

## 5 PROBLEMS IN INDUSTRIAL STRUCTURE

The industrial development of Kilimanjaro region is hindered by many problems at different levels such as the national, regional, district and intra-firm level, which have already been discussed. Based on these analyses, the present chapter will attempt to present the basic structure of these problems.

### 5.1 Regional setting

- (1) **Physical constraints:** The region is facing an arable land shortage, particularly in the highlands.
- (2) **Coffee dependence:** The economic structure is lopsided and vulnerable in that it depends on coffee, the major export and cash crop.
- (3) **Instability:** A coffee economy has meant a tendency toward slumps and booms.
- (4) **Structural stagnation:** Even though the economy, sometimes, experiences a sudden boom or prosperity, in terms of structure the economy is basically in a chronically stagnant situation which leads to shortages of employment opportunities and underemployment.
- (5) **Lack of investment opportunities:** Since there are few investment opportunities, the greater part of income earned from coffee exports has remained unproductive. In other words, coffee earnings are not efficiently utilized because there are alternative investment opportunities besides coffee production. Due to lack of investment opportunities, investment funds are flowing out of the Kilimanjaro region.

## 5.2 Sectoral Setting

- (1) **Unintegrated industrial structure:** The skewed economic structure also greatly affects the industrial structure. There is a so called "triple industrial structure" which is composed of parastatal industries, small and medium urban industries, and village industries. These industries are not well interrelated, which hampers an overall development of the industrial sector.

Lack of development in the industrial sector can be also seen in terms of size and kinds of industries. As to the size of industries there are few medium-size industries to bridge the gap between large and small industries. In terms of kinds, of industry, there are no goods for producers or consumers' durable goods' industries to bridge the gap between resources-based and simple consumers' goods industries.

- (2) **Vulnerable village and indigenous industries:** For future industrial development, the most crucial point is the weak position of village or indigenous industries, which are vital for future self-sustained growth (especially as run by cooperatives). It is obvious that this category of industry should be encourage, and will take on a pivotal role in the future industrial development of the region. However, this can be achieved only by upgrading the technical level of these industries, to link them with other categories of industries like urban industries and parastatal industries. As a result, this will lead to the dissolution of the unintegrated or triple industrial structure, and, eventually, will establish the basis of an industrial complex essential for future industrial development of the region.

### 5.3 Intra-firm Level

The present problem is the factors impeding the development of industries at an intra-firm level, particularly the village industries.

As shown in Table-22, our survey has clarified this question. The financial problem is the most serious and ranks first (30.2% of total replies), technical constraints second (29.2%) and marketing problems ranked third (24.0%). These three problems occupy nearly 84% of total replies.

At the same time, according to the "Expectations Survey", industrialists also are looking forward to government remedies for these problems. Consulting services and repair services would help the technical problems, and the marketing problem would be alleviated by a sharing of common facilities.

However, when scrutinizing these problems, it is clear that the basic cause of the top three problems is largely technological. A low level of technology leads to low quality of products and machine troubles, which further cause financial hardships and marketing difficulties. In other words, if the technological level is improved, the situation will be brighten. Technological development through institutions is essential.

With improvement of technology in small and village industries, and if they can stand on their feet, the process of self-sustaining growth in the industrial sector will be set in motion, and structural changes also will be induced.

which are a bridge between small industries and larger industries. This means that the region lacks one dynamic factor for future industrial development. Because of this, future emphasis should be placed on the development of basic industries aiming at a structural change in the region.

The fourth objective is income equality. Especially critical is the gap in income between Kilimanjaro and Pare. Even allowing for statistical error, there is a great gap between these two areas. Of course, an income gap is not limited to these two areas, but extends also to the intra-district level. When agriculture cannot effectively mitigate these gaps, industrial development which utilizes local materials can narrow such income disparity.

Problems and Expectations (Table-22)

	Question	Moshi					Number	%
		Hai	Urban	Rural	Rombo	Pare		
Problems	1 Financial Problems	11	11	2	17	17	56	30.2
	2 Technical Problems	13	13	6	10	14	56	29.2
	3 Marketing Problems	13	9	4	8	12	46	24.0
	4 Utility Problems	10	2	33	5	12	32	16.7
Expectations	1 Common Facilities	13	14	1	16	20	64	28.4
	2 Repair Services	11	3	1	6	4	25	11.1
	3 Training centre Services	12	4	1	7	12	36	16
	4 Consulting Services	11	6	1	7	15	40	17.8
	5 Financial Assistance	11	11	4	17	17	60	26.7

## 6. OBJECTIVES

Generally, regional objectives can be derived and translated from objectives at the national level, and overall development objectives and strategies of the region. National objectives for industrial development are not always repeated in the regional objectives for industrial development.

As the major objectives of industrial development, the following can be identified:

- (i) to increase industrial income
- (ii) to generate more employment opportunities
- (iii) to advance the level of basic industries through structural change
- (iv) to increase the equality of income distribution

As mentioned previously, the most serious issue in the region is a decreasing opportunity for additional income creation, due to the vulnerable crop pattern and land shortage. Therefore, we have to look for supplementary income opportunities in other sectors than agriculture. For this purpose, the industrial sector is most promising. Industrial development can provide village people with additional income which supplements low agriculture income if established in rural areas, particularly in the highlands. Furthermore, even if established in urban areas, industries can cater new income opportunities to the job-seekers who come from the highlands.

The importance of industrial development in the region is not limited to supplementary income opportunities, but also to create employment effects, especially for under-employed people. There is much open and hidden unemployment in the highlands: people who cannot find proper work in the agriculture sector. Accordingly, efforts to absorb more people should be made in industrial development, and an attempt made to avoid concentrating new income opportunities among certain groups, who already enjoy some income. It is vital that the effects of any new employment be maximized among the unemployed.

The government, also, is stressing the advancement of basic industries through structural change in the Third Five-year Plan. According to it, the characteristic feature of Tanzanian industries is colonial typed concentrating on export industries based on specific "cash crops," and simple consumer goods' which do not necessarily meet local demand. Therefore, future industrial development in Tanzania should be subject to and should be directed to basic industries, viz., producers' goods' industries, including intermediate goods' industries and capital goods' industries, and basic consumer goods' industries which meet local demand. The former comprises glass, cement, chemicals, ceramics and so forth, and the latter, food processing, clothing, footwear, etc.

In the context of regional industrial planning, it is essential to comply with government objectives. Especially when compared with the industrial structures of Tanga and Arusha Regions, that of Kilimanjaro is somewhat backward in terms of industrial composition. To put it another way, the industries of the Kilimanjaro Region concentrate on resources-oriented industries and simple consumer goods' industries, and lack intermediate goods' industries and capital goods' industries, which are essential for future industrial development. Another vulnerability of the region is lack of medium-size industries,

which are a bridge between small industries and larger industries. This means that the region lacks one dynamic factor for future industrial development. Because of this, future emphasis should be placed on the development of basic industries aiming at a structural change in the region.

The fourth objective is income equality. Especially critical is the gap in income between Kilimanjaro and Pare. Even allowing for statistical error, there is a great gap between these two areas. Of course, an income gap is not limited to these two areas, but extends also to the intra-district level. When agriculture cannot effectively mitigate these gaps, industrial development which utilizes local materials can narrow such income disparity.

## 7. TARGETS : PROJECTIONS

### 7.1 Introduction

The macro-projection of employment in the manufacturing sector in 1975 calls for approximately 12,300, and in 1980, 16,400. This projection is based on the assumption that the rate of employment increase at a rate of 6 per cent annum between 1975 and 1980. These projected figures, however, seem to show a big discrepancy from those covered by our field survey.

The total employment calculated through our field survey amounts to 8,385 in 1976. However, when we take into consideration the fact that our field survey could not cover all the existing industrial units of the region - it would be hereby assumed that its coverage is about 70 per cent in terms of number of employees -, the employment of the manufacturing sector in 1976 becomes approximately 1,200, which shows a close correspondence with the macro-projection. This discrepancy can be explained by the fairly large number of self-employed, which were not included in our field survey.

In our present employment projection, we have adjusted the employment figures for the purpose of practical planning in such a way that they include only purely industrial employees, excluding, for example, estate workers in the fields. (The detailed adjustment method and adjustment itself are discussed elsewhere as well as in the following section.) We also confined our projection, as much as possible, into medium to small-scale industries or, in other words, district and village industries, excluding large-scale and national industries which are primarily coordinated by the national authorities.

In addition to the employment projection, the following two projections of "Industrial Units and Investment Requirements" and "Industrial Output" deal primarily with medium and small-scale industries.

## 7.2 Employment Projection

Our field survey, although its coverage is not 100 percent, makes it possible to estimate the number of employees in the industrial sector of Kilimanjaro. The industrial population has already been given; it is reproduced here as the data for projection. The figures were adjusted somewhat by deducting any numbers that were questionable or vague, and also by estimating the rate of coverage in each district. The method employed in projecting employment growth rate is very simply. An annual growth rate of 6 percent is assumed for 1967-1975.

From the viewpoint of the projected macro-frame, 8.2% and 9.6% growth in manufacturing employment is expected respectively for 1975-1980 and 1980-1985 after considering increase of productivity. In spite of a high growth projection for manufacturing sector, its percentage to the total employment will remain at 5.5% in 1980 and 7.1% in 1985 as compared to the 4.4% in 1975. It would be very hard to realize this growth without provision of the considerable and concrete measures for promotion as for as concluded on the basis of the conventional trend.

There must be concern raised over heavier concentration of industrial employment in urban Moshi. This concentration causes urban migration, which eventually causes urban unemployment and slum problems which are notoriously common in the big cities of developing countries. While all this is true, our stand is that geographical distribution of industries should come after the development of a fundamental industrial infrastructure along with necessary physical infrastructural facilities and the establishment of basic industries. This, in turn, implies that a certain centralization of industrial activities is inevitable, particularly at an early stage of industrial development.



### 7.3 Industrial Units and Investment Requirements' Projection

In an attempt to project an acceptable number of new and expanded industrial units and their investment requirements over the coming five years, various assumptions are made hereunder. These assumptions are mostly based on a variety of information collected during the course of our planning activities in the Industrial Development Programmes.

#### (1) Assumptions of the Projection

To begin with, for new industrial projects the following two assumptions are made:

- (i) The average initial investment per unit is Shs.120,000/-.

This figure is deducted from both the compilation of existing industries and the calculation of new industrial projects which are dealt with in great detail in the last chapter of this plan. In spite of the fact that the previous estimate was SHs.200,000/-, our present is far below this figure. This may be due to some difference in the respective approaches to choosing appropriate projects. Ours is more heavily biased toward local resources utilization.

- (ii) The average employment per unit is 9

This assumption is partly based on our findings in the field survey, which proves that the region envisages a distributive polarization problem between a few large industries and many small industries, and based partly on our calculations carried out. This number of employees is the minimum figure which an average project requires. In other words, there is always a possibility of increasing the number, whenever the project can afford to do so. For the expansion of existing industries, it is assumed that;

- (iii) The average additional capital investment per unit is Shs.70,000/-.

The reason why the figure is lower by Shs.50,000/- in comparison with the average initial investment-is that the existing industries have various facilities, such as premises, and infrastructural facilities. These conditions reduce investment requirements to a substantial degree.

- (iv) The average additional employment per unit is 6

As with the case of capital investment, the employment absorption capacity is reduced by 3 from 9 to 6 in the case of expanding industries.

- (v) The number of new and expanding industrial units under project loans and grants is as follows: (Table-23)

	1976/77	77/78	78/79	79/80	80/81	81/82
New Indus. Units	-	5	15	15	25	25
(Producer-Cooperatives)	-	3	7	7	12	12
Expanding Indus. Units	-	10	20	20	25	30
(Producer-Cooperatives)	-	5	10	10	15	20

For the purpose of supplying short-term loans to both expanding and new units, the following projections are added;

- (vi) The present number of existing industrial units is 162

This number is deducted from our field survey. Distribution of industrial units by district as shown hereunder. (Table-24)

	Hai	Moshi		Rombo	Pare	Total
		Urban	Rural			
Number of Units Surveyed	18	39	10	27	26	120
Coverage (%)	75	70	65	80	80	-
Estimated No. of Units	24	56	15	34	33	162

- (vii) The average number of employees per existing unit is 27

This figure is again obtained from our field survey, which is in fact the result of the division of the total industrial population, 4427, by the total industrial units, 162. Incidentally, the figure 27, also corresponds with the outcome of division of the adjusted population, 3194, by the surveyed number of industrial units, 120.

- (viii) The average working capital loan requirement per existing (non-expanding) unit is Shs.9,000/-.

This figure is one half the amount assumed in Assumption for new and expanding industrial units.

- (ix) These industrial units are to receive working capital loans twice a year.

- (x) Among the non-expanding existing units, the following percentage is to receive working capital loans over the five years between 1977/78 and 1981/82: 10 per cent in 1977/78, 20 per cent in 1978/79, 30 per cent in 1979/80, 40 per cent in 1980/81 and 80 per cent in 1981/82.

- (xi) The average working capital loan is Shs.18,000/-.

The figure is again derived from our data compiled in the last chapter. It is approximately equivalent to 1.5 months working capital requirements.

- (xii) All of these new and expanding industrial units working capital loans.

And finally, for all the non-expanding, expanding, and new industrial units, we assume that:

- (xiii) All working loans are repaid within one year.

## (2) Specific Targets

The projections for: New industrial establishments and expansion of existing industrial units; long-term and short-term loan requirements; and government funds for subsidizing producer cooperatives in the industrial sector of Kilimanjaro, have all been based on the above assumptions.

In Table-26, projected estimates of long-term loan requirements are shown. Between 1977/78, total required investment is estimated at Shs.17.9 million, which is not very ambitious by any standard. When we assume that 75 per cent of the total investment required is financed through financial institutions, the total loan required for the investment amount to Shs.13.425 million. In Table-27, projected estimates of short-term loan requirements are arranged. Although working capital requirements for non-expanding industries, expanding and new industries are calculated in Items (6) and (9), respectively, as all the loans are supposed to be repaid within one year, the real loan requirements are seen in Items (7) and (10). The total short-term loan requirements are, in all then, Shs.1,368,000/. Finally Table-28 is the projection of government grant (subsidy) requirements for producer-cooperatives. The number of cooperatives to be newly introduced and to be expanded is already cited in Assumption 5 above. Here, we additionally assume that the government subsidy for fixed capital investment does not exceed 25 per cent of total fixed capital investment. The total subsidies to be granted to producer-cooperatives amount to Shs.2,367,500/- over a five-year period. Since the regional development budget of the industrial sector and the regional development funds from the Prime Minister's Office allocated to the Kilimanjaro Region above are approximately Shs.1.8 million in 1975/76, this figure can be regarded as very manageable.

Fundamental Elements in "Assumptions" (Shs.) (Table-25)

	Fixed Capital per Unit	Working Capital per Unit	Ave. Employ't per Unit	No. of indus- trial Units
New Industry Units	120,000	18,000	9 (Minimum Employment)	85 (41 Coops by 1981/82)
Expanding Industry	70,000	18,000	6 (Additional Employment)	105 (60 Coops)
Non- Expanding Industry	-	9,000	-	-

Estimates of Long-term Loan Requirements (Table-26)

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	Total
1. Number of New Industrial Units		5	15	15	25	25	85
2. Investment for New Industrial Units (1) x shs.120,000		600,000	1,800,000	1,800,000	3,000,000	3,000,000	10,200,000
3. Number of Expanding Units		10	20	25	25	30	110
4. Investment for Expanding Units (3) x shs.70,000		700,000	1,400,000	1,750,000	1,750,000	2,100,000	7,700,000
5. Total Investment (2) + (4)		1,300,000	3,200,000	3,550,000	4,750,000	5,100,000	17,900,000
6. Loans Required for Total Investment (5) x 75%		975,000	2,400,000	2,662,500	3,562,500	3,825,000	13,425,000

Estimates of Short-term Loan Requirements (Table-27)

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	Total
1. Number of Existing Industrial Units	162						
2. Number of Expanding Units		10	20	25	25	30	
3. Number of Non-Expanding Units (1) - (2)		152	132	107	82	52	
4. Percentage of Non-Expanding Units which Require Working Capital Loan		10%	20%	30%	40%	80%	
5. Number of Non-Expanding Units which Require Working Capital Loan (3) x (4)		15	26	32	33	42	
6. Working Capital Loan Requirements (5) x shs.9,000/-		135,000	234,000	288,000	297,000	378,000	
7. Yearly Increase in Additional Loan Requirements		135,000	99,000	54,000	9,000	81,000	378,000
8. Number of New and Expanding Units		15	35	40	50	55	
9. Working Capital Loan Requirements (8) x shs.18,000/-		270,000	630,000	720,000	900,000	990,000	
10. Yearly Increase in Additional Loan Requirements		270,000	360,000	90,000	180,000	90,000	990,000
11. Total of Yearly Increase in Additional Loan Requirements (7) + (10)		405,000	459,000	144,000	189,000	171,000	1,368,000

Estimates of Subsidy Requirements for Producer-cooperatives (Table-28)

	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	Total
1. Number of New Producer-Cooperatives	3	7	7	12	12	12	41
2. Investment for New Producer-Cooperatives (1) x shs.120,000	360,000	840,000	840,000	1,440,000	1,440,000	1,440,000	4,920,000
3. Subsidies to New Producer-Cooperatives (2) x 25%	90,000	210,000	210,000	360,000	360,000	360,000	1,230,000
4. Number of Expanding Producer-Cooperatives	5	10	15	15	15	20	65
5. Investment for Expanding Producer-Cooperatives (4) x shs.70,000	350,000	700,000	1,050,000	1,050,000	1,050,000	1,400,000	4,550,000
6. Subsidies to Expanding Producer-Cooperatives (5) x 25%	87,500	175,000	262,500	262,500	262,500	350,000	1,137,500
7. Total Subsidies (3) + (6)	177,500	385,000	472,500	622,500	622,500	710,000	2,367,500

## 8. STRATEGY FOR INDUSTRIAL SECTOR

### 8.1 Background

The following strategies can be regarded as the methods for fulfilling the above mentioned objectives, and should be the most effective approach in overcoming the constraints existing in the region.

Before going into a detailed explanation of each strategy, some fundamental issues should be mentioned here.

- (1) The first problem is who should take the key role in the strategies, and in what way the strategies will be carried out.

The official answer to this question has already been given in the historical background of the regional integrated plan. The major milestones are the Arusha Declaration, 1967, and Decentralization Policy, 1972. In summary, the Tanzanian people should pursue strategies within the framework of Tanzanian socialism and self-reliance. Especially the Decentralization policy has stressed that planning and control of development must be exercised more at a local level. The important point is the people's aspirations at the local level, instead of the conventional top-to-bottom approach.

- (2) Of course, we do not mean in saying "by Tanzanian people and within the framework of Tanzanian socialism" that foreign assistance and incentives are forbidden. This matter is already well defined by the Arusha Declaration and other Presidential speeches.
- (3) Although, as mentioned above, these strategies should be based on Tanzanian socialism, that does not mean that efficiency, motivation, technological improvement, and increase of productivity should be emphasized more than ever. Rather they are all simultaneous aims, and thereby strengthen economic viability and competition, and lead to self-reliance, economic stability, and regards growth.
- (4) The major problems which the Kilimanjaro region faces, and which industrial planning should tackle, are to create more possibilities for economic growth and to reduce economic vulnerability by restructuring the "mono-culture" type of economy. However, a structural change of the economy is not easy work. Hence, we do not assume that the objectives will be achieved completed during the period of the plan, but rather, we are trying to rechannel past tendencies which were inherent in the economy; to eliminate stagnation; and to establish fundamental conditions for a self-sustained and steady growth, the threshold of which will be crossed at the beginning of the Fourth Five-Year Plan.



## 8.2 Strategies

Eight strategies are presented here. These strategies can be roughly divided into two groups. Some of them are mainly related to removing the existing severe constraints of the industrial sector, and others are directly oriented to pave the way to future industrial development.

### (1) Strategy-1

Maximum utilization of existing production capacity of the industries of the region: The utilization of plant capacity is seriously low. In factories there are many machines which are underutilized. Causes are varied, such as non-availability of raw materials, difficulties of obtaining spare parts, difficulties in finding markets, etc. Among them, the problems of raw materials, spare parts, and machine trouble are typical. Improper maintenance has aggravated the situation.

Needless to say, if these difficulties can be overcome, higher production and employment will develop more easily than if more machinery is simply installed. We have to tackle the problem from many angles: Introduction of a technical guidance system, intensification of the maintenance system, and promotion of metal and engineering industries.

### (2) Strategy-2

Full utilization of locally available resources including recycling of waste resources: The Kilimanjaro region has several natural resources such as gypsum, magnesite, commercial crops like vegetables and fruits, forestry products, and livestock. Although many impediments exist, as much as possible new industrial units should emphasize these resources.

Recycling is also important. Some unutilized resources can be of use, though at present they are thrown away. Saw dust, lubrication oil, and scrap metal from broken vehicles are good examples of this category. Another part of recycling is the reutilization and reworking of problem parts and even machines themselves, which industrial workshops usually scrap. If they can be worked over, or transformed in minor ways, they can still be used for production purposes. We have many new industrial projects below based on these at present unutilized resources.

The effects of this strategy are far reaching. The first is creation of income and employment opportunities via new industries based on these local resources. Another effect is on the country's critical foreign exchange reserves. More utilization of local resources can lessen imports and some new industries may be able to export their products overseas due to the natural advantage of local resources.

### (3) Strategy-3

Preparing foundation of basic industries which meet the essential needs for development of the region: The basic industries should be given first priority since, as the Third-Five Year Plan stressed, they have the biggest strategic role and largest overall effect on industrial development. However, it is not easy for the Kilimanjaro Region to have ordinary basic industries like metals and chemicals at the present level of development, because these industries require great technology and efficiency compared with the present primary products-based industries and simple consumer goods' industries. Therefore our plan calls not for the introduction of

basic industries but rather the preparation of a foundation for basic industries, by introducing and improving foundries, forges, metal processing and the ceramics industry. Moreover, these introductory industries can provide spare parts, construction materials, and agricultural implements, the shortages of which crucial for the region at present.

(4) Strategy-4

Encouraging industrial linkage between existing industries and to other sectors of the economy:

This strategy is crucial to future industrialization. Unfortunately, most larger industries of the country are self-contained and have less linkage effects, both forward and backward, on the local economies. There are to historical reasons for this. One is that former colonial companies were oriented to other countries rather than local economies. Even at present, larger or national industries are not linked with smaller local industries, because the former cannot rely on the latter due to the gap in technological level.

The effects on development from industrial linkage are potentially tremendous. Larger industries are potential purchasers of raw materials and spare parts from smaller industries, and a potential supplier of intermediate goods to small industries. In addition, they will be big employers and consumers in the local economy. However, these effects are merely potential at the present stage.

Linkage effects are not limited only to within the industrial sector, but also to other sectors, like agriculture and tourism. Agro-industries are influential in overall development of the region. Some industries can be developed based on the agricultural crops, and others as suppliers to the agriculture sector, such as agricultural implements' industries. These industries should be more stressed in the context of rural development.

In line with linkage effects, we lay great emphasis on improvement of engineering activities of the smaller industries, particularly at the technical level, so as to catch up with larger industries. As a result, in the near future, larger industries which are at present equipped with their own big workshops, will count on spare parts from smaller industries. In this way, smaller repair shops will be able to expand their business by receiving technical knowledge and a fixed market from larger industries. At the same time, larger industries can also gain many benefits in that their own business can become specialized by handing spare parts - making over to smaller industries. Thus they also secure a near-by supplier rather than one in another region or overseas, and they can conduct regular and periodical maintenance by receiving constant service from smaller engineering factories. In this way, both of them can gain many benefits from each other. Eventually, the triple industrial structure which is composed of large industries, small urban industries, and village industries, and is a present characteristic of Kilimanjaro industries, will be dissolved and evolve to industrial integration and industrial complexity.

(5) Strategy-5

Properly allocating industries in the region, including establishing fundamental conditions for development of village industries

Considering that Tanzanian socialism places emphasis on increased equality of income distribution, it is vital to reduce the gaps in income and employment opportunities by proper allocation of industries. Generally, industrial location is determined by resources' availability, physical infrastructure, market accessibility and external economies. Hence, even though a per capita income level may be low, with a dense population, the situation is not so serious if natural resources and infrastructure facilities are readily available. The most serious situation is a low income area with no proper resources and no overhead social capital. In such a case, it is not easy to raise income level by deliberate industrial allocation in a short time span. However, as a matter of course, these factors are variable and flexible if considered over the long run. Since, at present, this low income areas is generally not endowed with infrastructure facilities, industrial allocation to this area should be paralleled with infrastructure development and manpower improvement.

This situation holds even truer in the case of village industries' development. It is essential to raise income levels and to change the means of life in the rural area from simple economic activities like a monoculture cash crop economy to more sophisticated economic activities, so as to eliminate misuse of resources and disguised unemployment. This solution is emphasized in the Third Five-Year Plan, and at the same time, at the level of regional development, when even the minimum that must be done is discussed.

However, even though village industries development is stressed by the central government, their elaborate policy measures have not been followed yet, if at all, any effects have simply not reached the level of village industrial units. The problems which village industries face are manyfold: Technologically, financially, managerially and organizationally as well. Accordingly, in the case of establishing industries in rural areas to raise income level and to absorb unemployment, policy should be considered from many angles, apart from infrastructure facilities. For example, people's aspirations, are important element in the sense that villagers want to participate in industrial activities with confidence and motivation.

A specific policy like the "growth pole" approach will not be taken up here, but a certain amount of industrial agglomeration will occur, because some industries depend on external economies.

(6) Strategy-6

Improving the technological level, and developing appropriate technology:

The question of technology is a basic and most serious constraint for industrial development of the region. If we attempt to develop the industries mentioned above, first of all we have to tackle this problem. It comprises various elements such as production equipment, production tools, workers' skills, etc. In any case, lack of technology desperately restrains development, by causing low productivity, high prices, low quality of products and so on.

The pottery industry is a good example of a low level of production equipment. A pottery wheel or furnace or kiln is not in use yet. Villagers are baking pots in open places instead of using kilns and naturally produce low-quality products. If some new tools or a bit of technology were introduced, the situation would vastly improve.

There is one problem which deserves close attention; that is, the selection of the appropriate intermediate technology, carefully fitted to the local situation; otherwise you have merely a white elephant. The development of an appropriate technology is crucial for the region. We can develop it both through modernizing traditional technology and through localizing technology imported from abroad. From a standpoint of self-reliance, the former type is preferable.

Another constraint is workers' skills. For example, even if good machinery is installed, its efficiency will be very low if workers cannot use it properly. The results are inferior quality goods which are not accepted in markets, and excessive breakdowns of machines due to lack of proper maintenance. According to our field survey, the latter is widespread in the region. Even if excellent machines are introduced, under the present improper maintenance system and improper machine management system, the machines would easily break down, and shortages of spares and parts would occur, leading to underutilization of machinery, low-level production, and the need for additional foreign exchange for spare parts. All of these problems are acute in the region and the country. Especially because of the situation with foreign exchange, additional imports of spares parts are detrimental. Hence, with proper maintenance and technical guidance, and more careful machine management, machine damage can be greatly lessened, thereby saving foreign exchange. In this context, it is proposed that the biggest priority be given to regular checkups and a periodical maintenance system. The most important thing, of course, is the discipline of users and the proper knowledge about machines, so this strategy requires not only the simple introduction of a technical system but also a change in the consciousness of the users.

#### (7) Strategy-7

##### Reorganizing or introducing a distribution system

Generally there is a tendency in developing countries to concentrate attention on production rather than demand. As a consequence the distribution system from producer to consumer is neglected. Naturally, planning should emphasize both facets of industrialization. Also, producers should produce goods which people want to buy.

Unfortunately, so far, the improvement of the distribution system has been delayed in the region as well as in the country, especially in rural areas. In fact, this neglect has created many problems such as short supply of essential goods, high-priced goods, and malnutrition. It is a matter of distribution, and of a physical network of storage and transportation facilities. In this region, all of these problems are serious.

A distribution system from the producer's side is called a marketing system. And this marketing system is underdeveloped even in rural areas. Coordination and harmony between traditional and modern systems is not well established - to the detriment of village industries. Of course, some marketing difficulties can be explained by low quality and high prices of goods from village industries, because of production difficulties. However, there remain many problems to be solved in overall marketing. Therefore, we put strategic importance on this task and a programme to provide general marketing opportunities and merchandising services, with the help of the Kilimanjaro Regional Trading Company; and, at the same time, to provide distribution channels and physical distribution facilities like storage and trucking, especially for village industries. Its vital importance is reason enough to discuss distribution and marketing problems separately from the general institutional setup.

(8) Strategy-8

Establishing and strengthening the policies and institutional setup for production expansion and productivity improvement, especially for rural industries:

As mentioned before, the constraints of industrial development are deep-rooted and intermingled, so that counter-measures also should be on many fronts, and in a package approach. In order to push this approach, the institutions and policy system related to industrial expansion, and financing, and manpower training, the marketing system and so on, should be positively reorganized and expanded to meet the situation. Needless to say, in this process, existing institutions and organizations should be given first priority.

## 9. ACTION FOR CHANGE: PROGRAMMES AND PROJECTS

### 9.1 Strategy and Programmes

The eight strategies proposed in the preceding chapter are translated into programmes and projects here.

#### (1) Basic Strategies: Technological Development and Marketing Improvement

According to our diagnosis, the basic constraints which hinder the industrial development of the region are technological and marketing problems. The former includes production equipment and manpower training; and the latter, marketing organization and product merchandising. All these elements are crucial for eliminating underutilization of production capacity and for further developing industrial activities. However, these problems are related in many ways. Hence the package approach which includes various elements is deemed most effective for breaking the vicious circle of constraints.

Our major countermeasure is to establish the Kilimanjaro Industrial Development Centre (KIDC) which is multi-functional. The Centre will greatly contribute to solving many matters of technology and marketing.

As far as the marketing system is concerned, the KIDC will coordinate traditional markets with modern organizations like RTC and the small industries. For example, it will encourage the distribution of products of village industries to open air markets and to the district RTC.

#### (2) Strategy of Maximizing Existing Production Capacity

As mentioned before, this problem is most serious for the region as well as the country. The utilization rate is said to be around 50% regionally. If this problem is eased the production and employment level will be easily increased without additional new investment.

Although the causes of under-utilization are diverse, technical defects and marketing bottlenecks are only a few of the results. Coping with this problem will be a function of the KIDC. It can provide maintenance and repair guidance, as well as vital spare parts.

Strategies, Programmes, and Projects (Table-29)

Strategies	Programmes/Projects	
<b>Basic Strategies</b>		
1. Technological Development.	Kilimanjaro Industrial	
2. Marketing Improvement.	Development Centre (KIDC)	
3. Elimination of Underutilization	KIDC	
<b>Industrial Expansion</b>		
	<u>Primary</u>	<u>Secondary</u>
4. Resources-Based Industries	New Establishment	KIDC,
5. Basic Industries	& Expansion	Moshi
6. Linked Industries	Projects	Industrial
7. Village Industries		Estate
8. Institutional Intensification	Leasing & Guaranteeing Scheme, Financing, Manpower Systems	

(3) Strategies for Industrial Expansion: Local resources-based industries, basic industries, linked industries and village industries

The development of these industrial units is directly treated in the programme of twenty-two new kinds of industries and expanding industries, and the highest priority will be given to these industries. However, there are many impediments to be dealt before implementing these strategies. It is expected that these impediments will be eliminated through the functioning of the KIDC and the Moshi Industrial Estate.

For the development of resources-based industries, the KIDC will undertake resources surveys and development of appropriate technology for more utilization of local resources. Since the metal and engineering industries are representative of basic industries, the KIDC will be equipped with a forge, foundry, and metal-processing and ceramic workshops. Furthermore the Moshi Industrial Estate will be centred around metal and engineering units.

Industrial linkage is more important when one considers that the industries of the region are dispersed in technical and geographical terms, and are characterized by triple industrial structure. Linkage is also urgently needed to raise productivity through an industrial division of labour. Because the main cause of an unintegrated industrial structure is lack of technology the KIDC will give special technical guidance to village industries as well as large industries to effect closer linkage.

Industrial linkage is not limited only to relations between smaller and larger industries, or between rural and urban industries, but also between industry and other economic activities like agriculture and tourism. The KIDC can encourage agricultural production projects and handicrafts for tourists.

The Moshi Industrial Estate also will greatly contribute to strengthening industrial linkage. This is even more true when one considers the proposed industries for the Estate—primarily metal and engineering industries.

The development of village industries is especially crucial for the full realization of Tanzanian socialism through economic equalization and the development of cooperatives. The KIDC is intended to setup two rural industrial promotion stations for providing quick industrial services and product display.

(4) Actions for Strengthening of Policy and Institutional Framework

In order to improve the industrial climate and develop industries in the region, an overall frontal attack is needed which calls for institutional and policy reinforcement. Needless to say, the KIDC and the Moshi Industrial Estate are part of this attack. In addition to them, the following projects and rearrangements could be implemented.

(i) Arrangements for Financial System

As mentioned before, the major issues in industrial financing are the weak network of financing institutions in rural areas and the users' lack of credit.

For the former problem, we propose to increase bank branches, especially of the Tanzania Rural Development Bank and the Tanzania Investment Bank. At the same time, additional manpower training is urgent. In these ways, the banks will be able to give managerial advice and guidance to small and village industries.

For the latter problem, it is proposed to set up a special leasing and guaranteeing scheme by utilizing a special fund of TIB for small industries. The main objectives of this project is to combine the guaranteeing system with technical assistance.

(ii) Industrial Manpower Training

It goes without saying that the supply of qualified manpower is a decisive element in industrial development. The manpower training of the KIDC will mainly specialize in upgrading workers' skills. As far as basic skilled manpower is concerned, other organizations such as the SIDO Industrial Workshops, Rural Training Centres and Post Primary Technical School will be in charge, after slightly rearranging their present systems. Needless to say, the KIDC will help to strengthen trainers and lecturers groups in such institutions.



Manpower Training Framework (Table-30)

Institutions	Trainees	Level
KIDC	Skilled or semi-skilled	Grade 1
	people, trainers of	Grade 2
	technical institutions	Grade 3
SIDO Industrial Workshops Rural Training Centres	Basic-skilled people	Grade 4
Post primary technical schools		Others

List of Industrial Projects, by Investment Cost, Manpower Requirements and Phases (Table-31)

	1ST YEAR		2ND YEAR		3RD YEAR		4TH YEAR		5TH YEAR		TOTAL			
	SKILLED OR NON SKILLED STAFF	INITIAL INVEST- MENT	SKILLED OR NON SKILLED STAFF	INITIAL INVEST- MENT	SKILLED OR NON SKILLED STAFF	INITIAL INVEST- MENT	SKILLED OR NON SKILLED STAFF	INITIAL INVEST- MENT	SKILLED OR NON SKILLED STAFF	INITIAL INVEST- MENT	SKILLED OR NON SKILLED STAFF	INITIAL INVEST- MENT	MANPOWER	
(1) NEW INDUS- TRIAL PROJECTS	50	850,400	6	969,600	140	12 1368,700	112	12 1,867,200	175	19 1,989,050	221	24 7,044,950	662	73
FOREIGN CURRENCY		503,500		506,850		814,050		842,900		975,300		3,642,600		
LOCAL CURRENCY		346,900		462,750		554,650		1,024,300		1,013,750		3,402,350		
(2) EXPAND- ING INDUS- TRIAL PROJECT	54	700,000	6	1,420,000	108	12 1750,000	135	15 1,750,000	135	15 2,100,000	162	18 7,720,000	594	66
FOREIGN CURRENCY		420,000		820,000		1050,000		1,050,000		1,260,000		4,600,000		
LOCAL CURRENCY		280,000		600,000		700,000		700,000		840,000		3,120,000		
(3) KILLINAN- JARO INDUS- TRIAL DEVELOP- MENT	26	4,275,384	-	4,108,251	9	17 1012,212	6	11 506,339	2	3 256,277	2	2 10,158,463	45	33
FOREIGN CURRENCY		1,082,787		2,926,811		375,075		210,625		60,000		4,655,298		
LOCAL CURRENCY		3,192,597		1,181,440		637,137		295,714		196,277		5,503,165		
TOTAL	130	5,825,784	12	6,497,851	221	41 4130,912	253	38 4,123,539	312	37 4,345,327	385	44 24,923,413	1301	172
FOREIGN CURRENCY		2,006,287		4,253,661		2239,125		1,753,525		2,295,300		12,897,898		
LOCAL CURRENCY		3,819,497		2,244,190		1891,789		2,020,014		2,050,027		12,025,515		

## 9.2 Programme No. 1: New Industries and Existing Industries

Our principal understanding in programming projects is to introduce more sophisticated and technologically higher versions of existing industries into the region, to an extent where some present industries would have to be eliminated. The present programme also seeks brand-new industries, in addition to simultaneously upgrading existing industrial activities, both quality-wise and quantity-wise.

### (1) New Industrial Projects

One of the most important tasks to boost industrial activities in Kilimanjaro is to introduce new, so far non-existing, industries into the industrial sector. In so doing, the first job that any planner has to tackle in preparing a list of projects is to establish specific criteria for selection of projects and put them in order of priority. Very little has been written in this area, and most of it is arbitrary, with analyses often done at the national level. In most cases, therefore, one cannot find some specific technique or method, applicable to a particular area within a country, like the region of Kilimanjaro. It is, then, our own task to set appropriate and suitable criteria for choosing priority projects. To do so, we have employed the following procedures:

- (i) Arbitrary nomination of projects based on our experience and an industrial field survey, the results of which in terms of local industrialists' opinions, are summarized in Table-34.
- (ii) Two stages of screening on those projects; one may be called a "merits/difficulties" test and the other a possibility of implementation" test. Those results are summarized in Table-35 and 36.
- (iii) Establishment of project priority criteria; this procedure is carried out mainly based on the previous two screening tests. Also added and required is consideration of technical, political, economic and social aspects. These aspects are examined at a local as well as at a national level and consequently 10 criteria are established.

Once the above procedures are completed, and certain crucial conditions examined, allocation of new industries within the region is carried out. Then investment requirements for new industries are calculated.

### (2) Nomination of Possible Projects

In Table-34, suggested potential (to the eyes of the local industrialist) industries are listed in addition to existing industries. In order to indicate degree of potentiality, frequency is compiled in terms of number of times suggested by district. In the field of crop-based industries, there are five newly-suggested industries, of which tomato canning is highly ranked by a frequency of 6 times, followed by coffee canning, fruit canning, an oil extraction business and pyrethrum processing. In the livestock-based industries, a dairy-processing project, a dairy-processing project, a trophy and crafts project, a fish-processing project and a meat-processing project and newly suggested and ranked according to frequency. There are three newly suggested forestry-based industries: A paper-making project, a small wooden article production

project and a chipboard project. In the field of clay and mineral-based industries, a cement products (other than bricks) project and a gemstone processing (or polishing) project are suggested. The cement products project has a relatively high frequency of 7. The sub-group of the metal-based industries has four new industrial projects. They are a subsidiary materials (such as nails, bolts, nuts and screws) project, a foundry project, an aluminum-casting project and a bicycle repair project. Finally, the non-metal-based industries' group has suggested nine new industrial projects. They are a paint-making project, a waste product project, a small paper article-producing project, a suitcase manufacturing project, a plastic article-making project, a button-making project, a paste/glue-making project, a soap-making project and a wind mill equipment manufacturing project. Apart from the two industrial projects (mentioned above) whose frequency of suggestion is quite high, all the other industries suggested have a very low frequency, ranging from one to three. This may, in turn, imply that industrial imagination of the local industrialists toward industrial diversification is fairly poor. This is then surely a place where government guidance and assistance is necessary.

Keeping all the suggested industries in mind, we brain-stormed and summarized the potential industries as follows:

- Trucking Project (1)

This is a project meant for transportation of industrial products and raw materials. Therefore, it may not be only an industrial project but also an integral part of industrial activities.

- Chipboard Project (2)

To make the most use of timber and timber-waste, it may be possible to establish one chipboard factory in Kilimanjaro, probably like the one in Tanga.

- Stone-Crushing Project (3)

There already exist one or two stone-crushing facilities in the region. But here it is possible to exploit additional stone resources for road construction and building materials.

- Subsidiary Materials Production Project (4)

Some small subsidiary materials such as nails, bolts, nuts and screws are lacking. It would be plausible that Kilimanjaro become a centre for producing a few kinds of subsidiary materials.

- Foundry Project (5)

A foundry industry forms a solid base for all kinds of industrial development. It is hoped that this industry will be established as soon as possible.

- Forging Project (6)

This project should also be established hand in hand with the foundry project. Obviously, this is also a fundamental industry in industrial development.

- Oil Extraction Project (7)

In Same, one relatively large oil extraction project is now under construction. However, what may be considered here is some smaller scattered units where oil seeds are available. Then, the Same unit would be able to play a role of higher refining.

- Tomato Sauce Project (8)

Although the volume of tomato production in Kilimanjaro is not known, it is often observed that quite a substantial amount of tomatoes go unsold and rot. Tomato preservation in the form of tomato sauce would be quite beneficial.

- Jam and Marmalade Manufacturing Project (9)

Citrus fruits which are quite plentiful all year round can be utilized for a jam and marmalade manufacturing industry.

- Animal (Livestock) Feeds Project (10)

Livestock, one of the most important protein sources, has to be developed substantially. To make the quality of meat better, livestock feeds must be up-graded and the conditions of their storage improved so as to better preserve them.

- Calabash Goods Project (11)

This project is already in operation, under the strong leadership of SIDO in Rombo. Though the project itself is successful, there should be room to upgrade products' design and quality, and then to expand its production capacity.

- Potato and Other Starches Project (12)

Starches are all imported from outside the region, in spite of the fact that potato and sweet potato, and cassava are cultivated locally.

- Meat-Processing Project (13)

Smoking of meats as a means of preservation will become increasingly important with the development of livestock. It may be followed somewhat later by the use of freezing instead.

- Bone-Crushing Project (14)

Bone powder (together with powdered animal blood) is a useful resource presently abandoned. It can be used for both livestock feeds and manure.

- Glue-Making Project (15)

Our impression is that chemical glue is very difficult to produce here, so perhaps animal and vegetable glues can be produced by utilizing local resources.

- Dairy Products Project (16)

There is already one fairly large dairy products units in Arusha. But Kilimanjaro might also be able to produce well-preserved fresh milk, cheese and yoghurt.

- Animal Cooking Oil Project (17)

One of the daily necessities, cooking oil, seems to be able to be supplied locally. Lard, for example, is quite easily collected from the fat of pigs.

- Charcoal-Making Project (18)

Presently local people are using firewood for cooking and housewarming. Firewood produces a lot of smoke and is often a cause of fire. In this sense charcoal would be more easily utilized, and a safer energy resource. Charcoal would also be useful for industrial purposes such as at a foundry or forge.

- Wood Toys and Educational Materials Project (19)

The national goal of universal primary education is in the final stage. Each region definitely needs educational materials for this programme. It is our conviction that a more sophisticated carpentry unit should be established for this sole purpose.

- Wheelbarrow Manufacturing Project (20)

In the mountain areas where road accessibility is awfully difficult and troublesome, a wheelbarrow type of short distance transportation would surely make everyday life more efficient and easy.

- Roof Tile Manufacturing Project (21)

Present pottery-making units would be upgraded to produce U-shaped roof tiles to replace the present tin plates. It would also be expected to produce a large variety of other products.

- Gemstone-Polishing Project (22)

Various kinds of semi-precious and precious stones are to be found in the Pare mountain area. Some simple processing project can be established

- Natural Brick Project (23)

This project has long been underway on a relatively small scale. The project would be promoted substantially when production is mechanized even a little and precision work is introduced.

- Gypsum-Processing Project (24)

Gypsum deposits are quite large. Although raw gypsum itself is not of much use industrially when it is processed gypsum becomes a far more important raw material for industrial products.

- Magnesite Mining project (25)

As a possible new mining project, magnesite is tentatively chosen here. It is probably possible to exploit some other minerals in the region.

- Scrap Metal Treatment Project (26)

Scrapped cars, machines and equipment can be sorted out according to metal characteristics. They can be used for or reformed for industrial metal products.

- Fashion Button Manufacturing Project (27)

Fashion buttons made out of animal skin and ivory and some wooden materials would be produced mainly for export to industrialized countries where they have higher value.

- Tailoring Project (28)

This project aims to reorganize small tailoring units into relatively bigger ones to produce various kinds of uniforms and office garments.

- Knitting Project (29)

Knitted wear is quite popular among those who live in mountain areas. Even in the lowlands, during rainy and winter season, it is cold enough to necessitate a cardigan or pullover.

- Dye-Making Project (30)

It may be possible to extract some dyes from natural grasses and trees available in the region. To do so, some intensive research will be needed. In addition, there is a possibility for introducing a chemical dye production unit.

- Hand Loom Weaving Project (31)

This project can only be possible if it produces artistic products or some unique quality products. The tourist-souvenir type of product can be developed.

- Soap-Making Project (32)

There are a few local soap-making industries in the region. Although large soap-manufacturing industries are being operated outside the region, it would be beneficial to a large strata of the local population to supply relatively cheap soap from nearby industrial units.

- Basket-Making Project (33)

Plenty of dried straw baskets and similar products are seen on the market. It is said that most of them are imported from other regions. The Kilimanjaro Region can produce similar products from, for example, sisal and other dried straws.

- Salt-Refining Project (34)

Salt, a necessity of life, cannot be produced from sea water in an inland region like Kilimanjaro. But is it surely possible to start a refining project for rock salt or raw salt, which would incidentally produce some chemical by-products useful for industrial development.

- Solar Water Utilization Project (35)

Plentiful solar heat can be utilized in several ways. One possibility is to manufacture hot water supply equipment which would utilize solar heat. Hot water produced in this way could be used for washing, bathing and drinking, thus reducing consumption of more useful energy such as gas and electricity.

- Hand Pump Manufacturing Project (36)

Where there are wells, there should be hand pumps. probably, the project would be assembly-type only in the beginning.

- Chalk Manufacturing Project (37)

As one of the essential educational materials, the manufacture of chalk is recommended here. As demand for this product is enormous, it is hoped that a reasonable-sized plant will be introduced into the region.

- Bicycle Seat Project (38)

Bicycles grow increasingly popular. But it is a difficult task to establish a whole assembling plant in any one place. Fortunately a large bicycle manufacturing factory is nearing its completion in Dar es Salaam. The Region would be very lucky if it could supply all the seats for the Dar factory.

- Egg-Shaped Briquette Project (39)

As a cleaner and long-heating energy source, a briquette manufacturing project is recommended. The detailed know-how exists in Japan.

- Local Medicine manufacturing Project (40)

As is the case with Chinese herb medicine, Kilimanjaro as well as other regions can possibly find vegetation for medical uses. The present local medicines of this sort should first be analyzed scientifically and then be industrialized.

- Oil Revitalization Project (41)

There are some people who believe that even used oil can never become useless, even if all that remains of it is dust and lists. On this principle, some industries succeed in manufacturing through oil revitalization plants. This type of plant would be undoubtedly useful for not only the region but also the country as a whole since oil is such a precious commodity.

It is not our intention to start all these suggested industries at once. It is first necessary to take various conditions into consideration in the industrial sector of Kilimanjaro, and carry out the "two-stage Screening Tests" on the projects. And finally on the basis of those tests, we will select the more easily-implemented of the projects.



### (3) Two-Stage Screening Tests on the Nominated Projects

#### - The Merits/Difficulties Conditions Test

Firstly, all these nominated projects are screened carefully through the "Merits/Difficulties of Conditions" test. Information on both merits and difficulties of implementation of the projects is collected from surrounding factors, in quite broad terms, such as the industrial scale of production consideration (viable scale merits and so on, technical factors, number of similar industries in adjoining availability of information on such an industry, and a very rough estimation of economic return upon a certain scale of production. In this way, fundamental characteristics and problems being faced by each project are identified and summarized in a descriptive way.

Through the above procedure, a fairly large number of projects are eliminated on the following grounds:

- (a) Large scale industries which involve extremely high foreign as well as domestic investment; these industries are primarily in the hands of the central government, and they are (2), (4), (24), (25), and (34).
- (b) Technically, too highly complicated and sophisticated: (15), (27), (34), and (36).
- (c) Extremely unfavourable location factor: Too close to Arusha and Tanga which already have very effective identical industries, such as (16) and (32).
- (d) Total absence of information concerning production possibilities; these industries often need more detailed pre-production surveys and research, and they included (24), (25), (30), (33), and (40).
- (e) Economically unjustifiable: (31), (35) and (37).
- (f) Not a new project, but a kind of expansion project: (11) and (23).

As a matter of fact, this test mostly fulfills our intention to eliminate projects too difficult to be implemented in the region over the coming five years. However, the eliminations are not results of the first test stage alone. They are also results of the second test, called the "Possibility of Implementation" test. That is, when we checked the results of the second stage, we found that a large number of projects could not satisfy various questions such as obtainability of raw and subsidiary materials, production means, and characteristics of production. Thus, these two stages of screening are interrelated.

#### - The Possibility of Implementation Test

The Possibility of Implementation Test is the second stage of testing, and clarifies the details of the selected 24 industrial projects, which are neatly arranged in Table 3. In this Table, various information and data are categorized into three broad items, "Raw/Subsidiary Materials," "Production Means," and "Products."

The Raw/Subsidiary Materials are further specifically divided into "Kinds," "Source," and "Available Quantity". The Production Means are again subdivided into "Kinds of machines/equipment," "Source," "Costs," "Life of Project" and further "Level of Skills Required," "Educational Background Required," and "Expected Employment per Unit." Finally, the products are subdivided into three sub-items and characterized by "Kinds," "Whom and Where to Sell" (Marketing), and "Production per Day."

In spite of the close relationship between the two tests previously pointed out, the second test stage has its own importance. It specifies to fuller extent the characteristics of production units. For example, the tomato sauce project has turned into the tomato puree project; the gemstone project is planned for two different sites, one at the mining site for stone collection and the other at Same for polishing stones; the edible oil extraction project will tentatively use sunflower seeds and ground nuts, though their availability is questioned, and so on. Before listing the finally selected industrial projects, we must emphasize that the process of this short listing does not necessarily mean that the excluded projects can never be implemented in the region, but, rather, it means that they need to be restudied and researched in a more rigid manner, not only at the regional level but also at the national level.

The final selections for industrial projects account for 23 units and are as follows:

- Trucking Project (1)
- Stone-Crushing Project (3)
- Foundry Project (5)
- Forging Project (6)
- Oil Extraction Project (7)
- Tomato Puree Project (8)
- Jam and Marmalade Manufacturing Project (9)
- Animal Feeds Project (10)
- Potato and Other Starches Project (12)
- Meat-Processing Project (13)
- Bone-Crushing Project (14)
- Animal Cooking Oil Project (17)
- Charcoal-Making Project (18)
- Wood Toys and Educational Materials' Project (19)
- Wheelbarrow Manufacturing Project (20)
- Roof Tile Manufacturing Project (21)
- Gemstone Polishing Project (22)
- Scrap Metal Treatment Project (26)
- Tailoring Project (28)
- Knitting Project (29)

- Bicycle Seat Project (38)
- Egg-Shaped Briquette Project (39)
- Oil Revitalization Project (41)

(4) Priority Criteria and Priority Test

Reviewing the above two procedures and reviewing also the important policy considerations described in earlier chapters, we establish ten specific criteria, believed to be appropriate and crucial:

(i) Criterion of availability of raw materials

The inland region, Kilimanjaro, is in a weaker position to start industrial projects by importing various raw materials from other regions or countries unless there is an acute demand within the region and/or nearby regions. It is, therefore, better when raw materials are available near the industrial site. It is also practical to take into consideration the quantity of available raw materials. Thus, raw materials become one of the most important criteria.

(ii) Criterion of availability of subsidiary materials

It has been pointed out in the previous chapters that lack of subsidiary materials such as nails, bolts, nuts, ring washers, welding bars and varnish is quite serious. Without a sufficient supply of these materials industrial activities are discouraged. In this case as in the case above, they should be made available within the vicinity of the industrial unit.

(iii) Criterion of availability of production means

Here, the Production Means implies machines/equipment for industrial production. Machines/equipment manufacturing industries are almost non-existent in the region. This being the fact, when any industrial projects start, equipment has to be procured. New and expensive imports constitute a time-consuming burden. If they are available, the nearer they can be obtained, the better. In addition, the lower their costs are, the better.

(iv) Criterion of technical level required

Any new industries require a certain level of skills and technology to keep the production going. In this respect, as a rapid increase in skilled manpower cannot be expected, our position is that the lower the level of skills and technology to begin with, and the more basic the level of industry to be established.

(v) Criterion of effects on employment

The employment problem is a social as well as an economic problem in this region. It is hoped politically as well as administrative-ly that employment should be created by the development of labor-intensive small-scale industries. This criterion, therefore, is established with this aim in mind. In our planning, with all the

projects being estimated at a level of minimum investment which can be expanded accordingly as demand expands, employment effect is ranked high when employment exceeds 10, medium when between 5 and 9, and small when less than 4.

(vi) Criterion of demand for products

Demand estimation is a most difficult problem. But fortunately, our field survey, and data collected from the statistics of the Regional Trading Company, as well as the demand for various commodities in the Moshi market as observed by the resident team over a one-year period, provide quite reliable information to register what the demand actually is.

(vii) Criterion of import substitution

Quite a large volume and variety of commodities and industrial products are imported from outside the country. Import substitution can be one of the first targets to be achieved in this region. As a matter of fact, this is the starting point for the region to implement a policy of self-reliance.

(viii) Criterion of possibility of exportation

Keeping in mind that the country is facing the acute problem of a shortage of foreign currency reserves, the region of Kilimanjaro should contribute to a remedy as much as possible through considering plausible industrial projects. For this reason this criterion is established, and any industry that involves exports is entitled to more serious consideration than others.

(ix) Criterion of economic scale of production

Today, the criterion of economic scale of production is one of the most crucial problems in industrialized countries. This is because whether a project pays or not depends solely on the amount of production, which reduces cost per product. In other words, unless a production scale is big enough to make the price (as well as the quality) of a product competitive in the market, no investment can occur. This principle applies also to the industries in this country. However, for the sake of establishing foundations for future accelerated industrial development, it is necessary to overlook this principle somewhat and pay attention to smaller and reasonably efficient industrial units in the region.

(x) Criterion of basicity of the industry

A definition of basic industries has already been given in an earlier chapter. This criterion is, in fact, a national policy-oriented one. It is expected that once these basic industries are established, industrialization itself and also industrial diversification through linkage effects would be accelerated.

In order to decide priority on the various industrial projects, a simple marking method is introduced. This method gives from

1 to 3 points in accordance with the degree of importance; that is, Point 1 gains the highest mark, followed by Points 2 and 3. Final scores are produced by adding up all these points from the ten criteria, and, of course, the lower the total figure is, the higher the priority is. Table-37, on marking the points is self-explanatory. It is the summary of the above ten criteria.

Table-38 outlines the criteria for priority as mentioned above, and, Table-39 outlines the resulting scores. In the latter table, six groups are categorized as lower-point industries. The lowest score is 16 and the highest score is 22. The results should, however, be read as being somewhat arbitrary. But we should note again that these 22 industries are those which have high potential in absolute terms in that we carefully screened out earlier other possible industries with drawbacks to them.

#### (5) Geographical Distribution of New Industries

Detailed investment schedule for 22 new industrial projects are carried out in Appendix. Regardless of their initiation year, it covers five year period as planning exercises. Investment requirements of both fixed capital and working capital are calculated according to costs items. Then, these 22 investment schedules are allocated to specific places all over the Region of Kilimanjaro. The summary of the investment schedule is treated in the following section and, here, locational distribution of the projects is determined in terms of timetable.

To allocate them, the following basic considerations are taken into account:

##### (i) Policy-oriented Elements

- (a) Overall diffusion of industries over the region and the rural area, with the aims of encouragement of rural industrialization, minimizing a drift and rural population and balanced development of the region.
- (b) Especially, the small industries related to daily necessities goods such as clothes, foods, shelters and basic production tools, will be preponderantly allocated, as far as market size is permitted, to rural area. Thus, these industries can be classified, in terms of market size, into ward-based industry, district-based industry and region-based industry.
- (c) "The growth-pole policy" which intentionally concentrates some industries in specific area or towns, will not be adopted.

##### (ii) Technical Elements

- (a) The project site should be situated near existing resources: This is particularly true in cases of mineral-based industries such as the roof-tile and burnt/natural brick projects, and the stone crushing industry.

- (b) The industrial utilities should be within the reach of the project: Particularly, the electricity is considered in relation with machines/equipment to be procured. Take the foundry and the forging project, for example, they are all located and distributed among the places where electricity is available. Even the gemstone polishing project is placed to have its polishing factory in Same Town.
- (c) The market should be near the production site: Locally demanded and consumable products such as processed agro-products are expected to be produced over certain coverage of local population. Thus, various production units of the kind are more or less equally distributed among four districts.
- (d) The industrial linkage effect should be one of the decisive factors in allocating particular industries to certain places: The meat processing project, the bone crushing project and the animal cooking oil project are, in fact, parallelly linked to each other. To start these projects, the industrialist has to collect sufficient amount of bones and fat (meat would not be so difficult so far as one can buy it) from various small slaughter-houses nearby. To do so, certain degree of up-grading in slaughtering technique has to be achieved.

The above considerations are applied to each of the finally selected industries and distributed geographically and time-span-wise. The results are shown below and in Table-40

Locational Identification (Table-32)

Name of Project	No.	Location	Identification
1. Trucking Project	4	Central Siha, Moshi Town, East Mkuu, Same	Located in the centre of each district to cover the whole district area and to provide a prompt distribution services.
2. Stone Crushing Project	5	Moshi Town, Mkuu, East Mengwe, Gonja, Kighari	(1) For road construction, Rombo and Pare are selected in terms of market accessibility and material availability. (2) For building construction, Moshi Town which is a big market is selected.
3. Foundry Project	2	Moshi Town, Same	By the necessities of larger market size, material availability, large electricity consumption and linkage effects, the two major towns are picked up.
4. Forging Project	4	East Machame, Moshi Town, Marangu, Same	In terms of material availability, industrial linkage and electricity requirement, the four wards are selected. Rombo is covered by Marangu.
5. Oil Extraction	5	Sanya Juu, Moshi Town, Mkauu, Kighare, Gonja	As this cooking oil is produced from cotton and sunflower seeds, the decisive factor is an easy access to raw materials. (1) Cotton seed oil: Moshi Town, Kighare, Gonja (2) Sunflower: Sanya Juu, Mkuu.
6. Tomato Puree	3	Sanya Juu, East Vunjo, Central Usseri	As materials are ripen tomatoes, the major problem is to be perishable. Location is selected near to producing area.
7. Jam and Marmalade	2	Moshi Town, Mshewa	Marmalade is allocated near to producing area. Apple and strawberry jam is located near to consumption market.
8. Animal Feeds	3	Sanya Juu, North Mashati, Kishiwani	Located in areas which maize husk, rice bran, honey etc. are easily collectable. Market is district-based.
9. Potato & other starch	3	East Masama, East Mengwe, Same	Location is near to material producing areas. Market is district-based.
10. Meat Processing	10	East Machame, West Masama, Central Siha, West Kirua Uunjo, Moshi Town, West Mengwe, Tarakea, South Mashati, Kighare, Lembeni	As the product is a long-term preservative smoked meat, location is near to material producing areas market is district-based.
11. Bone Crushing	4	East Machame, Moshi Town, South Mashati, Kighare	Located in the place which waste animal bones are available and which is linked with other livestock industries. Market is district-based.

Name of Project	No.	Location	Identification
12. Animal Cooking Oil	4	East Machame, Moshi Town, South Moshati Kilongwe	As raw materials are mainly available from meat processing factories, industrial linkage should be important. Market is district-based.
13. Wood Toys and Educational Materials	4	Sanya Juu, Moshi Town, Mkuu, Same	As major market is to primary school pupils, location is in the centre of each district.
14. Charcoal Making	8	Central Kibosho, East Uru, North Usseri, Tarakea, West Masama, Vuje, Mtii Kilongwe	Location is mainly based on raw material availability. Market is district-based.
15. Wheelbarrow	4	Central Kibosho, Mashati Olele, Msangeni, Same	As major users are peasant farmers, location is decided based on market accessibility.
16. Roof Tile, Clay Pipe etc.	3	East Machame, East Mengwe, Kighare	Located near to clay producing areas. Market is region-based.
17. Natural Stone Bricks	1	Tobeta (East Mengwe)	Raw material is "Tabeta Stone", meantime market is to a whole area of the region.
18. Scrap Metal Treatment	5	Machame, Moshi Town, Marangu, Himo, Same	As major aim is to supply metal materials to forging and foundry factories near-by, location is allocated near to these linked factories and in the centre of road networks.
19. Knitting	3	West Oldmoshi, North Uru, Tarabea	Location is based on marketability. Major buyers are people of Northern area of relatively low temperature.
20. Tailoring	4	North Machame, Moshi Town, Himo/Marangu Same	Location is based on market areas which are mainly connected with school pupil.
21. Bicycle Saddle	1	Moshi Town	Located near to major supplier of leather, for example, Tangania Tanneries, the customer could be the National Bicycle Co. P.S.M.
22. Gemstone	2	Bendera, Same	Located near to minerals producing areas.
23. Oil Revitalization	2	Moshi Town, Himo	Located near to major traffic centre which are easy to collect waste oil. Market is region-based.
24. Oval Buquette	3	West Shiha, Moshi Town, North Mashati	Located near to the places which are easy to procure major raw materials such as saw dust and coffee husk and to the possible bigger markets.
Total	89		



## (6) Expansion of Existing Industries

The present position of development of existing industries have already been viewed in the early chapter of this plan. Target projection for expansion of existing industries has also been performed in Chapter 7 together with that of new industries. Therefore, an expansion programme for existing industries can be prepared along quite the same line as the programme for new industries which was already completed. However, it is very unfortunate that the critical information concerning installed machines/equipment, their conditions and values (or prices if similar ones are purchased today), and production per month - in short, all those items categorized in Chapter 3 - could not be obtained by our survey or through elsewhere. This fact prevent us from pin-pointing specific industries to be expanded and its degree, too. Therefore, we are, in a way, not in a position to produce specific investment requirements for expansion of existing industries.

Nevertheless, tentative priority test for expansion industries was carried out in Table-43. The test also employed 10 criteria previously specified. Unlike the case of new industries, there are some poorly fitted criteria for the present test. First of all, since this test does not contain any criterion concerning the relationship between the number of existing units and the number of employees, when we judge the employment effect, which number, the total employment of all the units or the average employment per unit, should be chosen? Secondly, the seventh criterion, "Possibility of import substitution", has to be converted into "Degree of import substitution", and also "Possibility of exportation" into "Degree of exportation". This adjustment is simply due to the fact that production activities have already long been undertaken by the existing industries. Thirdly, as for the marking of level of skills, if the industry employs higher skills and is producing good-quality products, one may argue that as the industry can easily expand its activities with higher skills, this industry should acquire higher mark. Fourthly, the viable scale of production, the ninth criterion, can be dropped off on the ground that not only small scale but also medium and large scale industries shall be given equal opportunity to expand if required and necessary. Fifthly, the sixth criterion, "Demand for Products", can be combined with a notion of "Profitability of Production". Finally, one more consideration should attract more attention. That is, if there are any industries whose inputs which are presently imported, can be replaced by locally available resources, additionally higher priority has to be marked in.

The above considerations are introduced not in a rigid manner but in a more general way, and obtained the results as shown in Table-44. As more ambiguity is involved in this case than before, the ranking was done by dividing all the existing industries into four priority groups. The eight kinds of total points gained by different industries are compactly sorted into four groups from smaller points to higher priority.

Although the limited data and information do not allow us to proceed our detailed programming of expansion of existing industries further. Let us, in Table-45, re-produce the projected investment requirement of chapter 7 with a little qualification - new introduction of foreign currency portion of 60 per cent of total fixed capital requirements. As for the working capital requirements, figures introduced here are exactly same as before.

## (7) Toward Implementation of New Industries

In our planning, new industrial projects are understood to be undertaken largely by private initiatives. As it has already been seen in the previously analysis, it is the fact that the private industrial sector has still been playing by far a more important role in spite that the cooperative movement has been well-implemented into the rural industrial sector. It would, therefore, be impossible to eliminate all the private industrial productive activities. Instead, it should be recommended to encourage them in an organized manner within the frame-work of the industrial policy of the nation. It has been revealed through our survey that people in Kilimanjaro are very keen on starting new projects if surrounding conditions are secured. At present, however, most of them are rather reluctant to do so, due to mainly ambiguous policy in demarcating fields of private industrial activities and those of public industrial activities.

In all the countries of the world, industrial development has been encourage by the Government. Here, in Tanzania, too, the Government has been putting particular emphasis on the development of industrial sector. This being true, what is not clear enough in Tanzania is, once again, that to what extent the Government sector leads or regulate the industrial activities both in terms of kinds industries and volume of industrial production. It would be an ideal if all the small and medium scale industrial units are established and converted into the form of cooperatives. However, the real state of affairs does not seem to prophesy rozy perspectives of cooperative activities. Even in the present cooperative industries, there should be many things which has to be re-shuffled and up-graded such as organization itself, manpower and management. Keeping all these in mind, one would clearly see that implementation and development of new industrial projects cannot solely been achieved by the cooperative efforts. This is the very reason why almost 50 per cent of industrial projects are planned to be initiated by individual investors in Kilimanjaro.

One may, then, ask a question, "How can those industrial projects raise their investment funds?" In this region, there are four kinds of most accessible financial sources to be noted, the National Bank of Commerce, the Tanzania Rural Development Bank, the Governemnt Development Funds (subsidies), and "Cash Savings at Home". The first two are the formal banking institutions, of which NBC deals with only working capital and TRDB supplies investors with fixed capital only. Detailed discussion of these banking institutions have already been done in the main report. However, it should be advised that the newly proposed Kilimanjaro Industrial Development Centre be most utilized to assist those banks by preparing feasibility/technical studies for prompt disbursement of investment funds. The Government subsidies mainly consist of the Regional Development Budget and the Regional Development Funds from the Prime Minister's Office. All those subsidies have so far been spent on various projects including other sectors as a full grant. This practice should need some more careful scrutiny. In our targets projection in Chapter 7, we limited their rate of subsidization only up to 25 per cent of total fixed investment costs. In practice, however, this can be flexibly relaxed between 25 per cnet and 50 per cent. Then, the implementation of priority projects can more effectively and easily be implemented.

Finally, the "Cash Savings at Home" can also be regarded as one of the most important fund sources. It is said that, out of total volume of existing cash money, only 30 per cent of it is circulated. In other words, 70 per cent of total money is saved, and kept uncirculated among a large strata of local population at their own homes. If the banking activities penetrate into the local places of the region, monetary circulation will become more active and investment funds would be channeled through those formal banking institutions. But, what we are particularly concerned here is the fact that there are quite a large number of would-be entrepreneurs with their own cash money at hand. This potential should surely be embodied through the Governmental incentive measures.

Another very important question on the economic pre-feasibility, or, rather, an analysis of economic rate of return for each proposed project is well-answered at both a full capacity level and a 70 per cent capacity level in Table-. The marketability of most of those projects are specifically investigated product by product through the assessment of the Kilimanjaro Regional Trading Company's sales values within this region. As the K.R.T.C. claims that it has been dealing with 85 per cent of wholesale's values of all the traded commodities of the region, the real demand for the products would be much higher than the appeared figures. In addition, it is revealed that most of the products of the proposed projects are imported either from the other regions of Tanzania or other foreign countries.

For those products which are not handles by the K.R.T.C., we collected data either by visiting specific industries which are directly or indirectly connected with the products of the proposed projects, by employing a particular method of calculation such as the number of yearly increase of school boys/girls times a value of two pairs of school uniforms, or by replacing values or presently consumed household energy into charcoal and/or saw dust briquette. Incidentally, all those data were, needless to mention, readily taken into consideration in the priority ranking test which was undertaken in the previous section.

#### (8) Investment Requirements for New Industrial Projects

Projection of investment requirements for new industries has already been done and presented in Chapter 7. This, however, does not have any practical implications. Therefore, their investment requirements were automatically computed on several assumptions.

In this section, however, we are in a position to calculate investment requirements on the basis of implementable schedules. The geographical allocation of new industries has already been carried out in the previous section, so we know where they are being established. Combining these data and adding fixed capital requirements and working capital requirements over the five year period, practical investment requirements for fixed capital and working capital are obtained as in Table-41.

In table 41, total capital requirements and foreign currency portions are shown side by side under each fiscal year. This comparative presentation is only applicable to the fixed capital as cost items of working capital do not involve foreign currency requirements. As for the fixed capital requirements, projection figures exceed the present figures by far except for the first year of 1977/78. This is simply because the first investment of the present case requires heavy machine/equipment procurement from abroad. At the end of the five year period,

the total investment requirements for fixed capital of the present case falls short of those previously projected by 3.2 million shillings. This kind of discrepancy between projection and practical planning is very common. However, one should note that the case presented here is only one of the practical alternatives. With more and detailed data and information (when obtained), it would be possible to alter the present investment programme to a larger or a smaller extent.

As for the working capital requirements, the assumption (18,000 shillings per unit per year) in the previous chapter corresponds quite closely to the present planning. In Table-42, the previously projected working capital, slightly adjusted according to the number of establishing industrial units, and the present working capital requirement from Table-42 are compared. Over the first three years, we can see a big discrepancy in the figures, resulting in a very narrow gap in the overall total between them. The last two years, however, show very close correspondence between the projected working capital and the present working capital.

Suggested Potential Industries Based on Local Resources (Table-34a)

Kind of resource	Category of industries	Hai	Moshi		Rombo	Pare
			Urban	Rural		
Crop Based Industries	Coffee Pulper	1				
	Rice Mill					
	Maize Mill				3	1
	Sugar (Jaggery)					1
	Sisal Processing					
	Feed (Maize)					
	Cotton Ginning					
	Calabash Goods				1	
	Lamp Shade					
	Mosquito Coil					
	Pyrethrum			1		
	Tomato Canning	2		3	1	
	Coffee Canning	1				
Fruit Canning	1					
Livestock Based Industries	Oil Extraction	1				
	Hide and Skin	1				
	Leather Goods	4	1		9	2
	Trophy and Crafts	1	1			
	Dairy Products		2			2
	Meat processing					1
	Fishing					2
	Saw Mills	5	2	2	9	5
Carpentry	12	1		9	3	
Forest Based Industries	Plywood				1	
	Furniture	1	1			1
	Vehicle body					
	Crafts					
	Paper-making	1	2			
	Small wooden Articles					
Chip Board		1		1		
Clay and Mineral Based Industries	Gypsum					
	Brick (burnt)	4	2	1	9	2
	" (cement)					
	Pottery (tile)	2	2	1		2
	Gravel		1			
	Cement	2				5
Gemstone Processing						
Metal Based Industries	Tin and Blacksmith	5	1	1	3	
	Metal Working	10	3		1	4
	Engineering	1	1		2	
	Auto-Workshop					
	Spare parts making					
	Aluminium	1				
	Nails and screws, etc. (Sub-material)		3			
	Foundry	1				
	Bicycle Garage					

Suggested Potential Industries Based on Other Than Local Resources (Table-34b)

Kind of resource	Category of industries	Hai	Moshi		Rombo	Pare
			Urban	Rural		
Non-metal Based Industries	Bakery	3			4	1
	Tailoring		1		11	3
	Textile Piece Goods	7				
	Soft drink bottling					
	Sweets and Confectionary					
	Retracted Tires					
	Cooking Fat					
	Chemical Goods			1		
	Building and Civil Engineering					1
	Paint Making	1		1		
	Wax-Products	1				
	Box-Files and Labels			2		
	Exercise Books					
	Candle Making			2		
	Suit-Case			1		
	Plastic Industry			2		
	Buttan Making					
	Paste/Elastic			1		
	Soap Making			1		
	Windmills					

Merits/Difficulties Test (Table-35)

Industrial projects	Economically viable scale of production	Merits	Difficulties	Other comments
1. Trucking Project	-	Contribution to distribution products and production inputs between villages and towns.	-	Technical guidance on how to use, drive, repair for a longer life is necessary.
2. Chip Board Project	Medium scale production	Waste timber is utilized. For-energy source for boilers. Raw dust/waste can be burnt.	Raw materials have to be processed over very huge area of Kilimanjaro. Investment cost is very high.	
3. Stone crushing Project	Small scale production	Local resources are utilized. This project tends to be labour intensive.	Short term training on la-grinding technique is necessary.	Crushing into smaller stones would be necessary at the site.
4. Subsidiary material Production Project	Large scale production	As sub-materials are very scarce all over the country, there would be high possibility in exporting to other regions.	When the market is small its difficult to make a large production unit profitable. Difficulties in obtaining raw materials such as from bars and steel sheet.	
5. Foundry Project	Small scale production	This is one of the best industries for industrial development. Existing industries would benefit from this unit. Scrap metal is re-utilized.	How to supply energy at a low cost and continuously. How long scrap-metal to be used?	Waste oil be utilized as energy source.
6. Forging Project	Small scale production	One of the most important and basic industries. Complementary to the existing industries. Spare parts would be supplied through this project. Heat treatment becomes available. Scrap metal is re-utilized. Contributes to the village industries.	Would coke or heavy oil be readily available? Two or more years of training is required.	Waste oil may be utilized as energy source.

Industrial	Economically viable scale of production	Merits	Difficulties	Other comments
7. Oil Extraction Project	Small scale production	Oil seed would become a cash crop.	Raw material supply will be unstable. Collection of the oil seed would become problematic.	Primary processing can be done at villages. Secondary processing is recommended to be done in Moshi Town.
8. Tomato Sauce Project	Small scale production		Constant tomato supply.	
9. Jam and marmalaid Project	Small scale production		Constant tomato supply.	
10. Animal feed Project	Small scale production		Repercussion between human food and animal feeds...Availability of raw materials.	
11. Calabash Goods Project	Small scale production	Diversified utilization of calabash goods.	Better designing and merchandizing is required.	SIDO has already started the project in Rombo.
12. Potato and other starch project	Small scale production			
13. Meat processing Project	Small scale production	Through this project slaughtering technique will be up-graded. Animal fat and animal bones then can be utilized.	Bones have to be collected by visiting each slaughterhouse.	Smoked and dried meat project seems feasible.
14. Bone Crushing Project	Small scale production	Utilization of presently wasted resources.	Bones have to be collected by visiting	
15. Glue making project	Small scale production	Utilization of presently wasted resources.		
16. Dairy processing	Medium scale production	Contribution to milk preservation in a different form.	How to collect milk and availability of necessary amount of milk is the main problem.	Even Arusha Maziwa (milk) is in short supply of fresh milk.
17. Animal cooking oil project	Small scale production	Presently imported cooking oil will be replaced by this project.	Depends on availability of fats from various slaughterhouses.	



Industrial	Economically viable scale of production	Merits	Difficulties	Other comments
18. Charcoal making Project	Small scale production	No problem of smoke and less wasteful utilization of calories/energy.	Charcoal making method has to be improved.	Cooking stove has to be modified to be more useful.
19. Wood-toy and Educational materials Project	Small scale production	Go incide with the movement of universal primary education.	Selection of specific designs and precision work.	
20. Wheelbarrow manufacturing project	Small scale production	Short-distance transport of goods becomes much easier.		Woodwork and metalwork have to be combined.
21. Roof Tile Manufacturing project	Small scale production	Supply crucial building materials to local houses. Contribute to up-grading of local housing conditions.		There is a sample kiln. in Dodoma which was built by Italian experts utilizing locally produced burnt bricks.
22. Gemstone Exploitation and Polishing Project	-	Exportation is expected.	High technical skill is needed.	Much more detailed survey/research/investigation is necessary.
23. Natural Brick Project	Medium scale production	Fuller utilization of existing natural resources. Exportation can also be expected.	Transport and accessibility to the project site.	The unit has long been in operation in Lower Rombo. It is said that big old buildings in Nairobi were built by those stone bricks from Rombo.
24. Gypsum Processing Project	Large scale production	Processed Gypsum has a large variety of uses for industrial production.	A very costly project which involves a large amount of foreign currency.	Demand for Gypsum-oriented products have to be identified at national level. Move intensive investigation into deposits. quality and etc. is necessary.
25. Magnesite Mining Project	Medium and large scale production	Utilization of existing natural resources.	Transportation to magnesite consumers.	More intensive investigation into deposits, quality and etc. is necessary.
26. Scrap metal Treatment Project	Small scale production	Huge amount of scrap metals left idle in the region can be utilized for some time.		
27. Fashion Button manufacturing project	Small scale production	Fuller utilization of wood, animal skin and Ivory.	High quality is required Marketing problem into world markets.	

Industrial	Economically viable scale of production	Merits	Difficulties	Other comments
28. Tailoring Project	Small or medium production	To increase production efficiency and variety of production.	How to organize it or who organizes it? Is there any guarantee that tailors get more income.	
29. Knitting Project	Small scale production	To serve the demand in the rural mountain area where it gets quite cold at night and during winter season.	Some skills are required Raw materials must be mostly imported.	
30. Dye making project	Small scale production	Local resources utilization.	Any raw material in the local area? No information so far has been obtained.	We only consider natural dye (not chemical).
31. Hand Loom Weaving Project	Small scale production	Salable to tourists when products are attractive.	Artistic inspiration is required. Raw materials have to be imported.	
32. Soap Project	Small scale production	Soap would become available even in a remote place.	How to complete against relatively cheap/good quality soap produced outside the region.	
33. Basket making Project	Small scale production			
34. Salt refining Project	Medium and large scale production	Can expect various chemical by-products. Table salt would be exportable to other regions.	Large investment on sophisticated machines equipment. Markets have to be ensured.	
35. Solar Water Utilization Project	Small scale production	Solar heat utilization.	Demand and need for hot water are not known.	
36. Hand Pump manufacturing project	Medium scale production	Pumps can be utilized at all wells in the region.	Skills and subsidiary materials are needed.	Foundry and forging units have to be related.
37. Chalk manufacturing project	Medium scale production	Can supply to all kinds of schools and offices.	Highly processed gypsum is the raw material.	
38. Bicycle Saddle Project	Small and Medium scale production	Diversification of leather goods.	Markets have to be gauged at bicycle manufacturing and assembling factories.	National Bicycle Co. Ltd. would be the candidate.

Industrial projects	Economically viable scale of production	Merits	Difficulties	Other comments
39. Oval (Egg-Shaped) Briquette Project	Small scale production	Low cost energy project very useful for domestic consumption. The product has long-life burning ability.	Coal dust is one of the ingredients.	
40. Local Medicine manufacturing Project				Intensive research is required both at the regional and National level.
41. Oil Revitalization Project	Small scale production			Presently wasted heavy oil would be re-utilized to the point where it is now.

Implementation Possibility Test (Table-36a)

Industrial project	Kinds	Raw/sub materials where from obtainable	Available volume
Trucking Project	-	-	-
Stone Crushing Project	Rocks and Stones	Locally	Abundant
Foundry Project	Scrap Metal	Locally	Abundant
Forging Project	Scrap Metal	Locally	Abundant
Oil Extraction	Sunflower Seeds Groundnuts	Locally	Unknown
Tomato Puree Project	Tomato	Locally	Limited
Jam and Marmalade Project	Orange Lime	Locally	Limited
Animal feed Project	Maize, maize Husks, Rice, Rice Waste Coughed bones	Locally	Moderate Amount
Meat Processing Project	Cow(Ox), Pigs, Goat, Sheep	Locally	Moderate Amount
Bone Crushing Project	Raw Bones	Locally	Moderate Amount
Animal Cooking Oil Project	Animal Fat	Locally	Limited
Charcoal Making Project	Wood	Locally	Moderate to Abundant
Wood Toys and Education- al material Project	Wood	Locally	Abundant
Wheelbarrow Project	Wood and Iron	Locally	Moderate Amount
Roof Tile Project	Clay	Locally	Abundant
Gem Stone Project	Various Gem Stones	Locally	Un-known
Natural Brick Project	Tabeta Stone	Locally	Abundant
Scrap Metal Treatment Project	Scrap Metal	Locally	Abundant
Tailoring Project	Cloth	Locally	Abundant
Knitting Project	Woolen Thread	Import	Limited
Bicycle Saddle Project	Leather	Locally	Moderate Amount
Oval Briquette Project	Charcoal starch sawdust	Locally	Moderate Amount
Oil Revitalization Project	Potato and Cassava	Locally	Moderate Amount
Potato and Starch Project	Potato and Cassava	Locally	Moderate Amount

Implementation Possibility Test (Table-36b)

Industrial project	Kinds	Products whom, where to sell	Production per day
Trucking Project	-	-	640 km
Stone Crushing Project	Crushed Stone	Construction Govern- ment	10 t
Foundry Project	Repair Parts	Industries	780 kg
Forging Project	Agri Implement parts	Industries	300 kg
Oil Extraction	Edible Oil	Villagers	20 kg
Tomato Puree Project	Tomato Puree Factory	Tomato Source	300 kg
Jam and Marmalade Project	Jam and Marmalade	Restaurants, Hotel, etc.	100 kg
Animal Feed Project	Animal Feeds	Village Farms	250 kg
Meat Processing Project	Smoked meat	Shop Villagers	100 kg
Bone Crushing Project	Bone Powder	Feed Factory Villag	150 kg
Animal Cooking Oil Pro- ject	Cooking Oil	Shops Villagers	100 kg
Charcoal Making Project	Charcoal	Villagers Shops, Factories	200 kg
Wood Toys and Educational Material Project	Educational	Schools	30 sets
Wheelbarrow Project	Wheelbarrow	Villagers, Shops	5 units
Roof Tile Project	Roof Tiles Bricks	Villagers	600 pcs.
Gem Stone Project	Polished G. Stone	Export	-
Natural Brick Project	Natural Stone Brick	Export Home Market	165 pcs.
Scrap Metal Treatment Project	Sorted Scrap Metal	Factories	1 t
Tailoring Project	Uniforms Working Wear	Offices Schools	60 units
Knitting Project	Pull-over Sweater	Highland People	9 units
Bicycle Saddle Project	Leather Saddle	N.B.C in Dar	100 pcs.
Oval Briquette Project	Briquette	Villagers	1,500 pcs.
Oil Revitalization Pro- ject	Revitalized oil	Petro Station Car- Users	200 lit.
Potato and Starch Project	Starch	Shops	180 kg

Implementation Possibility Test (Table-36c)

Industrial project	Equipment	Obtainable	Cost	Life	Skill required	Education background	Employ
Trucking Project	8 trucks	Import	700,000/=	5 years	Medium	SVII - FII	
Stone Crushing Project	1 stone crushing 1 Digging Machine	Import	260,000/=	8 years	High and Medium	SVII - FIV	
Foundry Project	1 Cupola	Import and Local made	35,000/=	10 years	Medium	SVII - FIV	
Forging Project	1 Kiln and 2 Forging Machines	Import	75,000/=	10 years	High and Medium	SVII - FIV	
Oil Extraction	1 Squashing Machine and Filter	Import	42,000/=	10 years	Medium	SVII - FIV	
Tomato Puree Project	1 Squashing Machine and Filtering "	Import	30,000/=	10 years	Medium	SVII - FIV	
Jam and Marmalade Project	2-3 pans and Filters	Local Made	10,000/=	5 years	Low	SVII - FII	
Animal Feed Project	1 milling Machine	Import	20,000/=	5 years	Medium to Law	SVII - FII	
Meat Processing Project	1 Smoking Unit	Local Made	7,000/=	3 years	Law	SVII - FII	
Bone Crushing Project	1 Crushing Machine	Import	25,000/=	5 years	Law	SVII - FII	
Animal Cooking Oil Project	Pans and Tins	Local Made	3,000/=	5 years	Law	SVII - FII	
Charcoal Making Project	1 kiln	Local	3,000/=	1 year	Medium	SVII - FII	
Wood Toys and Edu- cational Material Project	5 Carpenter Sets	Import	5,000/=	3 years	Medium	SVII - FII	
Wheelbarrow Project	3 Carpenter Sets	Import	3,000/=	3 years	Medium	SVII - FII	
Roof Tile Project	1 kiln and Ocher	Local Made and Import	28,000/=	3 years	Medium	SVII - FII	
Gem Stone Projects	1 Cutting 1 Digging 1 Grinding	Import	50,000/=	5 years	High	FIV	
Natural Brick Project	2 Sets of Digging and Crushed Machine	Import	56,000/=	5 years	Medium	SVII - FII	Additi
Scrap Metal Treat- ment Project	1 sharing Machine 1 Truck (special order)	Import	125,000/=	5 years	Medium	SVII - FII	
Tailoring Project	Cutter, Sawing Machine, Irons, etc.	Import	42,000/=	4-5 years	Medium	SVII - FII	
Knitting Project	9 knitting Machine 1 Sawing Machine	Import	28,000/=	5 years	Medium	SVII - FII	
Bicycle Saddle Project	2 Pressing Machine	Import	50,000/=	8 years	Medium	SVII - FII	
Oval Briquette Project	1 milling Machine	Import	17,000/=	5 years	Law	SVII - FII	
Oil Revitalization Project	1 oil-Revitalization Machine, 1 Pick-up	Import	80,000/=	5 years	Law	SVII - FII	
Potato and Starch Project	1 Squashing Machine and Others	Import and Local Made	50,000/=	10 years	Law	SVII - FII	

Criteria to Choose Priority Projects (Table-37)

	Point 1	Point 2	Point 3
(a) Availability of Raw Materials	Available near production unit Large volume	Available within region Medium Vol.	Available within country or by import Low Vol.
(b) Availability of Sub-Materials	Available near production unit	Available within region	Available within country or by import
(c) Availability of Production Means	Self-made Low cost	Readily-Imported Goods Medium cost	Special order to foreign countries High cost
(d) Level of Skills & Technology	Low	Medium	High
(e) Expected Employment Effect	High	Medium	Low
(f) Demand for Products	High	Medium	Low
(g) Possibility of Import Substitution	High	Medium/Low	Nil
(h) Possibility of Exportation	High	Medium/Low	Nil
(i) Scale of Production	Possible at small scale	Possible at medium scale	Possible at large scale only
(j) Importance & Necessity with respect to Overall Industrial Dev.	High	Medium	Low

Priority Test (Table-38)

	1	3	5	6	7	8	9	10	12	13	14	17	18	19	20	21	26	28	29	38	39	41		
1. Availability of Raw materials	1	1	1	1	2	2	3	2	2	2	2	3	1	1	1	1	1	1	2	3	2	2	1	
2. Availability of Sub-materials	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
3. Availability of Production means	3	2	3	3	3	3	1	3	2	1	2	1	1	2	2	1	3	3	3	3	2	3	3	
4. Level of Skilled and Technology Required	1	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	2
5. Employment Effect	1	2	1	2	2	1	2	2	3	1	2	2	2	2	2	1	2	1	1	1	1	2	2	
6. Demand for products	1	1	1	1	1	2	3	1	2	1	2	1	1	1	1	1	1	1	2	2	2	1	1	
7. Possibility of Import Substitution	3	1	1	2	2	(2)	2	2	2	2	3	2	2	2	2	2	2	1	2	2	2	2	1	
8. Possibility of Exploitation	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	3	
9. Viable scale of Production	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
10. Basic ability of the Industry with respect to the industrial development	2	1	1	1	2	3	3	3	3	3	3	3	2	3	2	2	1	3	3	3	2	2	2	
Total	18	16	16	20	22	20	20	20	19	20	19	17	19	18	16	17	21	22	20	17	18			



Priority Ranking (Table-39)

Ranking	Total points	Industries
FIRST PRIORITY GROUP	16	1. Trucking Project 6. Forging Project 5. Foundry Project 21. Roof tile Project
SECOND PRIORITY GROUP	17	18. Charcoal making Project 26. Scrap Metal Treatment Project 39. Oval Briquette Project
THIRD PRIORITY GROUP	18	3. Stone Crushing Project 20. Wheelbarrow Project 41. Oil Revitalization Project
FOURTH PRIORITY GROUP	19	13. Meat Processing Project 17. Animal Cooking Oil Project 19. Wood Toys and Education Material Project
FIFTH PRIORITY GROUP	20	7. Oil Excavation Project 9. Jam and Marmalade Project 10. Animal Food Project 12. Potato and Starch Project 14. Bone Crushing Project 38. Bicycle Saddle Project
SIXTH PRIORITY GROUP	21 and 22	28. Tailoring Project 8. Tomato Puree Project 29. Knitting Project

Location Distribution of New Industries (Table-40)

	1st Year	2nd Year	3rd Year	4th Year	5th Year
Trucking Project	Moshi Town	Same, Sanya			
Stone Crushing	Rombo		East Mengwe (Tabeta Stones)	Moshi Town	Gonja, Usangi
Foundary Project	Moshi Town				Same
Forging Project	Moshi Town	Marangu		Same	Machame
Oil Extraction	Sanya Juu Moshi Town			Mkuu	Gonja, Usangi
Tomato Puree			Sanya Juu	East Vunjo	Usseri
Jam and marmalade		Moshi Town			Mshewa
Animal feeds Project		Sanya Juu	Kishiwani		Mashati
Potato and starch		East Masama		East Mengwe	Same
Meat Processing			Moshi Rural, Moshi Town, Kigare, East Machame South Mashati	Rembeni, South Masama, East Mengwe	Kilongwa, Central Siha, Tarakea
Bone Crushing			Moshi Town	East Machame, South Mashati, Kilongwe	
Animal Cooking Oil			Moshi Town	South Mashati	East Machame, Kilongwe
Charcoal making		Central Kibosho, East Uru, Muti, North Usseri	Vuje	Tarakea, West Masama	Kilongwe
Wood Toys and Educational Materials		Moshi Town	Same	Mkuu	Sanya Juu
Wheelbarrow Project		Central Kibosho		Mashati Olele	Ugweno, Same
Roof Tile Project		Usangi	Mengwe		East Machame
Gemstone Project					Bondera and Same
Natural Stone Brick Project	East Mengwe				
Scrap Metal Treat- ment Project	Moshi Town	Marangu		Same	Machame
Tailoring Project			Moshi Town	Same	Himo/Marangu Machame
Knitting Project			Kibololoni	North Uru	Tarakea
Bicycle Saddle Project				Moshi Town	

Investment Requirements for New Industrial Projects (Table-41)

(Unit: Shilling)

	1977/78	1978/79	1979/80	1980/81	1981/82
Number of Industrial Units of which Coops	6 (3)	18 (7)	15 (7)	24 (12)	33 (12)
Total Costs	F.C.P. (503,500)	Total Costs (1,010,350)	Total Costs (1,824,400)	Total Costs (2,667,300)	Total Costs (3,642,600)
	850,400	969,600 (506,850)	1,368,700 (814,050)	1,867,200 (842,900)	1,989,050 (975,300)
FIXED CAPITAL					
TOTAL	850,400 (503,500)	1,820,000 (1,010,350)	3,188,700 (1,824,400)	5,055,900 (2,667,300)	7,044,750 (3,642,600)
WORKING CAPITAL					
TOTAL	595,850	599,350	623,540	628,440	652,660
		1,014,950	1,018,450	1,058,530	1,077,550
			3,036,900	3,036,900	3,170,160
				3,502,650	3,506,150
		1,614,300	4,678,890	8,226,520	11,848,320

Working Capital Compared: Projected vs. Present (Table-42)

(Unit: Shilling)

	1977/78	1978/79	1979/80	1980/81	1981/82
PROJECTED	90,000/-	270,000/-	288,000/-	432,000/-	432,000/-
WORKING CAPITAL	(5 x 18,000)	(5 x 18,000)	(16 x 18,000)	(24 x 18,000)	(24 x 18,000)
PRESENT	74,481/-	126,868/-	379,612/-	437,813/-	430,224/-
WORKING CAPITAL	(595,850 - 12 x 1.5)	(1,014,950 - 12 x 1.5)	(3,036,900 - 12 x 1.5)	(3,502,650 - 12 x 1.5)	(3,441,800 - 12 x 1.5)
	74,481/20	126,868/75		437,813/25	430,224/95

(unit:shs.)

Summary of Economic Analysis of Proposed Industries (Table-43)

Name of Project	Initial investment	Annual total costs when operation starts	Economic rate of return (full capacity)	Marketability (estimated yearly demand: mainly based on RTC sales values)	Resources (raw materials)
1. Trucking Project	895,250	386,257	21.2	Demand in terms of Transportation services is enormously high	
2. Stone Crushing Project	287,160	255,523	40.6	1,600,000/- total output of 5 construction companies	Stone reserves are found abundant along valleys and rivers of Rombo and Yare mountain areas.
3. Foundary Project	175,066	136,000	40.5	175,000/- with possibility of 500,000/-	Abundant in the form of scrapmetals.
4. Forging Project	192,000	138,195	34.0	500,000/- of knife, Hoe, Panga, Axe	Abundant in the form of scrapmetals.
5. Oil Extraction Project (Cooking Vegetable Oil)	78,266	119,456	68.2	6,000,000/- with animal cooking oil (gee)	Cotton seed: Cotton production of Kilimanjaro in 1975/76 is 778 tons, of which approximately 2/3 or 500 tons account for cotton seed. As annual supply of cotton seed to an extraction unit is estimated at 50 tons, there would be enough amount of seed for about 10 processing units, provided that Same Oil Extraction Unit would not consume all cotton seed produced. Sunflower seed: Annual production of sunflower seed in 1975/76 is 78 tons. As a unit requires annual supply of 60 tons, present production level is recognized quite low. But it is expected that, as farmers become aware that seed is salable, they would increase its production.

Name of Project	Initial investment	Annual total costs when operation starts	Economic rate of return (full capacity) %	Marketability (estimated yearly demand: mainly based on RFC sales values)	Resources (raw materials)
6. Tomato Puree Making Project	53,827	134,886	117.3	200,000/- 500,000/- Tomato Related Products	It is recorded that vegetables are harvested 3,000 tons in 1975/76, of which tomato production is estimated to share approximately 15% or 450 tons. As annual tomato consumption at each unit is estimated at 75 tons, there would not be much problem in supplying enough raw materials, provided that consumption of fresh tomato would not reach a high level.
7. Jam and Marmalade Making Project	39,938	103,756	130.8	200,000/-	Citrus and other fruits production is recorded at 650 tons. As one industrial unit needs annual supply of 24 tons, it seems that raw materials are sufficient even if consumption of fresh fruits is taken into account. In spite of the above fact, production of strawberry and apple, which are most suitable for Jam, is at a quite low level at the present. It is hoped that a new product-diversification scheme will start in a couple of years time.
8. Animal Feeds Making Project	45,450	70,369	69.6	1,300,000/- supplied by National Milling Corporation	As raw materials, maize, maize husk and maize cog, rice bran and broken rice, wheat bran, bagasse, powdered bone and powdered animal blood can fully be utilized. Judging from the present production (1975/76) of maize (28,000 tons), wheat (6,581 tons), rice (4,200 tons), sugar and jaggery (49,703 tons), it would be quite possible to supply enough raw materials to proposed animal feeds projects. However, powdered bone and powdered blood would only be available when these projects start.
9. Potato and Other Starch Making Project	86,600	96,928	62.7	8,000,000/- of baking powder	Production of cassava (dry) is 3,200 tons, that of Irish potato 9,500 tons and that of sweet potato 4,000 tons in 1975/76. Total production of these food crops would suffice for needs of raw materials to proposed industrial units.

Name of Project	Initial investment	Annual total costs when operation starts	Economic rate of return (full capacity)	%	Marketability (estimated yearly demand: mainly based on RTC sales values)	Resources (raw materials)
10. Meat Processing Project (Smoked Meat)	32,950	323,279	480,000	475.7	1,000,000/- and over depending on the taste of local population	Livestock resources of Kilimanjaro in 1975/76 are; Cattle 751,933 heads, Goat 192,810 heads, Sheep 99,211 heads, Pig 12,300 heads. These figures would prove that the meat processing project, the bone crushing project and the animal cooking oil project can obtain enough raw materials from various slaughter-houses.
11. Bone Crushing Project (Powdered Bone)	51,050	72,136	108,000	70.1	100,000/- with an expectation of increase in demand	
12. Animal Cooking Oil Making Project	28,827	110,508	168,000	199.5	6,000,000/- with Briquette Project	
13. Charcoal Making Project	11,727	38,704	57,600	161.2	349,440/- with Briquette Project	Even under the envisaged shortage of timber for charcoal making, it would be possible if the charcoal making unit utilizes waste-timber which is abundant at most saw-mills of the region.
14. Wooden Toys and Educational Materials Making Project	46,916	118,692	180,000	130.7	170,000/- 2 sets per classroom for all the Primary Schools.	Abundant for the demand
15. Wheel Borraw Making Project	37,177	132,887	192,000	159.0	200,000/- by RTC and TFA	Abundant
16. Roof Tile and Other Making Project (Roof Tile) Brick, Claypipe	36,727	78,135	115,200	100.9	16,000,000/- in terms of G/S	Abundant
17. Scrapmetal Treatment Project (50 Red Scrapmetal)	131,172	191,145	276,900	64.7	1,312,000/- in terms of steel imported	Abundant all over the Region
18. Tailoring Project (School Uniform, Other Uniform)	103,116	366,640	576,000	203.1	2,000,000/- 2 pair per school boy or girl	Abundant from textile mills
19. Knitting Project (Knitted Wear)	86,950	338,209	486,000	170.0	120,000/- this is the figure RTC deals with. Far more demand is recognized at many shops in the Region	If wool, all have to be imported

Name of Project	Initial investment	Annual total costs when operation starts	Economic rate of return (full capacity) %	Marketability (estimated yearly demand: mainly based on RTC sales values)	Resources (raw materials)
20. Bicycle Saddle Making Project (Bicycle Saddle)	90,172	363,216	182.7	1,000,000/- Present sales of bicycle by RTC.	Just like the above case (the meat processing, the bone crushing and the animal cooking oil), it would be quite possible to secure enough raw materials provided that these industries are well coordinated
21. Saw Dust Briquette Making Project	25,616	51,420	122.5	349,440/- with charcoal Project	As raw materials, saw dust and coffee husk are considered. Both of them are abundantly recognized though their volume has not been compiled, and are often a stumbling-block for productive activities of factories and mills concerned
22. Oil-Revitalization Project (Revitalized Oil)	103,821	79,784	38.7	Over 500,000/- would be expected for industrial purposes	Abundant at petro-station and factories.
23. Natural Stone Brick Making Project (Stone Brick)	55,555	120,901	138.8	Demand for stone bricks as well as cement bricks are very high. A few million shillings of demand would be expected	Abundant Report
24. Gemstone Polishing Project (Polished Gemstone)	68,100	134,832	113.2	500,000/- to 1,000,000/- be easily provided that production can cope with the demand	Not investigated yet, but believed to be enough for the demand

### 9.3 Programme No. 2 General Industrial Promotion Programme

#### Project 1. Kilimanjaro Industrial Development Centre (KIDC)

##### (1) Objectives

The proposed Kilimanjaro Industrial Development Centre is designated as a pivot of industrial development in Kilimanjaro. It will play a central role in intensifying the effort for industrial development, and be the core of a package approach to industrial development. In this sense, the Kilimanjaro Industrial Development Centre is expected to generate a big impact on industrial growth of the region and trigger the sustained growth of industries.

Thus, the activities of the proposed KIDC will, in many ways, promote industrial development in the region. The objectives of the KIDC can be divided into primary objectives and overall objectives, and the former will be further classified into two categories, that is, improvement of the present situation and preparation of future industrial development.

##### (2) Primary Objectives

- (i) Guidance and dissemination of production and managerial technology: This includes general technical advice and help on improvement of use of machines and equipment, and on better management and accounting methods for the purpose of raising the general technological level.
- (ii) Development and introduction of intermediate technology appropriate to local situation: The KIDC will develop production technology appropriate to local resources and recycle specific resources which are scarce in this country, like fuel and metal.
- (iii) Special challenge to raise level of operation: This is serious in the region. Its main causes are said to be poor skills, improper maintenance, non-availability of repair services and lack of spare parts. The KIDC will attack these problems from all angles.
- (iv) Introduction and encouragement of new industries: The KIDC will conduct feasibility studies, set up the pilot machinery and test the manufacture new products.
- (v) Special encouragement of basic industries: The KIDC will emphasize installation of pilot production facilities in basic industries such as forging, foundries, metal processing and ceramics. This is a vigorous attempt to develop basic industries on a small-scale or village level.
- (vi) Intensification of industrial linkage: In order to intensify industrial relationships, the KIDC will extend special technical guidance to make small industries become suppliers for large industries, and to encourage large industries to place outside orders instead of self-supply.



- (vii) Intensive guidance of village industries: Since village industries are essential to the realization of Tanzanian socialism, the KIDC will endeavour to offer intensive guidance in production and managerial skills to rural industries which are based on rural markets and local resources.
- (viii) Manpower training: To mitigate the skilled manpower shortage, the KIDC will conduct short-time training for people with limited skills on specific subjects.
- (ix) Commercialization and sales promotion of products of village and small industries: Since marketing opportunities and marketing channels are lacking for these industries, the KIDC will provide merchandising guidance and places for product display as well as some channels of operation for distribution.
- (x) Collection and propagation of industrial information: For overall industrial development, the KIDC will gather industrial information and undertake basic periodical surveys, some of which will be useful for negotiations and guarantees from financial institutions.

### (3) Overall Objectives

- (i) Overall improvement and development of production, management and marketing skills of the industries in Kilimanjaro
- (ii) The enhancement of industrial employment and increase in income through expansion of the industrial sector
- (iii) Transformation and strengthening of the industrial structure of the region: The transformation from a structure based on simple consumer goods and industries processing primary products a firm and integrated industrial structure including basic industries
- (iv) Achievement of Tanzanian Ujamaa Socialism through encouragement of rural industries and cooperative movements

### (4) Activities and Benefits

#### (i) General extension services

##### (a) Managerial and marketing guidance

In order to cope with poor management, improper pricing, lack of skill in purchase of materials and poor merchandising, the KIDC will provide a wide scope of management and marketing guidance to industrialists.

Management techniques: To give management concepts and techniques to existing industries in the region; for example: quantitative control, inventory control, optimum costs etc.

Marketing guidance: Since there is no well organized marketing system in the region, there is a need for some kind of arrangement for promoting product sales. Also, sales of products of individual enterprises and cooperatives

will also be promoted through product design services, a market information service, marketing research etc.

The providing of these services will help create competitive and reducing the possibility of a surplus of unsaleable goods.

- (b) **Engineering guidance:** The majority of industries are facing machine troubles, lack of spare parts, and vehicle breakdowns which create, on one hand, under-utilization of machines, low productivity and an inferior quality of products, and on the other hand, promote demand for spare parts from overseas. To overcome these problems, a maintenance and regular check-up system, a repair service, and manufacturing of spare parts should be established. In this line, the KIDC will provide mobile maintenance guidance, repair services, and processing of some spare parts. Of course, spare parts processing will be done in the workshops of the KIDC.

The benefits created are immense and far reaching, such as strengthening production capacity (and reducing the under-utilization of capacity), improving production technology, encouraging engineering industries, and reducing imports.

#### (11) Workshop service

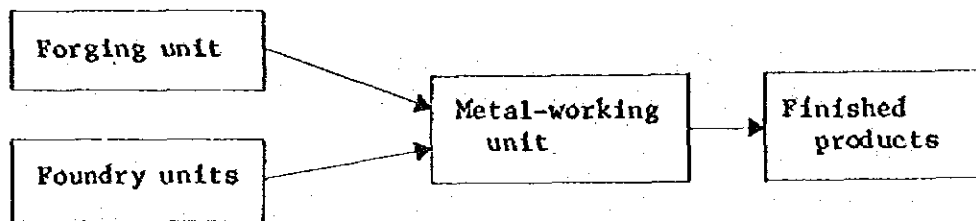
##### Aims

- (a) Repair service and spare parts manufacturing on order
- (b) Establishing and publicizing pilot plants in promising industries, and test manufacturing of promising new products
- (c) Development of new and appropriate technology, including recycling of waste materials
- (d) Analysis and examination of the nature and quality of materials and products after completion of their manufacture

##### Workshops

Installation of a forging unit, foundry unit, metal-working unit and ceramic unit, all of which are essential for industrial development

A forging unit combined with heat treatment is an facility for machine repair and spare parts processing. Also, a metal-working unit for cutting, pressing, grinding, fitting, and finishing is vital for machine repair, especially of assembling machines. Furthermore, a forging unit is important for the development of agricultural implements and cutlery goods. Also, this unit will greatly contribute to rural development through an upgrading of the village blacksmith.



A foundry unit is also basic for both existing and future industries. As in the former case, a foundry unit can contribute gears which are desperately needed here. For future industries, it will produce accessories, kitchen wares, pumps and building materials.

A ceramic/pottery unit is, first, for providing an extension service to the existing small rural potters and burnt brick makers whose technical level is still rudimentary but whose number is so great. Their future potentiality in items from table wares to producers' goods is very high. Initially, the industry can produce pottery burnt bricks, and clay pipe for irrigation and roofing tiles - all of these are presently technically accessible.

First a good-quality kiln must be established to serve the scattered potters and improve their product quality. Subsequently, additional kilns could be built in appropriate villages. At the same time, potter's wheels also should be introduced to local potters.

In the future, the ceramic industry could evolve to the stage of building tiles, refractories and insulators, with advancement of technology and clay quality. Attention should also be paid to art wares for tourists who come to Mt. Kilimanjaro and Mkomazi Game Reserve, which is an effective way to earn foreign exchange.

Needless to say, clay analyses should be conducted by an examination unit, because it is not yet known which areas have the better clays.

### (iii) Manpower training service

The shortage of skilled manpower is serious in the region. Especially lacking are cadres of practical technicians. The supply of skilled manpower simply does not meet demand.

The KIDC will focus on retraining and upgrading semi-skilled personnel who are presently working in factories. At the same time, it will upgrade the trainers and lecturers at institutions for training basic skills. Training time will not be lengthy but intensive, for about ten days. Further, the subjects to be taken up will be practical and technically specialized as follows.

- maintenance and repairing techniques
- metal-cutting
- welding
- heat treatment
- forging
- pottery wheels
- cost estimation
- product design, etc.

As for training lecturers, some could be invited from overseas, in addition to the resident experts.

(iv) Research and planning service

This service will include collecting and compiling information for further industrial development. For example, one of the tasks is to compile a "Guidebook for Kilimanjaro Industries" to reveal further investment opportunities. Also, this service will help industrialists get financing from banks by providing data. Another task is to undertake various feasibility studies for new projects.

(v) Sales promotion service: Moshi Industrial Exhibition Unit

With marketing the major difficulty of the industries in the region, it is recommended that the KIDC manage an urban marketing centre. This Industrial Exhibition Unit will be situated in the centre of Moshi, and at a different location from the KIDC headquarters.

Such a unit will be quite effective for village and small industries in terms of advertising and selling their products, because the rural marketing system is not well organized yet. Although village industries and district industries should be basically oriented to local markets, some products and surplus should seek additional markets in other places, especially, in Moshi. In this regard, the urban marketing centre will be helpful in exhibiting these products.

Such a centre can be of immediate use for display of handicraft made by village industries to tourists bound for Mt. Kilimanjaro. Many products could certainly be sold on the spot to fill this demand.

The reason for KIDC management of the centre is that it is in line, with the KIDC's providing marketing guidance, and it can also be expected to collect marketing information for the KIDC and the industries of the region.

(vi) Rural industry promotion service

This project is included in Programme 3 - Rural Industries Development Programme. Activities includes two rural industries promotion stations, and will greatly contribute to rural industrial development through fast service. In the first phase, stations will be established in Pare and Rombo.

Components of Industrial Growth Centres

Industrial Growth Centre	Technical Centre	Production Centre
Regional industrial growth centre	KIDC	Moshi Industrial Estate
District and village industrial growth centre	KIDC's rural industrial promotion stations, Rural Training Centres etc.	SIDO's industrial workshops

These centres or "rural industrial growth centres" are to be composed of technical and production units, together with SIDO's industrial workshops and rural training centres.

Although the strategic importance of the project in terms of rural development is mentioned in Programme 3, the detailed investment cost estimation and site plans are described in this Programme.

#### (5) Organization, Staff and Facilities

The KIDC will consist of an Advisory Committee and three departments.

The Advisory Committee is made up of a Regional Development Director, District Development Directors, Small Industrial Promotion Officer (SIDO), Manager of Kilimanjaro Regional Trading Company, Managers of District Development Corporations, Director of the KIDC, etc. The Committee is expected to meet quarterly under the chairmanship of RDD, and will advise on the activities of the KIDC.

The Industrial Promotion Department will be responsible for engineering aspects of the workshops and for introduction and improvement of technology in the pilot plants.

The Extension Service Department will be responsible for technical guidance and promotion of wider use of technology, in the areas of management, marketing, and engineering. Also it will supervise the Pare and Rombo Industrial Promotion Stations and the Moshi Industrial Exhibition Unit.

The Programming and Coordination Department will be in charge of programming, research, feasibility studies, coordination and general affairs.

#### Staff:

The total requirement is 89 staff members, the breakdown being 1, Director 79, local staff, and 9 advisers.

#### Facilities:

The major facilities of the KIDC will concentrate on the five sections: foundry, forge, mechanical engineering ceramics and briquettes.

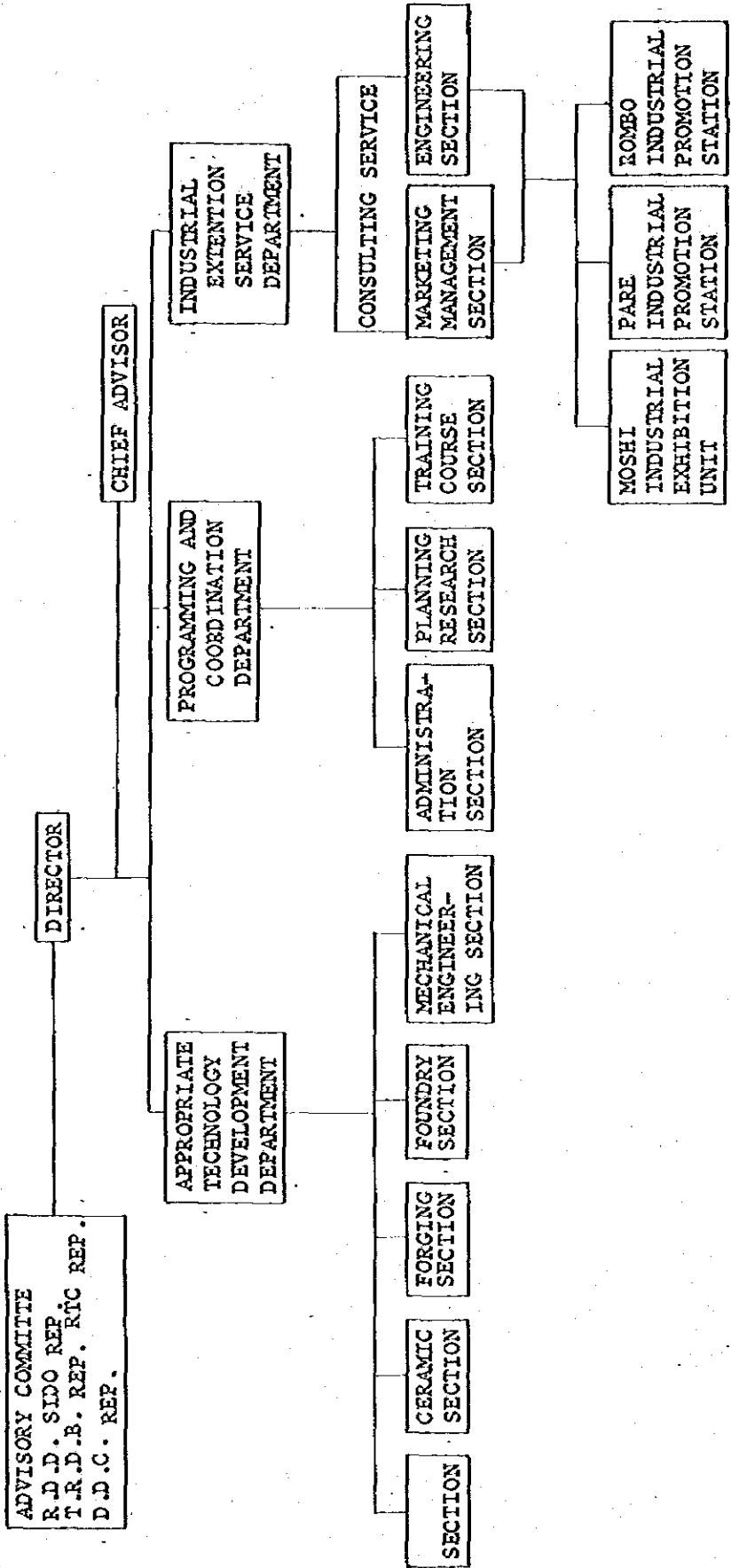
#### (6) Financial Requirements and Sources

The total initial investment cost of the KIDC will be approximately 10,157,000 shs., of which about 46% is expected to be provided in the form of foreign exchange. Annual running cost will average about 953,764 shs. exclusive of depreciation and interest costs. The detailed figures are shown in Table-45.

#### (7) Implementation by Phases

In view of the problems of manpower, and financial and physical resources, this project will be implemented in phases. As indicated in Table-46, the duration of the project is five years. The preparation of the major package of course will be established within the first two or three years, and after that these packages will be repeated.

Organization Chart of the KIDC (Fig. -4)



Organization, Staff and Facilities (Table - 44)

Organization/Location	Staff			Facilities
	Director	Advisor	Local Staff Total	
(1) Headquarters (Noshi)	1	9	64	74
Control Centre (Incl. Advisory Committee)	1	1	2	4
Programming Coordination Dept.	1	1	20	21
Administration Section	1	1	10	11
Planning/Research Section			5	5
Training Course Section			5	5
Extension Service Department	1	1	14	15
Marketing/Management Section	1	1	9	10
Engineering Section			5	5
Appropriate Technology Development Department	6	6	28	34
Foundry Section	2	2	5	7
Forging Section	1	1	5	6
Mechanical Engineering Section	1	1	10	11
Ceramic Section	1	1	5	6
Briquette Section	1	1	3	4
(2) Moshi Industrial Exhibition Unit			7	7
(3) Pare Industrial Promotion Station			4	4
(4) Rombo Industrial Promotion Station			4	4
Total	1	9	79	89

Cost Estimate of the Proposed Kilimanjaro Industrial Development Centre (Table-45)

	Project Year					Total	
	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total Foreign Currency	Total Local Currency
<u>Equipment Investment</u>							
Building and Shed	2,697,340	842,905	570,375	277,565	175,350	4,563,535	4,563,535
Machinery	627,287	2,908,811	368,075	203,625	70,573	4,178,371	10,573
(Foreign Currency)	(627,287)	(2,908,811)	(368,075)	(203,625)	(60,000)	(4,167,798)	
Machinery Installation Cost	32,443	285,167	31,094	14,649	7,054	370,407	370,407
Office Equipment	171,250	44,000	15,300	10,500	3,300	244,350	156,850
(Foreign Currency)	(55,500)	(18,000)	(7,000)	(7,000)		(87,500)	
Infrastructure	747,064	27,368	27,368			801,800	401,800
(Foreign Currency)	(400,000)					(400,000)	
Sub-Total	4,275,384	4,108,251	1,012,212	506,339	256,277	10,158,463	5,503,165
(Foreign Currency)	(1,082,787)	(2,926,811)	(375,075)	(210,625)	(60,000)	(4,655,298)	
<u>Operational Costs</u>							
Salaries and Wages	131,700	385,080	508,692	568,368	615,540	2,209,380	2,209,380
Staffing: Local Staff	27	57	68	75	78		
Advisor	6	8	8	9	8		
Maintenance Cost	4,544	31,650	96,430	110,705	121,365	364,694	364,694
Raw Materials & Utilities	-	314,531	391,207	452,722	475,362	1,633,822	1,633,822
Office Supplies etc.	34,870	92,828	125,848	144,755	162,620	560,921	560,921
Sub-Total	171,114	824,089	1,122,177	1,276,550	1,374,887	4,768,817	4,768,817
Total	4,446,498	4,932,340	2,134,389	1,782,889	1,631,164	14,927,280	10,271,982
(Foreign Currency)	(1,082,787)	(2,926,811)	(375,075)	(210,625)	(60,000)	(4,655,298)	



Implementation Schedule by Year (Table-46)

	1st Year	2nd Year	3rd Year	4th Year	5th Year
<b>(1) Programme Coordination Dept.</b>					
(a) Administration Section					
(b) Planning & Research Section	Feasibility Study Industrial Survey	"	"	"	"
(c) Training Course Section	Counterpart Training	Mechanical Engineering (Grade A & Manpower B)	Engineering Standard (A)	Metal Materials (A-B)	All previous course
		Mechanical Drawing (A)	Precision Measurements (A-B)		
		Process Control (A)			
<b>(2) Extension Service Dept.</b>					
(a) Marketing & Management Section	Counterpart Training	Cost Control Product Design	Inventory Control	All previous courses	"
(b) Engineering Section		Maintenance Control	Training Service	All previous course	"
		Repairing Service			
<b>(3) Industrial Promotion Dept.</b>					
(a) Mechanical Engineering Section	Counterpart Training	Machine Training (A-B)	Precision Measurements (A-B)	All previous course	"
		Spare Parts Manufacturing			
(b) Foundry Section	Counterpart Training	Molding (B)	Dissolution (B)	All previous course	"
		Wood Patterns (B)			
		Spare Parts Manufacturing			
(c) Forging Section	Counterpart Training	Forging (B)	Heat Treatment	All previous course	"
		Spare Parts Manufacturing	Welding		
(d) Ceramic Section		Counterpart Training	Pot-Making Burnt Bricks	Irrigation Pipe Roofing Tiles	Table ware Floor Tiles

## 9.3 Project 2. Moshi Industrial Estate

### (1) Introduction

Originally, the Moshi Industrial Estate Project was independently proposed by both the regional office of Kilimanjaro and the regional office of SIDO. Hence, it is not treated here as a project of the present IRDP. However, the Estate Project is so relevant for industrial development of the region that we also discuss here the role of the Moshi Industrial Estate in relation to the industrial planning of the IRDP.

#### (i) General Background

##### (a) Effects of Industrial Estate on Development

The development effects of the industrial estate are varied, e.g., transfer effect, complementarity effects, common facilities effect and information exchange effect.

A transfer effect is created by geographically shifting an industrial unit from a presently unfavourable place to a more favourable estate. This is especially relevant in prevention of environmental pollution.

The second effect is the complementarity effect which is the most important industrial estate benefit. A good example is the machine industry which needs a variety of spare parts. If these industrial units gather in one place, they can share many benefits with one another by providing necessary parts to each other.

Common facilities are popular in developing countries. Industrial development needs a lot of overhead capital which is a great burden for an individual industry. If some plural industrial unit can offer joint-use facilities through an industrial estate approach, it is very economical.

The fourth effect is information dissemination. Industries gathered in one place can exchange technical and market information, and can raise their own level. Naturally, the important consideration for establishment of an industrial estate is to maximize these various effects.

##### (b) Location of the Industrial Estate

Industrial estates can also be divided into several types depending on location. In this regard, the Moshi Estate because of its geography would be a "hinterland" estate. Generally, hinterland-type estates have problems in terms of transportation, particularly of imported materials. Considering these problems, the following are recommended for the Moshi Industrial Estate:

- to be higher processing
- to depend on local materials
- to direct heavy or bulky products to the local market

- to link up with existing industries
- to maximize the complementary effect idea and use of common facilities

(ii) The Proposed Moshi Industrial Estate

The Moshi Industrial Estate Project's major objectives are as follows: (a) To provide good accommodations for industry (b) to provide infrastructural facilities (c) to improve financial credit ratings and (d) to spread technology. Effect A is regarded as the transfer effect; B and C are the common facilities' effects, and D is considered the information dissemination effect.

(a) Common Facilities' Service

The major emphasis of the SIDO Estate is placed on common facilities' effects, particularly on infrastructure utilization, which seems to be appropriate in the regional context.

Generally, common service includes many items from physical to non-physical services. Major items are as follows:

\*Common Physical Services

Production Line

- Common utilization of a similar production process
- Common use of machine maintenance and testing facilities for materials
- Joint production of materials in common use
- Joint disposal of industrial wastes

Non-Production Line

- Joint storage facilities
- Joint transportation facilities
- Joint training of workers
- Medical facilities
- Entertainment facilities
- Commuters' bus service
- Administration office

\*Common Non-Physical Services

Production Line

- Joint purchase of raw materials
- Joint sale of finished products

It is a matter of course that an industrial estate project should fully maximize the advantages of the industrial estate establishment.

(b) Industrial Complementarity

The selection of industrial units in the Estate by SIDO favors light metal industries. This approach is appropriate when considering the problems faced in the region and the geographical position of Moshi, which is situated inland. Also, in selecting types of industries, a principle of complementarity is well taken into account. In the context

of the development of Kilimanjaro industries, complementarity should be more stressed than competitiveness. While the gathering of the same kind of industries causes excessive competition among member firms, a complementary-type estate will encourage specialization and an efficient use of scarce resources.

The selected industries are shown in terms of technical linkage in Fig. 1. It is evident that even in the present project, there is great complementarity. In an attempt to intensify this complementarity, a press and sheet metal processing may be supplemented which will greatly expand the kinds of finished products possible.

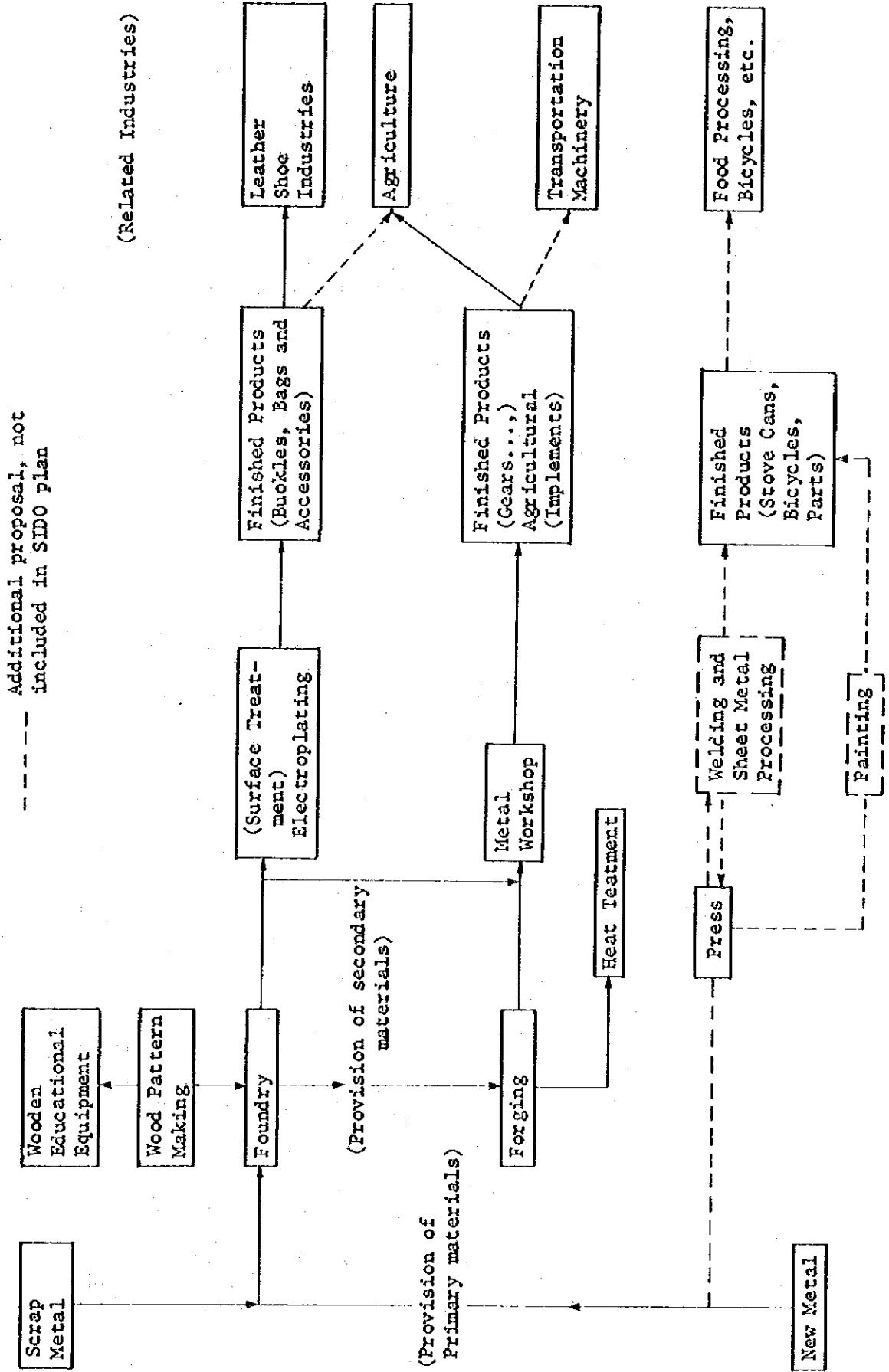
(iii) Relation Between Moshi Industrial Estate and Kilimanjaro Industrial Development Center

It is evident that the proposed industrial estate will take on an important role in encouraging future industrial development, particularly in the metal and engineering industries.

However, there are many physical and financial resources lacking. As already discussed, the technological problem is the most serious impediment on future development. Especially, the metal and engineering industries proposed in the industrial estate will require a higher level of technology. Further, joint production processes will need common technical standards and terms.

In order to encourage and to complete the proposed industrial estate, an intensive technological development policy is required. Thus, it is proposed that the Moshi Industrial Estate Project be carried out in conjunction with the Kilimanjaro Industrial development Center, or the latter should be followed by the former. After technical conditions are improved and coordinated, a new industrial horizon will be opened.

Industrial Linkage of First Priority Industries by SIDO (Fig.-5)



## 9.4 Programme No. 3 Rural Industrial Development Programme

### (1) Background

The strategic importance of the promotion and development of village or rural industries can be highly appreciated from many aspects: They have the capacity to generate employment opportunities at relatively low capital cost; they are very effective in processing locally available raw materials; they are a very good means of providing daily essential goods to the local people; they are helpful in creating additional income opportunities; they diffuse income over rural areas; and they can help to encourage local initiative, Ujamaa cooperation and a spirit of self-reliance in rural areas.

The Tanzanian government is placing special emphasis on village development. After the long historical experiences of villagization policy, the Village and Ujamaa Village Act, 1975, was presented before the people. This act establishes the framework for village organization and orientation of villagization programmes. In terms of economic organization, industrial activities are decided by a committee of the village council.

The problem is how to support villagization programmes in economic and technical terms. In order to encourage cooperative industries in villages, various kinds of activities are needed, such as technical guidance, marketing guidance, input provision facilities, and finance assistance. In fact, village and cooperative industries are now confronting these problems. Above all, at present, the problems of marketing, physical distribution, and spare parts procurement are crucial to the quality and pricing of finished products.

In these areas rural/village industries expect to be helped by the government through well-formulated programmes. In view of the related shortages of resources and of availability of physical and administrative infrastructure, it is recommended that a programme for development of rural/village industries be conducted by a package approach.

The package approach will be expected to include the following elements:

- (i) Credit and finance system
  - (ii) Merchandising and marketing of finished products
  - (iii) Improvement of physical distribution system
  - (iv) Supply of raw materials
  - (v) Technical guidance on production equipment and maintenance system, and provision of repair service
- (i) It is very difficult for village industries to secure loans from existing banking institutions due to many constraints, such as lack of a proper guarantee, relatively high interest rates, etc. In this regard, some special credit schemes are required.
- (ii) These two problems are conceived to be one of the most serious impediments for development of village industries at present.

They naturally cause market difficulties and a surplus of unsaleable products which eventually lead to closings. However, this area needs much specialized and professional knowledge, including market research and advice on product design. This is even more true when realize that village industries have to rely on a rural market whose network is not at all organized at present. Under the existing organization, the SIDO regional office is taking an important role in this area, but it is expected that in future the RTC will also have to take an important role. Furthermore, these systems should be linked with the traditional market system.

- (iii) This area includes transportation and storage problems. In the Kilimanjaro region, a shortage of transportation facilities is extremely serious. Considering the geographical situation, motor vehicles are an important factor in the delivery of finished products and the procurment of raw materials. In addition what is stressed here is a periodical maintenance system of motor vehicles which, otherwise, may have more frequent breakdowns. This question deserves more attention. In addition to a maintenance and check-up system a trucking system is necessary in rural areas.
- (iv) At present, of the supply of raw materials to village industries, (viz. cement, steel, metals, tools, etc.) the RTC of Kilimanjaro supplies 95%. However, since the basic problem in this area is the rather limited financial capability, it's more properly an area of (I), or the credit and finance system.
- (v) Village factories more or less contend with under-utilization of machine equipment. Its causes are many. Among them, especially significant are difficulties of procurement of spare parts, and machine breakdowns. Absolutely essential is a system of regular check-ups and a maintenance system for machinery. It is the same story as health control of the human body. If maintenance is not regularly performed on machines they easily breakdown and then need extra parts when the machines do break, at present it is difficult to get prompt repair service from any institution. In any case, it ultimately brings about underutilization of machinery. In order to extend a periodical checkup system to industries and to provide prompt repairing service to industries, some technician cadres or organizations are required, in addition to the existing system centering around the regional ujamaa and cooperative officer.

Based on an idea of a "package approach", the means for ii) marketing, iii) physical distribution system, iv) supply and v) technical extension service, will be contained in the "Rural Industrial Promotion Stations" of the proposed Kilimanjaro Industrial Development Center.

In addition, for financial problems, we propose a gurantee and lending scheme for small industries.

## (2) Project 1. Rural Industrial Promotion Stations

The stations will be established in the centre of Pare and Rombo Districts. These sites were selected because the districts are remote from the headquarters of the proposed Kilimanjaro Industrial Development

Center economically and geographically. The stations will provide package industrial services such as marketing, physical distribution, supply and technical guidance. The major functions are as follows. However, these activities will be carried out in close association with the headquarters of KIDC.

**Marketing service:** In order to demonstrate the products of village industries, the stations will be equipped with show rooms. A Marketing Officer who works here will collect market informations from various sources and provide to village industries. In view of the local market-orientation of these industries, such a function will be very useful.

**Physical Distribution Improvement:** The biggest problem in this area is transportation facilities, so some vehicles must be procured. Therefore, the installation of a shed for them is recommended. The vehicles will be used to deliver finished products and to carry raw materials. Another facility to be included with the station is a storeroom for finished products and raw materials.

**Repair Service:** Village industries cannot readily get repair services from relevant institutions. Therefore machinery and equipment remain idle for a long time, so production declines. A repair section will be attached to the Station. A technical expert stationed here will inspect village industries to repair machines and to provide maintenance guidance. The repair section will have some simple machines and tools. These stations are under the control of the proposed KIDC, so a repair section will work in close association with headquarters.

However, in view of the constraints of financial and physical resources, it is recommended that this project be implemented in phases. The detailed explanation of this project will be given in Programme No. 2-Project 1.

### (3) Project 2. Leasing and Guarantee Scheme

#### (i) Leasing & Guarantee Scheme for Small-Scale Industries

The establishment of the Kilimanjaro Leasing Company (KLS) and the establishment of a guarantee institution for small-scale industries under the direction of TIB using a special RIB "6 Million Fund" for small-scale industry will be proposed.

#### (ii) Rationalization of the Project

##### (a) Background and need for the project

In Chapter 5, we already observed that the major problem of development of village industries in Kilimanjaro is financing. Village industries lack of management capability and collateral and also the banking system itself lacks funds and capability. Of course these problems might be overcome within the present system if NBC and TRDB would be much more strengthened and/or if we were patient enough to wait for the upgrading of managerial skills for some time to come. But unfortunately these things are unlikely, and the problem is acute.



Fortunately, there is a five-year old fund (6 million Tshs) in TIB for the promotion of small-scale industry which has not been utilized yet. The fund should be used for the most efficient and most fruitful purpose.

Since the small industries are suffering from a lack of collateral, we recommend that TIB establish a guarantee institution using that fund. If the fund is managed carefully the maximum limit which TIB can guarantee will be ten times the amount that they have - i.e. 60 million Tsh. - which would be large enough to cover loans for the whole nation's small-scale industrial establishments for the time being.

As for the upgrading of management capability and moreover the project finding & formulation itself, SIDO should be strengthened a great deal. SIDO should especially have control over the issuance of guarantees so that the agencies incentive to organize and develop industry is strengthened.

The Kilimanjaro Leasing Company Ltd. (KLC) is needed since it can work: (1) As a financing intermediary by using RTC's facilities, and converting the small quantity of lending to a large quantity so that the financial institution (NBC, TRDB) gets the advantage, and (2) As a technical assistance agency which KIDC uses, since KLC owns the items it leases, it must take great care of these items - which in turn influences users - i.e. small industries.

(b) Merits of this scheme

The following are the merits of the scheme:

- An unutilized fund will be used in the most fruitful way: i.e. giving guarantees.
- Many institutions which so far have been separately assisting small-scale industries will be coordinated by the newly-established KLC.
- This system is socialist in nature. The means of production will be owned by the government through the KLC, and at the same time the system provides an incentive for increase of productivity, by charging a leasing fee to users, i.e. small-scale industries.

(c) Concluding remarks and further suggestions

This scheme is formulated under the following fundamental assumptions:

- SIDO in Kilimanjaro will be strengthened in terms of ability and number of staff.
- Every institution relating to this scheme, i.e. TIB NBC TRADB RTC and KIDC, cooperates in establishing KLC.
- Market channels and merchandising assistance will be supplied to small-scale industries so that they can realize a greater business potential.

This project will not work without careful coordination with other projects, which we suggest elsewhere.

## 9.5 Programme No.4 Long-term Industrial Development Programme

The proposed programmes and projects are confined to the coming five years. A span of five years is not enough to change the surrounding conditions and impediments including infrastructure. Hence, the proposed projects are selected with this limitation in mind, and generally ambitious large-scale projects are not included.

But if we were considering the long term, the list of industrial projects would be greatly changed. Under such a situations the following ambitious projects also would be possible.

(Table-47)

Projects	Location	Materials	Market	Present constraints
Sisal Paper-Making	Pare	Sisal	General	Power, water
Sisal Textiles	"	"	"	"
Bagasse paper	-	Bagasse	"	Water, Bagasse
Chipboard	-	Sawdust	"	Market
Chips for Pulp	-		"	
Gypsum Board	Pare	Gypsum	"	Power
Gypsum Processing	"	"	"	"
Can Making	-	-	"	Metal sheeting
Cement	Pare	-	Local	Power

## 9.6 Manpower Requirement

### (1) Classification of Industrial Manpower

Industrial manpower is firstly classified into two classes; an "engineer" and a "worker". They are, then, further sub-divided into five grades or categories; I Engineer, II Skilled worker, III Semi-skilled worker, IV Non-skilled worker and V Non-production worker. Definition of those grades is given in Table-48.

Manpower Classification (Table-48)

Manpower Grade	Necessary Ability	Qualification
Engineer	I A chief engineers or an assistant engineer who undertakes the following work:	University Graduates (or junior college Graduates)
	Professional Engineer (a) Planning in maintenance of machines/equipment and practical advice on maintenance. (b) Design and manufacturing of jigs. (c) R/D for new products and quality improvement.	
Skilled Worker	II A foreman who has more than five years of experience in particular production skills and can train semi-skilled workers	
Worker	III This worker has more than three years of experience in particular production technology and can undertake precision work under the supervision of the foreman.	
	IV This worker has less than three years of experience in certain field of production and works together with the semi-skilled worker under the supervision of the foreman.	
	V This worker does not have only industrial production skill (watchman, porter & messenger)	

The classification shown in Table-48 is not necessarily applicable to all the existing and probably new industries as well. For example, large-scale industries which have more than 50 workers are often managed by the following system:

Status	Engineer	Mechanical Engineer	Technician	Foreman	Worker	Helper
Grade	I	I	I	II	III	IV & V

On the other hand, manpower composition of small-scale industries is quite different from that of large-scale industries. That is, the small-scale industries do not mostly have any Grade I engineer, and sometimes do not even have the Grade II skilled worker, as shown below:

Status	Engineer	Foreman	Worker	Helper
Grade (Case 1)	-	II	III	IV & V
Grade (Case 2)	-	-	III	IV & V

(2) Present Conditions and Problems in Industrial Manpower

(i) Engineer (Grade I)

It is widely recognized that production engineering, R/D in engineer is responsible. The main reason why the above problem are acute is due to the chronic system that the Grade I engineer mostly goes straight to the manager's office right after his higher education, where he does not have any experience at the production line. Consequently, the Grade I engineer cannot have any access to the above mentioned problems.

In contrast with the above case, in most of the industrialized countries, university graduates have to have practical experience at the production line in order to acquire particular and practical engineering skills and technology together with production management.

(ii) Skilled Worker (inclusive of semi-skilled worker)

The present main problem is that no maintenance and no operational precaution for mechanical troubles have been practiced. It is believed that the major cause of this problem is the lack of technical (engineering) knowledge of the skilled worker. Therefore, it is urgently needed that the skilled worker raises his level of skills and technology particularly when the vigorous development of the industrial sector is expected. This is quite true as the skilled worker is believed to play a leading part in the production activities in the future.

One example would explain the above statement more vividly; we find in most of the engineering factories in Moshi that the

combination of resetting cutting-tools and cutting speed is not properly established, which results in decreasing the durability of the very machine and in producing poor quality products. This also affects the operation efficiency of the factory.

The solution of the above-mentioned problems should be related not only to the improvement of the ability of the skilled worker but also the improvement of coordination between the Grade I engineer and the skilled worker, where the former will contribute to the establishment of clear and accurate engineering standardization.

Thus, the proper basic theoretical as well as practical knowledge in engineering should be given to the skilled worker as soon as possible. To do so, the most efficient way is to train the skilled worker by employing various short term course. It will also be necessary to pave the way for the future specialization and diversification of various industrial activities as the industrial development proceeds.

(iii) Demand for Manpower in the Future

In order to estimate the demand for manpower, the following components are included:

- (a) Number of employees in the existing industries,
- (b) Necessary number of employees in expansion industries,
- (c) Necessary number of employees in new industries,
- (d) Necessary number of staff in KIDC.

And, further, in order to estimate manpower demand for each Grade specified in the earlier section, the following assumption is employed and, then, the present number of employees is allocated to each Grade, which is shown in Table-49.

Assumption and Present Structure of Employment (Table-49)

Grade	Assumption	Present Employment (1976)
I	2 %	89
II	5 %	221
III & IV	83 %	3,674
V	10 %	443
Total	100 %	4,427

In the following tables, manpower requirements by grade and by year for expansion industries, new industries and KIDC are separately summarized in Table-50, Table-51 and Table-52, respectively. And, then, finally, the total manpower requirement by grade and by year is estimated in Table-53, where the net employment is planned to increase by 1,500 over the coming 5 years.

Necessary Number of Employees in Expansion Industries (Table-50 a)

Grade	1st	2nd	3rd	4th	5th	Total
Estimated number of industries	10	20	25	25	30	110
Estimated number of employees	6	6	6	6	6	30
Total	60	120	150	150	180	660

Grade-wise Distribution of Necessary Manpower in Expansion Industries (Table-50b)

Grade	1st	2nd	3rd	4th	5th	Total
I (20%)	1	2	3	3	4	13
II (5%)	3	6	8	8	9	34
III & IV (83%)	50	100	124	124	149	547
V (10%)	6	12	15	15	18	66
Total	60	120	150	150	180	660

Necessary Number of Employees in New Industries (Table-51a)

Name of Project	1st	2nd	3rd	4th	5th	Total
Trucking	11 x 1	-	-	-	-	11
Stone Crushing	13	-	13	13	13	52
Foundry	9	-	-	-	9	18
Forging	11	11	-	11	11	44
Oil Extraction	-	8 x 2	-	8 x 1	8 x 2	40
Tomato Purey	-	-	8	8 x 3	8	40
Jam & Marmalade Manufacturing	-	16	-	-	16	32
Animal Feeds	-	7	7	-	7	21
Potato & Other Starch	-	7	-	7	7	21
Meat Processing	-	-	5 x 5	5 x 3	5 x 3	55
Bone Crushing	-	-	10	10 x 3	-	40
Animal Cooking Oil	-	-	6	6	6 x 2	24
Charcoal Making	-	5 x 4	5 x 1	5 x 2	5 x 1	40
Wood Toys & Educational Materials	-	8	8	8	8	32
Wheelbarrow Manufacturing	-	5	-	5	5 x 2	20
Roof Tile Manufacturing	-	13	13	-	13	39
Gem Stone Polishing	-	-	-	-	21	21
Scrap Metal Treatment	7	7	-	7	7	28
Tailoring	-	-	15	15	15 x 3	75
Knitting	-	-	14	14	14	42
Bicycle Saddle	-	-	-	10	-	10
Briquette	-	6	-	6	6	18
Oil Re-vitalization	5	-	-	5	-	10
<b>Total</b>	<b>56</b>	<b>116</b>	<b>124</b>	<b>194</b>	<b>243</b>	<b>733</b>

Grade-wise Distribution of Necessary Manpower in New Industries (Table-51b)

Grade	1st	2nd	3rd	4th	5th	Total
I	1	2	3	4	5	15
II	3	6	6	10	12	37
III & IV	46	96	103	161	202	208
V	6	12	12	19	24	73
Year Total	56	116	124	194	243	733

Grade-wise Distribution of Necessary Manpower in New Industries (Table-51b)

Grade	1st	2nd	3rd	4th	5th	Total
I	3	-	-	-	-	3
II	6	3	2	1	1	13
III & IV	17	6	4	1	1	29
V	0	17	11	3	2	33
Total	26	26	17	5	4	78



Total Manpower Requirements by Grade and by Year (Table-53)

	1st	2nd	3rd	4th	5th	Total
I						
KIDC	3	-	-	-	-	3
Existing/ Industries	89	-	-	-	-	89
Expansion Industries	1	2	3	3	4	13
New Industries	1	2	3	4	5	15
Total	94	4	6	7	9	120
II						
KIDC	6	3	2	1	1	13
Existing Industries	221	-	-	-	-	221
Expansion Industries	3	6	8	8	9	34
New Industries	3	6	6	10	12	37
Total	233	15	16	19	22	305
III & IV						
KIDC	6	3	2	1	1	29
Existing Industries	3.674	-	-	-	-	3.674
Expansion Industries	50	100	124	124	149	547
New Industries	46	96	103	161	202	608
Total	3787	202	231	286	352	4858
V						
KIDC	-	17	11	3	2	33
Existing Industries	443	-	-	-	-	443
Expansion Industries	6	12	15	15	18	66
New Industries	6	12	12	19	24	73
Total	445	41	38	37	44	615
New Employment Creation	142	262	291	349	427	1471

