steel Casting in Jinja with existing induction fusnce	MIP	-	-

* Figures are still not received from Ministry of Industry and Power, Uganda.

23/ From the interem report, draft Dec. 1976, WGA/76/007, Reorganization and expansion of UGMA factory.

Project Title	Implementating Institutions	Total Cost U.Shs. (million)	Foreign Exchange U.Shs. (million)
2. Expansion of Uganda Hoes Ltd.	USC	9.6	9.6
3. Uganda Batti Ltd. and Uganda Steel Ltd.	MIP	12.0	12.0
4. Expansion of E.A. Steel Products Ltd.	MIP	19.0	15.0
5. Modernization of Steel and Aluminium Window and Doors Industry	P	-	-
6. Establishment of National Railway System	MTCW	516.1	408.0
7. Purchase of Workshop Equipment for Road Transport	MTCW	30.0	30.0
8. Proposed Railway Workshop for manufacture of spare parts, coaches etc.	MPED URC	340	153
9. Modrnization of Six Saw Mills	WIC	34.3	26.2
10. Upgrading Jinja Plywood Factory	WIC	7.5	7.2
11. Upgrading Budongo Particle Board Factory	WIC	2.6	2.5
12. Furniture and Joinery Workshop	WIC	4.5	3.0
13. Zoka Saw Mills	WIC	9.6	6.4
14. Bugamba Saw Mills	WIC	7.2	3.8

Note: MIP: Ministry of Industry and Power
MPED: Ministry of Planning and Economic Development
WIC: Wood Industries Corporation
P: Private
MTCW: Ministry of Transport, Communication and Works
USC: Uganda Steel Corporation
URC: Uganda Railway Corporation

The products to be manufactured are as follows.

Jaggery Installations; Tractor Trailors for Sugar Handling; Sickles, Axes, Matchets, Ploughes; Complex Agricultural Tools; Spraying Pumps for Agriculture; Centrifugal Pumps; Solar Powered Water Pumps; Truck and Car Spares; Bronze Valves, Steel Vanves; Ingot Moulds, Steel Water Pipe and Fittings; Cast Iron Water Pipes and Fittings; Pressure Vessels; LGP Storage Tanks; Steel Structure for Building and Bridges; Transmission Towers; Sugar Mill Roll Shells; Continuous Welded Tubes; Punched Angles; UEB & Post Telecommunications Components; Railway Spares; Storage Tanks; Milk Can and Milk Products; Rebuilding of Diesel Motors.

UNIDO/UNDP Projects

1. SM/WGA/73/015 : Manufacture of Low Cost Farm Equipment (UNIDO)
UNDP Contribution US$96,580
Govt. Contribution U.Shs. 25.2 million

2. UGA/78/004: Industrial Repair and Maintenance (UNIDO)

3. SI/UGA/77/80: Asst. to Uganda's Steel Industry US$4,400

4. UGA/76/007: Assistance to the Industrial Planning Unit - Ministry of Industry and Power (UNIDO)
UNDP Contribution US$457,970
Govt. Contribution U.Shs. 2.7 million

5. UGA/73/001: Industrial Training Scheme (ILO)
(Ministry of Labour)
UNDP Contribution US$1,684,640
Govt. Contribution U.Shs. 7 million

6. UGA/71/525: Management Training and Advisory Centre (Phase II)
UNDP Contribution US$573,040
Govt. Contribution U.Shs. 24.9 million

7. UGA/71/007 Manpower Planning (ILO)
UNDP Contribution US$111,980
Govt. Contribution U.Shs. 700,000

8. SM/UGA/75/002: Assistance to Geological Survey and Mines Department
UNDP Contribution US$1,558,716
Govt. Contribution U.Shs. 5.2 million

9. UGA/77/066: Mineral Reconnaissance of Nile Province
UNDP Contribution US$608,255
Govt. Contribution U.Shs. 1.5 million

10. UGA/77/003: Energy Development
UNDP Contribution US$121,000
Govt. Contribution U.Shs. 300,000

11. UGA/-/-: Training Centre for Ministry of Transport, Communication and Works
UNDP Contribution US$369,880
Govt. Contribution U.Shs. 1.5 million

Proposed draft Second Country Programme 1977-1981 (not yet cleared by Governing Council and Government of Uganda).

Sectoral Resources Allocation Summary in US$

Sector	Total	1977	1978	1979	1980	1981	% of Total
Industry	3,638,304	280,637	711,161	1,159,398	993,988	493,120	13.4
Education and Manpower Training	8,489,465	1,351,278	2,375,342	2 738,885	1,634,500	388,380	31.2
Natural Resources	2,967,196	445,500	662,801	722,420	921,190	515,285	10.9
Total of all Sectors	27,187,197	3,234,646	5,805,426	6,735,296	5,984,955	5,425,875	

It is clear from the UNDP Country Programme that the Government of Uganda has given top most priority to Educational and Manpower Training within the country during the Action Programme Period.

Projects Identified by the Mission

The following projects were identified by the mission for the development of basic metal and engineering industries in Uganda.

Uganda Steel Corporation

1. UNIDO/ECA diaganostic study team for integrated pre-feasibility and possible feasibility study for integrated steel manufacture 4 to 6 months.

2. Requirement of geological and field laboratory equipment for the exploration of iron ores and important minerals.

3. Study on transportation of iron ores.

4. Expert assistance required for development of roads in mining area.

5. Project to set up a training centre of iron and steel with metallurgical laboratory.

Uganda Technical College

6. Introduction of Industrial Engineering course for industries initial requirement will be about 60 industrial engineers for the industry.

7. Introduction of special course for engineering design and draughtsmanship.

8. Requirement of surge-generator and power steblizing equipment for the training of the students in the existing laboratory.

9. Requirement of technical books for the engineering courses.

Ministry of Industry and Power

10. Finance and technical assistance for identification of projects and feasibility studies.

11. Jinja Steel Plant.

    (a) feasibility study for alloy steel casting with the existing induction furnace situated in Ugma factory;

    (b) expert assistance for a metallurgist (priority);

    (c) requirement of a chief engineer;

    (d) possible exploration and pre-feasibility study for the manufacture of refractory material for existing steel plant.

Uganda Railway Corporation

Technical assistance required 24/ in the proposed Railway Workshop where railway spareparts and coaches will be manufactured.

12. Technical assistance for the selection of signal and telecommunication equipment for entire railway system of Uganda 24/.

13. Expert Assistance required to train 200 apprentices in civil and mechanical/ electrical engineering in proposed Railway Training School. 24/

14. A team of technical experts is required to start up the proposed Railway Main Workshop. 24/ These experts must be operational and should train the railway operatives in various manufacturing activities.

24/ As per the letter from Ministry of Industry and Power to the Secretariat of ECA on 14 February 1979.

Sectoral and Subsectoral Constraints

The sectoral and subsectoral constraints in basic metal and engineering industries encountered in Uganda can be summarized below:

Steel Industries

The main constraints are:

- Lack of local steel scrap. The net availability of local scrap is only 7,000 to 8,000 tons per year whereas the plant capacity for scrap melting is 24,000 tons a year;
- Lack of skilled manpower both at management level and at floor level.
- Lack of qualified metallurgist;
- Lack of refractory material for furnaces (present delivery of retractory materials is about 25 to 30 weeks being imported from U.K.);
- Lack of spareparts and maintenance skill;
- Lack of internal transport facilities in Uganda;
- Low level efficiency of labour force.

Engineering Industries

(a) Foundry Industries

The main constraints are:

- Lack of Cast Iron Scraps; the existing availability of Cast Iron Scraps are 400 tons per year where the plant capacity is 2,500 tons per year;
- Difficulty in procurement of Pig Iron with carbon content 3.5%;
- Lack of skilled manpower in casting shop, pattern making shops;
- Lack of availability of Coke and fuel oil. The existing prices of Coke is U.Sh. 5,000 per ton, this is increasing the value added cost of shape castings;
- Lack of ferro-manganese material;
- Lack of maintenance facilities and spareparts;
- Lack of industrial co-operation e.g. the components like railway brake-shoes are imported from abroad where the Ugma factory has facilities to manufacture such brake shoes indigenously.

(b) Engineering Products

The main constraints are:

- Lack of design facilities to develop indigenous products;
- Lack of design facilities to develop the spare parts drawing locally;
- Lack of transport facilities;
- Lack of skilled manpower particularly fitters, turner, shaper, miller, welder, quality control and inspectors, maintenance operatives, etc.;
- Lack of personnel in technical field e.g. industrial engineers, designer, draughtsman, purchasers, mechanical and electrical engineers;
- Lack of modern machinery and equipment (in many establishments the machinery and equipment needs replacement);
- Lack of appropriate manufacturing technologies;
- Lack of facilities for (i) common services e.g. toolroom, spare parts manufacturing shops, heat treatment shops, and (ii) ancillary industries.

CHAPTER V

COUNTRY CONSTRAINTS

The previous Chapter has outlined the existing status of basic metal and engineering industries in Uganda, highlighting the major areas of sectoral and sub-sectoral constraints 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 Uganda Government is encountering at national level. Unless the basic constraints are removed, it is difficult for the Government of Uganda to implement the rehabilitation programme envisaged for the existing industries as outlined in the Action Programme. The major country constraints can be summarized below:

Institutional Constraints

Examining the present institutional structure, Uganda has too many parastatal institutions controlling specific industries. Many engineering activities are being duplicated and interlinked activities within various Ministries are not adequately threaded for integrated development of basic metal and engineering industries. For example, the identification of projects and the necessary feasibility studies are carried out by the Ministry of Industry and Power, Uganda Development Corporation, Uganda Steel Corporation and Ministry of Planning and Economic Development. The appropriate decision and implementation of various interlinked projects cannot get the gound owing to the interference of many Ministries and implementing agencies within the Government departments. There is an urgent need for the rationalization of institutional bodies as described in Chapter IV under the heading Institution for the Development of Industry, procedural reformation, interlinkage of Ministries and parastatal organization 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 Uganda

Constraints in management services:	- lack of technical training programme
	- lack of facilities for project evaluation and pre-feasibility studies
	- lack of facilities for management consultancy services
Product development and design	- lack of facilities for product adaptation and design
	- lack of facilities for product development and design
	- lack of facilities for supply of working drawings

Procurement - Finance and Marketing Services Constraints	- lack of foreign exchange and heavy dependency on cash crop export, to import essential goods and raw materials and spare parts etc. - lack of procurement facilities for Cast Iron and Steel particularly scrap material - lack of facilities for the procurement of appropriate plant and machinery which includes assessment of machine specification - lack of marketing facilities for engineering products

Technological Constraints

The technological constraints in Uganda can be summarized below:

Technological Advisory Services Constraints	- lack of facilities for plant layout - lack of facilities for process planning particularly with engineering industries sector - lack of facilities for methods of improvement (at present the technical institutions do not produce any Industrial Engineers - 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 (only Ugma factory has limited resources) - lack of manpower facilities for material and production control - work study system i.e. method study and work measurement does not exist even in large industries - lack of facilities for quality control and particularly metallurgical testing requirement
Common Engineering Services Constraints	- lack of steel casting facilities particularly for sugar and textile industries - lack of facilities for the supply of intermediate goods e.g. steel sheets, plate plates, commercial sections. Steel rolling mill at Jinga only produce steel for building material. Steel sections for machining are not being produced in Uganda.

- lack of facilities for toolroom work for the manufacture of jigs, tools and fixture
- lack of facilities for manufacture of spare parts both for machinery and existing machine tools in Uganda
- lack of electroplating and phosphating facilities available
- lack of heat treatment facilities (Limited facilities are available in Ugma factory for case hardening and through hardening operations)
- lack of maintenance facilities, particularly in transport, engineering industries, water supply, textile and sugar-industries, agricultural industries.

Ancillary Industries constrants

The promotion of ancillary industries are essential for Uganda in order to rehabilitate the existing industries. The following ancillary industries do not exist in Uganda.

- manufacture of Brass Bush Bearings
- manufacture of hardware
- manufacture of transmission gears
- manufacture of electrical components
- manufacture of automotive accessories
- manufacture of wheels and rims. (particularly for agricultural and transport equipment)
- manufacture of taps and water fittings, valves etc.
- manufacture of dairy equipment
- manufacture of plastic and rubber products for industrial use.

- manufacture of agricultural machinery parts (scs, chisels, tines etc).
- manufacture of itchgear and motors
- manufacture of engines upto 15 to 35 HP.

Manpower and Trai Constraints

This is one of the major constraints Uganda is facing today in all manufacturing sector particularly in engineering industries. Number of persons employed in engineering industries during 1976 accounted for only 1,945 and 7.9 per cent of total persons employed in manufacturing sector. Since the exod s of the foreigner in 1972, Uganda is facing a great shortage of mechanical and electrical engineers, Industrial Engineers, skilled technicians. The training facilities of existing institutions are inadequate, although the Government is endeavouring to increase the number of technical seats in the University, technical college and technical institutes, the comprehensive training programme for the actual need for the industries has yet not been materialized by the Government. A greater consideration is needed in this field.

Maintenance and spare parts constraints

Many engineering establishments both large and small are facing acute problems in getting spare parts. The transport and railways are also badly hit due to inadequate supply of spare parts. This is mainly inter-linked with the non-availability of foreign exchange situation in the country. The main spare parts constraints are:

- lack of parts for existing machinery and equipment; (particularly in basic engineering industries)
- lack of ball and roller bearings
- lack of electrical accessories and contactors etc.
- lack of spare parts for meters, generators and switch gear
- lack of spare parts for railways and railway locomotives
- spare parts for automotive equipment and vehicles

- lack of spare parts for electrical distribution
- lack of spare parts for water supply
- lack of spare parts for agricultural implements
- lack of spare parts for textile, coffee, sugar industries

Coupled with this non-availability of spare parts, the existing maintenance facilities are being deteriorated due to lack of skilled maintenance manpower.

Financial Constraints

Uganda's balance of payment situation has been deteriorated in the recent years. Uganda exports cash and processed crops and in return imports capital, intermediate and consumer products. Due to the low production and productivity in sugar industry and general deterioration in production and productivity of all engineering, textile and associated industries, Uganda is facing a great difficulty in obtaining necessary foreign exchange investment for the priority projects in the Action Programme.

The low level of performance in existing industries has greatly influenced the Uganda's country constraints in various sectors as outlined above. In order to overcome these problems and to reinforce the industries for higher production and productivity, it is necessary for the Uganda government to programme an integrated development plan for basic metal and engineering industry. Such programme must interlink the institutional and technological development aspects with special reference to the long and short-term manpower development scheme particularly in the basic metal and engineering industries sector.

CHAPTER VI

PROPOSED INTEGRATED DEVELOPMENT OF BASIC METAL AND ENGINEERING INDUSTRIES IN UGANDA

PROPOSED INSTITUTIONAL DEVELOPMENT 25/

Unification of Industrial Sector

Previous chapter describes the major country constraints Uganda is facing today. In order to overcome these constraints Uganda requires institutional structural changes for the development of integrated basic metal and engineering industries whose role and characteristics are important milestone for Uganda's self-reliance and self-sustaining economic growth. The existing strategies and policies outlined in the action programme should fit in within the framework of proposed institutional development as outlined in the attached flow chart. The attached flow chart indicates the various institutional linkages among the government Ministries, departments and parastatal organizations and explains the bridging of existing gaps.

In order to programme an integrated development of basic metal and engineering industries in Uganda, it is essential that the institutional mechanism should comply interlinked development process within the framework of Government's policies and strategies those are clearly outlined in the Action Programme. The proposed structural change and rationalization of existing institutions responsible for the basic metal and engineering industries integrated development, envisages the following important aspects:-

- development and reorientation of institutional mechanism. 26/
- identification and rationalization of institutional activities.
- institutional responsibility and identified work areas.
- interlinkage through horizontal and vertical integration of various institutions responsible for integrated development.
- integration of sectoral and sub-sectoral development programme through the restructuring of institutions with minimum duplication and overlapping of activities for development.

The detailed individual and interlinked functions of various Government institutions for integrated development of basic metal and engineering industries in Uganda are described below: (Please refer to flow chart).

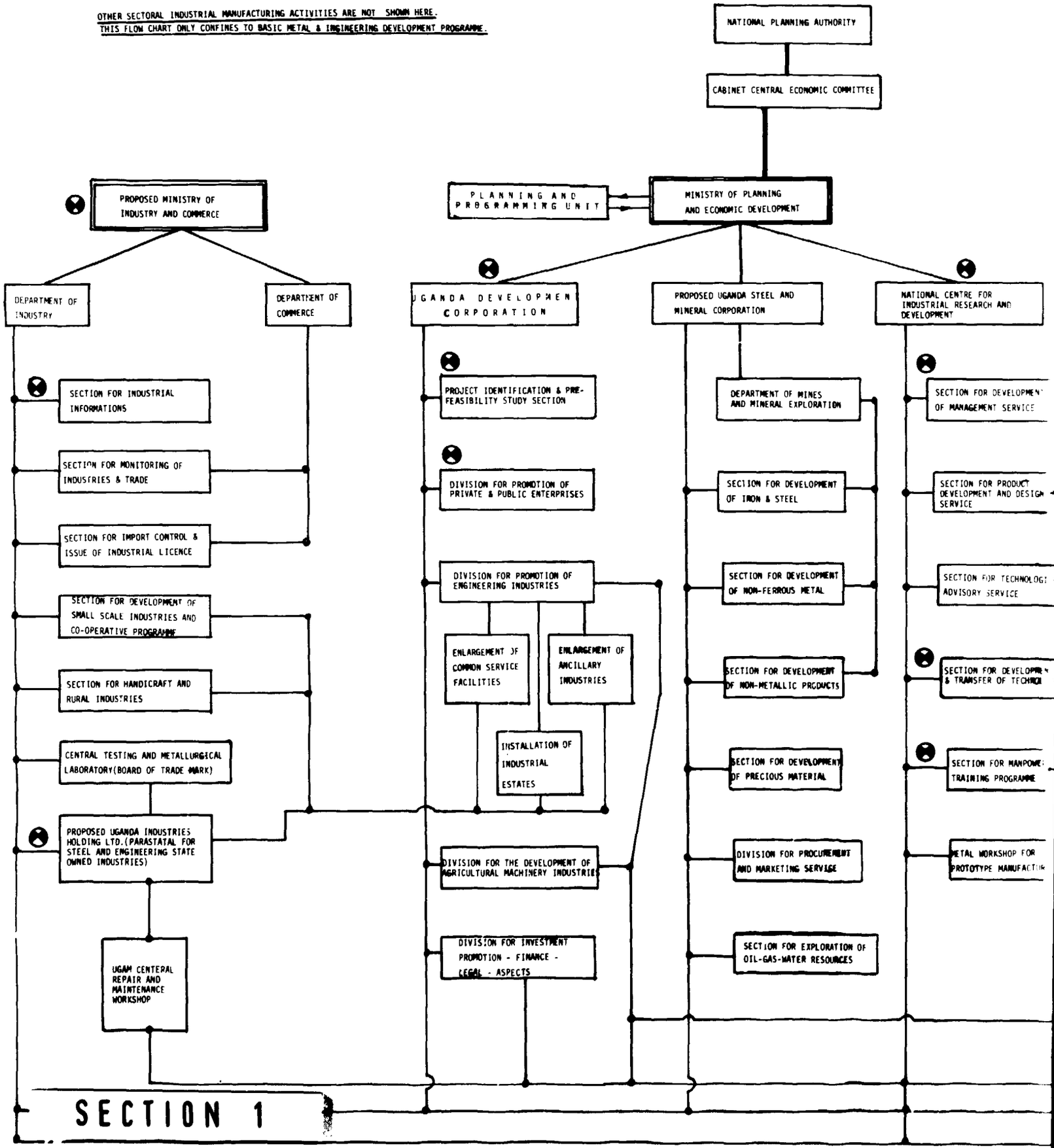
25/ This is formulated in line with the recommendations put forward by Uganda National Workshop held in Kampala 11-16 September 1978, pages 4, 5 and 6.

26/ In line with the important recommendation highlighted in Uganda National Workshop held in Kampala 11-16 September 1978.

INSTITUTIONAL & TECHNOLOGICAL IN

PROPOSED STRUCTURAL CHANGE OF INSTITUTIONS FOR INTEGRATED

AND ENGINEERING INDUSTRIES IN THE REPUBLIC



SECTION 1

AL & TECHNOLOGICAL INTERLINKAGE

S FOR INTEGRATED DEVELOPMENT OF BASIC METAL

IES IN THE REPUBLIC OF UGANDA

DESIGNED BY:-
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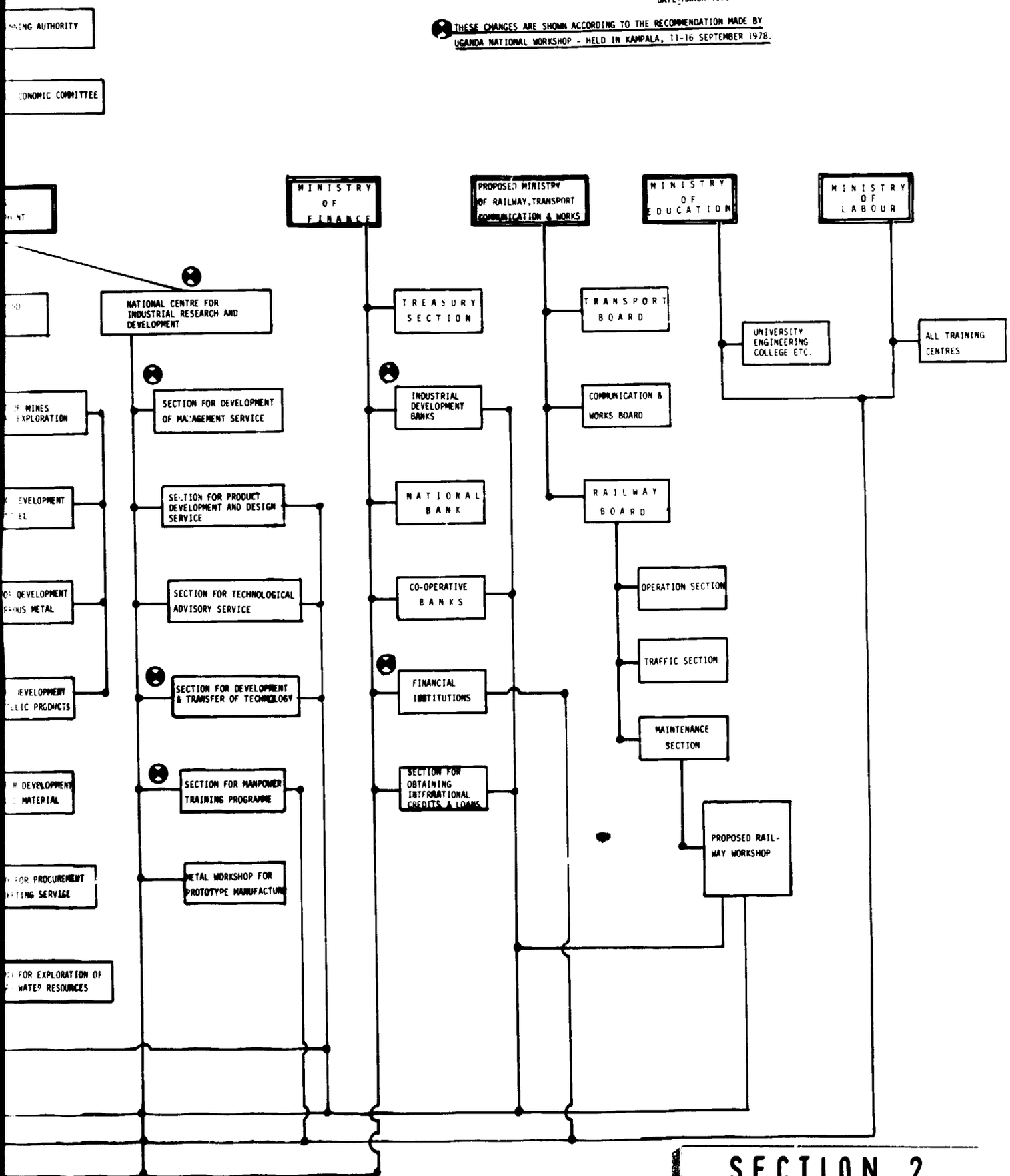
DATE-MARCH 1979

THESE CHANGES ARE SHOWN ACCORDING TO THE RECOMMENDATION MADE BY UGANDA NATIONAL WORKSHOP - HELD IN KAMPALA, 11-16 SEPTEMBER 1978.



SECTION 2

A. Cabinet Central Economic Committee

The committee's main function is to set out policy, strategy and planning of integrated development of basic metal and engineering industries.

Its secretariat is:-

B. Ministry of Planning and Economic Development

In this important Ministry it is suggested to incorporate a "Planning and Programming Unit" for integrated development of basic metal and engineering industries within the framework of Action Programme.

This Ministry will have the following parastatal bodies in addition to other existing activities:-

(a) Uganda Development Corporation (existing)

The function of this corporation will be mainly devoted to only development aspects of the industries and should be the central organization for spearheading industrialization.27/

- Project identification and pre-feasibility study section.
- Division for promotion of private and public enterprises including joint venture projects.
- Division for promoting 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.

- Division for the development of agricultural machinery and implements manufacturing industries.
- Division for investment promotion - finance and legal aspects.

(b) Uganda Steel and Mineral Corporation (proposed)
(Uganda Steel Corporation exists since 1975)

It is proposed that the present activities of the Uganda Steel Corporation as a parastatal body, need to be enlarged and should cover steel and mineral development.

27/ Report of National Workshop, 11-16 September 1978, paragraph 3-122, Page 4.

- Department of Mines and mineral exploration should be under this corporation;
- Section for development of Iron and Steel;
- Section for development of non-ferrous metal;
- Section for development of non-metallic products;
- Section for the development of precious metal;
- Division for procurement and marketing service;
- Section for exploration of oil-gas-coal;
- Water resources development.

(c) National Centre for Industrial Research and Development (proposed) 28/

(Enlargement of existing Management Training and Advisory Centre and merger of National Research Council into National Centre for Industrial Research and Development)

This proposed new centre will devote all the aspects of development for management, technology, manpower training programme, prototype design and manufacture. Particular emphasis will be given for the adoption, adaptation, absorption and transfer of appropriate industrial technology. All existing metalworking centres will be under this division. The Ministry of Education and Technical Training Institutes should closely co-operate with this centre. The centre will devote the following 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;
- Manpower training programme; 29/
- Proposed metal working centre for prototype manufacture.

C. Ministry of Industry and Commerce (proposed) 30/

In order to create improved performance, it is proposed to create the following departments to carry out specific activities of the Ministry.

(i) Department of Commerce

(ii) Department of Industry

28/ Recommended in Uganda National Workshop 11-16 September 1978, para. 3-123 (ii), Page 5.

29/ Recommended in Uganda National Workshop 11-16 September 1978, Page.5.

30/ Recommended in the report of National Workshop, 11-16 September 1978 sub-paragraph 3-121 (ii), Page 4.

(ii) Department of Industry

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

- Section for industrial information 31/
- Section for monitoring of industries
- Issue of licence for new projects and import control
- Development of Small-Scale Industries
- Development of handicraft and rural industries
- Central testing laboratory and issuance of Board of Trade Mark
- Development of co-operative programme
- Uganda Industries Holding Ltd. (proposal for a parastatal company responsible for running the state owned steel and engineering establishments and if possible to include all manufacturing establishments) 32/
- Proposed central repair and maintenance workshop. (This repair and maintenance workshop should cater for basic spare parts and maintenance outfits to all industries including preventive and regular maintenance training programme.

D. Ministry of Finance

The broad activities of the Ministry of Finance will be to co-ordinate the financial and accounts management with various divisions and sections of the Ministry of Industry and Power and the Ministry of Planning and Economic Development for the integrated development of basic metal and engineering industries. It will act as a direct agency of the Government to provide and control financial aspects of all projects and industries. The following are the important sections required to assist the industrialization in Uganda.

- Treasury Section
- Industrial Development Banks
- National Banks
- Co-operative Banks

31/ Recommended in the report of National Workshop 11-16 September 1978, paragraph 3-123 (i), Page 4.

32/ Recommendation by the Report on National Workshop 11-16 September 1978, sub-paragraph 3-121 (i), Page 4.

- Financial institutions 33/
- Proposed section for obtaining international financial credits and loans for major projects.

E. Ministry of Railways, Transport and Communication (proposed)

It is proposed that the exisiting Ministry known as Ministry of Transport and Communication needs to be renamed as Ministry of Railways, Transport and Communication. Due to the priorities of the railway development it is highly recommended that this proposed Ministry should have:-

- Railway Board
- Transport Board
- Communication Board

The main activity of the Railway Board will be to formulate the policy and strategy of the Railway Development in Uganda.

The activities of the Transport and Communication Boards respectively will follow the same pattern of activities as outlined for Railway Board. The Board through its administrative mechanism will have the following important sections:

- Development and Maintenance Section
- Traffic and Control Section
- Operation Section

The proposed Railways main workshop will come under the Development and Maintenance Section of the Railway administration or "Directorate".

It is essential that the proposed Department of Industry through its proposed various sections e.g.

- Small-Scale Industries
- Central Testing Laboratory
- Uganda Industries Holding Ltd.

should closely liase with the various Sections of the Ministry of Railways, Transport, Communication and works particularly with the Railway and Transport Workshops for greater subcontracting opportunities.

It is necessary for the proposed main Railways workshop to improvise a Modern Tool Room which will be required for all engineering industries development particularly the manufacture of jigs, tools and fixtures with special emphasis on small tools production.

33/ Refer Page 8 Uganda National Workshop 11-16 September 1978, paragraph 3-24.

F. Ministry of Education

G. Ministry of Labour

The Uganda National Workshop held in Kampala 11-16 September 1978 clearly indicated the importance of manpower development and greater utilization 34/ of such manpower for the development of industrial sector and manufacturing sector as a whole.

The Ministry of Education and the Ministry of Labour will have to play a dynamic role, the relative linkages of these ministries are indicated in the institutional flow chart shown in Page 61. Particular activity-integration is required with proposed Ministry of Industry and Commerce and proposed National Centre for Industrial Research and Development. A comprehensive manpower training programme is envisaged during 1980-1990 and 1990-2000 A.D. Such programme must spell out the sectoral development of manpower training in all manufacturing activities in Uganda. The proposed manpower development programme is out lined in pages 93 to 95.

TECHNOLOGY DEVELOPMENT

In order to implement the policy strategy and measure set out by the Cabinet Central Economic Committee through its secretariat Ministry of Planning and Economic Development it is essential that particular attention be given to the technology development in Uganda. There is a need for the formulation of a National Technology Plan 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 Ministry of Planning and Economic Development through its proposed National Centre for Industrial Research and Development Division in close collaboration with proposed Ministry of Industry and Commerce and Ministry of Education and Labour. Such technology plan must clearly spell out:-

- various manufacturing 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 local conditions.

- the development of indigenous manufacturing technology through adoption, adaptation or through importation.

34/ Refer Page 8 Uganda National Workshop 11-16 September 1978, paragraph 3-24.

- the requirements of machinery, equipment, metal working processes and manufacturing facilities required for the expansion of industrial sector.

- comprehensive survey of existing technologies being used in sectoral and sub-sectoral industries as out lined in Chapter (IV) titling Assessment of Existing Technology Level in Engineering Industries. Page 3.

- a definite time target to be introduced in the priority industrial sectors for product identification and development of such products as dictated by the technology plan available within the country.

- the assessment of basic manufacturing process of iron and steel making, foundry, forging, heat treatment, machine shop, tool room, and major basic manufacturing and processing requirements for basic metal and engineering industries development programme.

- the accelerated manufacture of indigenous spare parts and components in vital sectors of industries.

- the definite plan for the manufacture of capital goods and intermediate goods manufacturing industries with special reference to the manufacture of machine tools.

- a national plan and target for requirement of managerial and skilled manpower for Ugandan industries through the development of a comprehensive training programme for skilled and semiskilled operatives for the basic metal and engineering industries.

Therefore, the national technology plan will regulate the transfer of appropriate technology through the actual assessment of:

- the need for 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 Uganda will be carried out through the proposed National Centre for Industrial Research and Development as outlined in Page 63.

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

A. Development of Iron and Steel and Non-ferrous Industrial Metals

Development line or phase	Institutional	Interlinkage	Technological

Development of Ferrous Metal

I — Ministry of Planning and Economic Development. → Macro-policy and strategy within the context of overall economic development.

through

Planning and Programming Unit (proposed).

II — Uganda Steel and Mineral Corporation (proposed) → Micro-policy, strategy and Development Programme.

III — Department of Mines and Mineral Exploration (under above corporation). → Continuous exploration and geological survey of deposits of: Iron, coal, hydal power, copper, zinc, cobalt, sulphur, and all industrial metal and non-metallic exploration.

Assistance from other units

IV — Proposed National Centre for Research and Development: → Technical development for mining of ores, machinery for mining and spare parts required.

(a) Development of Management Service Section.

(b) Technical Advisory Service Section.

(c) Technology Development and Transfer of Technology Section.

Development line or phase	Institutional	Interlinkage	Technological
V	Proposed Central Testing Laboratory under Department of Industry.	→	Testing ores for commercial use (feed back to Department of Mines).
VI	Development of Ferrous Metal Section under proposed Uganda Steel and Mineral Corporation.	↔	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) Processed Ferro-Silicate and Ferro-Manganese. (d) Steel ingots and shape castings. (e) Rolled Section.
VII	Section for Project Identification and Feasibility Study. Under Uganda Development Corporation. (Other Ministries will be involved at this stage)e.g. (a) Proposed Ministry of Railway, Transport and Works. (b) Ministry of Finance. (c) Ministry of Education. (d) Ministry of Labour.		
VIII	Division for the Promotion of Private and Public Enterprises. Under Uganda Development Corporation.	→	Formation of Iron and Steel complex. Prototype production.
IX	Proposed Uganda Industries Holding Ltd. Under the Ministry of Industry and Commerce.	←	Complex will be handed over after commissioning and trial run.

Development of Non-ferrous Metal

This will be the same as described in the above development phase At the point step VI "Section for the Development of Ferrous Metal" under proposed Uganda Steel and Mineral Corporation should be involved followed by same activities through various institutions with different technology application for non-ferrous production of metal.

B. Development of Engineering Industries

Development line or phase	Institutional	Interlinkage	Technological
I	Ministry of Planning and Economic Development.	→	Macro-policy and strategy within the context of overall economic development.
	through Planning and Programming Unit. (Proposed)		
II	Uganda Development Corporation.	→	Micro-policy, strategy and Development Programme.
III	Division for the Promotion of Engineering Industries. Under Uganda Development Corporation.	→	Expansion of existing engineering industries and establishment of new engineering industries.
	Development of Small-Scale Industries under Department of Industry, Ministry of Industry and Commerce.		
	Development of Handicraft and Rural Industries under Department of Industry.		

Development line or phase	Institutional	Interlinkage	Technological

Development of Engineering Industries

IV Project Identification and Pre-feasibility Study Section of Uganda Development Corporation. At this stage other Ministries will be involved:-

(a) Ministry of Finance.
(b) Ministry of Education.
(c) Ministry of Labour.

→ Project identification pre-feasibility and feasibility studies of new industries and rationalization of existing industries.

V Proposed National Centre for Industrial Research and Development. (All section of this centre will participate at this stage). Fig. 61

⇄ Design and Development of identified engineering products; technology assessment, transfer of technology and appropriate choice of machinery and equipment; manpower training programme.

VI Division for promotion of private and public enterprises under Uganda Development Corporation.

→ Establishment of Engineering Industries.

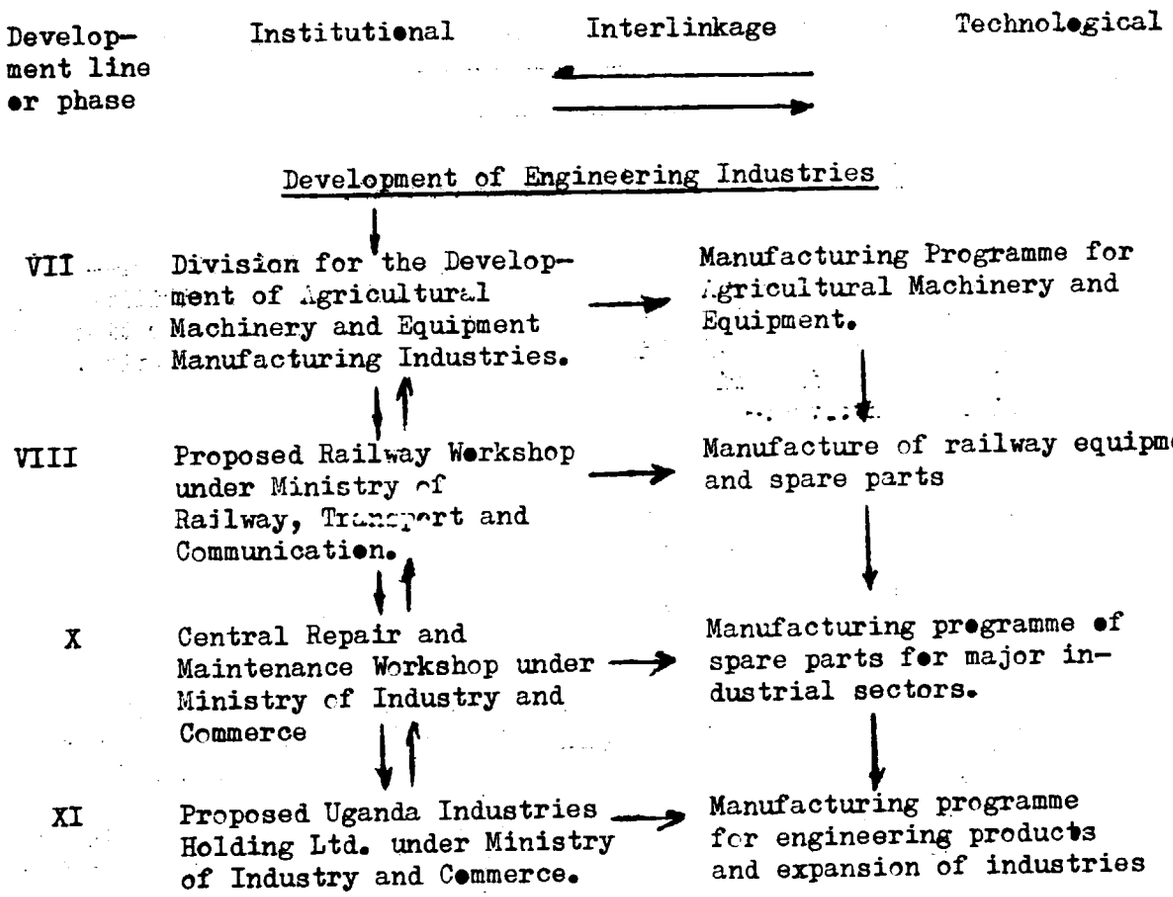
(a) Capital goods
(b) Intermediate goods
(c) Consumer goods

(Durable products)
(Non-durable products)

Enlargement of:-

- Common service facilities
- Ancillary industries
- Industrial Estates

Technology and manufacturing support for integrated development of engineering industries.



Institutional and technological interlinkage will be one of the important aspects of Uganda's plan for integrated development of basic metal and engineering industries. At present there exists a considerable lack of interlinkage both in institutional and technological activities in Uganda. The existing institutional activities are not well defined and many technological activities are overlapped in various segments within institutions. Harmonious development in engineering industries sector can only be achieved, if Uganda Government creates 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

Uganda's labour employment statistics indicate that (Refer Page 26) in 1976 the total employment in the industrial sector constituted 24,534 persons out of 6 million economically active population (1975). The sub-sector of industry e.g. steel, metal and electro products absorbed only 1,945 persons during 1976. These figures merely indicate on one hand too little absorption of industrial labour force in the engineering industries sector, and on other

hand points out the existence of potential future avenues for rapid expansion within the sector of metal and engineering industries.

The development plan of Uganda clearly indicates the Government priority on Management and Manpower Development particularly in the basic metal and engineering industries sector. Moreover the Government has taken adequate measure for the production of semi-skilled, skilled, and middle and higher management cadre personnel.

The Action Programme envisages that during the rehabilitation programme Uganda needs substantial numbers of manager, engineers, metallurgist, industrial engineer and middle and lower management cader personnel. The total persons employed during 1976 in the industrial sector constitute 24,534 out of this 1,945 employed in metal engineering industries sector. The mission estimates that about 1,500 qualified managers, engineers, industrial engineers, metallurgist, inspectors and skilled maintenance engineers are required to fulfill the objectives of the action programme for immediate need. In order to step up the training programme for the growing need of industries in all cadres of trained manpower, the mission identified the following basic management courses to be extended for both higher and middle management level in all industrial activities particularly in the field of basic metal and engineering industries in Uganda.

Programme for Higher and Middle Management Development

(a) Training Courses for Senior Executives

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

These courses must provide the following:

- To acquire closer experience in economic, social and political factors at macro level which affect the decisions made 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, control 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 Ugandan executive to develop their present performance and to augment potentialities for shouldering broader responsibilities in future. Time period of the course must be at least for two years.

The programme must include the following:-

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

Uganda has very limited numbers 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 Unitversity 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 management
- Method study (70% of the time must be devoted for method study)
- In addition to this, the programme should include basic procedure of work study, 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; etc.

- 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 incentive schemes;
- Factory management: e.g simplification, tandardization and specialization of design; production planning and control, quality control; material control; estimating and costing; plant maintenance;
- Selection of machinery and equipment for specific product; plant layout; job evaluation; merit ratings, etc.;
- Project evaluation, pre-feasibility and feasibility study assessment, product identification; introduction of new product lines;
- Formulation of supervisory and operative training within in-plant activities.

(a) 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 Uganda'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 Uganda's industrial activities. It is essential that the Government of Uganda 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 must 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 characteristics 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 shcemes.
- The training on inspection and maintenance in 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.

(c) 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 Uganda 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 Uganda Government substantial amount of foreign exchange which could otherwise be utilized if Uganda had facilities for industrial engineering courses.

Manpower Development at Higher and Middle Management Level in Uganda 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 Uganda. 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 Uganda'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 training 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, Ministry of Planning, Ministry of Finace; and (c) Industries of Uganda both public and private sectors.
- The apprentices 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/ maintenance section with appropriate plant and machinery.

Manpower Development at Skilled Technician/Workers Level in Engineering Industries

Uganda has a substantial shortage of engineering skilled technician and workers. The Action Programme has already envisaged a Crash Manpower

Development Programme, 35/ 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.

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

- Management Training and Advisory Centre
- The Directorate of Industrial Training
- Vocational Training Institute, Nakawa
- Vocational Training Centre, Lugogo
- Proposed National Centre for Industrial Research and Development

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.
- Skilled operatives in forging and heat treatment.
- 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 that above training activities need special consideration and mobilization of all internal resource and particularly the full utilization of proposed Ugma maintenance and repair shop, proposed 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 Uganda and with further reference to the existing Action Programme outlined in the development programme, the field mission recommend the following

35/ Page 165 A Three Year Economic Rehabilitation Plan 1977/78 - 1979/80.

important projects to be included in these two important sectors. Further studies are necessary in order to implement the projects listed below:-

(A) Basic Metal Industries

1.	Development of iron and steel complex at subregional level. Zambia/Uganda for the manufacture Tanzania/Kenya - Mild steel ingots. - Electrode Quality Carbon Steel. - Forging Quality Carbon Steel. - Hardening and tempering quality carbon steel. - Carbon, carbon-manganese and silico-manganese quality spring steel. - Carbon tool steel. - Case hardening quality carbon suphur steel, etc.	Pre-feasibility study and comprehensive dialogue is necessary.	Subregional
2.	Manufacture of fire bricks and refractory materials. (Uganda/Kenya/Zambia/Tanzania).	Pre-feasibility study and net subregional requirement needs to be estimated.	Subregional
3.	Further exploration of coal and coal based materials in order to utilize the best potential iron ores utilization.	Survey and exploration	Uganda
4.	Setting up of welding electrode manufacturing unit. (This can be possible if proposed Uganda iron and steel complex manufacture Electrode Quality Carbon Steel	Pre-feasibility and subregional requirement needs to be analysed. Exploration for indigenous flux material needs to be undertaken.	Uganda
5.	Setting up of small foundries for cast iron and brass shape casting at least Two in each industrial districts.	Feasibility study is required. These proposed foundries will assist in producing shape castings for rural small-scale industries.	Uganda

6.	Manufacture of brass ingots (Cu and Zn) and subsequent semi finished and finished brass products. e.g. Brass water fittings valves, impellers, etc. with local copper resources.	Feasibility study in	Uganda
7.	Introduction of S.C. Iron castings and malleable castings in the expansion programme of Ugma for the spare parts and shape casting for capital goods development.	Further study must be included in the existing Ugma expansion project.	Uganda
8.	Introduction of the following steel ingots for the requirement of: - 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. (All of these steels are input to engineering and agricultural implements manufacture).	Further study must be included in the existing Jinga expansion project.	Uganda
9.	Hot (cross) rolled sheets (average 5 mm. thick and 480 to 700 mm. width for agricultural discs etc.	Detailed study is required in Uganda and sub-region, can be included in Jinga expansion project	Uganda

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

10.	Ferrous die-cast component manufacture for pipe fittings, flanges, rings (carbon, alloy and stainless flanges), elbows, tees, crosses, reducers, bends, nipples.	Pre-feasibility study is required and can be included in Ugma expansion project.	Uganda

11.	Manufacture of non-ferrous die-cast components for automobile spare parts, household requirement, railway application.	This study must be carried out in conjunction with Item No. 6 above.	Uganda
12.	Manufacture of sugar cane machinery. - agricultural machinery e.g. cane harvesting machines. - processing machines	The study can be included in Ugma expansion project.	Uganda
13.	Manufacture of animal drawn and simple power operated agricultural machinery: cultivators, tillers, planters, seeders, reapers, etc.	Feasibility study required.	Uganda
14.	Manufacture of automotive ancillary parts and spare parts: - Radiators, exhaust pipes, brake linings, clutch facings, automotive brake slack adjusters, brake drums. - Filters, gaskets, armature rewindings, fanbelts, brake shoes, copper rivets, etc.	Market study and pre-feasibility study is required.	Uganda
15.	Bus body and truck/lorry assembly plant.	Feasibility study is required.	Uganda
16.	Manufacture of hardware e.g. bolts, nuts, rivets, screws, locknuts, machined screws, pins, split pins, etc.	Market study and feasibility study is required.	Uganda
17.	Forged mechanical hand tools e.g. hammers, pliers, screw drivers and small tools.	Feasibility study is required. Export market opportunity exists in subregion.	Uganda
18.	Manufacture of agricultural and industrial pumps. (Electric and non-electric).	Feasibility study is required.	Uganda

19.	Manufacture of kitchen utensils and cooking ware and hospital and canteen equipment. - Stainless steel cutlery - Aluminium/stainless steel pots, pans, etc. - Hospital, canteen and industrial equipment.	Feasibility study is required.	Uganda
20.	Manufacture of metal cans for food industries particularly canning of fishes from Lake Victoria. Product must include CTS cans, general line containers and clousers (Plain and Lithographed).	Feasibility study is required.	Uganda
21.	Manufacture of Bayonet type caps for: - Miniature lamps - Standard lamps - Fluorescent lamps	Potential export market opportunity.	Uganda
22.	Manufacture of razor blades.	Feasibility study is required	Uganda
23.	Manufacture of fabricated stainless steel vessels for small and bulk delivery of milk and liquid chemicals.	Can be included in Ugma expansion project.	Uganda
24.	Manufacture of gem clips, paper pin, hair pin, clips, buttons, hangers, etc. in small-scale sector.	Group feasibility study is required.	Uganda
25.	Manufacture of electrical accessories, e.g. switch gear, plugs and sockets, for 220 v. house supply, etc. including armature rewinding.	Group feasibility study is required.	Uganda

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

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

No.	Project Source	Page	Abbreviation
1	Rationalization projects i.e. Projects Operational/Under Study by the Uganda Government		PRU (Existing
2	Projects Identified by the ECA/UNIDO Mission in December 1978 during the Meetings with Government Agencies.		PIU (Proposed)
3	Projects recommended by the ECA/UNIDO Mission to achieve Integrated Development for Basic Metal and Engineering Industries.		PNU (Proposed)

Sequence of Programming

(A) BASIC METAL DEVELOPMENT PROGRAMME (NATIONAL LEVEL)

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency (Refer P.95)	Period of Development
1.	Proposed [illegible] of UNIDO/ [illegible] geologic study [illegible] integrated pre-feasibility study for iron steel.	51	PIU (Proposed)	USC	1979
2.	Requirement of geological and field laboratory equipment for exploration of iron ores.	51	PIU (Proposed)	USC and MIP	1978-80
3.	Study of transportation of iron ores.	51	PIU (Proposed)	USC and MTCW	1979
4.	Expert assistance for development of roads in mining area.	51	PIU (Proposed)	MTCW and USC	1979-80
5.	Proposed project to set up a training centre for iron and steel with metallurgical laboratory.		PIU (Proposed)	USC and MIP	1980

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
6.	Exploration of iron ores in Kashenyi and South Kigezi District.	48	PRU (Existing)	USC	1980
7.	Feasibility study of integrated steel manufacture at Jinja	48	PRU (Existing)	USC	1980
8.	Integrated iron and steel complex (Government is examining Hungarian proposal) see Page	48	PRU (Existing)	USC and MIP	1980-81
9.	Further exploration of coal and coal based material. (Initially charcoal can be used as reducing agent as suggested by Hungarian, but gradual development of coal is necessary.	79	PNU (Proposed)	USC and MIP	1980-81
10.	Manufacture of fire bricks and refractory material.	79	PNU (Proposed)	USC and UDC	1981-82
11.	Modernization of Kilembe Copper Mines.	48	PRU (Existing)	MIP and USC	1978-80
12.	Modernization of copper smelter at Jinja.	48	PRU (Existing)	MIP and USC	1980
13.	Cobalt/sulphur projects (Feasibility study).	48	PRU (Existing)	MPED and UDC	1980-81

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
14.	Manufacture of brass ingots of castings. (Cu + Zn)	80	PNU (Proposed)	MIP and USC	1981-82
15.	Feasibility study of alloy steel casting at Jinja with existing unused induction furnace in Ugma factory.	48	PIU (Proposed)	USC and MIP	1980-82
16.	Expert assistance for a metallurgist at Jinja factory.	48	PIU (Proposed)	USC	1980
17.	Requirement of a Chief Engineer at Jinja factory.	48	PIU (Proposed)	USC	1979

(B) BASIC METAL DEVELOPMENT PROGRAMME (SUBREGIONAL LEVEL)

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
18.	Proposed development of iron and steel complex at subregional level, Zambia/Uganda/Kenya/ Burundi	79	PNU (Proposed)	Zambia, Uganda, Kenya Burundi	1980-85
19.	Manufacture of fire bricks and refractory materials.	79	PNU (Proposed)	Zambia, Kenya, Uganda, Burundi	1981-84

(C) ENGINEERING INDUSTRIES DEVELOPMENT PROGRAMME (NATIONAL LEVEL)

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
20.	Proposed UGMA Steel and Engineering Corporation Ltd. (a) Integrated industrial repair and maintenance (b) Manufacture of standard products including capital and intermediate goods.	48	PRU (Existing)	MIP	1979-80
21.	Finance and technical assistance for identification of projects and feasibility studies.	48	PIU (Proposed)	MIP	1974-85
22.	Introduction of S.G. iron and malleable iron castings in the expansion programme of Ugma, (Item No. 20 above).	80	PNU (Proposed)	MIP	1981-82
23.	Introduction of various alloy steel ingots for the requirement of Ugma expansion and steel industries.	80	PNU (Proposed)	MIP and USC	1981-82
24.	Hot (cross) rolled sheets (Average 5 mm. thick and 480 to 700 mm. width for agricultural tools, discs, etc.).	80	PNU (Proposed)	USC and MIP	1983

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
25.	Setting up of small foundries for cast iron, brass and aluminium castings at least two in each industrial district.	79	PNU (Proposed)	MIP and USC	1980-82
26.	Setting up of welding electorde manufacturing units.	79	PNU (Proposed)	MIP and USC	1983
27.	Manufacture of brass water fittings, valves, impillers, etc. (Refer item No.14 above.	80	PNU (Proposed)	MIP	1980-81
28.	Ferrous die-cast component manufacture for pipe fittings, etc. (This item is included in Ugma expansion project. But the mission proposed to set up a seperate unit for this).	80	PNU (Proposed)	MIP	1980-81
29.	Manufacture of non-ferrous die-cast components for auto mobile spare-parts household requirement, industrial and railway application.	81	PNU (Proposed)	MIP and URC	1980-81
30.	Setting up of a Central Tool Room for manufacture of dies, tools, jigs, fixtures, precision moulds etc. (can be included in railway project or in Ugma expansion project).	49	PNU (Proposed) PRU (Existing)	MIP and URC	1980-83

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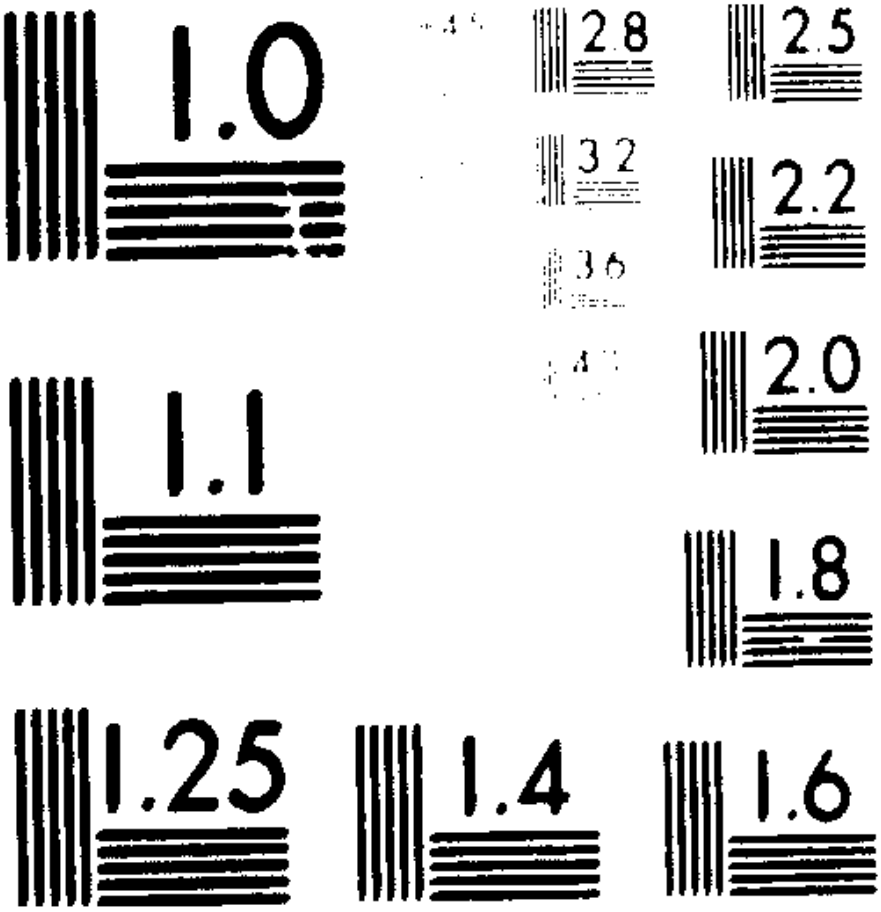

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
31.	Bus body and truck/ lorry manufacturing plant.	81	PNU (Proposed)	MIP and URC	1981-82
32.	Setting up of a prototype manufacture metal working centre, under proposed "National Centre for Industrial Research and Development Unit" (see the flow chart attached).	61	PNU (Proposed)	MPED	1980-82
33.	Proposed Railway Workshop.	49	PRU (Existing)	URC	1979-82
34.	Technical assistance for the selection of signal and telecommunication equipment for entire railway system of Uganda.	49	PRU (Existing)	URC	1979-80
35.	Establishment of National Railway system.	49	PRU (Existing)	MTEW	1979-85
36.	Purchase of Workshop Equipment for Road Transport.	49	PRU (Existing)	MTCW	1979-84
37.	Manufacture of sugar cane: - agricultural machinery - processing machines (Part of this item is included in Ugma expansion).	81	PNU (Proposed)	MIP	1980-83

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
38.	Manufacture of Animal Drawn and simple power operated agricultural machinery cultivators, tillers, etc. (Part of it is included in Ugma expansion).	81	PNU (Proposed)	MIP	1979-81
39.	Manufacture of automotive ancillary parts and spare parts.	81	PNU (Proposed)	MIP and URC and (P)	1979-85
40.	Manufacture of hardware e.g. Bolts, Nuts, etc.	81	PNU (Proposed)	MIP and (P)	1980
41.	Forged mechanical hand tools e.g. hammers, chisels, pliers, screw driver, hack saw, blades, small tools and band saws with reginding facilities.	81	PNU (Proposed)	MIP or (P)	1980-81
42.	Manufacture of agricultural and industrial pumps. (Electric and non-electric).	81	PNU (Proposed)	MIP or (P)	1982-84
43.	Manufacture of kitchen utensils and cooking ware.	82	PNU (Proposed)	MIP or (P)	1980-81

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
44.	Manufacture of metal cans for food industries.	82	PNU (Proposed)	MIP or (P)	1980-81
45.	Manufacture of Bayonet Type Caps for lamps.	82	PNU (Proposed)	MIP or (P)	1981
46.	Manufacture of electrical accessories e.g. switch gear, plugs and sockets, etc. (Armature rewinding).	82	PNU (Proposed)	(P)	1981-82
47.	Manufacture of razor blades.	82	PNU (Proposed)	(P)	1980
48.	Manufacture of stainless steel vessels. (Included in Ugma expansion. It is highly recommended to develop stainless steel products as a separate unit).	82	PNU (Proposed)	MIP or (P)	1979-81
49.	Manufacture of gem clips, paper pin, staple pin, etc.	82	PNU (Proposed)	(P)	1980
50.	Expansion of Uganda Hoes Ltd.	49	PRU (Existing)	USC	1979-81
51.	Uganda Batti Ltd. and Uganda Steel Ltd. expansions.	49	PRU (Existing)	MIP	1979-81

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
52.	Expansion of East African Steel Products Ltd.		PRU (Existing)	MTP	1980-81
53.	Modernization of steel and aluminium window and doors industries.	49	PRU (Existing)	(P)	1980-81
54.	Modernization of six saw mills.	49	PRU (Existing)	WIC	1980-81
55.	Upgrading Jinja plywood factory.	49	PRU (Existing)	WIC	1979-81
56.	Furniture and joinery workshops.	49	PRU (Existing)	WIC	1979-80
57.	Zoka saw mills.	49	PRU (Existing)	WIC	1979-80
58.	Bugamba saw mills.	49	PRU (Existing)	WIC	1979-80

(D) ENGINEERING INDUSTRIES DEVELOPMENT PROGRAMME (SUBREGIONAL LEVEL)

No.	Project Title		Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
59.	Manufacture and assembly of railway locomotive and rolling stock.		PNU (Proposed)	Uganda, Zambia, Kenya, Tanzania	1980-85

No.	Project Title		Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
60.	Manufacture of telephones and telecommunication equipment.		PNU (Proposed)	Uganda, Zambia, Kenya, Tanzania	1980–85
61.	Manufacture of industrial and domestic boilers.		PNU (Proposed)	Uganda, Zambia, Kenya, Tanzania	1980–85
62.	Manufacture of railway tracks and slippers with accessories.		PNU (Proposed)	Uganda, Zambia, Kenya, Tanzania	1980–85
63.	Manufacture of buses, trucks, lorries.		PNU (Proposed)	Uganda, Kenya, Zambia, Tanzania	1980–85

(E) EDUCATION, TRAINING AND MANPOWER DEVELOPMENT FOR BASIC METAL AND ENGINEERING INDUSTRIES DEVELOPMENT PROGRAMME

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
64.	Programme for Higher and Middle Management Development, - Training Courses for Senior Executives - Training courses for young managers, - Training courses for Industrial Engineers, - Training courses for maintenance engineers.	73	PNU (Proposed)	MTAC MTAC and DIT	2 years

No.	Project Title	Refer Page	Source Abbreviation as shown in Page	Government Implementing Agency Refer Page 95	Period of Development
65.	Post graduate training programme for graduate engineers/Diploma holders.	73-78	PNU (Proposed)	MPI	2 years
66.	In-plant quality control inspection courses.	11	PNU (Proposed)	MPI and DIT	1 year
67.	In-plant courses on machine shop practice.	11	PNU (Proposed)	MPI and DIT	3 years
68.	In-plant courses on tool room work.	11	PNU (Proposed)	MPI and DIT	4 years
69.	Ad-hoc courses on preventive maintenance.	11	PNU (Proposed)	MPI and DIT	6 months
70.	Ad-hoc courses on Industrial Design and Tool Design.	11	PNU (Proposed)	MPI and DIT	6 months
71.	Introduction of Industrial Engineering at University/Technical College Level.	11	PIU (Proposed)	UTC	2 years
72.	Introduction of special courses for engineering design and draughtsmanship.	11	PIU (Proposed)	UTC	2 years
73.	Requirement of technical books and electrical equipment in Uganda Technical College.	11	PIU (Proposed)	UTC	Immediate

No.	Project Title	Refer Page	Source Abbreviation as shown in Page 83	Government Implementing Agency Refer Page 95	Period of Development
74.	Skilled technician/ workers training courses. - General machinist - Fitters, welders, fabricators - High skilled tool room operatives - Quality control-viewers/inspectors - Skilled maintenance operatives - Skilled operatives for forging and heat treatment - Maintenance technicians for heavy industries	73-78	PNU (Proposed)	DIT and MPI and VTI	6 months to 1 year

ABBREVIATION (Govt. Institutions)

MTAC - Management Training and Advisory Centre
DIT - Directorate of Industrial Training
VTI - Vocational Training Institute
MIP - Ministry of Industry and Power
MPED - Ministry of Planning and Economic Development
USC - Uganda Steel Corporation
MTCW - Ministry of Transport, Communication and Works
URC - Uganda Railway Corporation
MTEW - Ministry of Transport, Energy and Water Resource
(P) - Private Enterprise
WIC - Wood Industries Corporation

The Role of ECA/UNIDO/OAU in Programming These Projects According 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.

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

Therefore, the roll of ECA/UNIDO/OAU will encourage Uganda to improve and expand these two vital sectors of industries through an integrated development based on fundamental needs for basic development (the parameters of these development those 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 an 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 possibility 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, spareparts 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 VI)

CHAPTER VII

SUMMARY AND RECOMMENDATIONS

The Action Programme clearly outlines the importance of basic metal and engineering industries development in Uganda. The overall programme is directed towards the development of indigenous resource-based industries through the optimization and utilization of available natural resources for the priority industries in Uganda.

This report mainly highlights the priority projects for integrated development of basic metal and engineering industries in Uganda.

The Chapter III has focused the economic and industrial review of Uganda in the recent years with particular reference to the industrial and manufacturing sectors.

In the same way the Chapter IV has discussed and examined the present status of basic metal and engineering industries in Uganda. The Chapter further highlights the existing functions of government machinery, level of technology Uganda 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 sub-sectoral constraints in metal and engineering industries are also examined in this section of the report.

The Chapter V has examined the country constraints those are hindering the natural growth of the basic metal and engineering industries development process. Uganda is facing multi-directional country constraints in the field of institutional arrangements, product development and design aspects, technological aspects, lack of common service facilities and ancillary industries development and finally the lack of skilled manpower which is seriously deteriorating the industrial activities in Uganda.

In order to overcome all those country constraints and set the economy in right footing, the report suggests in Chapter VI an integrated approach for basic metal and engineering industry development programme for Uganda. The

report examines the government institutions those are responsible for the implementation aspects for such development programme and proposes at national technology plan inorder 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 Uganda to establish a comprehensive sequenced development programme for basic metal and engineering industries as indicated in this report which includes:

- projects those are identified by the Uganda government;
- projects those are indentified 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 Uganda 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 Uganda 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 outlined in proposed programme in Chapter VI page 83 to 95.

2. It is recommended to interlink the institutions those are responsible for the development of basic metal and engineering industries as outlined in Chapter VI page 61.

3. It is recommended to formulate a National Technology Plan as described in Chapter VI pages 66 to 67.

4. It is recommended to interlink the institutional and technological activities as described in Chapter VI pages 68 to 72.

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 page 63.

6. It is recommended to implement the manpower development programme for basic metal and engineering industries as outlined in Chapter VI pages 73 to 78.

7. It is recommended to introduce with immediate effect an Industrial Engineering Course as suggested in Chapter VI page 74 at University and Technical College level.

8. It is recommended to organize in-plant training courses, ad-hoc courses in selected engineering disciplines as outlined in Chapter VI pages 93 to 95.

9. It is recommended to implement the projects identified by the ECA/UNIDO mission as listed in Chapter IV pages 51 to 52.

10. It is recommended to consider the projects those are necessary within the context of integrated development of basic metal and engineering industries as suggested in Chapter VI pages 78 to 82.

11. It is recommended to implement the proposed integrated development projects (including the programmes for manpower development aspects) as listed in the detailed programme for basic metal and engineering industries in Chapter VI pages 84 to 95.

12. It is recommended to consider the subregional projects these are identified by the mission as outlined in Chapter VI pages 86 and 92.

13. It is recommended that an early mission to be sent from ECA/UNIDO Joint Industry Division to discuss with Uganda government for future actions to be taken for integrated development of basic metal and engineering industries projects as outlined in this report.

APPENDIX

List of Persons Visited

1. Mr. Tedla Teshome	Deputy Resident Representative, UNDP. (Kampala)
2. Mr. Joseph Adrole	Permanent Secretary, Ministry of Industry and Power, Kampala
3. Mr. Vincent Ntege	Officer, Planning Unit Ministry of Industry and Power, Kampala
4. Mr. Swaib M. Kigezi, (Pakistan)	Manager, Ugma Steel and Engineering Corporation, Lugazi
5. Dr. Samar Chatterjee (India)	Production Superintendent Ugma steel and Engineering Corporation, Lugazi
6. Mr. A.H.R. Andeku	General Manager, Uganda Steel Corporation, Kampala
7. Mr. U.G.N. Rutagi Bakeine	Operations Manager, Uganda Steel Corporation, Kampala
8. Mr. A.J. Gulle	General Manager, Jinja Steel Factory, Jinja
9. Mr. Dki Okello	Chief Accountant
Mr. Nathan Isimai	Personel Executive
Mr. F. Mugalula	Purchasing Executive, Jinja Steel Factory, Jinja
10. Mr. Raul Jofré A.	UNIDO Adviser, Industrial Planning Unit, Ministry of Industry and Power, Kampala
11. Mr. Tim Langoya	Under Secretary, Industry Ministry of Industry and Power, Kampala