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UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

REGIONAL AND COUNTRY STUDIES BRANCH

RESEARCH HIGHLIGHTS

AND FOLLOW-UP

RECOMMENDATIONS FOR

THE DONOR MEETING IN ZAMBIA

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LISTS OF ABBRIVIATIONS

ECA	Economic Commission for Africa.
FAO	United Nations Food and Agricultural Organization
FEMAC	Foreign Exchange Management Committee.
IDDA	Industrial Development Decade for Africa.
ILO	International Labour Organization.
IMF	International Monetary Fund.
INDP	Interin National Development Plan.
INDECO	Industrial Development Corporation.
IO/FEAS	Feasibility Studies Branch.
IO/PLAN	Industrial Planning Branch.
IO/IMRB	Industrial Management and Rehabilitation Branch.
MAWD	Ministry of Agriculture and Water Development.
OAU	Organization of African Unity.
PIC	Price and Income Commission.
REG	Regional and Country Studies Branch.
SADCC	Southern African Development Co-ordination Conference.
UNCTAD	United Nations Conference on Trade and Development.

UNDP	United Nations Development Programme.
USAID	United States Agency for International Development.
ZSI	Zambian Standards Institute.

Preface

The search for a lasting solution to the problems facing African manufacturing industry - under-utilization of planned capacity -, Regional and Country Studies Branch (REG) of UNIDO came up with the view that industrial rehabilitation exercise could not be carried out successfully by treating plant internal specific problems only. Capacity under-utilization does not imply that plant management does not want to produce at planned output, but because some external factors outside the control of the management are responsible for management's decisions.

In view of these facts, REG came up with the idea that a viable rehabilitation of manufacturing industry could only be tackled from a global perspective - bearing in mind both internal and external constraints.

This paper is therefore a product of "top-down" approach of rehabilitation exercise of African manufacturing industry. The point of departure is the examination the causes of the under-utilization of the existing plants to show that they are of both micro- and macroeconomic origin. The objectives of rehabilitation exercise - striving to full capacity utilization - was clarified in the study. Efforts were made to explain what "top-down" approach is all about, and how it could be applied. An exclusive part of this study is devoted to the first application of the "top-down" approach in Zambia drew references to argo-related manufacturing industries. The general or over all characteristics of the sector is discussed before the major problems and constraints, linkages, ownership patterns and policies as they relate to the

sector are reviewed. The same proccedure is taken for branch and finally plant levels. At plant level, problems of management, organization and marketing; physical plants; inputs; coasts and pricing systems are analysed. Finaly this paper concludes by elaborating on the expriences derived in applying this approach. Being conversant with both internal and external problems and constraints facing the plants, recommendations for rehabilitation is made.

I Introduction

1.1 Objectives of the rehabilitation programme and its role in the UNIDO activities

The principal objective of the programme is to improve industrial capacity utilization and productivity in agro-related industries of African countries by thorough examination of industrial rehabilitation potentialials not only at the firm/plant level but also by analysing general economic environment.

The current economic situation in African countries can be analysed from both macro and micro economic points of views. In this connection, it is worthwhile to mention here the following problems: recessing, stagnating or slowly growing markets and a debt related shortage of foreign exchange as a result of balance-of payments crises which affected importation of essential industrial inputs. This situation was further aggravated by the slump of commodity prices in the world market which was the mainstay of many African economies. Furthermore, in the early stages of industrialization of the region, projects were often based on the assumptions of domestic market demand growth, export prospects and the development of supportive infrastruture in the individual countries, assumptions which subsequently proved unrealistic.

Macroeconomic policies like fiscal and monetary policies and specific pricing, trade and industrial policies have in many cases distorted product markets and production conditions. At the microeconomic level, investments have in many instances also been made on the basis of project concepts that were technologically too complex to be sustained over a long term without significant support in the form of training and other essential auxilliary

inputs. This has adversely affected productivity. In the food processing industry in particular, expected raw material supplies to manufacturing plants proved to be insufficient, irregular or even non-existent. It is commonly observed that capacity utilization rate in most of the African manufacturing industries are as low as 30 per cent. High import dependence within the context of increasing foreign exchange constraints could be cited as a major reason for the decreasing levels of capacity utilization in the manufacturing sector.

In recognition of this deteriorating industrial and economic situation, the African Heads of State and Government declared the 1980's as the Industrial Development Decade for Africa (IDDA). Resolution 35/66 B of the General Assembly called on UNIDO to formulate, in co-operation with the Secretariats of Organization of African Unity (OAU), and Economic Commission for Africa (ECA) proposals to implement programme for the Industrial Development Decade for Africa and to monitor its progress. The programme elaborated for the decade was subsequently adopted by the governing bodies of the OAU, ECA and UNIDO.

It is believed that, greater utilization of installed capacities and improved productivity would be a powerful means of restoring economic growth in Africa. Industrial rehabilitation projects will therefore play a vital role in the next decade. As has been shown above, industry should be seen in the context of over all economic situation and policy development.

To obtain a clear understanding of the macro-environment of the manufacturing sector in various countries will thus be an essential part of UNIDO's future work. This will entail going beyond the usual scope of technical assistance

projects. UNIDO has a unique competence for bridging the gap between macro- and micro-economic analyses. As an Organization possessing expertise on industrial development, UNIDO has a special role to play in relation to African governments actively seeking to undertake reforms aimed at regenerating the manufacturing sector. The exprience of IMF/World Bank supported economic recovery programmes in African countries is mixed. In such particular cases UNIDO may have a mediatory role to play.

The present need for rehabilitation of African manufacturing industry stems from many factors, i.e. bad intial planning, wrong management decisions, changing market conditions, unfavourable government policy changes, technological obsolescence of existing equipment, lack of spare parts because of shortage of foreign exchange or the deterioration in the external economic environment. Industrial rehabilitation, could be looked upon as a process that include technical, technological and managerial, as well as economic, financial, marketing, design and engineering aspects. It should therefore be understood to refer to restructuring, not only at company or plant level, but as well as at a subsectoral and sectoral level, that recognizes economic and financial aspects, as well as the general and technical management structure, processes and product technology, product range, and the characteristics of domestic and foreign markets.

What is needed now is an efficient management system, training of staff suited to the needs of the industry, the enterprise and the country, a careful financial analysis of the proposed new machinery and equipment, effective and dynamic martketing, concentration of human, physical and financial resources of a few manageable projects or markets rather than spreading these over a wide area, a better analysis of market trends, closer attention to patterns o

technological development applicable to the specific sector, enterprise and country, and awareness of the environmental impact of the enterprise as well as of its overall socio-economic importance to the country.

In order to meet these requirements, it is necessary to make an in-depth country diagnostic survey which involve economic and policy diagnoses of the industrial sector in selected African countries and assessments of the resource requirements for and expected results of selective industrial plant rehabilitation. The surveys will provide the basis for programming national policy measures and advisory services. They will also provide the means to identify and to design detailed technical and financial programmes at company and/or plant levels for UNDP/UNIDO and other interested multilateral and bilateral agencies, and private companies, jointly with the governments concerned. Detailed branch profiles in selected subsectors will assist UNIDO in formulating and designing subsector approaches for industrial rehabilitation. In addition, rehabilitation surveys will also identify the potentials for subregional and regional co-operation as a special discussion of the progress of African industries. These studies focus on issues directly pertaining to industrial rehabilitation. The main emphasise will be on identifying the assistance UNIDO could provide within the context of national programmes for industrial rehabilitation, including identification of potential rehabilitation projects. The Zambian report for example identifies such projects in interrelated industries: cereals milling, stockfeeds, meat products and packaging.

II Approach, methodology and scope of the diagnostic surveys of rehabilitation needs of African manufacturing industry.

2.1 Approach of study; "top-down" methodology

Essense of industrial rehabilitation often is understood as the treatment of symptoms of the plant's apparent problems - such as financial shortages, replacement of aging parts or even the entire plant, expert advisory services etc. - without going into details to find out the real causes and their ramifications. Too often follow-up actions are missing. Thus there is a serious risk of the patching of a leak in the rusty barrel which in a short time will give rise to leak elsewhere even worse before the "patching".

The reemargence of these problems could be attributed to the fact that external or macroeconomic factors like fiscal and finance policies were not taken into consideration. Rehabilitation must therefore be a dynamic, forward-looking concept. To restore industry back to what it was may not be sufficient. This may lead to the industry back to where it was before rehabilitation excercise started which could be in the doldrums. After all, inability to cope with changes in external conditions may have been the cause of the industry's poor performance in the first place. What are its implications and modalities? On the microeconomic level, it is important to direct rehabilitation to production and management in existing industrial entrprises where the following problems occur:

inappropriate technology;

marketing;

finanacing;

product diversification;

poor management; and

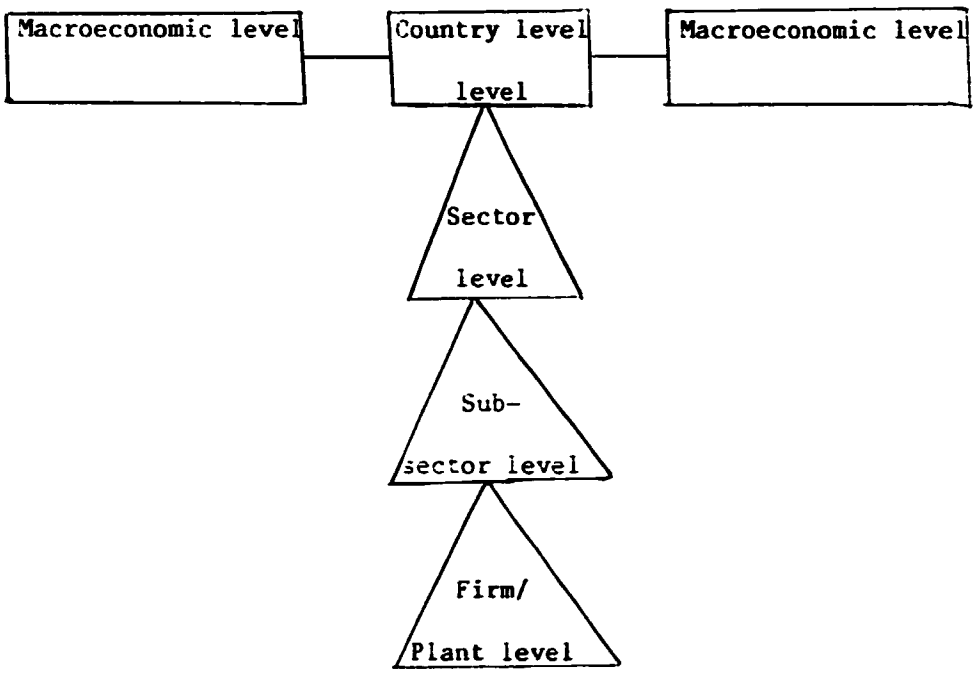
inadequate supply of key industrial raw material etc.

Manufacturing industries which overcome or master internal specific ploblems may not escape the obstacles imposed by the government's fiscal and monetary policies. It is therefore very important to fully examine the nature and magnitude of the underlying constraints to be able firstly to assess the general viability of any rehabilitation efforts and secondly to identify the precise type of measures, investment studies, market studies, policy and institutional issues, technical matters which need to be examined in great details as part of the subsequent efforts of detailed rehabilitation work at subsector, company and plant levels. In other words, it is only with a broad classificaton of current problems and definitly their causes and with an intial estimation of the appropriateness of rehabilitation can targetted technical assistance projects be tailored and launched to selected activities of the industrial sector in various African countries.

In order to solve the problems of the manufacturing industries of the developing countries in general and that of Africa in particular, UNIDO is moving away from its old "bottom-up" approach to a new "top-down" approach.

The "top-down" approach starts from the macroeconomic level (Country level), desends through the sector (manufacturing sector), subsector (food maunfacturing subsector) and branch level and finally arrives at the plant level as shown in figure 2.1.

Figure 2.1



It is believed that a "top-down" approach would make it easier to arrive at appropriate explanation for the reasons of low capacity utilization which are consistent with the data and with the microeconomic and institutional environment in which plants operate in African (Zambian) conditions.

3.2 Implementation of "top-down" approach

The application of "top-down" approach has shown that the over all health of a national economy is a pre condition for any industrial rehabilitation programme. The search for the question, why a plant does not function properly has been found to be not only directly an endogenous problem, but that exogenous problems are also present. Solving or tackling the plant's internal specific problems does not revive the plant, and where it does, is

only a matter of time. What is therefore needed is the simultaneous treatment of both internal and exteral problems. However, given the dimentions of internal and external problems now facing the African contient, it is obvious that in order to accomplish this complex problem, Africa must receive the full support of the international community.

International co-operation and assistance is essential because most of the industrial rehabilitation projects involve foreign technical and financial supports particularly in the acquisition of equipment and spare parts. The procurment of these equipment and spare parts require huge amount of foreign exchange which is in short supply due to the slump of commodity price which is the main earner of foreign exchange for African countries.

Besides financial assistance, African countries require technical, financial and managerial experts who will help the local counterparts in selecting, appraising, negociating, procuring, establishing and monitoring the plan rehabilitation.

To apply the "top-down" approach in the field, a team composed of experts from various deciplines proved a si ne qua non. This was a departure from the traditional UNIDO method of sending either an engineer or an economist to assess a plant for technical or to provide financial assistance to the global study of internal and external environment prior to rehabilitation exercise. This team was composed of industrial and macroeconomists, industrial engineers, finance and market experts. In addition, this team was also supported by local experts who were in the position to know where answers to some questions could be derived and helped in getting the right contacts.

Addministrative support for the field mission is an essential element in the success of the mission and should be arranged in advance. The same is for contacts with key authorities in government and plants management. The Secretariat gave the experts a supportive work by preparing a briefing note which gave them an insight into the political and economic structure of the country. In addition, detailed questionaiers for the factories were prepared for the mission.

It could be observed that the composition of the team made it easy to produce a final report which included among other things the findings - technical, administrative, marketing, pricing and tarif problems - and recommendations and measures to be taken.

The choice and number of plants visited may be because of time and transport constraints - four weeks. It could be observed that the plants visited not only situated in and arround Lusaka, but also that three fourth of them are government controlled. A proper balance between public and private enterprises selected for plant visits was also found to be important. Although it is desirable to include as many industrial locations as possible, time and transport constraints would usually force the team to restrict its activities to few areas. The fact that the managements of the plants visited did not see foreign exchange as a major constraint in the running of the plants does not imply that other privately owned plants enjoy the same.

III Research highlights of the programme

Preesntly REG has completed an industrial rehabilitation mission to Zambia. In the course of this autuum, 1988 a semilar survey will be completed for

Angola. Another three or more countries will be selected for survey in 1989. Zambia's report is now available and examples could be drawn from it.

3.1 Focus on agro-related industries

The rehabilitation of manufacturing industry in Africa is channeled towards agro-related industry. It might be asked why this sector is accorded priority over such vital sectors like the heavy industry? The answer could be found in the priority programme laid down by the African Heads of State and Government which seeks to revitalize the more dynamic and internally generated forces for growth and development. The main objective is therefore to increase the linkages between the agricultural and manufacturing sectors. This objective is implicit in its stated target of encouraging import substitution and export promotion through domestic resource utilization. This could be justified from the objectives of the Zambian Third National Development Plan 1979-83 which states among other things, that "....Balanced development, having regard to linkages between industry, agriculture and other sectors of the economic. To promote industrial production based on local raw materials, to satisfy domestic demand and generate exportable surpluse"

Observing the economic trend between 1975 and 1985, it is noticed that the average annual growth of Africa's agricultural value added (AVA) was only 0.9 per cent as compared to an average annual population growth of 3 per cent. This points out that the growth of agro-industrial sector is, in general, lagging behind population growth. Since agriculture is both the principal activity of over 80 per cent of the population in most African countries and sources of over 50 per cent of export earnings (except for mineral oil export), agricultural stagnation has meant not only inadequate supplies for

processing industries and shortage of foreign exchange revenues needed for imported inputs but also low growth of domestic consumer demand.

It is also estimated that in 1986 capacity utilization, for example, in the vegetable oils and fats industry in Africa averaged 32 per cent while for developed countries it ranged between 65 - 85 per cent. The levels of industrial capacity utilization were affected by many technical and economic factors such as supply and demand, prices and world trade. Globally, in most developing countries only a minor share, about 10 - 30 per cent, of the raw materials produced by the local agriculture undergoes industrial processing. In the developed market economy countries, on the other hand, the share is about 80 per cent.

This situation is an indication of the serious problems faced by existing plants in African countries. Most of the equipment which was installed during the pre-independence period have not been replaced, due to the poor state of the economy and especially lack of foreign exchange. As a result, most of the equipment and technology have become obsolete and spare and replacement parts are not easily available. Thus, many of the existing plants, especially in the food-processing sector, require rehabilitation, complete overhall or full replacement by modern plants, if capacity utilization is to be increased.

It is therefore believed that rehabilitation of agro-related industry will provide support to agricultural development through provision of essential inputs such as machinery and equipment, sockfeeds, fertilisers and chemicals, giving special consideration to the input requirement of small-scale farmers. In fostering backward and forward linkages in the economy, agricultural output such as maize, cotton, sunflower, groundnuts, livestock and other agricultural

raw materials are expected to be processed by manufauturing industries in order to satisfy domestic demand and boost export.

3.2 Food processing subsector

3.2.1 Overall charateristics

There are at least 14 to 16 branches of food processing industry in Zambia. They are not well developed, but nonetheless, they do appear to satisfy to a large extent Zambia's national needs.

The raw material inputs are mostly locally produced, but in some subsectors like the oil and fats subsectors, much of the raw material are imported in the form of crude vegetable oil which is then refined in the country.

The government's interest in promoting development of food processing is demonstrated by the Interim National Development Plan (INDP) which allocates 13 per cent of the total priority A projects finance, 58 per cent of Priority B project finance and 2.7 per cent of Priority C project finance to the subsector.

3.2.2 Major problems and constraints

As a subsector of the manufacturing sector, the problems of the food processing subsector could be viewed as being both external and internal.

(i) The following problems could be regarded as external:

The landlockedness of Zambia increases the transport costs of

her external trade;

The political situation in southern Africa disrupts the transport arteries and Zambia is forced to increase her defence budget because of South African attempt to destablize the region;

The low world market prices for the countrie's major export product, copper brings Zambia in an unfavourable terms of trade situation;

Decreasing domestic demand resulting from the decline of a copper-based economy; and

Political/bureaucratic interference in enterprise management, especially in the public sector.

(ii) The major problems facing the Food processing subsector are the poor capacity utilization which could be traced to non-availability of spare parts and insufficient supply of raw materials. This could be traced from the country's past industrial strategy. Until early 1980's, Zambia's industrialization strategy was based on capital-intensive import-substituting industries. These industries invariably required large amounts of imported machinery and, in many cases also imported considerable quantities of raw materials. With the decline in foreign exchange earnings based on copper, it has become increasingly difficult to finance the purchase of spare parts, new machinery and raw materials. This is a major reason for the sharp decline in capacity utilization in manufacturing industry. Such branches like the flour milling, oil seed processing and stockfeed manufacturing, suffer considerable losses from equipment and machines. The caused of breakdowns of equipment and machinery are attributed to the excessive quantities of impurities in the raw materials. This is also one of the major reasons for machine wear and tear. This particular problem is invariably the result of inadequate plant design.

For example, cleaning equipment is not included in the process flow. Interlocking of electrical installations, as a protection device against overloading and breakdown, is not included in installations. To sum up, it could be argued that the poor performance of most of the processing plants is a direct result of inadequate plant procurement and contracting, specification and design. None of the installed capacity has been achieved. In fact, the individual machinery has often never been tested, either for capacity or performance, prior to final takeover. In addition, entire processing line in the plants are seldom subject to the normally-required tests as a part of the commissioning procedure.

3.2.3 Linkages

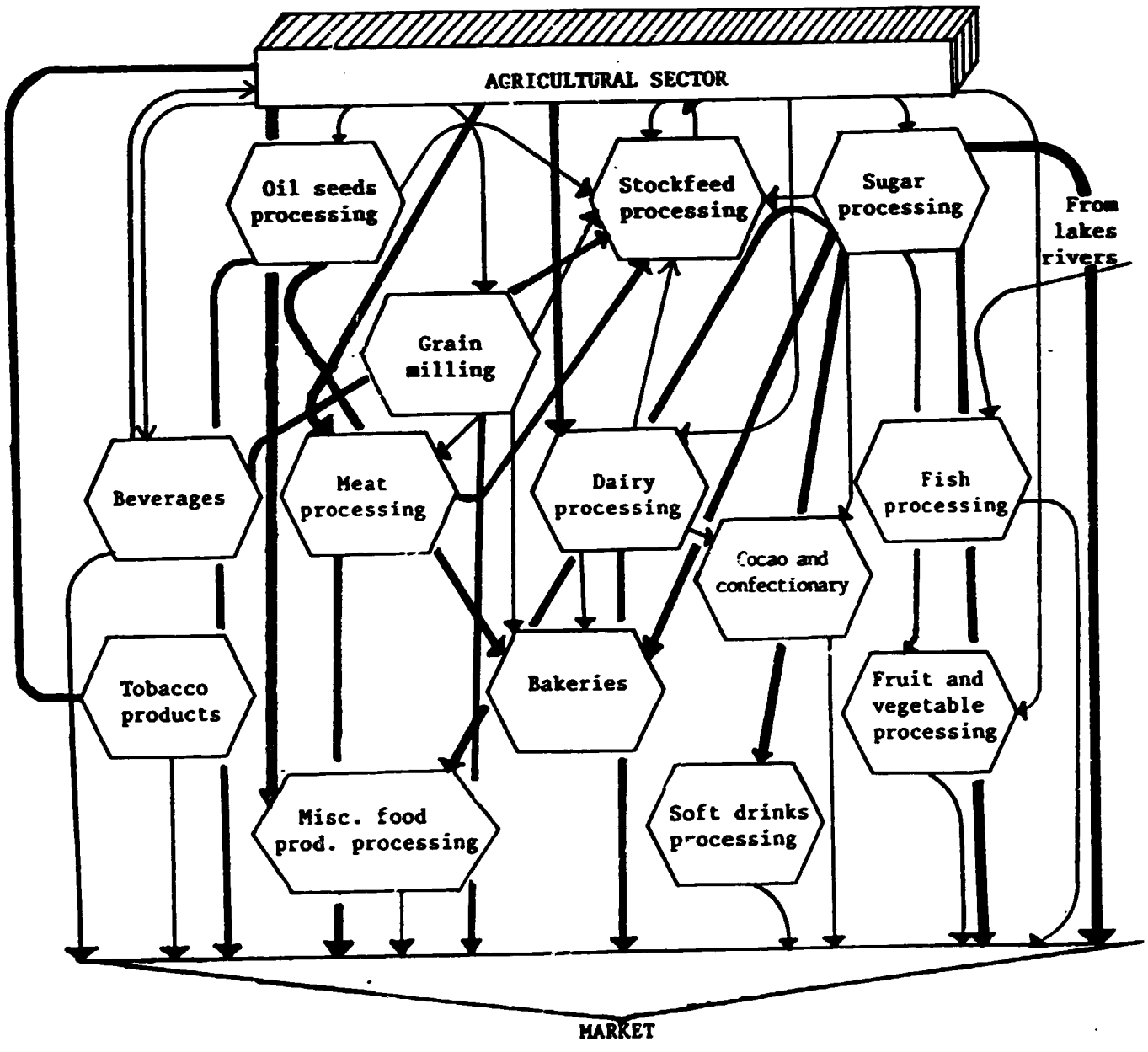
There is an extentive forward and backward linkages in the food processing subsector. Though most of the linkages shown in figure 3.1 may not exist at present in Zambian food industry, they however represent the desired linkages in that subsector.

The stockfeed manufacturing branch is an important industry whose inputs are by-products of food processing industry in the agricultural sector. In order that growth of livestock subsector is maintained, the stockfeed branch must have reliable linkages with other branches. The essence of these linkages is that other subsectors should supply raw material which the stockfeed will have to turn out as qualified formular feeds for the livestock subsector.

The dependence on imported raw materials like in the oil seeds processing branch, have caused poor performance. Though, they contribute inputs for the stockfeed industry, it is argued that the stockfeed industry would survive

Figure 3.1

Linkages in the food processing subsector



independent of imported raw material if efficient and well-developed oil seeds and meat-processing industries are established, using local raw material substitues.

The package industry which does not belong to the food processing subsector, has a number of backward linkages to a number of subsectors as agriculture, textiles, pulp and paper and chemical industry which provide provide some of its inputs. It has also forward linkages to all branches of the food processing subsector as they utilize its products. It is therefore very proper to give a considerable attention to it, in its own right for its linkages to the food processing industry.

3.2.4 Policies related to the food processing subsector

About 78 per cent of the firms in the food manufacturing sector are privately owned, while the remaining 22 per cent are controlled by parastatals or partly by INDECO.

The Government encourages both parastatal and private sector firms to produce items that are essential to human needs. It also encourages processing of local raw materials. Particular importance in the INDP is attached to:

(i) increased capacity utilization;

(ii) promotion of resource-based industries in an effort to promote inter-linkages, especially between agriculture and manufacturing; and

(iii) improved quality control in locally-produced goods.

A five year tax holiday is given to "sensitive" branches of the food-processing subsector, like stockfeeds and edible oils. Industrial

machinery is subject to 10 per cent import duty and spare parts of 20 to 25 per cent duty since the 1988 Budget. Additionally, a 20 per cent custom sales tax and a 2.5 per cent up-lift for "value for duty purposes" (VDP) are levied on any product that attracts import duty.

There is a complete embargo on imports of competing processed foodstuffs. Imports of sausage castings and spices are allowed. Stockfeeds and vegetable oils and fats which are classified as priority activities have easy access to foreign exchange.

Since May 23 1988, products like sugar, salt, mealie-meal, cooking oil, baby milk and wheat products are subject to price control. Permission to increase the prices of food products which are subject to satututary Instrument No. 1. 1988 has to be obtained from PIC.

3.3 Branch profiles

3.3.1 Meat processing

3.3.1.1 Overall characteristics

The survey of the meat processing branch is on pork products. The products of pig - such as sausages, polonies and cured hams and becon - account for about 7 per cent of the total domestic consumption of meat in Zambia. The pork processing industry is primarily along the "line-of-rail", concentrating in Lusaka and to some extent in the Eastern Province where there is a tradition of rearing pigs.

It could be observed in table 4.3.1 which shows the number of pigs staughtered between 1983 and 1986 that the majority of the pigs slaughtered in Copperbelt are ungraded.

Table 3.2 shows the number of pigs slaughtered between 1983 and 1986.

Table 3.1

	1983		1984		1985		1986	
Province	Graded	Un-graded	Graded	Un-graded	Graded	Un-graded	Graded	Un-graded
Central		682		575		487		509
Lusaka	22,336	16	22,117	0	12,729	0	22,792	2
Copperbelt	NA	5,655	369	5,884	1,261	3,277	1,126	4,989
Southern	449	325	819	290	389	139	537	160
Western	58	11	39	1	-	0	40	9
Northwestern	-	60	-	41	-	2	-	22
Northern	-	74	-	29	-	5	-	61
Luapula	-	28	-	2	-	0	-	6
Eastern	-	373	-	148	-	98	-	211
Total	22,843	7,144	23,344	6,965	14,375	4,001	24,495	5,969

Source: MAWD.

3.3.1.2 Major problems and constrints

The single largest problem of the pork products branch at present is the shortage of slaughtering pig. Other problems include shortage of spare parts for some essential equipment.

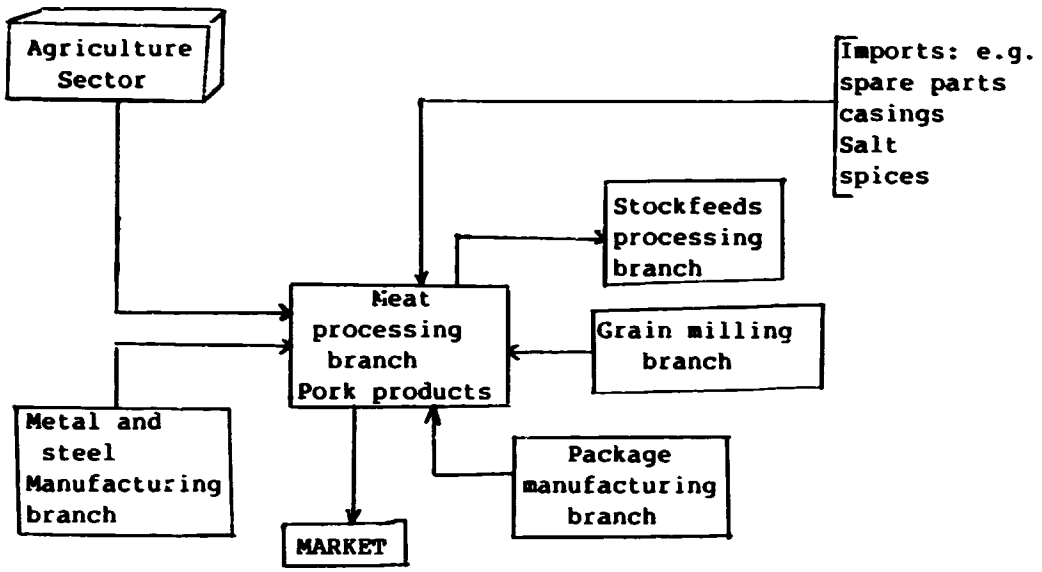
The presence of the above mentioned problems contribute to underutilization of available plants, thereby reducing supply. Presently, there is no need for storage as products are immediately sold, but with the overcoming of the present problems and plants working at full capacity, storage may impose a serious problem.

According to MAWD sources, it is the policy of the Government to increase pig production. The aim is to encourage export of pork products. Main emphasis will then be laid on the promotion of pork processing and make it economically viable. The method adopted by Government to improve pig farming for the past ten years is the "Integrated pig management Scheme" whose objective is to organize farmers into pig-producing co-operatives, each equiped with a central management responsible for supply of feeds and other inputs, as well as marketing and extension services.

3.3.1.3 Linkages

The major linkages to other branches, and subsectors are illustrated in figure 3.2

Figure 3.2



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

3.3.1.4 Spatial distribution

The pork products branch is concentrated in the large population centres along the "line-of-rail", with three model points around the Copperbelt, Lusaka and Livingstone with over 90 percent of Zambia's current output of pork.

Ninety-two per cent of the meat-processing branch is privately owned and the remaining 8 per cent is controlled by INDECO.

3.3.2 Oilseed processing branch

The USAID study of the oilseed sector in Zambia, gave the national oilseed processing capacity an estimate of about 214,000 tonnes, with ROP and Premium Oils as the largest processors, accounting for about 73 per cent of the

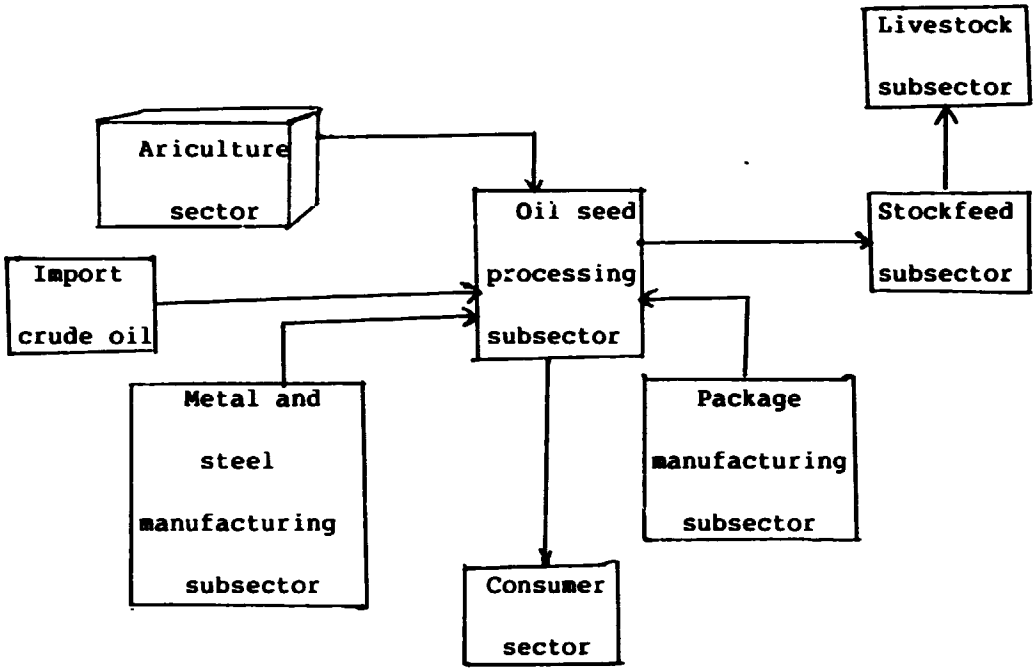
national total of extraction capacity. Medium- and small-sized firms process the remaining 24 per cent and 3 per cent respectively.

The major problem of oilseed processing branch is the lack of adequate supply of raw material. The oil seeds also contain very high quantities of impurities which causes damage and wear and tear on all moving parts, especially the expeller screws. This invariably results in poor performance of the equipment, frequent breakdowns and increased need for maintenance. Others include inferior equipment including non-existing, or poor cleaning facilities, lack of spare parts and poor working environment. Due to periodic shortage of raw material, large quantity of crude vegetable oil is imported. This could hamper the development of local products.

3.3.2.1 Linkages

The forward and backward linkage pattern in the oilseeds processing subsector is shown in figure 3.3. The adequate supply of good quality of oil seeds is very important for the successful performance and development of the stockfeed subsector and hence for improved production of livestock subsector.

Figure 3.3



3.3.2.2 Spatial distribution

The oil-cruching industry is mainly concentrated in the Copperbelt and Lusaka. According to the April 1987 USAID survey small scale enterprises located in the Lusaka and Copperbelt regions accounts for about 89 per cent of the total capacity of oil extraction in Zambia. Other production areas include: Kalite in Eastern Province (6 per cent), Choma in Southern Province (2 per cent) and other small-scale expellers (3 per cent).

3.3.2.3 Ownership patterns

INDECO dominates the oil seed processing branch, accounting for 75 per cent, leaving 25 per cent to the private sector.

3.3.3 Stockfeeds manufacturing

3.3.3.1 Overall characteristics

There has not been any remarkable change in the stockfeed manufacture over the past years. According to the study conducted by the Booker Agriculture International Ltd. in August 1987, there were declines in the aggregate production in the 1980's from 192,000 tonnes in 1980 to 140,000 tonnes in 1987. The installed capacities have not been met.

Although there is a defined national standards for different types of stockfeeds as set down by the Zambian Standards Institute (ZSI), there is no enforcement of these regulations. One could argue that the reason for not implementing them is that there is no unit assigned to test and monitor a control system.

3.3.3.2 Major problems and constraints

One major problem facing the stockfeeds industry is that a greater part of its inputs like mineral elements, trace elements, vitamins, medicated addicitives and animal proteins are imported. Such imports necessitate foreign exchange and this makes the feed industry very vulnerable. Alternative use of local raw

material as by-products from meat industry and offal as ingredients for feed production should be explored.

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

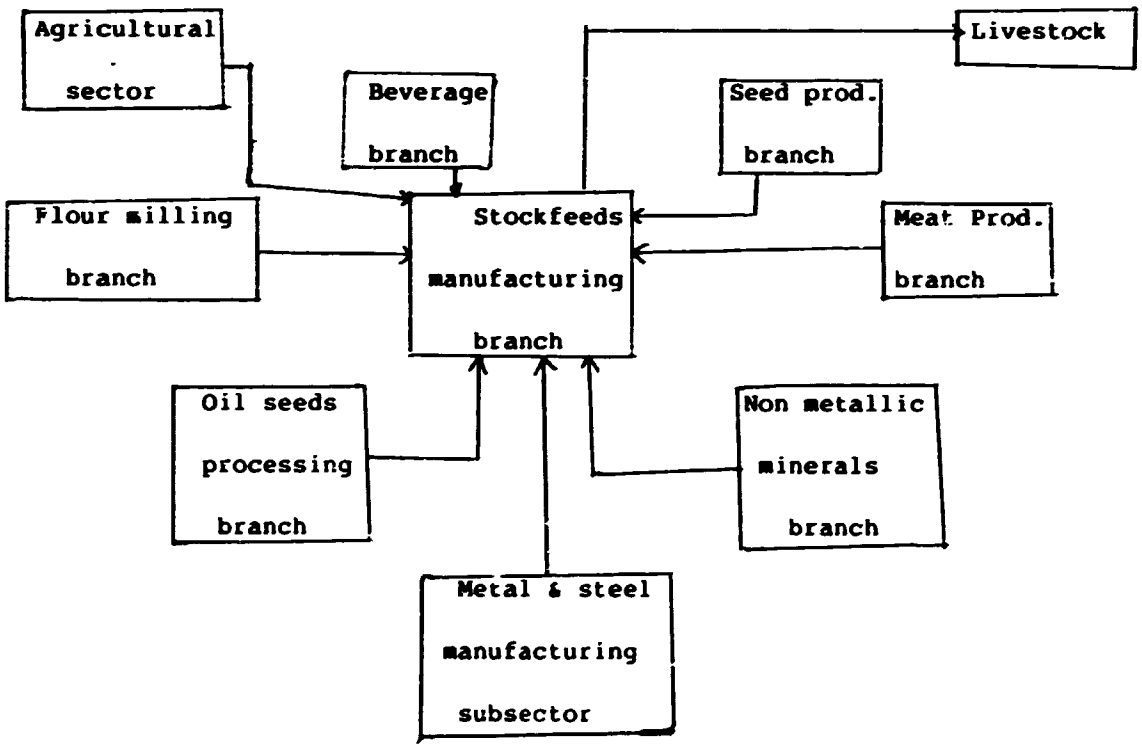
There are no laboratory facilities in most stockfeed plants. Analyses of ingredients and finished products cannot be carried out to the extent that is necessary for effective control and monitoring of production processes and often results in inferior feeds deficient in protein. The absence of adequate monitoring and control also tend to produce an overly high fibre content in poultry and pig feeds. The low quality of stockfeeds has also had adverse effects on the quality of the animals which consume them.

The pricing policy of ingredients are not encouraging. The prices are set irrespective of quality and this does not encourage improvement of raw material, as a result, in an effort to keep down costs, quality usually suffers. If a national standard for feed ingredients were established, and the price of stockfeeds were related to quality, the future of the stockfeed industry will be bright. The only way to enforce the quality standard that will relate to both raw materials and finished products would then be the establishment of qualified independent laboratory. Such an establishment could serve the stockfeed industry as a whole since, in many cases, such equipment could not be justified at the plant level.

3.3.3.3 Linkages

The stockfeed industry has backward linkages to the agricultural sector and also to other manufacturing subsectors, as illustrated in figure 3.4. The adequate supply of good quality oil seed is very important for the successful performance and development of the stockfeeds subsector and hence for improved production of livestock subsector.

Figure 3.4



3.3.3.4 Spatial distribution

Most of the stockfeed plants are found along the "line-of-rail", with the

exception of some small plants belonging to the Cooperative Unions which are located in provinces away from this important transport artery.

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

3.3.3.5 Ownership patterns

The importance of this industry to the Government, reflects the ownership patterns. 95 per cent of the stockfeed manufacturing branch is owned by parastatal companies, leaving only 5 per cent to the private firms.

3.3.3.6 Policies and institutions as they relate to the stockfeeds branch

The same applies as in section 3.2.5. Additionally, there is no duty on imported machinery and on imported raw materials.

3.3.4 Package manufacturing branch

3.3.4.1 Overall characheristics

The package manufacturing industry produces a varity of products, but for the purpose of this survey, only bag production is considered.

The raw material for the production of bags come from synthetic and from

natural fibre, mostly jute.

The overall domestic production of polypropylene bags is estimated to range between 25 to 30 miilions per annum, or about 50 per cent of the demand. Jute bags are mostly imported and the domestic production at present is only approximated to 0,25 million.

About 98 per cent of the raw material needed in the bag manufacturing industry is imported at present. Efforts are being made by the Government to encourage the production of kenaf, a fibrous plant which can be grown in Zambia and which can be substituted for imported jute.

3.3.4.2 Major problems and constraints

The over dependence of this industry on imported raw material, makes it extremely very vulnerable, particularly as foreign exchange is very scarce.

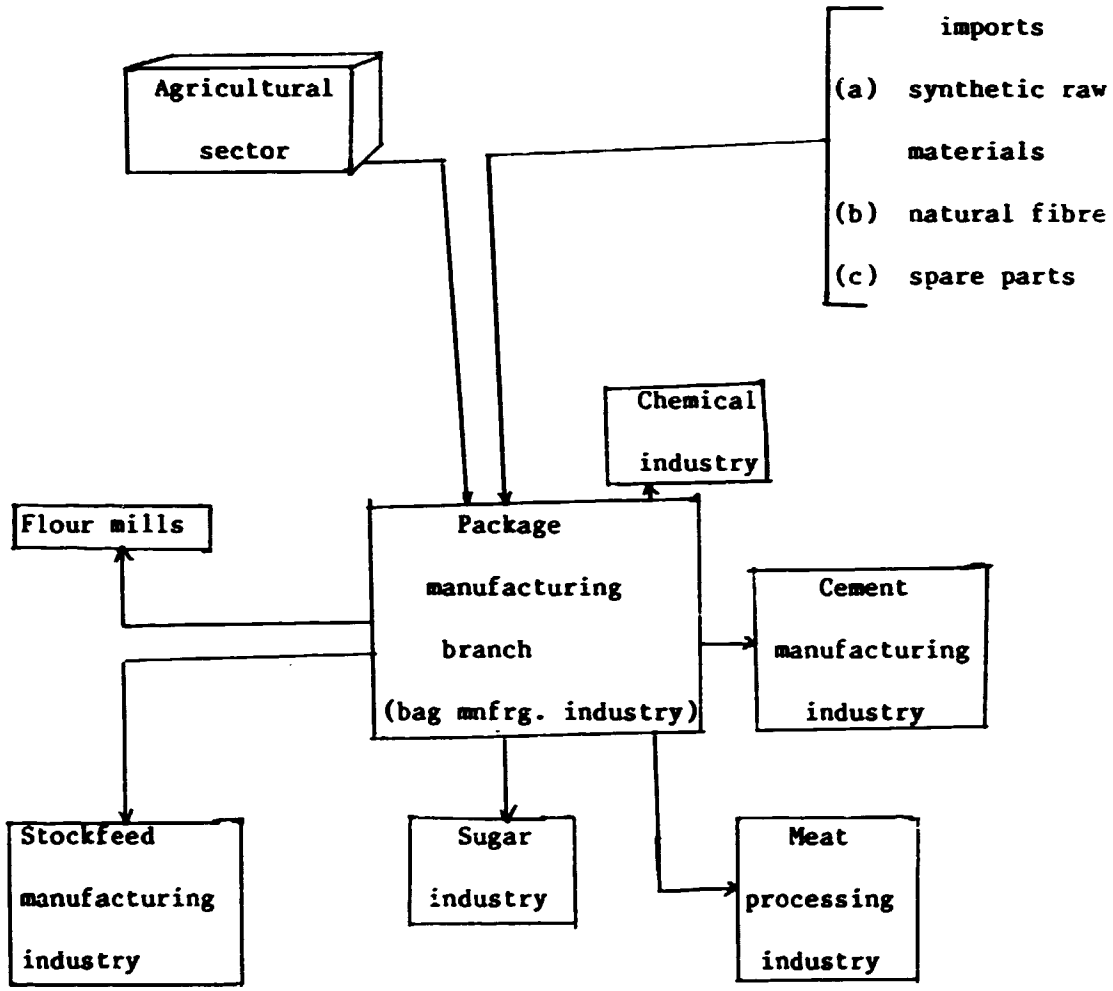
Almost all the spare parts and all the plants are imported. Heavy dependence on imported spare parts has caused considerable constraints in the industry. At periods of spare parts shortage, some pieces of equipment have gradually been dismantled and the parts used as spares. As a consequence, capacity of the plants have been reduced.

3.3.4.3 Linkages

Bag manufacturing has a large number of forward linkages. However, backward linkages to domestic sectors or subsectors are extremely weak as shown in

figure 3.4. This is mainly due to the importation of almost all the machines, spare parts and raw materials used.

Figure 3.4



3.3.4.4 Ownership patterns

86 per cent of the firms in the package manufacturing branch are privately owned. The remaining 14 per cent is owned by parastatals in which INDECO is

the majority shareholder.

3.3.4.5 Policies and institutions as they relate to the package manufacturing branch

The policies and institutions govering this branch are the same as in sectiob 3.2.5. In addition to this, imports of machinery, synthetic granules or jute fibre are duty free.

3.4 Plants profiles

3.4.1 Management, organization and marketing

It is generally observed that:

(i) All the four companies visited - pork factory, feed mill, oil mill and bag industry - have good top management, but some of the key positions are vacant. There is general deficiencies at middle and at foreman and supervisory levels. Management and information systems are generally inadequate for routine tasks such as accounting, addministration, purchases and sales.

(ii) There is a weak or non-existent sales organization both locally and regionally, largely because it is a seller's market.

(iii) The institutions which are responsible for Zambian foreign trade are the Export Council of Zambia, the Ministry of Commerce and Industry and the newly founded Export Board of Zambia (1985). It is observed that

these institutions are performing well, particularly the Export Board of Zambia. The major functions of this Board include: supervising the implementation of the export Development Act, 1985; formulating and approving national policies aimed at developing, promoting and encouraging export of goods and services from Zambia; dealing with any appeals or complaints received by it under the act. It is also given the responsibility of promoting the development of non-traditional exports.

Generally speaking, it is observed that the export industry of Zambia is poorly represented abroad, which is due mainly to high costs involed. Zambia has only three Trade Commissions in London, Harare and Dar-es-Salaam and a Trade attache in Maputo. It is envisaged, that another four will be opened in Scandinavia, West Germany, European Community in Brussels and Switzerland (UN Organizations) if and when funds are available. Questions regarding trade and export are handled by regular embassy personnel at the other missions. It can be deemed as very unsatisfactory because the staff are employed by the Ministry of Foreign Affairs but are managed by the Ministry of Commerce and Industry.

(iv) Budgeting at all levels, seems often to be wishful thinking rather than an attempt to make a realistic assessment of a company's financial position and expected expenditure.

3.4.2 Physical plants

It is generally observed that all the plants visited were operating below the installed capacity. And more, they were discribed as "achieved capacity"

implying that, given the state of the plants, the starting point for measuring capacity utilization was already much below the original installed capacity. The reasons for under utilization could be sought from the following:

(i) The production equipment in the manufacturing sector is either old or obsolete, therefore performing well below the purported designed capacities, or even out of use due to protracted lack of proper maintenance. It was also observed that in several cases, plant design and processes used were unsuitable, and that design capacities stipulated by the original equipment suppliers were unrealistic and unattainable in practice. Lack of inputs or poor quality of inputs were also among the reasons for low capacity utiliization.

(ii) Quality control programmes are vitually absent and where present are haphazardly implemented. This is because there are no in-house laboratory facilities for analysis of raw materials and finished products. The external tests results are expensive and the results take long to return.

(iii) There is a general causal approach to plant hygine, industrial health and safety and waste treatment and disposal.

(iv) There is a general observation that some equipments and at times entire plants, were not properly specified from a technical standpoint in the contracts, or properly commissioned on installation, nor were they performance-tested and accepted in line with any applicable supply agreements. Their expected performance capacities are largely fictitious.

3.4.3 Inputs

Raw material supplies to the plants like maize and sunflower seeds, are of poor quality when cleanliness is taken into consideration. Between 5 to 10 per cent of the maize and sunflower seeds supplied is classified as impurities. These impurities cause substantial extra costs for transport, handling and wear and tear and breakdown of processing equipment. With the present system of payment, the producer has no incentive to deliver clean products.

It is believed that if the impurities are removed the following benefits could be derived.

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

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

(iii) A saving of 50,000 m^3 storage space in warehouses, or under tarpouline, which could be used for clean products and not waste;

(iv) Reduced losses of produce during storage; these are difficult to assess but are likely to add up to serveral million Kwacha.

(v) Reduced wear and tear and breakdown in industry; this can be assessed in terms of low maintenance costs, lower utilization of processing industries.

3.4.4 Costs and pricing system

The following observations were made on the policies and institutions of costs and pricing system as affecting Zambian manufacturing industries:

(i) The initial industrial policy of Zambia was of that import substitution, which made industries to rely heavily on imported inputs. With the present economic difficulty (lack of foreign exchange), there is the urge to reduce this dependency. This objective may take a long time to be achieved. Meanwhile, companies in the manufacturing sector are dependent on imports of machinery and spare parts - and in many cases for the bulk of their raw materials as well - in order to keep their plants running. With few exceptions like in the stockfeed, oil seed processing and package industry, spare parts are subject to custom duties. These duties increase the costs of maintaining plants in good working condition. This discourages plant maintenance and in turn, reduces capacity utilization.

(ii) The Zambian manufacturing sector suffers from a complex battery of pricing distortions. While some products are subsidized, others are placed under price controls, or even have to obtain permission from PIC before raising prices. Some others depend on the free market mechanism. The absence of a common price denominator has brought untold difficulties for many manufacturers. The repercussions spread throughout the sector and back into agriculture, where input prices increase and output prices are fixed, profits diminish or even turn into losses. Under such circumstances, the reactions may vary, depending on the type of business involved. While private firms are threatened to fold up, parastatal companies with INDECO support may survive longer but the question is, how long? The role of retail prices is primarily to cover the production cost and to generate profit to enable the company to maintain its plant in good working condition and replace its plant over time

There is no encouragement for companies in Zambia to adopt efficient system. This is because of the cost-plus method of pricing manufactured products introduced by PIC. It is argued that even if this method is accepted, it is unclear whether some parastatals could maximize their profits. In the case of companies with more than one product line, individual costings and profits are often not calculated, thus making it difficult to know whether one line is subsidizing another.

(iii) All companies are subject to 40 per cent tax of their profit according to the provision of the 1988 Budget. This tax rate is too high particularly in industries that are import dependent and need liquidity for rehabilitation. The rate is also higher than in some neighbouring SADCC countries, Zambia's competitors for exports of manufactured goods.

(iv) One of the major constraints of the Zambian economy is the shortage of foreign exchange. As the manufacturing industries are import dependent, the foreign exchange shortage, impedes the importation of essential transport vehichles, machinery and spare parts.

The foreign exchange constraints were not rated by the management of the companies visited as their main problem. This could be explained by the fact that most of these companies are either in the "sensitive" branches of the agro-based industry or were parastatals, or both. There was general satisfaction among the managers about the way FEMAC is handling foreign exchange.

3.5 Rehabilitation requirements

3.5.1 Management organization and marketing

(i) The first step to take is to fill the existing vacancies in the top management so that the General manager is given the time to formulate strategic policies of the companies visited. It would be wise and advisable to fill these positions with outsiders with adequate training and exprience. There is an urgent need for a good computerized information system.

(ii) There is a general need for reorganization of the marketing system. Though, the companies are presently operating in a seller's market, it is believed that after rehabilitation output would increase and if there is no restructuring of the marketing department, this could impose a serious problem for the companies.

(iii) All companies envolved in export, should be allowed to use part of their retained export earning for foreign sales promotion.

(iv) One way to increase the share of export is to increase the number of Trade Representatives abroad, particularly in the most important neighbouring countries. Trade representatives should be given enough funds and responsibility to promote Zambian goods abroad. Members of trade representation should be well experienced in international sales promotion and should be recruited from industry. The formation of Export Board of Zambia should be speed up and be given the strongest possible support from both private and public sectors.

(v) Budgeting should be realistic and done with utmost care and the Board of Directors and management should see to it that the budget is closely followed and that deviations are analysed and corrected where appropriate.

3.5.2 Physical plants

(i) The most immediate need of the plants is the replacement of the worn-out and malfunctioning parts and components, replacement of unservicable or under-sized production equipments, and the redesigning of processing schemes for greater efficiency and capacity.

(ii) The companies should introduce an enforceable scheduled maintenance programme for all machinery and equipments. Bearing in mind the problems and implications of the lack of spare parts, the companies should establish an adequate inventory of running and replacement of parts. Since spare parts availability is a recognised constraint in this regard, efforts should be made to establish and equip in-house workshops which could fabricate simplier parts and repair some components. Various repair workshops for specialised equipments and machinery should be established in various provinces.

(iii) As existing special laboratories are strengthened and central laboratories established in the major provinces and Lusaka, to provide special analysis services, it is also necessary that each plant be served with an in-house laboratory that would test the quality of inputs and products of the plants.

(iv) It is necessary to improve and extend personnel hygine safety and comfort facilities.

(v) Zambia needs to establish channels to utilize professional expertise to facilitate the definition and selection of industrial equipment and processes, supply contract preparation and negotiation, monitoring and supervision of installations and commissioning, and performance testing and acceptance of equipment and plants.

3.5.3 Inputs

It was observed that one of major problems facing the inputs is the presence of large quantity of impurities in the raw materials. To facilitate industrial rehabilitation, the following measures should be taken:

(i) Introduction of product grade which uses cleanliness (absence of impurities) as a measure of better grade. Farmers should then be paid higher or lower depending upon the content of impurities.

(ii) An alternative way of implementing this measure would be to install at the receiving points at the co-operative society level, or at district level, depending on payment routine, simple air/screen grain cleaners, where cleaning is done before weighing for payment. This would give the farmer an incentive to deliver better product. The farmer would be obliged to dispose or pay for the disposing of the impurities screened.

(iii) The price increase for clean product should correspond, at least to the percentage units of impurities removed.

(iv) It is advised that, grain cleaners be manufactured in Zambia using a well-known simple design acquired from European manufacturers. It is assumed that with the present and future demand for grain cleaners and spare parts in Zambia and likely export chances, there is a sufficient basis for establishment of a viable manufacturing enterprise.

(v) The present situation with almost full dependence on imported raw materials particularly in the package industry is not acceptable in a long term perspective. Considering the period of time necessary for switch-over to alternative sources of raw materials for bag manufacturing, policies and guidelines should be established. An important step in reducing import dependence has been taken by the introduction of kenaf fibre as a substitute for imported jute fibre. Kenaf production must have to be synchronized with development of the national processing industry.

3.5.4 Costs and pricing system

(i) Due to shortage of foreign exchange and the too often shortage of spare parts, it would be appropriate that the production of spare parts be encouraged and protected where necessary in Zambia. Thus, a more rational structure of protection on spare parts would be a differentiated one, where higher rates are imposed on competing imported spare parts and a zero rate on non-competing ones. Plants undertaking rehabilitation process which are being financed out of their own resources or by bank loans, should be exempted from paying duties on machinery essential to the rehabilitation exercise.

(ii) Increases in prices of manufactured products should be synchronize with increases in the prices of inputs. The PIC and MAWD will

have to collaborate in approving and implementing price increases. This will call for strengthening the operations of PIC. In turn, such strengthening may necessitate technical assistance from donor community.

(iii) In addition to incentives and tax rebates to firms producing export products as stipulated in the 1986 Investment Act, it would be appropriate also to reduce the general level of company taxation. The reduction of the level of company taxation should depend on the extent to which the company substitutes domestic for imported inputs, increasing capacity utilization, production of non-traditional exports etc. provided they apply the tax saving to plant rehabilitation. Adequate controls should be imposed to ensure that the money is used appropriately.

(iv) As regards to the foreign exchange regime, it is advisable to return to a moving peg system rather than medium-term fixing.

(v) The newly introduced education levy that is imposed on all manufacturing industries should be reversed.

3.5.6 Recommedations and project concepts

The following are recommeded for the rehabilitation of manufacturing industry in Zambia:

- Provide expertise to redesign tariff structure .
- Investigate reasons for delays in implementing price increases in PIC. Provide expertise to syncronize changes in prices and costs for manufacturers.
- Modify company taxation policy to promote internal funding of

rehabilitation.

- Technical assistance in planning and design, including contracting and commissioning procedures and specification of equipment (UNIDO).
- Technical assistance in the development of maintenance procedures and training (UNIDO).
- Technical assistance in establishing spare parts production (UNIDO).
- Technical assistance for developing or purchasing standardized equipment, parts and components (UNIDO).
- Assistance in the establishment of provincial maintenance centres, workshops and laboratories (UNIDO).
- Assistance to in-house training for middle-management in manufacturing.
- Arrange study tours for middle-management in manufacturing (UNIDO).

IV Follow-up activities

This paper has shown a practical application of the "top-down" approach. It has identified the weaknesses of African manufacturing industries and has also given recommendations on how to tackle these problems. Could it at this point be concluded that REG has finished its assignment? The answer to this question should be no. What now remains is the presentation of REG's findings to the target group through an appropriate channel so that African manufacturing industry problems can be solved.

Which therefore is this target group and what is the appropriate channel through which this information could be transmitted? The channel should be a meeting organized by REG the objective of which will among other things be to discuss the findings and recommendations of the rehabilitation surveys. In

particular the meeting will discuss a detailed rehabilitation project document based on the project concepts included in the survey.

Although emphasises will be laid on national issues, regional and/or sub-regional problems and co-operation should also be discussed. This is mentioned here because certain national problems have sub-regional or/and regional origins and implications. The treatment of certain national problems therefore have to be paralleled by actions at regional or subregional levels.

Participants at the meeting should include senior representives of governments, because they are responsible for the formulation and execution of national fiscal and monetary policies that affect the economic activities of the nation. The presence of Intergovernmental organizations like PTA, SADCC, ECOWAS etc. whose objective is economic co-operation among member states, is also essential. Firstly, it will enable them to plan their industries with the view of economies of scale and comparative advantage among different community members.. Secondly, the development and inprovement of material and social infrastructure which is the base for any meaningful development, which is a major constraint for manufacturing industry in an individual country, could in many cases be better handled by intergovernmental organizations than by the individual governments. The national and international business community should also be invited because it has the necessary financial capital for rehabilitation of the African manufacturing industries. The discussions at the meeting will give them extensive implication on and deeper insight in the viability and the possible future orientation of the various industries that compose the manufacturing sector.

Finally, representatives of interested United Nations organizations and other

international organizations like IMF, World Bank, EEC etc. should also be invited to paticipate at the meeting. The activities of both IMF and World Bank have a major influence on rehabilitation of industries in Africa. The EEC could play an important in the on going rehabilitation exersice by recommending to the member countries areas that they could render both financial and technical assistance.