KILIMANJARO IDP

INDUSTRY

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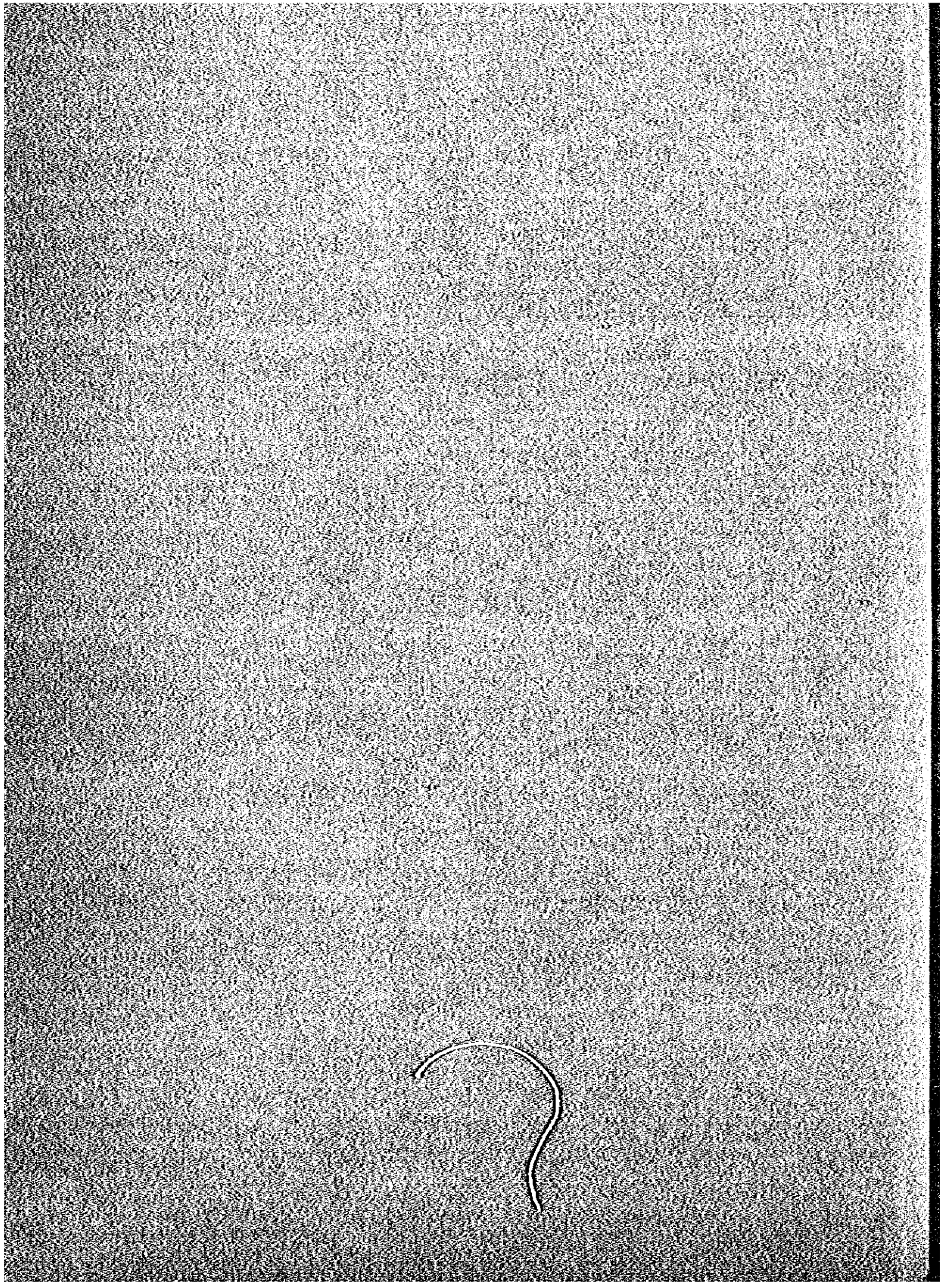
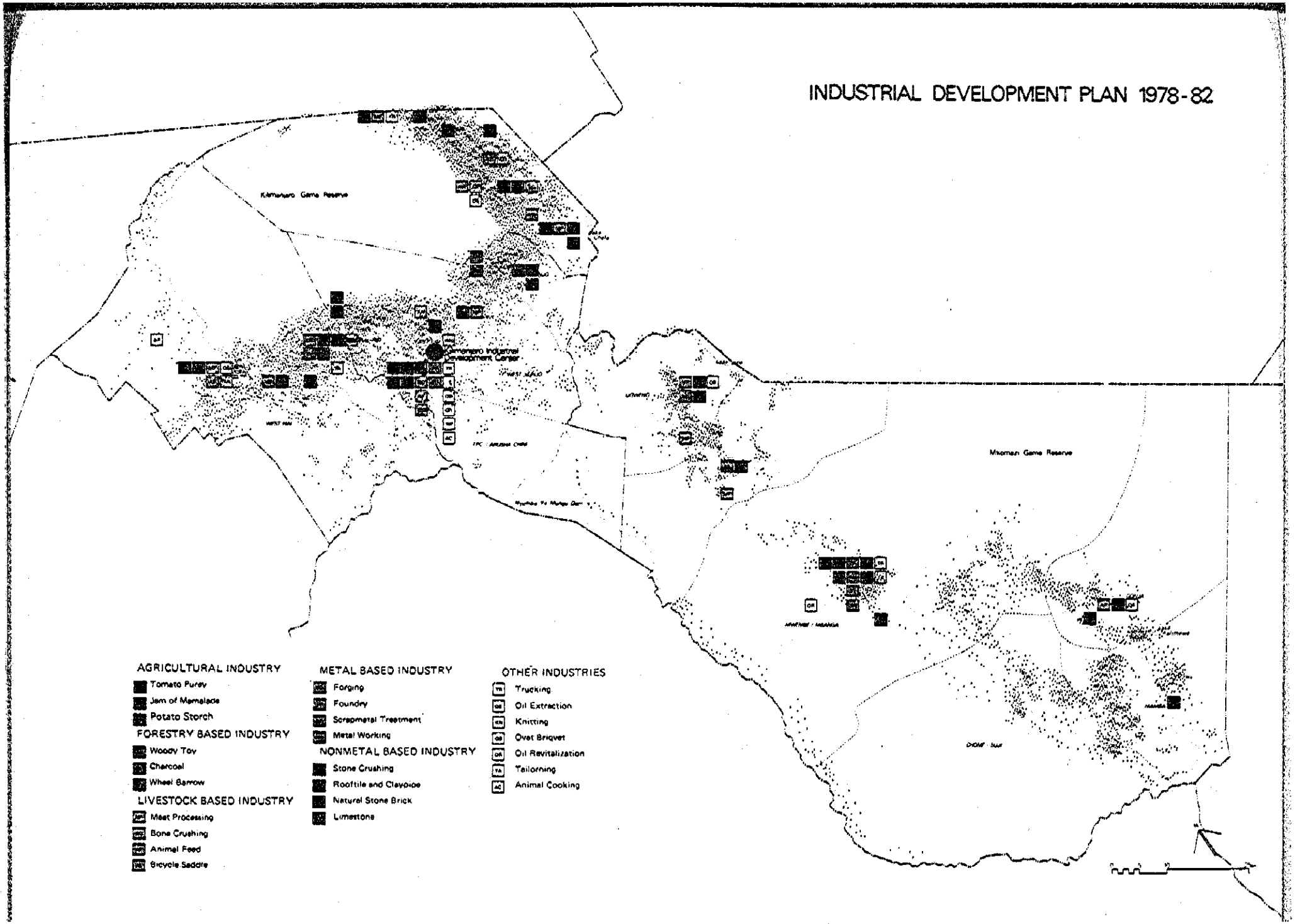


INDUSTRIAL DEVELOPMENT PLAN 1978-82



INDUSTRY

Contents

1 CONCEPT AND TYPES OF INDUSTRY

This part will deal with sectoral planning of the mining and manufacturing industry. However, if deemed necessary, the coverage will extend to service sector areas such as repair work.

Since the manufacturing industry sector comprises various types of enterprises, before going into the main discussion, some problems of typology and concept of industrial enterprise will be discussed here. Categorization of industrial enterprise is diverse depending on standing criterion such as size of employment, technology utilized, product variety, type of market, industrial location, input-output linkage and management organization. Based on these classifications, one may refer to small and large and modern industries, consumer goods and basic industries, local market oriented and export oriented industries, ancillary and sub-contractor industries, and private, cooperative and national industries.

In the context of Tanzanian planning, the relevant criterion of classification is based on size of industrial units, namely, little or cottage, small, medium and large industries. In this case, the big problem is the number of employees to divide into small, medium and large industries.

This is different from country to country depending on stages of economic development. As far as the number of employees is concerned, small industry is less than 250 workers in U.S.A., less than 300 workers in Japan, less than 50 workers in Sri Lanka, 20 workers in Ghana and so forth. However, in this country, there is no criterion based on quantative standard, but on qualitative standard from the standpoint of socialism and self-reliance. In this country, the definition of small industry is given by SIDO, in 1973. In the following discussion, if considered necessary, quantative criterion also will be used.

A large scale unit: one which employs 50 or more workers.
A medium scale unit: one which employs 10-49 workers.
A small scale unit: one which employs less than 9 workers.

Another relevant classification of industries in terms of Tanzanian planning is division among village industries, district industries and national industries made by the Ministry of Industries. National industries consist of medium and large industries producing goods for the domestic market, for export, or for use in small industries. National industries will be under the control of public corporations. However, in the case of the Kilimanjaro region, the Tanganyika Planting Company and the Kibo Match Corporation, which are the big producer and the big employer, are private companies. District industries, medium and small scale industries, produce a high proportion of basic consumer goods. At the moment the majority of these establishments are privately owned and located in main urban centers. Village industries and handicraft industries are those industries which, under the Village and Ujamaa Villages Act of 1975, the villages have been empowered to establish as one of their major economic activities. These industries will manufacture goods needed by the village itself as well as the neighboring villages. (See, United Republic of Tanzania, Speech by the Honourable C, D. Musuya, M.P. Minister for Industries, 1976.) Although this classification includes

many elements in terms of criterion, it is very functional because of being government policy oriented. This classification is mainly based on types of market, but also takes into consideration industrial location as well as management organization.

Apart from the above classifications, our discussion will frequently use some other terminology like "local resources based" and "local market oriented" industries. The former relates to source of industrial inputs and the latter to outlet of industrial products or type of market. This is an operational classification in the sense that this is effective in clarifying the primary incentive in setting up new industry and in expanding existing industry.

2. INDUSTRIAL DEVELOPMENT AT THE REGIONAL AND NATIONAL LEVEL

2.1 Historical Review

(1) Independence and the First Plan

The basic structure of the Tanzanian economy, immediately after political independence, was economic dualism built up of two different economies, modern or export-oriented economy on one hand, and traditional or less monetized economy on the other hand. These economies basically differed both in economic institutions and in resources allocation pattern, and had relatively small relations between them. The relationship between them was not such as to encourage a complementary development, but to foster the growth of the modern economy closely linked with metropolitan countries at the expense of the traditional economy.

As the best remedy to get over such a colonial-type dual economy, the active industrial development policy centred around an import substitution approach was chosen from some political and economic rationalization. Firstly, industrial development is thought as the most effective measure to liquidate such a colonial-type monoculture economy. Secondly, industrialization was considered the best means to ensure higher income level than agricultural development. Thirdly, industrialization was expected to absorb more unemployed people than other policies. Finally, industrialization was conceived to generate bigger spread-effects as growth pole or growth center as ever seen in developed countries. Such an argument was the background to the First Plan, 1964/65-68/69.

At independence, Tanzania was virtually without industry, mainly due to the East Africa industrial allocation policy in the colonial days. In the years 1960-62 the manufacturing sector accounted for only 3.4 in 1963, only twenty-two thousand people were engaged in manufacturing. Naturally, the First Plan set first priority to industrial development. Industrial strategy included the following three principles:

(i) the additional processing of local primary products

(ii) import substitution of mass-produced consumer goods

(iii) the manufacture of building materials which would be in heavy demand as a result of ambitious investment program and which could be produced economically locally because of the high transport cost element.

Starting from a very low level, a high rate of growth in industrial output was achieved. With the increasing capacity created in the Frist plan period, industrial output could be expected to continue to expand at high rates well into the Second plan period. The official gross domestic product estimates indicate industrial growth of 10 per cent per annum from 1960/62-67, but industrial output was estimated to be no more than 8 per cent of gross domestic product by the completion of the First Five Year Plan.

However, import substituion started mainly with imported capital and technology, which caused new many complex problems. Foreign or alien companies selected to establish assembly-type factories relied heavily on imported materials. Their technology utilized were generally equipped with capital intensive method, so that they had small employment effects on a local labour market characterized by huge unskilled labor. It could be said that there was less linkage between these companies and local economies than colonial companies.

Also, these companies were gathered in urban area which was more advantageous to enjoy external economies, keeping away from investing in rural area. Moreover, the emphasis on sophisticated insutrial development led to relative decline in agricultural and food production. Further, the concentration on new industries gave rise to an unfavorable situation for traditional or cottage industries. This is more obvious when their relations are competitive. The agricultural sector was caught in a stagnant situation. The sectoral and geographical imbalance ievitably led to income disparity between agricultural and industrial sectors, or rural and urban area. Rural income declined relative to urban income. Rural people, 90 per cent of the total population, were exposed to a vicious circle of low productivity and low income. Further income disparity stimulated a rapid drift of rural people to towns, and, eventually, concentrations of people. However, the urban economy was by no means ready to provide full productive employment opportunities to migrants. A significant part of migrants remained unemployed in towns. The effect was the emergence of a new type of unemployment and underemployment problems in the country.

Another serious problem was the effect on external position, since these industries, in addition to being dependent on imported technology, used a high proportion of imported materials. Further, the products of import substitution industries were limited in the overseas market because other developing countries had established similar industries and, also, because these industries like textiles were the most highly protected in the industrialized countries. The eventual outcome was unfavorable effects on balance of payments, which made it more difficult to obtain capital goods and intermediate goods for further industrial development. This is even truer when the process of import substitution was completed. In this sense, to attain sustained growth, industrial strategy should have been changed.

(2) The Arusha Declaration and the Second Five-Year Plan

In order to bring about a basic transformation in such a colonial-type economic structure, the Arusha Declaration was adopted in 1967. The basic principles of the Declaration are Tanzanian socialism and self-reliance, which include nationalization of the major means of production by peasants and workers, equalization of income between agriculture and industry and between different people, and rural development for establishment of socialist society, Ujamaa village. As far as industrial development is concerned, first focus is on the development of nationalized large industries by public organization, parastatal, on behalf of peasants and workers. Second is to develop the industries which provide basic items such as food, shelter and clothing to satisfy the basic needs of life for the majority of Tanzania. The third is village industries development for rural development.

The idea of the Arusha Declaration was introduced in the Second Five-Year Plan, 1969-1974. A central concern of the Second Five-Year Plan, getting over the problems created by import substitution in the First Plan period, was to prepare industrial strategy for sustained growth. Its reply was that the increasing priority of industrial strategy should have been given to the development of basic intermediate and capital goods industries, through structural change. Basic principles of industrial strategy in the Second Five-Year Plan were as follows:

(i) To expand the range of products manufactured and lessen dependence on foreign sources of supply

(ii) To increase the manufactured element in exports

(iii) To shift trade dependence away from overseas towards internal and African markets and sources of supply

(iv) To develop managerial and technical expertise in the operation of industry and the introduction of modern technology

Two industrial groups challenged these objectives. The major role was intended to be played by the parastatal sector, the National Development Corporation, in accordance with the expansion of public control following the Arusha Declaration. The small remaining portion, only about 16 per cent of total industrial investment, was expected to be undertaken by the private sector including small industries and craft workshops. These activities were thought to have many advantages such as they require very little capital investment, they can be well met by labour intensive method, and they can be carried on the villages and small towns of the country, thus improving the quality and variety of life in the rural areas. However, the situation was severe as shown in the statement of the President:

> We shall continue to expand simple manufacturing, the processing of primary commodities, and the provision of basic construction materials; but we have now reached the stage where we must think seriously about the next and more difficult phase of industrialization.

It is a more difficult and complex task to carry out structural change, in line with increasing priority to the development of capital goods and intermediate goods industries. Against this, counter-arguments are sometimes offered:

(i) the size of the national market for basic industries

(ii) the level of technology required is high and not yet available in the country

(iii) the capital intensity of these industries is high which is a drawback in a country where capital is scarce

These questions can be refuted, but they are plausible and likely. The requirement of the next stage of industrialization is complex, so that the preparation for longer term industrial strategy will need to be based on the identification and preparation of new industries. Initially, this was expected to be ready during the first half of the Second Plan period which would provide the framework for detailed preparation of the Third Plan.

(3) Preparation of the Longer Term Industrial Strategy

After going into the Second Plan, many relevant papers were prepared to elaborate the longer term industrial strategy. To begin with, in 1971 the Party issued the Guideline (Mwongozo) which expounded the principles of management of industries on socialist lines through worker's participation. Afterward, it was further clarified by emphasizing a collective leadership of Management Committees instead of Boards of Directors.

Subsequently, in 1973 the Party issued Guidelines on Small Scale Industries which stressed the importance of establishing these industries in villages as part and parcel of developing the rural economy. Further, according to this guidelines, the priority should be given to the development of small scale industries because of the following reasons:

(i) these industries enable many more people to engage in productive activities and to provide additional income opportunities to the village farmers in the dry season

(ii) these industries will play an important role in achieving a technological revolution in rural areas

(iii) these industries are essential in the implementation of our policy of self-reliance, starting from the family, Ujamaa village, through to the nation

(iv) these industries are essential to eliminate step by step the disparity between rural and urban areas

(v) if ancillary and other small industries are developed systematically, the cost of industrial production will be reduced

Furthermore, the Guidelines revealed the unique definition of small scale industries in the context of Ujamaa socialism and self-reliance:

> A small industry is any unit whose control is within the capability of our people individually or cooperatively, in terms of capital required and know-how; it includes handicrafts or any organized activity based on the division of productive labour.

When setting the strategy for small scale industries, the following elements should be borne in mind:

(i) the utilization of our raw material resources in order to enhance their value added

(ii) the use of available technology

(iii) application of more effort than capital

(iv) provision of more services

(v) the need to produce commodities to meet the requirement of the people in the villages, districts, regions and in the country generally; and to eventually be able to export such commodities for additional income

(vi) expensive buildings are not necessarily required

The Party's Election Manifesto of 1975 clarified that industrialization should be considered as one of the most important tool for attaining self-reliance, and the emphasis must be placed on industries which utilize local raw materials. The Manifesto further stressed the importance of basic metal industries which would lay a foundation for the manufacture of machines and equipment needed in the economy, and endorsed the direction of structural change which gives increasing priority to the development of capital goods and intermediate goods industries.

Furthremore, in dissolving Parliament in 1975, the President presented the detailed list of industries which should be stressed for strengthening the future self-reliance. They are those industries which produce the basic requirement for the country such as:

(i) all the consumer goods we need, giving priortiy to such things as sufficient clothing, adequate housing and basic public services like water, schools, dispensaries, etc.

(ii) simple intermediate goods as are within our capacity in terms of skill and raw material availability

(iii) goods which we can export and thus obtain foreign exchange

(iv) products from small scale industrial units with appropriate technology instead of using sophisticated technology too expensive for our economy

However, needless to mention, the consistent and detailed explanation of the strategy framework, particularly the development framework of capital goods and intermediate goods industries, has not been clarified. This is to be included in the coming Third Five-Year Plan.

2.2 Industrial Sector in the Third Five-Year Plan

(1) General View

Since as yet the Third Five-Year Plan is not issued, it is not possible at the moment to present a general framework of the plan. Hence, the present discussion will be limited to only a few aspects of the Plan.

It is generally expected that the Third Plan will include the following elements as goals:

(i) industrial gowth

(ii) structural change

(iii) employment generation

(iv) greater equality of income distribution

(v) greater equality of regional development

(vi) worker participation in industry

(vii) increased self-reliance

Among these objectives, the highest priority will be given to structural change, in keeping with the direction identified in the Second Plan, which means the transformation of colonial-type dual economy to one of self-reliance.

As a matter of course, it is obvious that structural change will be a vital core in the plant formulation of the industrial sector as much as in the overall economy. The problem is how to define the structural change in terms of industrial planning, but this was also clarified in the Second Plan in the sense that structural change of the industrial sector will be achieved by putting emphasis on the development of basic industry. Basic industry will comprise, firstly, the industries which provide the basic needs of the people such as food processing, textiles, clothing, foot wear and building materials, and, secondly, intermediate goods and capital goods industries which supply materials and machinery equipment to other industries.

With regard to the rest of the objectives above, once a set of basic industrial activities is selected, they will be somehow spontaneously determined, depending on the choice of production technology.

In achieving structural change, there are many complex problems to be borne in mind. For this purpose, Tanzanian resources will be concentrated, in accordance with the principle of "developing Tanzanian resources to meet Tanzanian needs", on the development of basic industries which supply most of the materials necessary for modern industrial development. The second consideration is the timings both of the selected industries and of the strategy.

The former is important in the sense that the rate at which structural change can be achieved will depend on the growth in Tanzanian demand for specific commodities, the related technical requirement, economies of scale of the industries, and the coordination of linkage effects as well as the existing industrial structure which the strategy would

reduce in importance. The latter timing will be related to the balancing of the basic needs of consumer, the coordination of present and future industrial structure, and balancing of the technical requirements of production like forward linkage. In any case, timing will be important in achieving smooth structural change.

The final but most important element is the choice of technology, which will directly affect industrial growth, employment, and regional dispersion of industry. Some relationships among these objectives are rather contradictory. Generally, in most producers goods industries, choice of technology is restricted, technology is capital intensive or labour saving, and a lot of infrastructure is required which is available only in urban areas. Of course, we can have an optimum solution to reconcile these conflicting relations. This is development of small scale industries in relevant areas. Above all, the intensification of industrial linkage between small and large industries is crucial in the sense that the labour-intensive small industries will be adopted as much as possible. The choice of small industries will facilitate the spread of industrial development through the regions and the districts.

The problems of greater equality of income distribution and worker participation in industry, can be considered from many angles, but as far as income equalization is concerned, small industry development will be effective by dispersing more income opportunities over the country.

(2) Selection of Industrial Investment

On the basis of the basic industry strategy, a set of rules for selecting industrial investment will be proposed:

(i) basic industries - those which use domestic resources to produce essential commodities for consumers or domestic industries

(ii) export industries/import substituting industries - those which have ability to earn or save foreign exchange with lowest possible expenditure of local resources

(iii) small industries - those which can be carried on in small plants achieving high industrial growth, greater employment and greater regional equality, in accordance with the first two rules

These industries given higher priority can be classified into larger or national industries, district industries and village industries in terms of their size and market pattern. As a result of the Arush Declaration, the development of national industries will be the function of the National Development Corporation, especially true for capital and intermediate goods industries. In other words, the NDC has been called upon to concentrate its effort on developing basic industries such as iron and steel, metal working and engineering, chemicals and pulp, and paper and packaging, in line with long term industrial strategy. In this sense, the emphasis of the NDC will shift from light industries to heavy industries.

Long term industrial strategy (amount of public investment)

	1970	1995
food, beverage, tobacco	40%	20%
textiles, leather	25	18
wood, pater	12	15
chemicals	10	14
non-metal minerals	3	3
metals	10	30

As far as small industries are concerned, the Small Industries Development Corporation (SIDO) is to take responsibility for their development. According to SIDO's schedule for the coming five years, the major projects are as follows: 14 industrial estates, ceramics complex, leather goods complex, development of appropriate technology, training projects and so on. However there are no active projects which correspond to long term industrial strategy and basic industrial development.

(3) *Some Remarks*

The focal point of the long term industrial strategy is to carry out structural change in a sense that the main emphasis of the industrial structure will be shifted from traditional export industries and consumer import substitution to capital and intermediate goods industries. Actually, it is not an easy task but many problems await us. One of them is to attain structural change side by side with industrial growth, employment generation and geographical eqality of income. However, in many cases, these objectives are rather contradictory. For the smooth achievement of structural change, a cafeful coordination of concurrent objectives will be required. According to long term industrial strategy, a decisive solution reconciling these objectives is to adopt small scale methods of production which can utilize labour-intensive technology and can be located throughout the region.

If small scale industries will play such a vital role in the strategy, careful and deliberate small industrial policy in relation to basic industries will be required. One important point is to intensify and organize various types of industrial linkage between smaller industries and larger industries in areas of basic industry. It is sure that these policy measures will take decisive position in the structural change for the future.

2.3 The Role of Industry in the Kilimanjaro Region

As discussed in the previous section, the most characteristic point in the Kilimanjaro economy is heavy dependence on coffee production, which is concentrated in the upper land. Another feature is dense population in the limited upper land. Under these circumstances, when the population growth is considered as a dynamic factor, it is envisaged that the income generating potentiality is limited, the economy is vulnerable and unstable, and land shortage will become acute. These problems are those which the Kilimanjaro economy fact now and will face in the future.

In order to overcome these problems, generally there are four prescriptions. Firstly, to raise agriculture productivity per acre on the existing crop pattern by using methods like fertilizer and small machines. Secondly, diversify agriculture in terms of crops. For example, introduce new vegetables and fruits into the region. Thirdly, resettle some of the population to new settled areas in middle and low lands of the region. Last but not least is to introduce additional non-agricultural activities such as forestry, livestock, fishery, and small industries. Among them, small industries will be the most important.

Which prescription is most feasible and promising? In view of the dominance of agriculture in the Region, it is needless to say that agriculture should be emphasized. Even so, there are many constraints. In some areas, land is much too limited to introduce additional crops. Transmigration, regarded as a large scale and effective solution, is facing many problems such as social factors which resist a shift from a native place, the large amount of money which is required for new settlement, and the time required for such a move. In this connection, industrial development will attract much attention.

The reason why industrial development is emphasized is not confined to the pessimistic situation in the agricultural sector. Generally speaking, industrial development should be encouraged in response to economic growth. As income growth, a large share of people's demand shifts from agriculture products to industrial goods. It requires a change of economic structure inclined to industry. As a matter of fact, the Kilimanjaro Region has some backward structure in terms of industry which indicates few ties between smaller and larger industries, and a lack of producer goods industries vital for normal industrial development.

As previously discussed, the government is stressing the necessity of structural change toward a self-reliant economy in the Third Five-Year Plan. In terms of the government policy and the industrial development context, industrial development of the Region is an imperative assignment. This is more true when considering agricultural structure, lack of arable land and dense population prevalent in this Region.

3. PRESENT STATE OF INDUSTRIAL DEVELOPMENT IN KILIMANJARO

3.1 General Picture of the Industrial Sector in Kilimanjaro

(1) Overall Profile

(i) Existing Industries and Their Characteristics

There exist a few more than 36 kinds of industries in the Region of Kilimanjaro. Their specific profiles of industrial activities deducted from our field survey are shown in Table 1. Most of those industries are processing industries of agricultural and forestry primary products. When the 36 industries are categorized along the "Classification of Manufacturing Industries" in an attempt to find out specific characteristics of industrial structure, one can easily see which industries the region lacks. They are the manufacture of paper and paper products, most chemical products, glass and glass products, basic metal products such as non-ferous metal, iron and steel, and fabricated metal, and machinery and equipment. In other words, there are practically no capital goods and intermediate goods manufacturing industries and only a very limited number of manufacturing industries of durable and semi-durable consumer goods.

Most of those missing industries are, then, what are called "basic industries", basic in the sense that they can contribute to the future industrial development of the region. On the other hand, among the existing industries of Kilimanjaro, those which are most basic are the metal working industries, engineering industries and automobile workshops, which are exclusively located within the area of Moshi Township.

Thus, the industrial development of Kilimanjaro can be viewed as highly unbalanced. This would also mean the inter-industrial relationships among various industries are very much limited. Although the fact above does not necessarily imply that all those missing industries have to be established within the region, it suggests that some broad direction of the industrial development is necessary.

(ii) Developmental Stage of Existing Industries

The present state of industrial development can also be seen in terms of the historical development of the stages of the production system. Industrial production has been increased with the development of various production systems combined with technical progress as follows:

- household manufacturers
- village handicrafts
- artisans' workshops
- primitive factories
- "assembly lines and the continuous flow process"
- "semi-automatic and automatic factories"

At any stage of industrial development of a country or a region like Kilimanjaro, there exists a particular combination of all those production systems. Although it is an awfully difficult task to determine an optimal combination of the systems at any stage of industrial development, the case of Kilimanjaro shows a polarization phenominon toward a group of small scale production units (household manufacturers, village handicrafts and artisans' workshops) and toward a group of modern production lines (assembly lines and the continuous flow process, and semi-automatic and automatic factories). The former group occupies more than 90 per cent of the existing industries of Kilimanjaro. Thus, the very crucial production system, the primitive factory, which is believed to play an important role particularly in bridging the former and the latter group in many ways, is seriously lacking. A lack of industrial inter-linkage between the large and small units is quite apparent in Kilimanjaro.

(iii) Economic Indicators

One method to indicate a developmental situation of any sector is to specify some particular economic indicators. However, in developing countries fundamental data and information are lacking so seriously that no one can calculate them. Fortunately, our field survey in Kilimanjaro enabled us to solve this problem. We can now, therefore, see some characteristics of existing industries in terms of (a) the average fixed capital investment per unit undertaken in the past, (b) the average number of employees per unit, (c) the capital/labour ratio and (d) gross output of the regional manufacturing (industrial) sector through re-arrangement of data and information contained in Table 1.

First of all, the average fixed capital investment undertaken per unit is calculated at approximately Shs. 280,000 of which Shs. 150,000 were invested on machines/equipment and Shs. 130,000 were on factory and office buildings. These relatively large figures are mainly due to large modern or capital intensive industrial units such as sisal processing units, textile goods units, a plywood unit and a construction and engineering unit. When these large units are excluded from the averaging procedure, the average fixed capital investment become Shs. 115,000 of which Shs. 70,000 go to machines/equipment investment and Shs. 45,000 to premises' investment.

Secondly, the average number of employees per unit (excluding only the 4,000 employees of Tanganyika Planting Company) is approximately 40. When the total employment is adjusted by deducting all questionable estimates or the number of employees (mostly sisal estate labourers), the figure drops by nearly 15 from 40 to 26 or 27. If the large modern industrial units mentioned above are excluded the average employment figure would further decrease by more than 10.

Thirdly, the computed capital/labour ratio in terms of capital value per labourer is a little lower than Shs. 7,000, of which about 55 per cent goes to machines/equipment investment and the rest to factory and office buildings. The above capital/labour ratio, interestingly enough, shows some correspondence to the figures (Shs. 8,580) for "other necessities" and "textiles", which would be the main industrial activities of Kilimanjaro, presented in a paper prepared by Prof. J.F. Rweyemamu in 1971. When one takes into consideration the fact that the latter figures were deducted from industrial units of more than 10 employees, which are supposedly more capital intensive than without including the smaller units, one may expect that the degree of correspondence must be much closer.

The present Gorss Output of the industrial sector of Kilimanjaro, is estimated at approximately Shs. 133,690,000, based on our field survey. Assuming that our survey coverage of industrial units in terms of production volume is 70 per cent as a whole, we can obtain an approximation of total Gross Regional Output of Shs. 191 million, referring to the figures of 1970 and 1972 given from "Survey of Industrial Production".

Economic Characteristics of Existing Industries (Table-1a)

	Existing Industries	No. of Units	Fixed Investment Costs (Machines/Equipment vs. Factory Buildings)	Monthly Operation Costs	Employment	Monthly Wages/Salaries per Employee	Production per Month
1	Coffee Pulpery	4	117,650 23,000	7,940	16	267	23,000 kg
2	Rice & Maize Mill	9	19,000 6,000	2,000	3	312	13,500 kg
3	Sugar (Jaggery)	1	- -	-	100	-	27,200 kg
3'	Sugar (Refined)	1	- -	-	4,000	500	400 ton
4	Sisal Processing	6	600,000 200,000	68,000	240	303	40 ton
5	Livestock Feeds (Maize)	1	150,000 40,000	40,000	10	380	290 bags x 50 kg
6	Cotton Ginning	1	345,000 35,000	35,000	16	375	500 bales
7	Calabash Goods	1	19,000 -	3,863	11	130 (Trainees)	4,000
8	Lamp Shade	1	- -	1,400	3	350	28 units (or 2,500)
9	Mosquito Coils	1	200,000 -	60,000	105	400	250,000
10	Hide & Skin (Tanning)	1	120,000 45,000	20,830	8	625	22,000
11	Leather Goods	5	34,000 100,000	61,000	50	348	88,000
12	Saw Mill	12	93,000 46,000	39,000	30	399	68,000
13	Carpentry	13	18,000 33,000	6,900	16	425	99,000
14	Plywood	1	2.7 million 5.8 million	258,000	243	-	380,000

(Table-1b)

	Existing Industries	No. of Units	Fixed Investment Costs (Machines/Equipment vs. Factory Buildings)	Monthly Operation Costs	Employment	Monthly Wages/Salaries per Employee	Production per Month
15	Furniture	5	22,000 77,500	9,800	9	543	12,000
16	Vehicle Bodies	1	- -	5,000	12	292	6,000
17	Crates	1	500,000 105,000	125,000	42	420	170,000
18	Gypsum	1	- -	-	120	-	42,000
19	Bricks (Cement & Natural Brick)	5	3,200 -	12,000	6 (12)	414	13,000
20	Pottery (including burnt bricks)	4	500 -	-	17	250	4,400
21	Gravel	1	18,000 -	11,440	4	260	26,000
22	Tin & Black-smithing	4	5,500 2,000 - 3,000	1,000	3	-	2,000
23	Metal-Working	5	40,000 54,000	3,500	7	479	4,450
24	Engineering	2	200,000 130,000	8,500	5	720	12,000
25	Auto-Workshops	4	35,000 -	38,000	32	444	50,000
26	Bakeries	6	- 52,500	55,430	15	386	56,000
27	Tailoring	8	10,000 -	18,500	16	140	24,300

(Table-1c)

	Existing Industries	No. of Units	Fixed Investment Costs (Machines/Equipment vs. Factory Buildings)	Monthly Operation Costs	Employment	Monthly Wages/Salaries per Employee	Production per Month
28	Textile Piece Goods	4	339,000 146,000	655,000	153	530	560,000
29	Soft-Drink Bottling	1	- -	350,000	55	402	450,000
30	Sweets & Confectionary	1	200,000 70,000	-	38	391	170,000
31	Retreated Tires	1	90,000 -	140,000	15	740	100,000
32	Cooking Fat	1	150,000 25,000	530,000	45	356	-
33	Salt Grinding	1	90,000 -	-	6	500	-
34	Chemical Goods Packing	1	20,000 72,000	4,000	10	390	-
35	Soap Making	1	- 60,000	-	8	380	-
36	Construction & Civil Engineering	1	3,000,000 270,000	900,000	69	423	-

(2) Geographical Distribution of Industries

Industrial distribution in the region of Kilimanjaro is here discussed upon examining the data collected through our field survey. To visualize the distribution of industries more clearly, this problem is tackled from two angles, distribution of industries in four districts and characteristics of industrial distribution within each district.

(i) Industrial Distribution by District

Distribution of industrial units among the districts is shown in Table 2. This table, explains industrial distribution in terms of kinds of industries. In spite of the fact that the survey did not cover all industrial units, some characteristics are clearly shown. Moshi District has the highest percentage, 40.8 per cent, among the four. As the percentage of industrialization in rural Moshi is believed relatively smaller than in the rest of the districts, Moshi District may even increase its percentage rate in real terms. Rombo District and Pare District, then, follow Moshi District with 22.5 per cent and 21.6 per cent, respectively. Industrial units in Rombo and Pare are somehow equally distributed. Although Rombo District is smaller than Pare District in area, this phenomenon is quite understandable for the following reasons. First, population is quite similar in both districts. In other words, a similar amount of local demand for industrial products has long existed. Second, both districts are far from the major industrial centre, urban Moshi. Rombo is much nearer than Pare. But what counts in measuring the distance is accessibility to destinations. Although the Rombo road is all-weather road, it is not tarmac yet, while Pare has the main tarmac road through the district. Consequently, it requires similar driving time to the centres of Rombo and Pare District. The fact that both districts are far from the Moshi centre necessitated the creation of a similar number of industries in order to satisfy indigenous demand of the local population. The fourth ranked district is Hai. As Hai is a very new district, which was separated from the old Moshi District only in 1975, and as this part of Kilimanjaro has long been a large plantation farming area, it is understandable that the number of existing industrial units is quite small. In other words, Hai District is primarily within the enclave of industrial activities of urban Moshi. As a result, the survey proved that Hai District only occupies 15 per cent of total industrial units surveyed.

(ii) Industrial Distribution by Specific Resources

Classification of industries shown in a vertical manner in Table 2 takes three steps. Firstly, the whole industrial sector is broadly divided into two groups, one is "Industries Based upon Local Resources" and the other "Industries Based upon Outside Resources". This method of grouping is important in discussing future industrial development of Kilimanjaro. Secondly, these two groups are divided into six sub-groups according to specifically identified resources. The group of "Industries Based on Local Resources", then, consists of "Crop-based

Industries", "Livestock-based Industries", "Forestry-based Industries" and "Clay and Mineral-based Industries". The latter group, consistes of "Metal-based Industries" and "Non-metal-based Industries". Thirdly and finally, those sub-groups are divided once again into 36 specific kinds of industrial units.

Distribution of crop-based industries is characterized by even distribution except for the intensive sisal processing activities in Pare. This sub-group accounts for 21.7 per cent of the total industry. The live-stock industries are very small in number and exist around industrial growth poles such as Himo, Usseri and Same. There are only three tanneries in the whole region, one in Moshi Town, another in Himo (rural Moshi) and the other in Usseri (Rombo). As for leather goods, however, the statistics should be looked at with some caution. That is, self-employed manufacturers of leather goods, mostly shoe makers, have not been included in the statistics. If they are included, the number of livestock-based industries will increase substantially. This sub-group constitutes 5 per cent of total existing industries. The third sub-group of local resource-based industries, the forestry-based industries, shows some interesting feature. Saw milling and carpentry (inclusive of furniture making) activities are common in all districts and are more or less evenly distributed among the districts. Here, once again, when self-employed carpenters are introduced into the statistics (in fact, Hai's other districts), the number of forestry-based industries definitely doubles. Another point worth mentioning is that urban Moshi, as might be expected, contains more sophisticated and technologically intensive forestry-based industries such as plywood, furniture and fixtures, and crates. This sub-group accounts for 27.5 per cent. The last sub-group of the clay and mineral-based industries is very unevenly distributed. One of the main reasons for this is that they are mostly dependent upon local sources for minerals.

Commercially-exploited clay and minerals are very limited. Poterry and burnt bricks are produced in Hai and Pare. Gypsum is mined in Pare and gravel is dug in Rombo. Cement bricks are produced in Hai, Moshi and Rombo. Natural bricks are exploitable at a more intensive level if proper measures are taken in lower Rombo. The share of the sub-group is 9.2 per cent.

The first sub-group of the latter group, the metal-based industries, is fundamentally related to the level of regional industrial development, as the metal-based industries are closely tied to most of the manufacturing industries and, therefore, often regarded as the key for the future accelerated industrial development. The region of Kilimanjaro, then, needs to put more emphasis on promoting these industries. The statistics show that every low level of black-smithing and tinsmithing are practiced in Moshi, Rombo and Pare. Metal-working units are found at a rate of one unit in each district on an average. The urban Moshi metal-working unit is, needless to say, the most advanced among them. Some more sophis-

ticated metal-based industries such as engineering and auto-repairing are active in urban Moshi. This, in turn, suggests implicitly that when machines and equipment breakdown, they or broken parts have to be sent to urban Moshi industries, unless they have special workshops capable of repairing them within the industrial units themselves. This sub-group accounts for only 13.3 per cent in spite of its fundamental importance as the industrial accelerator. The other sub-group of non-metal-based industries is supposed to cover a large variety of industries. The statistics, however, can only characterize 9 industries. Baking and tailoring industries are very common in all the districts. It should be noted that veranda tailors (Self-employed tailors) are in fact countless in all the districts. Tailoring units of Rombo and Pare are of this kind in nature. Textile piece goods industries include sisal and kenal bags and garments. All the other industries listed here exist in urban Moshi, which would indicate that urban Moshi is the centre of industrial production of the region. This sub-group accounts for 23.3 per cent of the total existing industrial units of Kilimanjaro.

As a summary of the above discussion, Table-3 can be viewed horizontally. Ranking distribution among the districts by industrial categories is clearly identified. The Crop-based industries are ranked in the following order: Pare, Moshi, Rombo and Hai. The Livestock-based industries: Moshi, Hai, Rombo and Pare. The Clay- and Mineral-based industries: Rombo, Pare, Hai and Moshi. The Metal-based industries: Moshi, Pare, Rombo and Hai. When all industries are included the order becomes Moshi, Rombo, Pare and Hai.

(iii) Industrial Distribution within Each District

(a) Hai District

Distribution is now seen from the second angle mentioned at the beginning of this section, industrial distribution within each district. This can be discussed vertically in Table 2, district by district, starting with Hai. In Hai, industrial activities are quite low in comparison with the other three districts. Distribution of industrial activities of Hai is, therefore, somewhat difficult to categorize. The crop-based industries account for only two in number (or 11.1 per cent) and there does not exist any livestock industry. Forestry-based industries are relatively active and there industries are limited to 3 units (or 16.6 per cent). There is only one metal working unit (or 5.6 per cent) and this may be attributed to the fact that we did not survey self-contained workshops on large estate farms. In the field of non-metal-based industries, one bakery unit is surveyed and there are no other industries in this district. One of the most important reasons for this low level of industrial activity is, as mentioned above, that Hai has long been within the enclave of economic and industrial activities of Moshi. It is only two years since the new administrative district, Hai, was created.

(b) Moshi District

In Moshi District, we consider that it is more proper to analyse the statistics without separating the district into two sub-districts. One of the reasons for this is, as pointed out before, that industrial activity in the rural Moshi sub-district is assumed rather low. Moshi District, then, shows very distinct characteristics in its distribution of various industrial units. First, none of the clay and mineral-based industries exists. The sub-group of the crop-based industries occupies 16.3 per cent and is characterized by a super industry of Tanganyika Planting Company (TPC - sugar estate and refinery) and a sole coffee-curing industry (Tanganyika Coffee Curing Co., Ltd.). In addition, Moshi has the value-added production of animal feeds and pyrethrum products (mosquito coils, etc.). The livestock-based industries are more active than in any other districts, but only account for 8.2 per cent of Moshi industries. This, however, does not mean that their production activities are insignificant. On the contrary, both tanning units and leather goods units are quite large scale by Tanzanian standards.

In these industries, one can easily see that the technological level of processing is reasonably high. The forestry-based industries are characteristically distributed within teemselves. Saw mills are more or less similarly equipped as those in other districts except that the production scale in urban Moshi is much larger. No carpentry units are recorded in urban Moshi according to our survey. This is simply because we regarded urban carpenters as furniture manufacturers. As a matter of fact, township carpenters are producing more refined and precision products than rural carpenters. Industrial diversification, e.g. plywood, vehicle bodies and crates, is quite apprent in urban Moshi. This sub-group constitutes 26.5 per cent of Moshi's industrial units.

The first sub-group of the latter group, the metal-based industries, shows a concentration of industrial engineering and automobile repairing activities. Thus, Moshi has long been the centre of repairing and engineering activities in the Region. This sub-group accounts for 19.6 per cent of Moshi industries. The second and last sub-group can now claim an urban diversification of industrial activities. Seven kinds of industries out of the nine do not exist in rural districts (including the rural Moshi sub-district) This phenomemon may suggest some limitations as well as possibilities in the development of the industrial sector of Kilimanjaro Region. Industrial development has centred around urban Moshi owing to the fact that physical infrastructural facilities are available and the physical distribution system is well-established, with urban Moshi the very center of the distribution network. Thus, this sub-group accounts for a full 41.7 per cent.

(c) Rombo and Pare Districts

Rombo and Pare, in spite of the large difference in geographical characteristics, show slightly similar distribution patterns. The respective importance of crop-based industries is 22.2 per cent in Rombo and 38.5 per cent in Pare. The high rate of the latter can be attributed to the historical fact that Pare has been one of the sisal production centres and, therefore, it established quite a few sisal processing factories. The livestock-based industries constitute 7.4 per cent in Rombo, while there is no such industrial unit in Pare. The case of Pare would perhaps imply that livestock resources are too scarce. But as a matter of fact, Pare's livestock resources are second only to Moshi. One of the reasons for the lack of livestock-based industries in Pare is that Pare people tend to keep livestock animals only as property and not as commercial goods. There are forestry-based industries in both districts and their positions are 22.2 per cent and 11.5 per cent in Rombo and in Pare, respectively. The reason why the rate of Pare is half that of Rombo is that forest reserves are ranges and are relatively small due to climatic conditions in Same. The sub-group of the clay and mineral-based industries accounts for 18.5 per cent in Rombo and 11.5 per cent in Pare. This discrepany is mainly due to the fact that Rombo has four cement brick-making units, since people there are very keen on building cement block houses.

Three metal-based industries exist in each district. They occupy 11.1 per cent and 11.5 per cent in Rombo and in Pare, respectively. One unique characteristic is that both districts have one metal-working unit each, both of which must have emerged from the urgent necessities of local demand. As for the non-menal-based industries, baking tailoring. The variety industries in urban Moshi does not exist in either of these two districts. Hence it is possible to introduce a variety of industries oriented to local markets here. This last sub-group accounts for 18.5 per cent in Rombo and 26.9 per cent in Pare.

A vertical view of Table 3 summarizes the above discussion. Industrial activities in Hai would, then, be ranked, according to sub-group classification, in the following order: Foresty-based, Clay- and Mineral-based, Metal-based, Non-metal-based, and finally livestock-based. In Moshi: Non-Metal-based, Forestry-based, Crop-based, Metal-based, Livestock-based and Clay- and Mineral-based. In Rombo: Crop-based, Forestry-based, Non-Metal-based, Clay- and Mineral-based, Metal-based, and Livestock-based. In Pare: Crop-based, Non-Metal-based, Clay- and Mineral-based, Metal-based, and Livestock-based. Finally, when the figures are compiles at the regional level, the ranking order becomes Forestry-based, Non-Metal-based, Crop-based, Clay- and Mineral-based and Livestock-based.

Industrial Distribution by District (Table-2)

Availability of Resources	Kind of Resources	Category of Industries	Hai Survey	Moshi Township Survey	Moshi Rural Survey	Rombo Survey	Pare Survey	Total
Industries Based on Local Resources		Coffee Pulpery	1		1	1	1	4
	CROP-	Rice Mill		** 2			** 3	** 5
		Maize Mill				4	(1)	4(5)
	BASED	Sugar Jaggery			1		1	2
		Sisal Processing	1		1		4	6
	INDS.	Feed (Maize)		** 1				** 1
		Cotton Ginning					1	1
		Calabash Goods				1		1
		Lamp Shades			1			1
		Mosquito Coils		1				1
		Sub-Total	2	4	4	6	10	26
	LIVESTOCK-							
	BASED	Hides and Skins				1		1
	INDS.	Leather Goods		** 3	1	1		5
		Sub-Total		3	1	2		6
	FOREST- BASED INDS.	Saw Mills	4	2	2	3	1	12
		Carpentry	7		1	3	2	13
	FOREST- BASED INDS. (cont'd)	Plywood		1				1
		Furniture		5				5
		Vericle Bodies		1				1
		Crafts		1				1
		Sub-Total	11	10	3	6	3	33
	CLAY	Gypsum					1	1
	AND	Brick (Burnt)	2					2
	MINERAL-	" (Cement)				4	1	5
	BASED	Pottery	1				1	2
	INDS.	Gravel				1		1
		Sub-Total	3			5	3	11
Industries based on Other than Local Resources	METAL	Tin, Blacksmithing				2	2	4
	BASED	Metal Working	1	1	2	1	1	6
	INDS.	Engineering and		2				2
		Auto-Workshops		4				4
		Sub-Total	1	7	2	3	3	16
	NON-	Baking	1	1		1	3	6
	METAL	Tailoring				4	4	8
	BASED	Textile Piece Goods		4				4
	INDS.	Soft-drink Bottling		1				1
		Sweets and Confectionary		* 2				2
	NON-METAL- BASED INDS. (cont'd)	Retreated Tires		1				1
		Cooking Fat.		1				1
		Chemicals		* 3				3
		Building & Civil Engineering		2				2
		Sub-Total	1	15		5	7	28
		Total	18	39	10	27	26	120

Order of Industrial Activities (Table-3)

Industries	Hai		Moshi		Rombo		Pare		Total (Region)
Crop based Industries	4	3	2	1	3	1	1		3
Livestock based Industries	3	3	1		2		3		
Forest based Industries	6	5	6		6				6
Clay and mineral based Industries	2	2	1		4		3		1
Metal based Industries	1	2	2		3				
Non-Metal based Industries	2	4	1		2		3		5
	4	3	5		3				4
	4	1	1		3		2		2
	4	1	3		2		3		
Total (Region)	4		1		2		3		

(3) Industrial Units by Size

Definition of "size" is a major problem among economists, politicians and administrators. For purely practical purposes, it may be wise to divide the industrial sector into three kinds of industries: large-scale industries, medium-scale industries and small-scale industries. We also define that small-scale industries include handicraft and cottage-type industries. Our definition, then, taking the local situation into account, determines that large-scale industries are those which employ more than 51 employees, medium-scale industries are those which employ more than 11 and less than 50 employees, and small-scale industries are those which employ one to 10 employees.

(i) Unit Distribution by Size

Following the above definition, our survey is summarized in Table 4. The total number of small-scale industries is 58, which accounts for 48.3 per of the total industries surveyed in the region. Regarding their distribution among districts, Moshi is ranked first, Rombo second, Pare third, and Hai last. But interestingly enough, distribution among Moshi, Rombo and Pare is more or less even. This high degree of small-scale industrial activities, at least in number, confirms their relative importance in the development of the regional industrial sector. The medium-scale industries, then, number altogether 39 units, which account for 32.5 per cent. The figure decreases to a substantial degree in comparison with that of small-scale industries. Within the medium-scale industries themselves, Moshi has by far more, 48.7 per cent, than and other district Hai comes next with 20.5 per cent, and then, Rombo District with 17.9 per cent. Pare is ranked at the lowest level with 12.8 per cent. From this, one may easily observe that in the rural areas of Kilimanjaro, aciivities of medium-scale industries are much lower than urban Moshi. In statistical terms, there exist 22 medium-scale units in the three rural districts of Kilimanjaro, which account for only 18 per cent of the total industrial units surveyed. The large-scale industrial sector is once again led by Moshi (more specifically urban Moshi). Large-scale industries share 16.7 per cent of all the existing industrial units in Kilimanjaro. There are no large industries in Har, while Pare District has a fairly large number of sisal-processing industries whose activities are recently mostly slow due to low prices in the international sisal market. There exist only tow large-scale units in Rombo District, which share only 8.3 per cent of the large-scale industrial sector.

(ii) Pattern of Industrial Development by Size

Industrial development is a continuous process of expanding existing industries and establishing new industries. Although most industrialized and industrializing countries have been experiencing different types of industrial development, most countries have an industrial size distribution in which the large-scale, the medium-scale and the small-scale industries form a pyramid. If this is also to be the case of Tanzania, it is necessary that the existing small-scale industries be brought into the medium-scale industrial sector, and/or that high priority projects for medium and small-scale industries be introduced, keeping in mind that large-scale industries are quite difficult to introduce into this region due to various factors described elsewhere. For these reasons, then, when we look into Table-4, urban Moshi is found to have the most favourable pattern for industrial development.

Industries by Size (Table-4)

Number of Employees	Hai	Moshi		Rombo	Pare	Total
		Urban	Rural			
1 - 10	8	14	5	18	13	58
11 - 50	8	17	2	7	5	39
51 -	0	8	3	2	7	20
Total	16	39	10	27	25	117

(4) Ownership and Organization

Another question to be introduced during the course of industrial planning is the question, "What kind of ownership should be encouraged?" The answer has already been given by the authorities: that is, a cooperative form of industry-producer cooperative- is the one which has to be supported, promoted and eccouraged within the framework of Ujamaa socialism. This policy has long been in effect in one way or another and some effects of the policy have already become apparent.

(i) Types of Ownership and Organization

Ownership and Organization, according to our survey, can be broadly categorized into three types: parastatal, cooperative and private. Parastatal organizations are those which are owned by the Government of Tanzania and they are, to a large extent, nationalized organizations. Cooperative organizations are those which are formed and run through cooperative add collective efforts of the local people. Finally, the private organizations are those which have been organized through individual efforts and, therefore, owned by individual people. The private organizations are further sub-divided into purely individual ones and partnerships.

(ii) Distribution of Industries by Ownership, and by Specific Industries

Table 5 categorizes industrial distribution by ownership and by the specific kind of industry. Out of 26 industrial units in the crop-based industrial sector, 5 units (or 19.2 per cent) belong to the parastatal sector, 12 units (or 46.2 per cent) to the cooperative sector and 9 units (or 34.6 per cent) to the private sector. One central reason why the cooperative sector is dominant is that the authorities have long supported the establishment of posho mills in rural areas by grants, which were drawn from the Regional Development Fund of the Prime Minister's Office. The parastatal industries also occupy a relatively high ratio in comparison with those the other sub-groups. This is due to the nationalization of sisal-processing units in Pare and Hai Districts. As a result, the private ownership sector comprises only about 20 per cent. In the livestock-based industries, the private sector's activities are ranked first, sharing 50 per cent of the total livestock-oriented industries. The cooperative sector follows with 37.5 per cent. There is only one parastatal tannery unit in the region, Tanzania Tanneries Co., Ltd. With this, the parastatal sector holds a share of 12.5 per cent. Next, in the sub-group of the forestry-based industries, the cooperative sector leads the other two by its share of 50 per cent, followed by the private sector with 40.6 per cent and the parastatal sector with 9.4 per cent. The leading role of the parastatal sector can be attributed to successful re-organization of induvidual carpenters into producer cooperatives. In the field of the clay- and mine-ral-based industried, there are only 11 units altogether and of them, 7 (or 63.3 per cent) belong to the cooperative sector, and 4 (or 36.4 per cent) to the private

sector. The cooperative sector again holds a higher ratio. This phenomenon can be explained by the successful introduction of the cooperative movement in the cement brick-making industries.

The metal-based industries are dominated by the private sector with 68.8 per cent, seconded by the cooperative sector with 31.2 per cent. There are no parastatal metal-based industries in the region, which may prove some lack of penetration of governmental policy into one of the most important industries. The final sub-group, the non-metal-based industries, is headed by the private sector which shared 57.1 per cent, and seconded by the cooperative sector with a share of 39.3 per cent. There is only one parastatal industy (3.6 per cent), a sisal bag-manufacturing industry.

To sum up, let us examine the regional statistics. The aggregate statistical figures are shown at the bottom of Table-5. The parastatal sector embraces 9 industrial units (or 7.6 per cent), while the cooperative sector has 54 industrial units (or 45.4 per cent) and the private sector 56 units (or 47 per cent). The private sector is, thus, still engaged in production activities to a dominating degree. Although the Government policy to encourage the cooperative sector (and the parastatal sector) is well known, (in fact there has been a very strong diversification drive toward producer cooperatives), it should be noted that the role of the private sector will be crucial for the industrial development of the region.

(iii) Ownership Distribution of Industries by District

Ownership distribution of existing industries at the district level is shown in Table-6. A particularly interesting feature is that the cooperative sector dominates over the private sector in all the rural areas of Kilimanjaro, namely, Hai District, Rural Moshi Sub-district, Rombo District and Pare District. Moshi's Urban Sub-district is the only area where the private sector dominates over the other sectors nearly totally. Thus the government guidance of cooperative production based upon the solialist philosophy seems to have had penetrating and substantial influence on the rural population. This, however, does not necessarily mean that cooperative industries are better-managed than the private industries.

Ownership Distribution of Industries (Table-5)

Kind of Resources	Category of Industries	Parastatal	Cooperative	Private
	Coffee Pulphery		3	1
	Rice Mill			
	Maize Mill		) 7	) 2
Crop-based	Sugar (Jaggery)			2
Industry	Sisal Processing	2		2
	Feeds (Maize)			1
	Cotton Ginning		1	
	Calabash Goods	1		
	Lamp Shades		1	
	Mosquito Coils			1
		(5)	(12)	(9)
Livestock -based Industry	Hides & Skins	(1)	1	(1)
	Leather Goods		2	3
		(1)	(3)	(3)
	Saw Mills	1	5	5
Forest- based Industry	Carpentry	1	9	3
	Plywood	1		
	Furniture		2	3
	Vehicle Bodies			1
	Craftes			1
		(3)	(16)	(13)
	Gypsum		1	
Clay and Mineral- based Industry	Brick (Burnt)			
	(Cement)		) 4	3
	Pottery		1	1
	Gravel		1	
		(0)	(7)	(4)
	Tin & Black-Smithing			4
Metal- based Industry	Metal Working		4	2
	Engineering			2
	Auto-Workshops		1	3
		(0)	(5)	(11)
	Baking		4	2
	Tailoring		6	2
Non-Metal -based Industry	Textile Piece Goods	1		3
	Soft Drinks			1
	Sweets, Confectionary			2
	Retreated Tires		1	
	Cooking Fat			1
	Chemical Goods			3
	Construction & Civil Engineering			2
		(1)	(11)	(16)
	Total	10	54	56

Ownership Distribution of Industries by District (Table-6)

Types of Industries	Hai	Moshi		Rombo	Pare	Region (Total)
		Urban	Rural			
Parastatal	1	2	1	2	4	10
Cooperative	11	4	6	17	7	41
Private	4	30	3	8	5	50
Total	16	36	10	27	16	105

(5) Pattern of Industrial Growth in Kilimanjaro Region

As previously mentioned, the Kilimanjaro region's economy is still characterized, broadly speaking, by a "monoculture economy" emphasizing a coffee economy. And its industrial structure is dualistic and skewed, compared with its neighbouring regions, Tanga and Arusha.

It is essential to know whether the present structure has been chronic or has been only one stage in transition from a past colonial period to a new industrialized stage. The following analysis examines the past trend of the establishment of industrial units by using only a Directory of Industries, for 1968 and 1975, because of lack of relevant data.

(i) Four Phases of Industrial Growth

Based on the yearly production stated in the Directory of Industries, for 1968 and 1975, the present analysis suggests that the Kilimanjaro region's industrial development may be separated into four phases, namely, 1st period (1930-1935), 2nd period (1936-1955), 3rd period (1956-1968) and 4th period (1969-1975), although this classification is tentative and needs more previse analysis, some characteristics of each period are as follows.

(a) 1st period (1930-1935)

During this period, the British colonial period, Kilimanjaro's industrialization started, but this was pure colonization in that all establishments were to collect and process local primary products such as coffee, sugar, and leather, in enclaves.

(b) 2nd period (1936-1955)

During this period, additional locally abundant resources like woods, began to be exploited on a very small scale Table-7 shows that out of fourteen industrial units, six units were related to the wood industry. (See Appendix. Detailed Table)

Number of Establishments Established per Period (Table-7)

Period	I	II	III	IV
No. of Establishments	3	14	31	10
Average per Year	0.5	0.7	2.4	1.4

(c) 3rd period (1956-1968)

The 3rd period corresponds to the time from 1956 to the First Five-Year Plan. During this period, the speed of industrialization was accelerated by a number of consumer goods industries like confectionery, soft drinks, textiles etc. which were oriented to replacing imports. Most of these industries were privately owned.

(d) 4th period (1969-1975)

The accelerated speed seems to have continued up to 1968, from which time the speed of industrialization again declined as shown in Table-7, to 1.4 units per year. But, the most important point was structural change rather than an increase of units, as characterized by the Arusha Declaration, 1967.

The change concerned not only the speed but also the kind of industries. Resources-oriented industries like tanning, sisal bags, plywood, carpentry etc. began to be promoted. However, this period is quite different from the 1st and 2nd periods. These activities were established mostly by public corporations or parastatals instead of individual or foreign investors.

(ii) Summing Up

At present, in terms of "growth concept," the Kilimanjaro region is suffering somewhat from industrial stagnation. This is definitely the case, even in comparison to neighboring regions.

However, even though this is a general profile of the industrial sector of the region, we can recognize a new and steady trend of other industrial growth since the enforcement of the Villages and Ujamaa Villages Act, 1975. It is the emergence of small industrial development centred around cooperative industries.

For future industrial development in the Kilimanjaro region, these village industries (usually in the form of cooperatives) will be expected to play a major role, making every effort to break through the many constraints that they face.

3.2 Surrounding Conditions

(1) Industrial Administration System

On the basis of the government's classification of industries, the industrial policy also can be divided into three groups.

First is the policy on large and national industries. Most of this industry is under the control of public corporations such as NDC, TEXCO, TWICO, National Sugar Corporation, STAMICO, etc. However, there are some exceptions in that some large industries are still privately owned. The major national industries in the region are as follows:

NDC:	Tanzania Tannery, Tanzania Bag Corporation, East Africa Kenaf Industries.
TWICO:	Moshi Plywood
Private:	Tanganyika Planting Company, Kibo Match Corporation

In general, the management, technical and financial problems of these industries are mainly decided by the central organization. In this sense, these industries are less connected with local and regional institutions. However, according to our survey, even in large industries technical development is very weak.

The second category is district industries, which are producing a high proportion of basic consumers goods mainly for local demand. At present, most of them are privately owned and geographically concentrated in Moshi. In future, the government is intending to place them under the control of the District Development Corporation. However, at the moment, in this region, those industries under DDC are very limited.

In Kilimanjaro region, there are four District Development Corporations, namely, KIDECO (Moshi District), RODECO (Rombo District), PADECO (Pare District), and HAIDECO (Hai District). Their major activities are that KIDECO runs a bus company and coffee estate; RODECO is involved with poultry, a soft drink distributorship, and pencil manufacturing (in planning), and PADECO is involved in a cotton ginnery, oil extraction, a motel, a soft drink distributorship, and gypsum mining. HAIDECO has no business because of being very recently established. (See Table-8)

All DDCs are managed by their own board of directors in close connection with the Prime Minister's Office and regional office. As to their financial structure, 25% of their total funds is provided by PMO and the rest is financed from the National Bank of Commerce. The Small Industries Development Organization is providing technical guidance.

With respect to private small and medium industries, technical and management guidance is undertaken by SIDO, and some pricing guidance is given by a regional commercial officer. Since these industries can generally stand on their own feet, external dependence is relatively small, except for technical guidance.

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The third group is village industries including cooperative industries. Recently, these industries have mushroomed, especially because the village have been empowered to establish industry as one of their major economic activities. In fact, the government also has placed great emphasis on the development of these rural industries through various institutions.

However, a great number of difficulties await them. In spite of the government's active and intensive assistance to these industries, it is difficult to remove problems such as lack of capital, lack of technical knowledge, and poor marketing. Among them, the basic constraint seems to be lack of technical knowledge, which creates underutilization of machinery equipment, poor marketing and difficult access to finance.

Although, at present, many government efforts have been made to remove this basic constraint and to accelerate indigenous village industries, more intensive and more systematic technical guidance is required. Otherwise, these mushrooming village industries, in a short time, will perish.

Kilimanjaro DDC's Third Five Year Plan - 1976-1980/81 (Thousand Shillings) (Table-8)

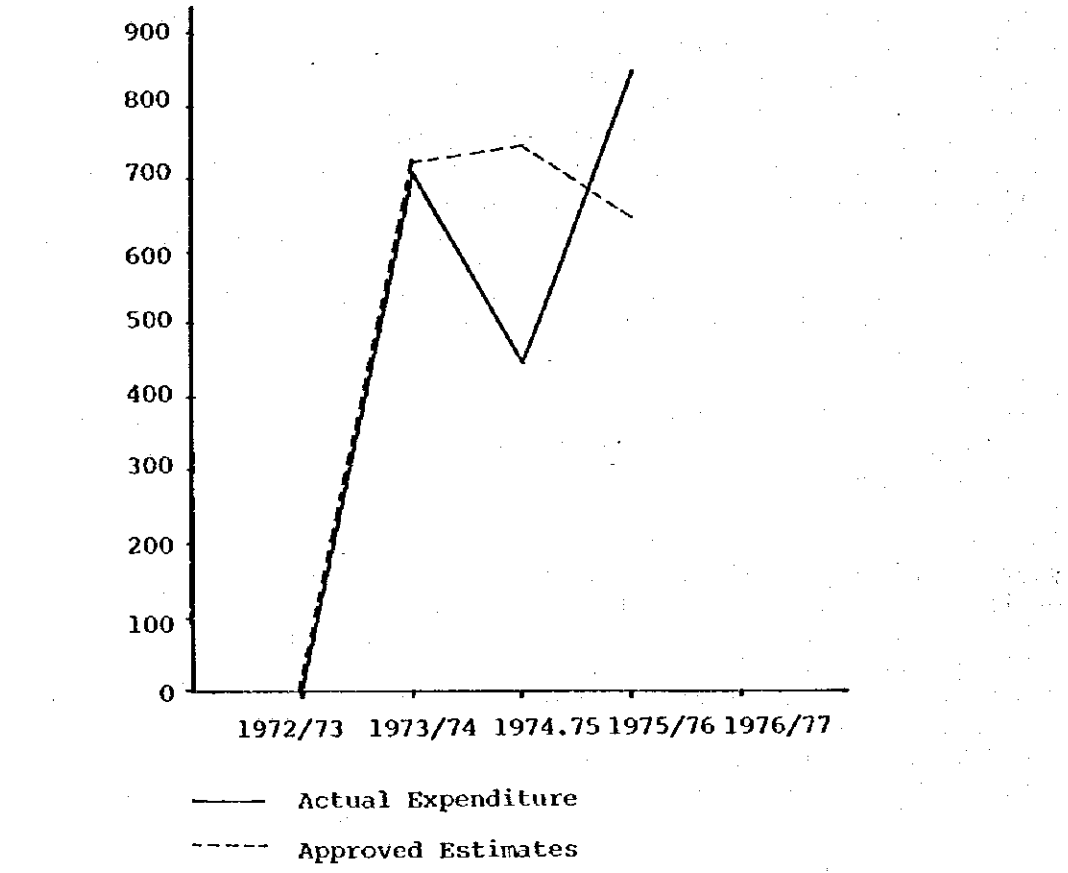
Project Name	Total Costs of Project			Exp. upto '75/'76, '76/'77 Allocation				1977/1978		1978/1979		1979/1980		1980/1981	
	Govt. Equity/ Grant	Other Sources	Total	Govt. Equity/ Grant	Other Sources	Govt Equity/ Grant	Other Sources	Govt. Equity/	Other Sources	Govt. Equity/ Grant	Other Sources	Govt. Equity/ Grant	Other Souces	Govt. Equity/ Grant	Other. Sources
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
KIDECO															
1. Goat farming	110.4	331.3	441.7	-	-	-	-	110.4	331.3	-	-	-	-	-	-
2. Garage Construction	25	75	100	-	-	-	-	25	75	-	-	-	-	-	-
3. Glue making	37.5	112.5	150	-	-	-	-	-	-	-	-	37.5	112.5	-	-
4. Saw Mills	300	900	1,200	-	-	-	-	-	-	300	900	-	-	-	-
5. Burnt Bricks	25	75	100	-	-	-	-	-	-	25	75	-	-	-	-
Sub-Total	497.9	493.8	1,991.7	-	-	-	-	135.4	406.3	325	975	37.5	112.5		
RODECO															
1. Pig Farming	146.3	438.7	585	-	-	-	-	146.3	438.7	-	-	-	-	-	-
2. Pencil Manufacture	81.5	244.4	325.9	-	-	-	-	81.5	244.4	-	-	-	-	-	-
3. Saw Mill	625	1,875	2,500	-	-	-	-	-	-	625	1,875	-	-	-	-
4. Extraction of Ava. cado Pear Oil	25	75	100	-	-	-	-	-	-	-	-	-	-	25	75
5. Wholesale Shop	500	1,500	2,000	-	-	-	-	-	-	500	1,500	-	-	-	-
Sub-Total	1,377.8	4,133.1	5,510.9	-	-	-	-	227.8	683.1	112.5	337.5	-	-	-	-
HAIDECO															
1. Furnt brick making	33.6	100.8	134.4	-	-	-	-	33.6	100.8	-	-	-	-	-	-
2. AnnahotCaffia Project	121.4	364.2	485.6	-	-	-	-	121.4	364.3	-	-	-	-	-	-
3. Transporter Project	80	240	320	-	-	-	-	-	-	80	240	-	-	-	-
4. Housing Estate	250	750	1,000	-	-	-	-	-	-	250	750	-	-	-	-
5. Lime Extraction	15	45	60	-	-	-	-	-	-	-	-	15	45	-	-
Sub-Total	500	1,500	2,000	-	-	-	-	155	465	330	990	15	45	-	-
Total	2,375.7	7,126.9	9,502.6	-	-	-	-	518.2	1,554.4	1,780.0	5,340.0	52.5	157.5	25	75

(2) Government Finanace

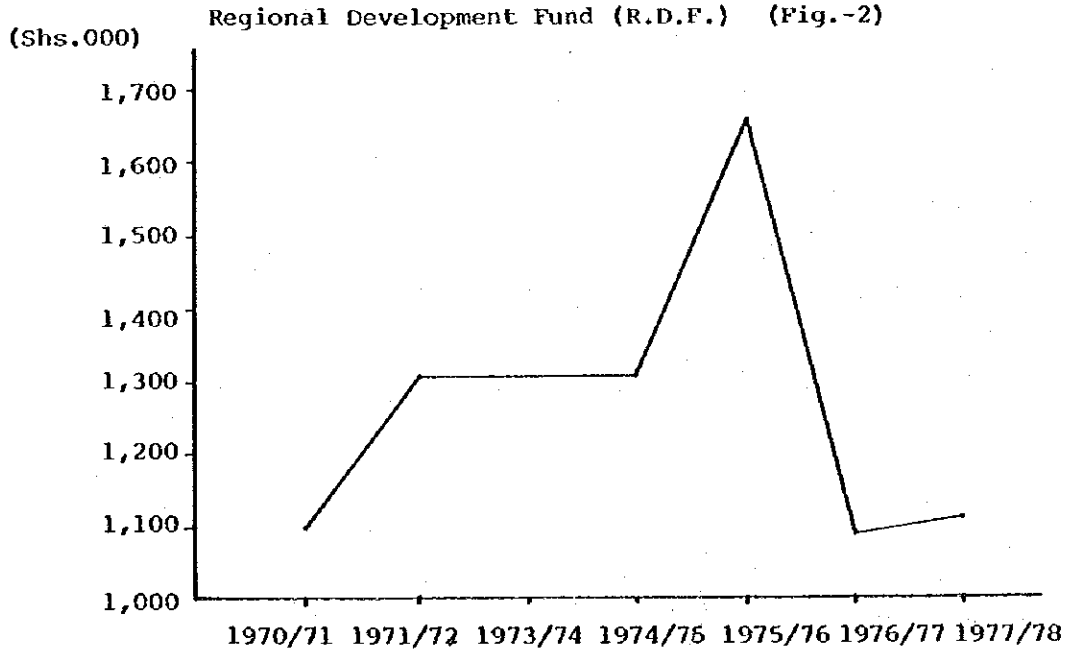
In Fig.-1, budgetary allocation for industrial development is shown. In the fiscal year 1972/73, there was no allocation at all, which is very surprising in view of Kilimanjaro's potentiality in industrial developemnt. From 1973/74 on, the budgetary allocation has been maintaining the same substantial rate of increase, especially in the approved estimates. The estimates fluctuate around 700,000 shillings. Actual expenditure, on the other hand, fluctuates widely. In 1974/75, the actual expenditure was only 60 per cent, while in 1975/76 the industrial sector overspent its estimates by 31.8 per cent. These figures, however, may not be a real problem. What is probably more serious is the percentage share in the total development budget. The percentage ranges between a high of 4.7 per cent and a low of 2.3 per cent in actual expenditure. This is additionally supported by evidence of extremely low allocations in the regional recurrent budget for the industrial sector. The percentage for it ranges from 0.08 per cent to 0.16 per cent in actual expenditure.

In Fig.-2, the RDF allocation to Kilimanjaro is shown from the fiscal year 1970/71 up to 1976/77. Since 1970/71, the R.D.F. grew up more or less steadily. But over the next couple of years, it dropped to a substantial degree. This, we feel, must be due to lack of specific regional strategy and project preparation. Although the allocated R.D.F. is not meant to be used solely by the industrial sector, once the strategy and careful preparation of projects are established, it would be advisable and feasible to utilize the presently available R.D.F., which is a little over Shs. 1 million, systematically and with special emphasis for industrial development.

Regional Development Budget of Industrial Sector (Fig.-1)



Regional Development Fund (R.D.F.) (Fig.-2)



(3) Technological Institutions

(i) Profile

Present institutions for creating industrial technicians are roughly divided into two groups, namely, formal education and non-formal education systems. The former includes the Technical Secondary School, Technical College and the University of Dar es Salaam.

For the Kilimanjaro region, there is Moshi Technical Secondary School in Moshi Town which has courses in mechanics, woodworking and automobiles. However, even though the Technical Secondary School is located in Moshi, its students are not limited to the Kilimanjaro region. Nevertheless, the location of the Technical Secondary School is very relevant for the region and surrounding area in that it can provide, to some extent, its facilities for local industries.

Therefore, when considering direct supply of technicians for the industries of the region, the role of non-formal training institutions can be important. As far as Kilimanjaro is concerned, such public technical institutions are the Post-Primary Technical School and the Rural Training Center supported and supervised by the Prime Minister's Office, the ministry of National Education and the Regional Office. In addition to them, there are training centres run by the Small Industries Development Organization (SIDO) of the Ministry of Industries.

(ii) Regional Training Institutions

The Post-Primary Technical Schools are aiming at keeping young people in villages to work for rural development by giving them some schools. There are two in Moshi District, two in Hai District, four in Rombo and four in Pare District. The subjects taught there, are, in line with rural development, carpentry, masonry and domestic science.

There are two Rural Training Centres in Kilimanjaro region (one is situated in Same, the other in Msinga, Moshi District). The kind of courses depends on the requirements of the applicants, for example, food, agriculture, livestock or domestic science. The courses are short and the number of students is not fixed. Naturally, the objective of the centre is for rural development in line with the government's policy.

At present, the SIDO training centres are situated in Usangi, Pare and Useri, Rombo. The former is dealing with pottery making, metal-working and wood-working. The latter deals with colabach products like tea pots. These training centres are expected to be very effective in training basic skills and to encourage rural industrial development.

In addition to the above institutions, there are some private training institutions. Among them, the Kilacha production and training Centre in Himo, Moshi District, is unique and promising.

They are at present specializing in making instruments for poulty hatching. They plan to expand in the future. Further, in conjunction with the Tanganyika Parents' Association (TAPA), there are two training centres in Minja, Pare District and Mashati, Rombo. Their major subjects are carpentry, automobile mechanics and maisonry. The length of the course is four years. The Kilimanjaro Youth Technical Training Centre in Mandake, Moshi Town, is managed by missionaries as is the Kilacha Production and Training Centre. This is being transformed into a secondary school, and the major subjects are carpentry and mechanics. Finally, there is the mechnics course of Marangu Farm School run by the UMCA. The YMCA is planning additional courses after the completion of a new building.

(4) *Industrial Registration and Taxation*

Industries which are registered with the revenue office are generally those which appear in the Directory of Industries and Survey of Industrial Production, which are annually produced by the Bureau of Statistics. Those industries are categorized as medium and large-scale manufacturing industries. Practically no studies, except ours, have so far been made about the small-scale industries which employ less than 10 people. Our survey revealed that most of the small-scale manufacturing units are not registered with the revenue office. This brings into light two important policy implications. Firstly, the regional authorities concerned have not had any real data and information concerning the small-scale industries so they have difficulties in small-scale industrial planning and, in turn, in implementing the plans. Secondly, the Treasury cannot lay foundations for establishing solid revenue sources from the small-scale manufacturing sector. In the latter respect, some may argue that present small-scale industries are too small to levy a corporation tax, on the ground that most of them are not making any profits or they do not even practice bookkeeping. Consequently, they may say that taxation discourages new investment of small-scale entrepreneurs. But this is false. Taxation does not exist to discourage any industrial activities but does exist to absorb a proper margin of profits for more equitable use for the economy or the people. We do not intend to discuss the meaning of taxation here. But what we would like to stress is that the revenue office does not yet have an application form for a business license, particularly for the manufacturing sector. This type of registration system is urgently be needed.

As for taxation, our concern is the other side of coin, that is, subsidization to industries to encourage investment activities - investment incentives. However, before we discuss some measures to encourage investment, let us touch upon one thing on the taxation issue. When the authorities levy any kind of tax on the small-scale industries, an ad valorem type of tax would be totally unmanageable. A unit type of tax should be recommended. As for investment incentives, there are four types of measures to stimulate investment: (1) reduction in the rate of corporate profits tax, (2) accelerated depreciation, (3) tax holidays and (4) investment credit. To compare the effectiveness of those measures is not really our business within the regional scale. However, what we have to mention finally is that the above argument is not valid at the regional level as it is the business of the central authorities.

Technical Institutions with Special Reference to Kilimanjaro Region (Table-9)

	Run By	Name	Main Location		Subject/Period of Study	No. of Students		Means of Selection/Grade Level	Purpose
GOVERNMENT SCHOOLS	PMO/Region	Post Primary Technical School	Moshi Hai Rombo Pare	2 2 4 4 12	Carpentry Maisonry Domestic Science 2 years	Moshi Hai Rombo Pare	149 65 325 309 848	Post-primary school, many applicants, somewhat competitive	to remain in village and to work for rural development
	Ministry of National Education	Rural Training Centre	Same Msinga	1 1 2	Depending on requirements of applicants, e.g. food, agriculture, livestock, domestic service 3 - 9 months	not fixed generally twenty students per class		generally, after primary school but regardless of age./ Preferably, recommendation by D.D.D.	Rural Development
	Ministry of Industry/ SIDO	Training Center (1) Usseri Calabash T.C. (2) Industrial Workshop	Usseri, Rombo Usangi, Pare		Calabash/12 Crafts months Pottery, Metal Working/3 months				
PRIVATE SCHOOLS	Missionery (Catholic)	Kilacha Production and Training Centre	Himo, Moshi		Instruments for				
	"	Kilimanjaro Youth Technical Training Centre	Mandaku, Moshi		Carpentry, Mechanics				
	Tanganyika Parents (TAPA)	TAPA Training Centre	Minja, Pare Mashati, Rombo		Carpentry Mechanics Maisonry/4 years			After primary School	
	YMCA	Marangu Farm School	Marangu, Moshi		Mechanics				under preparation

(5) Industrial Employment

As far as population in the industrial sector is concerned, no reports have ever revealed on how many people are actually engaged in the sector. The only available data have been the Industrial Survey, which, however, listed only those industries that employ more than 10 people. Our survey, fortunately, enables us to estimate a fairly accurate number for the workers in the industrial sector of Kilimanjaro.

(i) Employment in Existing Industries by Employment Group

Employment in existing industries by employment group is shown in Table-10. Table-10 is summarized conveniently according to the size of industries. The small employment group of 1 to 10 corresponds to small-scale industry. Similarly the medium employment group of 11 to 50 corresponds to medium-scale industry, and the larger employment group of 51 and more to large-scale industry. The small-scale industrial sector employs 311 employees, which are equivalent to 3.8 per cent of the total industrial employees, which is 11.8 per cent. The large-scale industrial sector has 6,970 employees, which is 84.2 per cent. This high rate of large-scale industry - or uneven distribution of employment - is largely due to the fact that the Tanganyika Planting Company (sugar estate and factory) employs 4,000 workers. When this special case is excluded from the statistics, employment distribution from the small to the large becomes 7.2 per cent, 22.9 per cent and 69.4 per cent, respectively. Even this latter case clearly declared that as far as employment absorbtion effect is concerned, the large-scale industry is far more effective. In spite of this, it is very difficult to establish new large-scale industries in Kilimanjaro by regional initiative because of the following:

(a) Large-scale industry often requires large amount of foreign currency, which is not abundant in the country.

(b) The national policy has already determined some specific goals for large-scale industrial development.

(c) Moshi has been less successful than the surrounding regions, Arusha and Tanga, in introducing and developing large-scale industries.

(d) It is quite difficult to find resources for large-scale industrial development within the region.

(ii) Employment Distribution by Industry Groups and by Types of Ownership/Management

Employment distribution by specific industries and by types of ownership /management is shown in Table-11. Distribution of employment in the crop-based industries proves that the private sector creates an overwhelming portion of employment. Out of total employment of 5,695 in the crop-based industries, the private sector accounts for 4,718 (or 82.8 per cent), the cooperative sector for 213 (or 3.7 per cent) and the parastatal

sector for 764 (or 13.4 per cent). The major reason for this heavy bias for the private sector is TPC, where 4,000 people are employed. The livestock-based industries employ 216 people which are shared by the cooperative sector with 44 (or 20.5 per cent) and by the private sector with 171 (or 79.5 per cent). Here again, the private sector dominates. In the forestry-based industries, 898 people are employed and they are fairly evenly scattered among the parastatal sector (41.6 per cent), the private sector (32.2 per cent) and the cooperative sector (26.1 per cent). The clay and mineral-based industries hold 256 employees, who are shared by the cooperative sector (58.7 per cent) and the private sector (41.3 per cent). The metal-based industries absorb 209 employees, of which 144 (or 68.9 per cent) are in the private sector and 65 (or 31.1 per cent) are in the cooperative sector. The final sub-group of the non-metal based industries employs 1,114 workers, of which 522 (or 46.9 per cent) are shared by the private sector, 372 (or 33.4 per cent) are by the parastatal sector and 220 (or 19.7 per cent) by th cooperative sector.

When the employment figures among three sectors are viewed as a whole, it is seen that out of the total employment of 8,385, the private sector accomodates 5,949 (or 70.9 per cent), the parastatal sector 1,510 (or 18.0 per cent) and the cooperative sector 926 (or 11.1 per cent). These figures clearly show that distribution of industrial units by ownership/organization does not correspond to distribution of industrial employment. Although the number of existing producer cooperatives is almost equal to that of private industries, the total number of employees in the producer cooperatives is less than one-sixth of that in the private industries. The aggregate figures together with this single comparative example tell that in spite of the fact the Government puts more emphasis on cooperative production and parastatal production, as far as employment is concerned, the private sector plays by far the more important role in employment absorption and creation.

When Table-11 is analysed vertically, the inter-industrial group distribution of employment is observed. The crop-based industries take the most important position with 5,695 employees (or 67.9 per cent) in the total employment of 8,385. Then, they are followed by the non-metal based industries with 1,114 (or 13.3 per cent). The forestry-based industries occupy the third place with employment of 898 (or 10.7 per cent), followed by the clay and mineral-based industries with 254 (or 3.0 per cent), the livestock-based industries with 215 (or 2.6 per cent) and the metal-based industries with 209 (or 2.5 per cent). This ranking order itself may have some employment implication in planning and programming projects. But more important is the fact that Kilimanjaro's industrial employment is mostly absorbed by the agriculture-based (in a broad sense) industries, while the metal-based industries, which are considered to be very basic for the future industrial development, account for the lowest amount of employment.

(iii) Employment Distribution by District

Employment distribution by district is shown in Table-12. Moshi district is divided into Moshi Urban and Moshi Rural. In the upper row, figures are sorted out simply by adding up our field survey data in each district and sub-district. According to this data, Moshi Rural accounts for 4,373 (or 52.1 per cent of the regional total employment, 8,385), which is by far the highest employment figure. Moshi Urban, then is at second place, follow by Pare with 1,452. Hai and Rombo account only for 407 and 385, respectively. The fact that Moshi Urban is not ranked first is a phenomenon peculiar.

But this is simply attributed to TPC's 4,000 employees. In addition, Pare also retains an abnormally high employment figure. This is due to 5 large sisal estates, whose employment included labourers in sisal fields. In an attempt to grasp real industrial employment, figures in the lower row are adjusted in the following manner:

(a) In Hai, the number of employees (100) working in sisal estates is deducted.

(b) 4,000 employees of TPC are deducted from the employment figure of Moshi Rural.

(c) Sisal estate labourers together with 90 casual workers in a tailoring unit (1,047 in total) are reduced from Pare employment statistics.

The adjusted figures in the lower row of Table-12 thus give a more realistic picture of employment distribution. Moshi Urban has the largest share with 1,770 employees, followed by Pare with 405, Rombo with 385, Moshi Rural with 372 and Hai with 307. Thus, Moshi Urban's high employment figure shows much higher industrial activities in comparison with other districts Rombo, Pare and Moshi Rural show very similar employment figures, and Hai is slightly behind these three districts in terms of industrial employment.

Employment by Size of Industrial Unit (Table-10)

Employment group	No. of industrial units	(%)	Total employment	(%)
1- 10	59	50	311	7 3.8
11- 50	39	33	980	11.8 8.5
51-100	6	5	419	5.1
101-500	13	11	2,551	30.8
501-	1	1	4,000	48.3
Total	118	100	8,281	100.0

Employment Distribution By District (Table-12)
(Numbers of Employees)

		Moshi			
	Hai	Urban	Rural	Rombo	Pare
Unadjusted	407	1,770	4,372	385	1,452
Adjusted	307	1,770	372	385	405

Employment Distribution of Industries by Type of Ownership (Table-11)

Availability of resources	Kind of resources	Category	No. of employees			Total
			Parastatal	Cooperative	Private	
Industries Based on Local Resources	Crop-based ind.	Coffee Pulphery	-	47	80	127
		Rice Mill Maize Mill)	-	21	3	24
		Sugar (Jaggery)	-	-	4,100	4,100
		Sisal Proccesing	737	142	420	1,299
		Feeds (Maize)	-	-	10	10
		Cotton Ginning	16	-	-	16
		Calabash Goods	11	-	-	11
		Lamp Shades	-	3	-	3
		Mosquito Coils	-	-	105	105
		Subtotals	764	213	4,718	5,696
	Livestock-based ind.	Hides and Skins	-	8	-	8
		Leather Goods	-	36	171	207
		Subtotals	0	44	171	215
	Forest-based Ind.	Saw Mills	125	67	163	355
		Carpentry	6	184	48	202
		Plywood	243	-	-	243
		Furniture	-	20	24	44
		Vehicle Body	-	-	12	12
		Crates	-	-	42	42
		Subtotals	374	235	289	898
Industries Based on Other Than Local Resources	Clays & Mineral-based ind.	Gypsum	-	120	-	120
		Brick (Burnt) (Cement)	-	15	55	70
		Pottery	-	10	50	60
		Gravel	-	4	-	4
		Subtotals	-	149	105	254
	Metal-based ind.	Tin & Blacksmith	-	-	11	11
		Metal Working	-	58	13	71
		Engineering	-	-	17	17
		Auto Workshop	-	7	103	110
		Subtotals	-	65	144	209
	Non-metal-based ind.	Bakery	-	30	32	62
		Tailoring	-	175	11	186
		Textile Piece Goods	372	-	241	613
		Soft-Drinks	-	-	55	55
		Sweets/Confectionary	-	-	38	38
		Retreated Tires	-	15	-	15
		Cooking-Fat	-	-	45	45
		Chemical Goods	-	-	16	16
		Construction & Civil Engineering	-	-	84	84
		Subtotals	372	220	522	1,114
		Grand Totals	1,510	926	5,949	8,385

(6) Natural Resources for Industrial Development

Existing natural resources in Kilimanjaro shall be divided into 6 categories; agricultural resources, livestock/animal resources, forestry resources, mineral resources, fresh-water fish resources and non-utilized waste/scrap resources. Those resources are regarded here as natural resources and considered in the context of industrial uses.

(i) Agricultural Resources

Kinds of resources: Agricultural crops are usually divided into Cash Crops and Food Crops. Cash Crops consist of coffee, cotton and cotton seed, sugar, sisal, seed beans, pyrethrum, castor, jaggery, sunflower and cardamon. Food Crops consist of banana, maize, mixed beans, fingermillets, paddy (rice), wheat, cassava dry, potato (Irish), sweet potato, vegetables, citrus fruits and other fruits. Vegetables which are commonly on a market are carrot, radish, onion and spring onion, cabbage, cauliflower, cucumber, red pepper and green pepper, okra, egg-plant, spinach, pea and tomato, while observable fruits are banana, avocado, pear, mango, papaw, strawberry, apple, grape and orange and lime (citrus fruits).

Spatial distribution: Most of the main crops are produced within the coffee and banana belt which has altitude of between 1,000m and 1,500m. Sisal, sugar and jaggery, castor, sunflower, fingermillet and cassava are produced in the lower areas of Kilimanjaro. Wheat is produced only within the area of west Kilimanjaro (present Hai District), while rice is produced in the southern Pare. Maize is most widely planted from the upper land to the lower land where long rain gives enough water for the plant.

Production and consumption: Production of marketed crops of Kilimanjaro are listed in Table-13 and -14, which is quoted from the report of agricultural sector. All those crops are normally marketed through particular channelling organization such as N.M.C., T.C.A., and Village Cooperative Societies (former primary societies). But most of the crops are consumed within local places either by farmers themselves of through the nearby open air markets. The ratio of local consumption is amazingly high, as shown in Table-13. Main reasons for this would be that most of the farmers cannot produce substantial amount of surplus, in other words they can only produce as much as they consume, and that crop prices set by the Government for those organizations are fairly low in comparison with locally prevailing market prices.

Production of Cash Crops in 1975/76 (Table-13)

Crops	Hai	Moshi	Rombo	Pare	Total
Coffee	6,025	12,053	7,952	1,041	27,072
Cotton	162	326	-	237	778
Sugar	-	49,103	-	-	49,103
Sisal	260	1,017	-	3,190	4,467
Seed Beans	800	-	-	-	800
Pyrethrum	44	-	3	-	47
Castor	31	10	-	30	71
Jaggery	-	200	-	400	600
Sunflower	20	48	-	10	78
Cardamon	1	2	0.5	29.5	33

Production of Food Crops 1975/76 (Table-14)

Unit: Ton

Crops	Hai	Moshi	Rombo	Pare	Total
Banana	78,000	140,000	85,000	16,000	319,000
Maize	10,000	8,000	6,000	4,000	28,000
Mixed Beans	700	1,000	300	500	2,500
Fingermillet	700	350	700	50	1,800
Paddy Rice	50	400	-	3,750	4,200
Wheat	6,531	-	-	50	6,581
Cassava	800	800	600	1,000	3,200
Potatoes (Irish)	6,870	80	2,500	50	9,500
Sweat Potatoes	800	1,200	800	1,200	4,000
Vegetable	1,000	1,000	400	600	3,000
Citrus Fruits	10	40	20	30	100
Other Fruits	60	50	40	300	450

Industrial utilization: When natural resources are industrialized, it involves two types of related industries; one is the input-related industries which exploit or increase resources production and the other is the output-related industries which are mostly processing industries. Our discussion from here only deals with the latter type of industries in order to avoid unnecessary

duplication of discussion of industrial utilization of natural resources.

There exist a number of agricultural processing industries in Kilimanjaro such as coffee curing and pulpery, cotton ginning, sisal processing, jaggery and sugar production, maize and rice mills and an ediable oil extruction (which is under construction in Same). Most of the other crops, vegetables and fruits are sold fresh without being processed at all. It is, therefore, quite proposable to introduce new industries based on other agricultural products such as a starch making unit from potato and sweet potato, a marmalade making unit out of citrus fruits and sugar, a tomato purey making unit and a dried fruits manufacturing unit.

In planning those new thinkable industries, our main problem is that we have never come across to learn available volume of those crops. Unless continuous supply of agricultural crops are secured, any industrial projects cannot be started. In this regard, there would be another additional problem envisaged in this region. That is, the farmers are quite well off with production of coffee and banana and most of crops which will be used for new processing industries (when established) can only be produced within the coffee and banana belt. While the coffee enjoys a very high price in the world market, it is too risky for the farmers to plant some other crops in the belt area.

(ii) Livestock/Animal Resources

Kinds of resources: As livestock/animal resources, we can only list cattle, goat, sheep, chicken and hen, pig donkey and bee. Although there are wild animal resources, as they are not meant for regualr production and consumption, we shall only touch this topic very briefly when necessary.

Spatial distribution: Cattle is distributed quite widely and equally all over the region, with characteristics that the higher the altitude is, the higher the share of dairy cows is. Chickens/hen are also found all over the region, while goats and sheep are found in the middle and lower lands. Pig-keeping is not very popular probably due to religious reasons. As for bee-keeping, Rombo and Pare are the places for it. Over the last several years, due to a severe drought, honey collection remained very low.

Production and consumption: Production of meat, poulty, milk and eggs are reproduced in Table-16 from the livestock report of IRDP. Demand for them is supposed higher than their supply which can easily be sensed from a fact that meat supply is often cut for a week or so in Moshi Town. The potential supply capacity of meat is believed to be quite high except pork, but a problem is that those livestocks are kept as a part of farmers' property but not as commercial goods. All the products are nearly totally consumed within very near production sites except milk of NAFCO in Hai District. Therefore, no specific marketing functions have ever been penetrated into the local livestock market unlike food and cash crops.

Livestock Resources by District in 1975/76 (Table-15)

Unit: Head

Kind	Hai	Moshi	Rombo	Pare	Total
Cattle	132,000	301,100	130,000	188,833	751,933
Goat	9,000	65,000	22,000	96,810	192,810
Sheep	20,000	28,500	10,500	40,211	99,211
Pig	4,000	4,185	4,000	115	12,300
Total	165,000	398,785	166,500	325,969	1,056,254

Consumption of Meat, Poultry, Milk and Eggs (Table-16)

	Hai	Moshi	Tombo	Pare	Total
Meat (kg)	852,492	1,117,166	710,440	664,479	3,404,514
Poultry (kg)	32,837	80,000	-	8,820	121,657
Milk (1,000 l.)	-	-	-	-	69,000
Eggs (dozen)	41,800	100,000	12,628	49,910	204,347

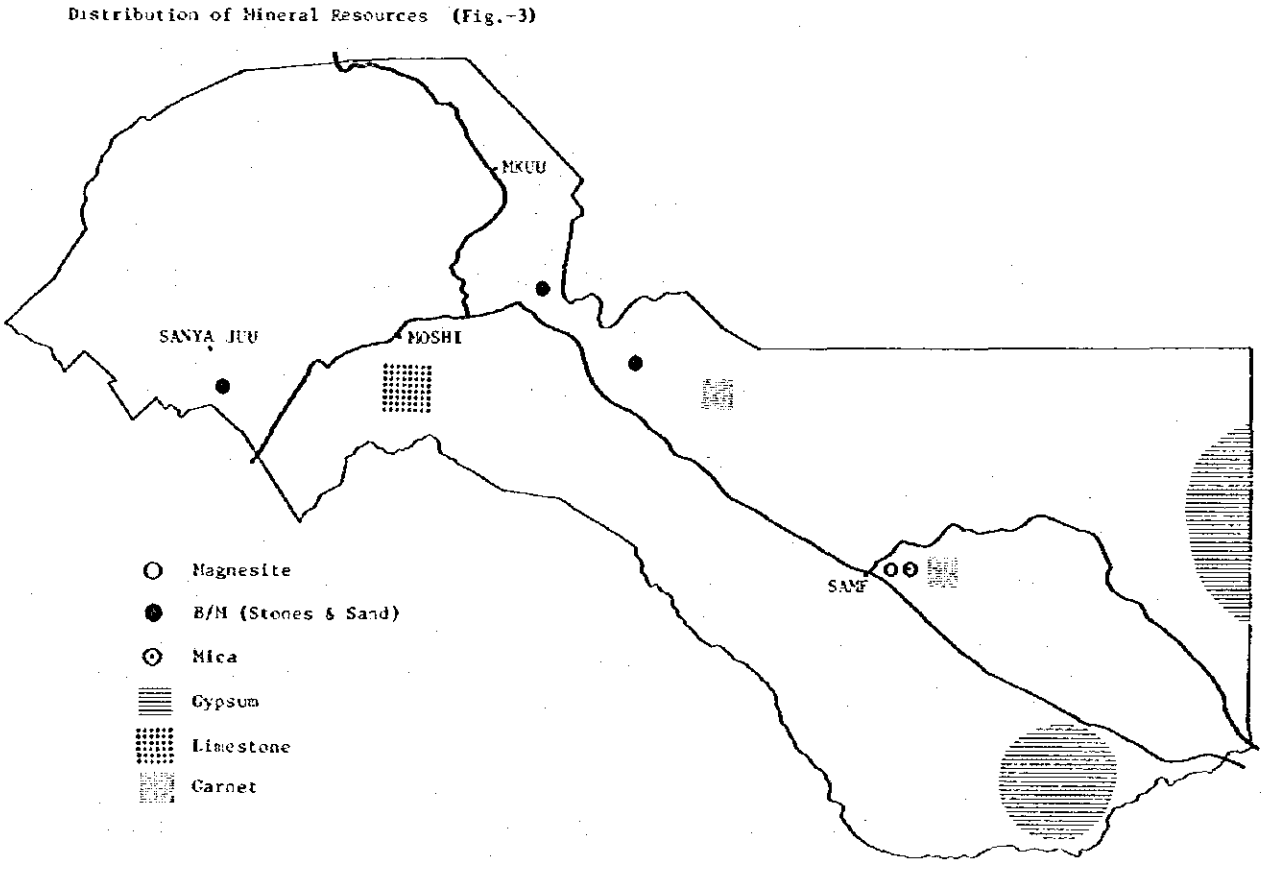
Industrial Utilization: As output-related industries, there only exist the (Hide and Skin) tanning industry and the leather products manufacturing industry. However, it is highly plausible to commence a blood-power producing unit and a bone-powder producing unit by using presently wasted livestock blood and bones, whose products may be utilised as ingredients of livestock feeds. In addition, as input-related industries, a feeds manufacturing unit shall be recommended. There exists only one checken feeds manufacturing industry in Moshi Town, but for the purpose of producing better quality livestock, much more diversified, yet local resource-oriented feeds manufacturing industries should be established. As for honey, a honey processing industry (there is one unit in Tanga which deals with honey collected in Kilimanjaro) and a honey wax industry would be recommendable, but these industries would be conditioned by a constraint of limited volume of honey wax production. In addition to the above, by utilizing wild animal hide and skin, tusks and ivory, a curio and souvenir industry would be recommeded, but there already exist a few industrial units of this kind in Moshi Town. For this industry, supply of raw materials would be one of the most serious problems.

(iii) Mineral Resources

Kinds of resources: Main mineral resources so far found in Kilimanjaro Region are sand and stone as building materials, clay, rhodolite, lime stone, mica, magnesite, rhodonite, quarts/felspar and gypsum.

Spatial distribution: Distribution of above mentioned mineral resources is shown in Fig.-3. Among 4 districts, Pare District is the richest in resources.

Fig.-3 Distribution of Mineral Resources



Production and consumption: There are three commercially exploited industries-gypsum mining in South Pare, burnt brick/pottery making units in North Pare and Hai, and the natural stone brick industrial unit in lower Rombo. Gypsum mined is sold to the Cement Manufacturing Factory in Dar es Salaam by train. Although its production is not known precisely, at one mining spot according to our survey), it is reported to be 700 tons per month per unit. The natural stone brick industry is producing bricks as building materials just like cement bricks and burnt bricks. In spite of the fact that natural stone deposits are very large, its production is fairly low class bricks per month. Apart from these three kinds of mineral resources presently under utilization, most of the rest of minerals are left idle or non-exploited.

Industrial utilization: The natural stone brick making unit and the burnt brick/pottery making unit are the only units which shall be regarded as the "manufacturing industry". The others mostly belong to the "mining" industry, where no or very little processing of raw materials is undertaken. Due to lack of intensive field investigation and surveys/researches for the utilization of un-exploited mineral resources, the Region is not in a position to say anything specific concerning mineral-based industrial development at this stage. However, there must be some possibility to establish new industrial units such as a gypsum processing industry for a variety of products - which may require a huge plant and high technology -, and a gemstone processing industry. These industrial projects would be implemented in the long run as detailed field investigations have not been carried out yet, while some of the mining industries could be developed in the short run.

(iv) Fishery Resources

Kinds of resources: The main commercial fish is Terapia (Terapia Pangani, Terapia Jipe and Terapia Esculenta), whose production accounts for easily over 98 per cent of total fish catch of the Region. There are also some cat fish (clarias) and very little of eel. In the high streams of Mt. Milimanjaro, there are trout resources only for sport fishing.

Spatial Distribution: The main and sole commercial fishing spot is Nymba ya Mungu. But there are some other self-consumption type of fishing sites in the region such as Lake Jipe, Kalimawe Lake (Dam), Lake Chala and various fish ponds, and trout streams in the high mountain.

Production and consumption: Although production of Terapia has been decreasing over the last few years as can be seen in Table-17, substantial amount of Terapia and other fresh water fish have been supplied to local market in the form of either smoked fish or dried fish. Although most of fish are consumed within the Region, some fresh fish are marketed to other regions through Dar es Salaam by the National Cold Chain Store, who has one freezing unit at the Ntmba ya Mingu Dam.

Industrial utilization: Fish processing has long been undertaken in forms of sun-drying, smoking and freezing. We may be able to regard it as a kind of processing industry. In view of the present state of fish catch and their processing, it would not be practical to think of establishing new fish processing industries such as fish canning. It should rather be wise to up-grade already existing processing activities through re-organizing processing units systematically in a concentrating and cooperative manner. In addition to this, there shall be some possibility to establish a kind of repairing shop of fishing implement and fishing boats.

Annual Fish Catch at Nyumba ya Mungu Dam (Table-17)

Unit: Ton

	1971/72	1972/73	1973/74	1974/75	1975/76
Terapia				2282.0	4575.5

Nymba ya Mungu and Other Major Fresh Waters in 1975 (Table-18)

	Fish Production in Tonnage	Value of Fish in Shillings
Nymba ya Mungu	4,575.5	10,135,300/-
Lake Victoria	46,602.2	52,935,200/-
Lake Tanganyika	64,345.3	95,387,100/-
Lake Rukwa	3,102.7	2,836,500/-
Lake Nyasa	39,265.3	64,130,500/-
Lake Kitangiri	703.9	347,000/-
Total	158,594.9	225,771,600/-

(v) Forestry Resources

Kinds of resources: Timber resources are broadly categorized into soft wood and hard wood. In the case of Kilimanjaro soft wood consists of pines and cypresses (ceders), which are mostly platned trees by the efforts of forest authorities, while soft wood consists of camphor and podo, which are natural vegetation. In addition to those four species, there are more variety of different species in the lower land, which are mostly impossible to utilize for industrial and commercial purposes.

Spatial distribution: Although forest reserves are scattered around Mt. Kilimanjaro and Pare Mountain Ranges (Rau, Kahe, East Kileo, West Kileo, Minja, Mramba, Kindoroko, Vumari, Koko,

Chambogo, Kiwilu, Kisiwani, Chongweni, Conia, Maganda, Kilanga, Chome and Kankoma), main reserves are confined around Mr. Kilimanjaro.

Timber reserves of Mt. Kilimanjaro are divided into three blocks, North Kilimanjaro, South Kilimanjaro and West Kilimanjaro, of which North Kilimanjaro produces soft wood (pine and cypress), South Kilimanjaro produces hard wood only (podo and camphoe), and West Kilimanjaro produces both hard wood and soft wood. In addition, Pare Mountain Ranges produce hard wood only.

Available volume and consumption: The timber inventory of Kilimanjaro is approximately 5.2 million m^3, out of which 20,378 m^3 are removed from the reserves in 1975. As, in this latter figure, removals undertaken among villages where private ownership is preserved are not included, the real removals must be quite larger in volume than the appeared 20,378 m^3. Although it is not compiled statistically a share of hard wood and that of soft wood, it is believed that hard wood removals would share themselves more than soft wood removals.

Even if the above qualification in real removals is taken into account, it looks that the timber inventory is large enough for the future timber consumption. But it is not true. Because, when we estimate volume of merchantable timber, it is generally assumed that only 20 - 30 per cent of total timber inventory can be utilized and the rest of it has to be untouched for various purposes such as water conservation, land conservation and ecological preservation. If we assume further that the life span of a tree is 50 years, it can only be justificable to remove 30,000 m^3 per annum, provided that reafforestation is continuously undertaken.

Thus, as shown in Table-19, there is a danger that actual timber removals exceed the upper limit of real timber availability.

Timber Inventory, Removals and Justificable Volume of Removals of Kilimanjaro in 1975 (Table-19)

Timber Inventory	Timber Removals	Justifiable Volume of Removals
5,159,365 m^3	20,378 m^3	20,000 m^3 - 30,000 m^3

Industrial utilization: Logs are industrially utilized in two ways. One is that they go straight to manufacturing factories such as a plywood unit and a match manufacturing unit. The other is that they go to local saw mills, where they are cut into different sizes, which, in turn, be sold to various manufacturers, carpenters, building materials manufacturers and so on.

Although wood seems to be utilized to a maximum extent, there would be some more room for industrial utilization. One of the possibilities may be a briquette manufacturing project, which mainly utilizes saw dust as raw materials.

(vi) Non-utilized Waste/Scrap Resources

Kinds of resources: This category embraces a variety of resources which are presently abandoned or wasted. Keeping in mind the scarcity of existing natural resources in Kilimanjaro, re-vitalization and re-utilization of presently abandoned or wasted resources should draw high attention in planning the industrial development. Observed resources are scrap metals such as metal sheet, steel bar, cast iron and other non-ferous metal items (which are mostly obtained from scrapped cars, machines and equipment), saw dust and scrap wood easily obtained at most of the saw mills, bagasse, sisal waste, used paper, used heavy oil such as engine oil and lubrication oil, rice bran and wheat bran, maize cog, scrap leather and kapok.

Spatial distribution: Most of those resources are scattered to where there are related industries such as saw mills, sugar and jaggery manufacturing units, sisal estates, and auto-workshops and petro-stations, maize and rice mills and tanneries. Spatial distribution of those existing industrial units has already been discussed in the early sub-section of this chapter and is shown in Map.

Available volume: Availability of the resources is not known by any rigid standard. But in general volume of available resources is believed to be substantial. Take scrap metals, for example, our observation is that they can be supplied to a small forging unit and also a small foundry unit for at least 5 years.

Industrial utilization: For the future industrial utilization of these resources, the following industries would be considered:

(a) Scrap metal --- a foundry unit, a forging unit and a metal sheet processing unit.

(b) Saw dust and scrap wood --- an egg-shaped briquette making unit, and a charcoal making unit.

(c) Bagasse --- a livestock feeds unit, a paper manufacturing unit (with sisal waste).

(d) Sisal waste --- a paper manufacturing unit (with bagasse).

(e) Used oil --- a oil re-vitalization unit.

(f) Rice bran, wheat bran and maize cog --- a livestock feed unit.

(g) Scrap leather --- a curio products unit.

4. MAJOR CHARACTERSTICS AND PROBLEMS ENVISAGED THE INDUSTRIAL SECTOR

4.1 Employment

It has often been pointed out by quite a large number of planners, regional and district officers, and some scholars that the industrial activities in Kilimanjaro are basically, like most of other regions of Tanzania, conducted by "the farmer with an industrial side job", and, therefore, the real number of industrial employees who live solely on their own industrial earnings is much smaller than is frequently shown by various survey and statistical results. The present state of employment presented earlier does not answer this proposition. In other words, it does not explain exactly how the employment structure is formed within the industrial employment itself. Fortunately, an additional analysis of our field survey reveals fundamental characteristics of employment structure by showing the comparative weight of permanent, casual and technical (skilled) employees.

(1) Employment Structure within the Industrial Sector

Statistics of the employment structure compiled through our survey are presented in Table-13. The total number of employees is the sum of permanent and casual employees, and technical employees are included within the number of permanent employees. Out of a total employment of 3,930 (the adjusted total), permanent employment accounts for 66 percent (or 2,592 in number) and casual employment for 34 percent (or 1,338 in number). A similar tendancy is observed when this regional level analysis is separated into two groups, Moshi Urban and Rural Kilimanjaro (including Moshi Rural, Hai, Rombo and Pare). In Table-14, the employment structures of Moshi Urban and Rural Kilimanjaro are shown. The share of casual labourers in the total employment of Moshi Urban is slightly lower than that of Rural Kilimanjaro, while the number of technical men in Moshi is twice as many as in many areas of Kilimanjaro. This high ratio of casual employment would be characterized from both the demand side and the supply side of the labour market.

The demand side claims that the entrepreneur is reluctant to employ casual labourers permanently due to the following reasons: (a) their skill is very low and often none; (b) their workmanship is very irregular and not reliable; (c) casual labourers are much cheaper than permanent employees; (d) as the entrepreneur does not expect high skills from casual workers, there is no harm to production when he replaces casual labourers and it is not difficult to dismiss them when business falls off; (3) consequently, there is no desire on the part of employers to bring up skills of casual workers and employ them permanently. The supply side, on the other hand, does not have much to claim, it rather states objective supply conditions as follows: (a) the supply of labour is very high due to high population over the last several years; (b) in spite of high availability of industrial labour, its quality and level of skill are not known precisely, but believed to be fairly low; (c) during the non-agricultural dry season, abundant unemployed and underemployed labour floats to both rural industries and urban industries, the latter causing a problem of seasonal urban migration; and (d) consequently, the labour force has to accept casual labour conditions.

The problems involved above should first be tackled by up-grading the skills and industrial minds of present and potential labour forces in the region. Then, the demand side would change its attitude toward casual workers and the relationship between demand and supply would become a virtuous circle.

(2) Implications of the Present Structure

The large share of casual employment together with the above arguments of the labour market indicates that the real industrial population is much smaller than the apparent total. It may also insinuate implicitly that quality of labour would be fairly low, as casual employees can be characterized as non-skilled, manual workers, and agricultural activities of the region overwhelmingly dominate industrial activities. The former point of the last statement would be strengthened with the evidence that only 184, or 4.7 percent of the total employment, belong to a group of skilled manpower. The figure may be lower if we set specific criteria for evaluating their skills and test them. The evidence for the latter point of the same statement can also be seen clearly in Table 15. In it, one of the questionaire items of our survey, "Do you have any other source of income other than running the industrial unit?", is summarized by compiling "Yes" and "No" answers given by all the units interviewed. At the regional level, out of 116 answers, 66 or 57.4 percent gave "Yes" answers, which means that they are the farmers with an industrial side job or industrial workers with side jobs (mostly in agricultural farming), while the "No" answer accounts for 50 in number of 43.1 percent, implying that they are literally the real solely-specialized industrial workers without any side jobs. In this connection, an additional look into a breakdown of statistical data between Moshi Urban and the rural areas as a whole (Moshi Rural, Hai, Rombo and Pare) gives more distinct and interesting results. In Moshi Urban, 88.9 percent (or 32 out of 36 units) of industrial workers answered that they are not engaged in any other jobs for additional income, while 77.5 percent (62 out of 80) of rural industrial workers replied that they have some other side jobs (or seemingly sometimes main jobs) such as farming (most commonly), shops, bars and agent works. From this, it should easily be argued that industrial development in a real sense is led much more by Moshi Urban than Rural Kilimanjaro.

Through the above discussion, the statement made at the beginning of this section was proved to be true except in the case of urban industrial workers. Three specific problems are confirmed: the high sharing ratio of casual labour force in industrial activities; low availability of skilled manpower; and the comparatively low level of marginal income earnings of the industrial sector (especially the rural industrial sector) against those of the agricultural sector.

Employment Structures (Table-13)

Kind of Resources	Category of Industries	Employment Characteristics			Total			Adjusted total		
		Permanent	Casual	Technical	Permanent	Casual	Technical	Permanent	Casual	Technical
Crop--based Industries	Coffee Pulpery	38	89	0						
	Rice and Maize Mill	22	6	0						
	Sugar	4,080	20	0						
	Sisal Processing	769	430	(24)						
	Feeds (Livestock)	10	0	0	4,981	618	(24)	981	618	(24)
	Cotton Grinning	3	13	0						
	Calabash Goods	11	0	0						
	Lamp Shade	3	0	0						
	Mosquito Coil	45	60	0						
Livestock based Industries	Hide & Skin	5	3	(4)	51	170	(7)	51	170	(7)
	Leather Goods	46	167	(3)						
Forestry based Industries	Saw Mill	256	99	(7)						
	Carpentry	146	56	(17)						
	Plywood	223	20	(80)	694	204	(111)	694	204	(111)
	Furniture	33	11	(5)						
	Vehicle Body	4	8	(2)						
	Crates	32	10	0						
Clay & Mineral -based	Gypsum	120	0	0						
	Brick	33	37	0	213	41	(0)	213	41	(0)
	Pottery	60	0	0						
	Gravel	0	4	0						
Metal-based Industries	Tin & Blacksmith	8	3	(6)						
	Metal Working	63	8	(12)	170	25	(25)	170	25	(25)
	Engineering	9	0	0						
	Auto Workshop	90	14	(7)						
Non-Metal based Industries	Bakery	73	19	0						
	Tailoring	39	147	(3)						
	Textile Piece Goods	256	45	(12)						
	Soft-Drink Bottling	40	15	0						
	Sweets & Confectionary	8	61	0	483	350	(17)	483	280	(17)
	Retreated Tires	15	0	0						
	Cooking Fat	25	20	(2)						
	Chemical Goods	11	13	0						
	Construction & Civil Engineering	46	30	0						
	Grand Total				6,592	1,408	(184)	2,592	1,338	(184)

(Table-14)

Moshi Urban	P	1,233	69.1%
	C	552	30.9%
	T	(121)	
Rural Areas	P	1,359	63.4%
	C	786	36.6%
	T	(63)	
Total	P	2,592	66.0¥
	C	1,338	34.0%
	T	(184)	

"P" stands for "Permanent"
"C" stands for "Casual"
"T" stands for "Technical"

Do You Have Any Other Sources of Income Besides Running the Industrial Unit? (Table-15)

Availability of resources	Kind of resources	Category of industries	Hai		Moshi Urban		Moshi Rural		Rombo		Pare		Region	
			Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Industries Based on Local Resources	Crop-Based Ind.	Coffee Pulpery	1	-	-	-	1	-	1	-	-	1	3	1
		Rice & Maize Mill	-	-	1	-	-	-	4	-	3	-	8	0
		Sugar	-	-	-	-	1	-	-	-	1	-	2	0
		Sisal	1	-	-	-	1	-	-	-	1	3	3	3
		Feeds	-	-	1	-	-	-	-	-	-	-	1	0
		Gotton Ginning	-	-	-	-	-	-	-	-	1	-	1	0
		Calabash Goods	-	-	-	-	-	-	-	1	-	-	0	1
		Lamp Shade	-	-	-	-	-	1	-	-	-	-	0	1
		Mosquito Coil	-	-	-	1	-	-	-	-	-	-	0	1
		Subtotal	2	0	2	1	3	1	5	1	6	4	18	7
	Livestock-Based Ind.	Hide & Skin	-	-	-	-	-	-	1	-	-	-	1	0
		Leather Goods	-	-	1	1	-	1	-	1	-	-	1	3
		Subtotal	0	0	1	1	0	1	1	1	0	0	2	3
	Forest-Based Ind.	Saw Mill	3	1	-	2	1	1	2	1	1	-	7	5
		Carpentry	6	1	-	-	-	1	2	1	2	-	10	3
		Plywood	-	-	-	1	-	-	-	-	-	-	0	1
		Furniture	-	-	1	4	-	-	-	-	-	-	1	4
		Vehicle Body	-	-	-	1	-	-	-	-	-	-	0	1
		Crate	-	-	-	1	-	-	-	-	-	-	0	1
		Subtotal	9	2	1	9	1	2	4	2	3	0	18	15
	Clay & Mineral-Based Ind.	Gypsum	-	-	-	-	-	-	-	-	1	-	1	0
		Brick	2	-	-	-	-	-	4	-	1	-	7	0
		Pottery	1	-	-	-	-	-	-	-	1	-	2	0
		Gravel	-	-	-	-	-	-	1	0	-	-	1	0
		Subtotal	3	0	0	0	0	0	5	0	3	0	11	0

Availability of resources	Kind of resources	Category of industries	Hai		Moshi Urban		Moshi Rural		Rombo		Pare		Region	
			Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Industries Based on Other than Local Resources		Tin & Black-smith	-	-	-	-	-	-	2	-	1	1	3	1
		Metal Working	1	-	-	2	-	1	1	-	1	-	3	3
		Engineering	-	-	-	2	-	-	-	-	-	-	0	2
		Auto Workshop	-	-	-	3	-	-	-	-	-	-	0	3
		Subtotal	1	0	0	7	0	1	3	0	2	1	6	9
		Bakery	1	-	-	1	-	-	0	1	3	-	4	2
		Tailoring.	-	-	-	-	-	-	3	1	4	-	7	1
		Textile Piece Goods	-	-	-	4	-	-	-	-	-	-	0	4
		Soft Drink Bottling	-	-	-	1	-	-	-	-	-	-	0	1
		Sweets & Confectionary	-	-	-	1	-	-	-	-	-	-	0	1
		Retreated Tires	-	-	-	1	-	-	-	-	-	-	0	1
		Cooking Fat	-	-	-	1	-	-	-	-	-	-	0	1
		Chemical Goods	-	-	-	3	-	-	-	-	-	-	0	3
		Construction and Civil Engineering	-	-	-	2	-	-	-	-	-	-	0	2
		Subtotal	1	0	0	14	0	0	3	2	7	0	11	16
		Total	16	2	4	32	4	5	21	6	21	5	66	50

4.2 Financing

It has been discussed that the Kilimanjaro region has been receiving a very small proportion of finance for equipment investment through major banks, that and the demand for working capital also is showing a downward trend even though the present level is relatively high.

Here, to begin with, the financial demand of industries in Kilimanjaro will be discussed based on the data collected by our survey. Subsequently, the causes of the great gap between supply and demand will be treated in detail.

(1) Financial Demand by Large and District Level Industries

(i) Demand for Equipment Investment

Larger Industries: As far as large or parastatal industries are concerned, their finances for equipment investment are completely and directly controlled by the central government, so this problem should be discussed in terms of nation-wide fund allocation.

However, in the context of the Kilimanjaro region, there remains the problem of why the region has not received as much fund allocation as Arusha and Tanga which enjoy the same market size as Kilimanjaro. For this case, the following explanation could be possible:

(a) Kilimanjaro is relatively wealthy in terms of GRDP per capita, so that not as many funds have been allocated because of the government policy to equalize the regional income level through industrial allocation.

(b) Kilimanjaro is deeply dependent on the coffee economy, and is relatively less endowed with industrial resources which can attract and induce large investment.

District Level Industries: The present discussion will be concentrated on district and village level industries.

According to the our survey, the district level industries do not have so many complaints about financing and do not need much financial assistance, whereas village industries have an acute need for financial support. The reasons why district industries do not have much dependence on outside funds, could be as follows:

(a) Since their business is fairly profitable, they can finance their equipment investment by themselves if necessary.

(b) They are reluctant to expanding their business because raw materials and spare parts are not easily obtainable and business atmosphere is not favourable for them.

(c) Some industrialists belonging to certain ethnic groups which traditionally tend to depend on their own communities for financing.

(ii) Demand for Working Capital

Table-17 indicates that NBC lending for manufacturing industries in the region is absorbed almost 70-80% by parastatals and the rest by private industries, mainly Tanganyika Planting Company and District level industries. An interesting fact is that although the private sector's share has been declining since 1974, the local industries' share has been gradually increasing, which means that district level industries have been well treated by the Bank. This fact supports the result of our survey that there are not so many financing problems.

From the above observations, we may conclude as follows:

(a) As far as the parastatals are concerned, it can not be said that financing is a bottleneck to expanding their activities, even though a deep discussion of this problem is beyond our analysis. However, if any problem does exist, it is a problem of the central government.

(b) As for financing of district level industries, it can not be said that financing is a serious obstacle for their development. Rather, the problems would be non-financial constraints such as lack of technical skills, shortage of raw materials, difficulties in obtaining spare parts, lack of industrial linkage, etc.

In this context, it can be said that the financing problem of the region can be mainly related to that of village industries. This problem will be further discussed in the following section.

(2) Financial Constraints in Village Industries

The problems of financing in village industries can be boiled down to two main factors, namely, lack of creditability on the borrower's side and lack of capability on the bank's side.

(i) Lack of Creditability

Generally speaking, creditability or credit-worthness of borrowers is derived from two elements - the Managerial capability of industrialists and security or collateral security. As far as management capability is concerned, it is a serious problem for village industries, which will be fully discussed in the section 4 of this chapter.

With respect to security, the problem is not easy to solve. Generally, the most ordinary items for security are real property like land and buildings. But in Tanzania land has not been and is not expected to be a major security item partly because the marketability of land has been very limited due to the traditional land system which restricts transferability among different ethnical groups. Buildings also are more or less in the same position as land.

Machines also cannot act as good security because maintenance is inadequate. Therefore, Banks ask borrowers for guarantees by third persons or public institutions like SIDO. However, since the guaranteeing systems or institutions have not been properly developed, borrowers may again face difficulty locating proper guarantors.

(ii) Lack of Lending Capability

Financial institutions have recently placed an increasing emphasis on development of small industries and on diffusion of industries in rural areas. TRDB is particularly emphasizing this, and the NBC also has been heavily involved in small industries development through crop income mobilization and the hire purchase scheme by its subsidiary, the Karadha Company. Also, SIDO has established the special hire purchase scheme to develop small industries. Even the TIB has a special fund for small industry development as previously mentioned.

However, there are many problems to be solved before these funds and schemes can be satisfactorily utilized. Some of them can be attributed to the banks. At present, in the case of Kilimanjaro, only the NBC has branches even though the network does not fully cover the whole region, rather concentrating in Moshi Town as shown in Table-18.

TRDB has one branch in Moshi with as few as five staffmembers among whom three are acting. SIDO also has a regional office but the staff is extremely limited. Neither TIB nor the Karadha Company has any branchs but NBC's Mawenji Branch in Moshi functions as an agent for the Karadha Company.

From this situation it may be seen that the banks lack accessibility to potential borrowers compared with their responsibilities including not only lending activities but also project finding, project formulations and technical and management guidance. The latter problems are especially crucial.

The final problem may be that of capability and efficiency of the bank staffs, a problem which is common to all economic activities of the country. Since the Arusha Declaration, sufficient time has not passed to bring up proper qualified manpower. Therefore, even though many projects and schemes are prepared, their realization may not be easy. How to overcome it is our problem.

Financial Demand Survey by Industry Group (Table-16)

	National Level Industry			District Level Industry			Village Level Industry		
	Parastatal	Foreign controlled	Total	Private Moshi	Cooperative Moshi Uuban	Total	Private Rural	Cooperative Rural	Total
"Yes"	33%	100%	40%	18%	67%	24%	88%	72%	76%
"Yes"	3	1	4	4	2	6	14	33	47
"No"	67%	0%	60%	82%	33%	76%	12%	28%	24%
"No"	6	0	6	18	1	19	2	13	15
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total	9	1	10	22	3	25	16	46	62

Source: Our own questionnaire survey.

"Yes" shows that there is financial problem, and vice verse.

NBC Lending for Manufacturing Industry in Kilimanjaro Region (Table-17)

	1973		1974		1975		1976	
	S	V	S	V	S	V	S	V
Public Sector								
Govt. community organization								
Parastatals	76.7 7,850	85.8 7,695	69.0 8,900	62.6 8,877	74.2 12,500	68.0 7,688	66.7 13,000	76.3 10,544
Cooperative			0.2 6	6				
Ujamaa Village			0.4 52	0.4 52	0.2 33	0.3 30	0.3 43	0.3 35
District development cooperation			0.4 50	0.3 40	0.3 50	0.3 36	0.4 100	0.5 64
Subtotals	76.7 7,850	85.8 7,695	79.0 9,008	63.3 8,475	75.2 12,583	68.6 7,754	67.4 13,143	77.1 10,643
Private Sector								
Local	13.4 1,372	14.1 1,264	14.5 1,890	11.3 1,513	12.8 2,149	16.0 1,808	14.6 2,854	18.4 2,545
Foreign controled	9.8 1,000	-	15.5 2,000	25.4 3,381	12.0 2,000	15.4 1,739	18.0 3,500	4.5 623
Others	0.1 10	0.1 6						
Subtotals	23,3 2,382	14.2 1,270	30.0 3,890	36.7 4,894	24.8 4,149	31.4 3,547	32.6 6,354	22.9 3,168
Grand Total	100 10,232	100 8,965	100 12,898	100 13,369	100 16,732	100 11,301	100 19,497	100 13,811

NBC Lending by Branch in Kilimanjaro (Table-18)

	1973		1974		1975		1976	
Rombo	-	-	13	7	9	3	63	28
Same	4,522	2,244	6,444	3,933	7,926	3,671	722	560
Kibo	124,850	126,640	147,341	99,121	238,408	167,381	294,335	228,016
Boma	15,139	11,034	41,811	32,981	47,115	48,030	57,322	31,410
Mawenzi	1,404	961	3,814	2,913	3,078	2,528	3,248	2,142
Totals	145,915	146,879	199,423	138,955	296,587	221,613	355,690	262,156

4.3 Production Equipment and Maintenance

The following analysis of production technology is based on the industrial classification such as large or national industries, urban small and medium industries (district industries), and village industries. The assessment of the level of production technology is made from both absolute level of present production equipment and the situation of machinery operation including maintenance and spare availability.

(1) Large industries

This category includes public and private large industries such as sisal and coffee estates, tanneries, wood working, etc. The main production lines of these industries are equipped with all imported machines. Some factories are run in a two-shift system. The production has been satisfactory in the sense that product quality corresponds to production equipment.

(i) Maintenance System

According to our survey, the big problems are with maintenance and spare availability, which lead to under-utilization of machinery/equipment. Some problems are:

(a) The machinery/equipment cannot be operated due to the lack of spare parts.

(b) Spare parts are not durable because of improper materials.

(c) The factories do not have enough manpower or facilities for proper maintenance.

(d) There are no cooperative firms in the region which have enough technology capable for providing maintenance service to larger industries.

These problems are not independent, but interrelated. The requirements of spare parts are accelerated because of improper maintenance and improper material quality of spare parts.

For example, in one factory, a gear was badly misformed. This is not because of ordinary use, but because of un-fitness of the material of the gear and overuse above the endurance limit of the gear. In another factory, there was a broken-down diesel truck because a crank shaft bearing was burnt out. This was due to neglecting the regular provision of engine lubrication oil. In a third factory, a motor for power of a machine was broken down because a bearing was overheated. This resulted from the improper repair of the motor on a previous occasion.

The main reasons for these break-downs are due to non-practice of periodical or daily check ups, inadequate reparing, and low material quality of some spare parts. Above all, regular maintenance is crucial. In large industries, the breakdown of one machine will create big effects upon the other machines. Therefore, early detection of problems and the early repair of machinery are important factors in sustaining economic activities of large firms.

(ii) Self-contained Work Shops

Although most large firms have their own workshops for maintenance and reparing, their equipment and facilities are very limited. Hence, they cannot cope with all requirements. Then it is natural that they will seek the assistance of outside relevant firms for maintenance and reparing. However, for these purposes, some improvements in large industries are needed as follows:

(a) To set a clear division between inside orders and outside orders.

(b) Outside orders should be placed after preparation of drawing sheets of spare parts and an identification of material quality.

(c) To identify a time to manufacture machine parts so as to put proper cost and price on outside orders.

(d) To clarify the technological conditions of the factory by setting technology standards and checking standards in the factory.

(e) To plan an optimum stock of spare parts for proper maintenace.

The arrangement of such conditions will enable large factories to order spare parts from outside firms and to facilitate good maintenance. Eventually, it will encourage the development of small industries.

(2) Small and medium industries

As a representative small industry, the metal working industry is analysed. In Moshi Town, there are many metal working industries which are classified as follows:

(a) car repair shops, which repair various vehicles and the main transportation facilities of the region

(b) metal engineering shops, which manufacture parts and spares for motor vehicles and other ordinary machines

(c) Metal processing shops, which engage in fabricating window-frames, stoves, etc.

The following analysis discusses the major problems of production technology of metal and engineering industries. These industries are expected, in the future, to raise their production technology as a key of the industrial complex in line with development of large and village industries.

(i) Car Repair Shops

One of major problems is that reparing is done on a haphazard basis. This is mainly because of lack of tools and measuring devices. Naturally, this causes differences in the results of reparing.

Motor vehicle reparing should be done under the standard which automobile manufacturers require.

As the demand for car reparing will increase, some test-machines will be required for early detection of problems. However, since it is not economical to install such machines in every repair shop, it is recommended that they be established in one specific place for common use. Besides, in the future, the diesel engine will be encouraged because petroleum is a scarce resource for Tanzania, and as agriculture develops, mechanization will go on. In order to cope with these situations, additional facilities should be installed in these shops.

(ii) Metal Engineering Shops

Metal engineering shops in Moshi Town are very important to repair machinery/equipment and to manufacture parts and spares for large industries and village industries. Their importance will increase particularly with the advancement of maintenance engineering in related industries. However, at the moment, the capability of these shops is not enough to meet such requirements.

The reasons are diverse. One of them is that the related business is difficult to carry out because there is no common standard in engineering service among industries, particularly, between large and small industries. Further, the functions of these industries are not specialized but cover different activities, which hampers technological development. These problems mean that various kinds of materials have to be stocked in those industries so they can accept many types of orders. Consequently, the firms have to prepare a lot of working capital, and the workers cannot specialize and improve their skills.

Accordingly, for technological improvement, the following divisions among industrial units is expected to be realized:

- foundry
- forging
- heat treatment
- welding and sheet metal processing
- surface treatment and painting
- press
- machine work

Needless to mention, before attaining such specialization, a definite technical standardization among industries is required. Also, this social division of labour will be a gradual process.

(3) Village Industries

Representative industries in rural areas are saw mills, rice and posho mills and jaggery. The major problems in village industries are related to power supply: reparing motors in areas with electricity and repairing power generators in areas without electricity. These repair have mainly been done by small industries in Moshi Town. When repairs are needed

in villages far away from Moshi, the machines are transported to Moshi and brought back. Therefore, it takes time for repairs and production meanwhile, is stopped.

Before trouble occurs, there are things to be done. One of them is a proper maintenance. For example, regular supply or exchange of engine lubricating oil, cleaning of air cleaner, regular supply of oil to motors, cleaning of motor brushs, are some simple maintenance steps effective in preventing machines troubles. If such maintenance is done, machine troubles will be minimized.

In the future, after setting a maintenance standard for each industrial unit, regular inspection should be conducted to find out early troubles. Further, parts and spares which are regularly needed for maintenance and repairing should be properly stocked.

(4) Production Control and Planning

In addition to the above-mentioned maintenance system, a production control system which manages the whole production process is needed for efficient operation of factory equipment. This will allow quality control, production cost control and production time planning. Eventually, this will make firms competitive and viable through reduction of products, quality equalization, quality improvement, shorter manufacture time and lower production cost.

As previously mentioned, for further development of village industries, production planning will be crucial. For this purpose, the following points should be taken into account.

(a) The production plan should be prepared after taking into consideration the kind of products, production quantities, production capacity by each process, deadline to be delivered, and so forth.

(b) Regular maintenance should be conducted under certain standard so as to use equipment more rationally and economically.

(c) Work standards and daily schedules should be set for each process.

(d) Product quality standards should be established and their application and durability defined.

(5) Summary

The lack of a proper and regular maintenance system is accelerating the incidence of machine troubles and the demand of spares and parts. However, it is difficult to produce locally such spare parts because of lack of technical standardization among local industries. Those few parts produced are inferior in quality due to the utilization of improper production materials.

Accordingly, if maintenance and production control are properly undertaken, product quality and the production level of industries of the region will be greatly improved and increased without investing much capital in additional equipment.

4.4 Marketing Structure

(1) Marketing Channels

It is observed that marketing is crucial for the industrial development of the region. In fact, this statement is proven by our questionnaire, particularly for newly establishing village industries. The following discussion of the marketing system will be in accordance with the government's classification of industries: national industries, district industries and village industries.

To begin with the marketing area, in the case of village industries, most of their markets are the respective village (see Table-19), ward, district and division. On the average 32% of the market is within the village. With regard to medium industries which employ 11-50 workers and represent district industries, the main market is shifting from the district to the region. The biggest marketing area of these industries is the region. Another important feature of these industries is that many of their products are sold through private wholesalers to other regions, for example, Mwanza and Dar es Salaam. At the moment, small and medium urban industries are generally linked with a private marketing system.

In terms of buyers for small and medium industries, manufacturing industries are closely connected with individual clients; in other words, they are directly selling their finished products to the consumers. This can be explained from many aspects, but the main reason seems to be that some industries are combined with distributors, and industries are forced to sell directly to final consumers due to lack of proper marketing channels.

In this way, small and medium industries, or in other words, village and district industries, are selling most of their products within the region. The problem is a marketing system. As mentioned before, although urban marketing systems are properly organized, as far as the rural marketing system is concerned, it is extremely undeveloped. Hence industries face many difficulties in marketing their products.

(2) Merchandising

The major and sole wholesaler at the regional level is the Kilimanjaro Regional Trading Company, but at present its purchases from local industries are limited to a few products such as soap, window frames, toilet paper holders, etc. In other words, the products of village and small industries are not put in the RTC distribution channel, and they are not linked with public distributors. Village and small industrialists are forced to seek their distributors for themselves, such as private wholesalers or retailers or final consumers.

However, this does not mean that the RTC is reluctant to receive the products of small local and village industries. The case is the reverse. The RTC is waiting for marketable products. However, it is said that most of the products are regrettably unqualified for marketing. That is to say, price, quality and quantity are not appropriate. Hence, the substance of the problem is not marketing but production, and in particular, production technology.

This does not mean that there is no problem in the marketing system proper. For example, in order to avoid a pile-up in stock of non-saleable products to ascertain improper machinery equipment and set standards for production capacity, preparatory market research is required. In fact, it is frequently observed that village and small industries have a large stock of unsold items and confront financial hardships.

If the proper market research is conducted beforehand these industries can, as far as their technical level allows, devise a suitable product design, set a proper production target and fix a proper price. Above all, product design is crucial. Recently, a great accumulation of non-saleable products has occurred in village and small industries due to unattractive product design, even though there is a good potential market and competitors are enjoying good business.

In sum, reorganization of marketing channels is an urgent matter for village and small industries. These industries will be forced to direct their products more to the rural market. Linkage between such industries and traditional marketing systems like the open rural market and duka, and linkage between these industries and cooperatives and the RTC should be intensified. Above all the role of the RTC is vital. As it is a professional organization for marketing and has nation-wide information on marketing, it should actively provide marketing knowledge and information to village and small industries. In this sense, the district RTCs should be enforced in terms of functions and manpower.

Finally, a remark which should be added, is on the relationship between village industries and open air rural markets. The latter is a distribution and marketing centre as well as a social centre in the village, and for village people it is most important. Although, in the past, the major goods traded there were minor agricultural crops, recently manufactured goods also are being added. Thus, as a marketing outlet for village industries the role of open air rural market is crucial for future development.

Industrial Marketing (Table-19)

Number of Employed per Industry	1-10	11-50	51 and more	Total
A. Market Areas				
1. Villages	40	18	3	61
2. Wards	24	14	3	41
3. Divisions	22	13	3	38
4. Districts	21	14	3	38
5. Regions	14	24	11	49
6. Outside of region	4	9	5	18
7. Outside of country	1	2	3	6
Total	126	94	31	251
B. Buyers				
1. Individual clients	-	-	11	11
2. Traders	11	12	7	30
3. Government	-	3	-	3
Total	11	15	18	122

(3) KRTC and Industrial Market in Kilimanjaro

The Kilimanjaro Regional Trading Company covers about 85% of total manufactured goods market in the region. The purchasing power of the region ranks at top group reflecting a fluctuation of coffee cash earnings, as compared with other regions.

Sales Value by RTC, 1974/75-1975/76 (Table-20)

(Unit:1,000 shs.)

July 1974 - June 1975			July 1975 - June 1976		
RTCs	Sales value	(%)	RTCs	Sales value	(%)
Dar es Salaam	147,433	20.2	Dar es Salaam	131,358	12.4
Tanga	72,731	9.9	Tanga	92,070	8.7
Mwanza	60,304	8.2	Kilimanjaro	89,414	8.4
Arusha	49,306	6.7	Mwanza	89,277	8.4
Kilimanjaro	48,410	6.6	Arusha	74,141	7.0
Mbeya	40,091	5.5	Mbeya	55,640	5.2
Subtotal	418,275	57.1		531,900	50.1
National total	731,303	100.0		1,060,115	100.

A half of total demand of the region can be regarded as producer's goods which correspond to the supply by BHESCO and AISCO. However, what should be stressed here, is that although the Kilimanjaro region enjoys a bigger market as mentioned above, the proportion of local supply in it is relatively low. In other words, it is said that in terms of market demand the region has a bigger potentialities of further industrial development in both producers goods and consumers goods. At the moment, the major item of local supply through the KRTC is only match box by Kibo Match Corporation.

Sales/Revenue Budget of KRTC, 1974-77 (Table-21)

(Unit:1,000 shs.)

	1974/75		1975/76		1976/77	
	Value	(%)	Value	((%)	Value	(%)
BHESCO	12,048	29.4	16,808	29.7	22,294	29.6
AISCO	6,876	16.8	9,331	16.5	15,423	20.4
DABCO	4,386	10.7	4,506	7.9	8,345	11.0
House Supply Company	9,692	23.7	10,346	1.8	14,150	18.8
NAPCO	120	0.3	1,200	2.1	800	1.0
General Food Company	7,837	19.1	14,334	25.3	14,277	18.9
Total	40,959	100.0	56,525	100.0	75,289	100.0

* Although these are budget figures, they are not big different from actually performed figures.

4.5 Industrial Linkage

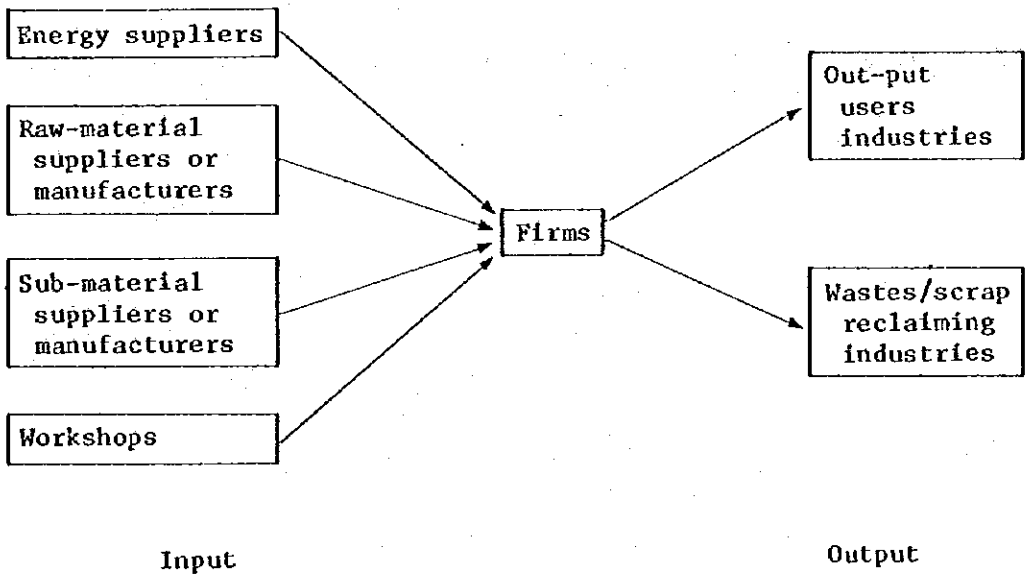
(1) Its Importance and Types

The relevance of industrial linkage in relation to industrial development can be pointed out from various points. Especially, the reason why this issue should be emphasized in context of the industrial development of the Kilimanjaro region is that the industrial sector of the region is characterized by the so-called triple structure in a sense that there are the least linkage among larger industries, modern small industries and village industries.

Generally, the potential advantages which may be generated by intensification of industrial linkage are far-reaching such as encouragement of division of labour, raising productivity, up-grading of skillness, securing stable market, regular procurement of in-put materials, avoidance of duplicated investment and efficient use of limited resources.

Actually, the industrial development of advanced countries has been accelerated by strengthening industrial linkage in the forms of industrial complex, sub-contractor industries etc. The basic relation of industrial linkage is shown in Fig.-4. In this region also, in order to develop the industries, the intensification of industrial linkage will be essential, and thereby the triple industrial structure will be reduced.

Basic Relation of Industrial Linkage (Fig.-4)



Actually, there are many types of industrial linkages in terms of firm size as follows:

(i) Larger Industries--Larger Industries

This is the industrial relationship between larger industries which are connected as their input suppliers and output demanders. The main advantage from this linkage is generally seemed to be reduction of transportation cost. Therefore the respective industrial units should be closely located even using either pipes or conveyors. The typical case of this linkage is petroleum complex.

(ii) Smaller Industries--Larger Industries

In this case, smaller industries will be input suppliers for larger industries. This kind of linkage can be well observed among electrical products firms and motor vehicles manufacturers, and thereby larger industries can reduce their production cost by relying their manufacturing of spare parts on outside smaller industries as subcontractors. As this is a means of taking advantage by specialization based on size of industries between larger industries and smaller industries, it is required to establish technical standardization system between the two to maintain a definite quality of products, and for this purpose, to give technical guidance to smaller industries by larger industries.

In the Kilimanjaro region context, coffee processing, tomato processing and jam processing will belong to this linkage category.

(iii) Larger Industries--Smaller Industries

This case can be observed centreing around large and integrated-type industries like spining, iron and steel etc. The smaller industries will gather around such larger industries as demanders or users of their products such as garment factories, forging factories, repairing shops etc. In this case, the technical relationships of production among them are scarce and mainly they are between trading partners.

Some examples of this pattern in the region are between tanneries and leather factories, between saw mills and wood working factories.

(iv) Smaller Industries--Smaller Industries

In this case, smaller industries will attempt to specialize and cooperate among them, to some extent, in order to utilize effectively their equipments and to up-grade efficiently their skills.

Some examples in metal workings are specialization based on the activities of forging, foundry, heat treatment, welding and so on. In Japan, for example, cutlery goods are produced in village by this type of specialization among household industries. Namely, one household industry will specialize press processing, one will specialize hardening, one will specialize grinding, one specialize polishing and final one will assemble all parts processed so far.

This type of linkage will be effective to create various favourable effects such as improving skilled workers and accumulating practical knowledge and skills at technical level and intensive inventory of raw materials and minimum running capital at managerial level. However, this type of linkage will require geographical concentration to be complemented one another.

(2) Industrial Linkage in Kilimanjaro

The present situation of industrial linkage of the region can be described, taking into consideration the above linkage categorization, as follows.

(i) Smaller Industries--Larger Industries

As the larger firms of the region, East Africa Kenaf Industries, Tanzania Tanneries, Tanzania Bag Corporation, Moshi Plywood, Tanganyika Planting Company and Kibo Match Corporation, are representative ones, most of which have own fairly big workshops for the maintenance and repairing of their facilities.

The major relationship between these large firms and smaller industries of the region are characterized as follows.

(a) No larger industries relying their main materials on smaller industries,

(b) No larger industries counting their sub-materials on smaller industries,

(c) No larger industries counting their maintenance and repairing service on smaller industries.

(a) and (b) will be admitted as a matter of course because in this region there is no larger industries like automobile industries which need a lot of spare parts. Hence, smaller-larger industrial linkage will be confined to the relation of (c). Even (c), larger industries generally have own workshops as previously mentioned. However, as these workshops covers a wide range of repairing service and are required various works, their specialization and upgrading are not easy, and then the operation rate o- them are extremely low.

(ii) Larger Industries--Smaller Industries

As smaller industries of this category, leather and bag makers and furnitures producers depending on large-scale tanneries and saw mills, are exemplified. The development of these industries depend greatly on product design or merchandizing, so that the linkage with information suppliers which undertake design development and market survey, will be essential.

(iii) Smaller Industries--Smaller Industries

As the most common linkage of this category, there are two types, geographically, namely, between villages and towns, and within towns. The former is the case that saw mills and rice mills in villages count their repairing and maintenance on repairing shops of towns. The latter's example is the linkage among car repairing shops in towns, based on the activities such as metal cutting, padding, metal polishing and motor overhauling, which each repairing shops cannot afford to install inside. In addition to these activities, vehicle-scrap sorting which may return some of these scraps for reuse to repairing shops, is another linkage.

(iv) Linkages with Other Sectors

There are various kinds of industrial linkage with other sectors, but what is important in Kilimanjaro's context, is the linkage based on local resources like crops, livestocks and minerals including clays.

(a) Crop Products:

At present, in this region, most of crop products are despatched to other regions, mainly Arusha, without higher processing or secondary processing. However, this is mainly because total regional production volume of respective crops are not enough to satisfy its their scale of production. Thus, in future, if their production levels are raised, some crop-linked processing industries will be promissing and encouraged. This will be more likely in the area of vegetables, fruits, wheat, cotton and pyrethrum.

(b) Livestock Products:

They are also sent out to Arusha. With an increase of these productions, new development of dairy and meat processing industries will be expected and visualized.

(c) Minerals and Clays:

At present, there are few industrial linkage with mineral production, even though some deposits are recognized to be existed. This is, presumably, mainly because the region faces some disadvantages in such mineral processing industries as requiring a lot of fuels, due to the hintrerland region, and, so far, the sufficient survey of mineral deposits has not yet conducted. However, in case of gem stones, if their deposits situation are only more clarified, linked industries will be easily possible in immediate future.

Although the proper surveys have not been conducted in clays also, brick and clay pipe makings will be possible even in case of low quality materials.

(3) Impediments for Industrial Linkage

As previously mentioned, the industrial linkage of the region is very limited in such a extent as set up "triple industrial structure". Among them, the linkage between larger industries and smaller or village industries are crucial and serious in the light of the industrial development of the Kilimanjaro region.

Its major impediments can be summarized as follows:

(i) Larger Industries Side

(a) As there is no a definite technical standardization in larger industries, it is difficult to give order to outside small industrialists,

(b) Incapability to assess the price to order outside because of improper management system of materials purchase and placing orders outside,

(c) General distrust in skills of smaller industries.

(ii) Smaller Industries Side

(a) Very limited capacity to accept orders from outside because of lack of processing facilities like foundry, forging and press,

(b) Low level of technology because of lack of specialization in processing activities,

(c) Incapability of determining the price/cost and delivery schedule of products because of improper management technology.

These impediments are applicable to development of linkage within small industries.

(4) Summing-Up

In order to encourage overall industrial development, the intensification of industrial linkage will be essential and urgent.

Even in case of the Kilimanjaro region, there are a great of possibilities of expanding industrial linkage, especially, a linkage extension such as maintenance service, printing, box making etc. from the existing larger industries.

Also, in future, the linkage among village/cottage industries centreing around specific kind of industry like ceramics and cutlery, will become significant, particularly for rural development.

However, anyhow, to strengthen industrial linkage, the following improvements will be essential and unavoidable;

(a) Improvement of production technology in both sides,

(b) Improvement of management technology of both sides,

(c) Newly establishment of some basic processing facilities in smaller industries.