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PROMOTION OF RURAL IMPLEMENT MANUFACTURE IN TANZANIA*

by

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0. ABSTRACT

An essential element of rural development is a supply of rural implements that satisfies demand. By rural implements we mean farm implements, craftmen's tools and basic household utensils. This paper starts out by the ascertainment that this element is lacking behind in most rural development programmes, at least in Tanzania which is used as a case in point.

The past and present supply-demand balance of rural implements is traced and recorded as far as available data allow, including presentation of a survey of the hitherto overlooked produktion performed by the village black- and tinsmiths. The conclusion of this survey is that these smiths constitute a sizable productive force which is underutilized.

A programme for promotion of the smiths' activities is outlined and it is discussed how this programme integrates with the rest of the Governments efforts to satisfy the demand for rural implements and with its rural development efforts in general.

Some general conclusions are finally made in respect of industrialization in relation to integrated rural development.

1. INTRODUCTION

Adequate supply of farm implements, craftmen's tools and basic household utensils is one of the prerequisites for rural development. Without provision of these "rural implements", these means of production, no production.

Why this commonplace introductory statement ? Because, by and large, the demand for rural implements is not satisfied and seems not sufficiently provided for in most rural development programmes, even the integrated ones; at least not, as yet, in Tanzania which will be in focus for this paper.

We will discuss which source of supply of rural implements combined with which organization of the distribution system would be appropriate for meeting the demand, given the present situation of Tanzania in terms of available resources and considering the overall rural and industrial development policies of the country. In other words, the question raised is: Which strategy for provision of rural means of production would be most expedient and realistic ?

In particular the technological, socio-economic and political feasibility of small-scale, rural manufacturing of farm implements will be discussed, not very theoretically, but in as concrete terms as possible. Answers will be attempted to the following questions: What seems to be the present and potential role of the village black- and tinsmiths in meeting the demand ? What have the government done so far to assist them ? Which plans for promotion of their trade are presently made ? How are the prospective conditions for the plans to be realized ?

In sum, the line of reasoning does not start out by viewing rural industrialization as a "good" thing or an end in itself. We take the imperative for supply of rural implements as given - and we try to specify that imperative in a given country - and then we analyse to what extent and under what conditions it is feasible to think of rural industries manufacturing these implements.

2. FACTUAL BACKGROUND FOR THE CASE STUDY DISCUSSION

The main historical, geographical and socio-economic features of Tanzania as well as the declared overall policy since 1967 towards socialism and self-reliance we assume are known to the reader. In this chapter only those specific characteristics of Tanzania's background and policies will be reviewed which are necessary to appreciate the case study discussion in this paper.

Tanzania's rural development strategy emphasizes the need to increase agricultural production by mobilizing the productive capacity, and improving the living standards of the 14.0 million people (out of a total population of 15.3 million) estimated to live in the rural areas, almost wholly engaged in subsistence agriculture. About 85 % of the country's peasant holdings are below 2 ha.

A particular target for the increased production is set to be self-sufficiency in food production, at least in cereals, by 1980. E.g. with maize, this would mean an increase of some 450,000 tons over the 1972 level of 880,000 tons, which can be accomplished by either expanding the total cultivated area by about 600,000 ha (a 50 % increase) at the present yield levels, or by raising average yields from 7.5 to 11.5 quintals. The value of agricultural imports in 1975 amounted to about US$ 90 million (93 % of which went to maize, rice and wheat) against the value of agricultural exports the same year which was about US$ 200 million (78 % of which came from coffee, cotton, sisal and cashewnuts).

Apart from improving seeds development, fertilizer distribution, extension and credit services, agro-mechanization development is an important component in the efforts to reach the above mentioned target. At present the ratio between hand-, animal- and tractor-cultivated land belonging to the villages is something like 85-10-5 (%). Both animal- and tractor-powered cultivation are being promoted through expansion of tractor-hire services and ox-training centres in order to change this ratio away from hand-cultiva-

tion. However, this change is a slow process. Hand-tools will remain the most important means of production for a considerable time to come. Although no explicit policy statement is made, a demand projection from 1973 contains an implicit policy intimation in that it predicts the relative share of total demand (this demand measured in tonnes) between hand-tools, animal-implements and tractor-equipment to change from 81-11-8 (%) in 1977 to 72-18-10 (%) by 1984. Nevertheless, the total weight of hand-tools demanded annually is projected to increase from approx. 5,600 to 6,600 tonnes over the same period, representing an average annual increase of 2.3 %.

As regards integration of rural non-agricultural production in the rural development strategy the policy position of the government is less clear. This probably has to do with a much felt and debated, yet unsolved, lack of an overall industrial development strategy. What we can observe is that whereas large-scale, state controlled/owned enterprises over the past ten years have grown, the privately owned, registered, medium- and small-scale enterprises have stagnated, in some sectors declined. E.g. in 1968 the enterprises of between 10 - 100 employees accounted for 44 % of gross industrial output and 37 % of employment. In 1971 the levels were 29 % and 23 % respectively. The number of enterprises of over 100 employees did rise from a total of 86 to 120 in the same period. Although no precise survey data of industrial production have been compiled since 1972 we can confidently say that the situation since 1971 has been perpetuated. Enterprises employing less than 100 people are not enumerated comprehensively as yet, and are thus not included in the above figures.

However, in 1973 a special party directive on small industries was issued. It stressed the need for a technological revolution in the rural areas based on control by the people, using existing skills and materials and avoiding heavy capital expenditure. A particular institution, the Small Industries Development Organization (SIDO), was created and given the task to formulate and implement a decentralized, small-scale industrial development policy. But without an explicit specification of how such a policy should relate to an overall industrial development strategy, let alone to the rural development strategy, SIDO's task was difficult.

Obviously, in this situation SIDO started out by regarding any small, rural, cooperatively organized enterprise as "good", as long as it did "mobilize the production capacity" in any particular area. Soon though, both budgetary and administrative constraints called for some very hard decisions to be made about which type of industries should be promoted, where and how. The scope and nature of these decisions will be subject to detailed discussion later in this paper (chapter 6), using rural implement manufacture as a case in point.

Having presented the most relevant background information in respect of agriculture and industry we need to point out a few, more general aspects of the country's rural development scene: In the early 1970's the government decentralized parts of its decision processes and planning-control. The intention was to achieve a high degree of integration or co-ordination between the different sectors through planning and implementation at the regional level. The country has 20 regions. Besides a Regional Development Director with a very broad field of responsibility, a number of regional and district planning officers were appointed. Similarly, many of the parastatal service institutions opened regional offices. Among these are SIDO's regional offices, each headed by a Small Industries Promotion Officer (SIPO) and assisted by one technician and one economist. Also the state controlled wholesale distribution system was decentralized by the creation of Regional Trading Corporations (RTC). Finally we need to mention that 1974-75 saw a major movement of most of the relatively scattered rural population into planned villages, called ujamaa or development villages. Some 6,700 such villages are presently in existence.

3. THE FORMAL SECTOR SUPPLY OF FARM IMPLEMENTS

3.1 Large-scale Production

All large-scale manufactured farm implements were imported until 1970. This year a relatively large-scale factory started its operation, the Ubungo Farm Implement Manufacturing Company (UFI) located in Dar es Salaam. Construction of it was started in 1966 after a government agreement between the Peoples Republic of China

and Tanzania for an interest-free loan had been made. The company was incorporated and became a member of the National Development Corporation (NDC)[1] group of enterprises in 1968. The initial investment was 8.4 mill. Tshs (about 1 mill. US$), and the number of employees is presently about 350. Although the factory was set up with Chinese expertise, it is now entirely in local hands.

The factory is fitted up to produce a wide range of both hand tools, animal implements, and hand-operated processing equipment, such as jembes (hoes), axes, ox-ploughs and spares to these, groundnut shellers and winnowers. In other words, the product line is rather multi-purpose and versatile. Potentially such a plant is conducive to generation of innovations and adaptations for the ultimate benefit of the users, but also of the workers in that they can gain useful experience and trade training. If allowed to exploit this potential the plant could thus become more than just doing import substitution: It could make a contribution to what has been termed the "technological capacity" of the country.

So far though, the factory has had other things to cope with. Initially it had marketing problems since its products had to be sold through the State Trading Corporation (STC) together with other imported implements. This was solved when STC in 1973 was restructured into Regional Trading Corporations. By then UFI was given the monopoly on control of importation, production and sales of farm implements. But other problems cropped up such as shortage of raw materials, lack of space in ships to transport them, lack of machine spare parts and occasional water and electricity interruptions. The problems of adapting the local infrastructural conditions to the technology are probably gradually being solved. The problems are not unique for UFI, they are rather quite common to the establishment of large-scale industries. It should be noted, however, that the costs of the local conditions adaptation rarely are debited these industries, neither directly nor in cost comparisons with alternative technologies.

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1) According to NDC's 10th annual report "NDC is intended to function as a profit-making organization; it is charged to do all such acts and things as may be necessary to uphold and support the credit of the corporation and to avert or minimize any loss to the Corporation. NDC is wholly owned by the Government and is Tanzania's principal instrument of economic expansion and progress in the fields of productive investment".

For the said reasons UFI was not able to utilize its full capacity. On an average yearly basis its jembe production capacity of 800,000 was utilized by about 40 % during its first five years of operation. The utilization of its 8,000 ploughs/year capacity has been somewhat higher. A number of axes and groundnut shellers has also been produced. But all in all, capacity utilization has been "below 50 %".

The initial difficulties have not discouraged the company. The jembe production capacity is presently in the process of being more than doubled, i.e. to 2.2 mill/year. Also increased capacity for production of ploughs, axes and pangas (machets) is being considered. This may be taken as an indication of more and more emphasis being given towards mass production of relatively simple products, i.e. towards the import substitution type of production policy, and as we will discuss later, even towards possible future exportation.

Moreover, a new factory of about the same size as UFI is planned by NDC to be located in Mbeya (in the southern part of the country, next to the new Tanzania-Zambia railway). The site has been surveyed and trial production might be started in 1979-80. Messrs. Mysore Implements Factory of India has been identified to provide technical collaboration. The investment is of the order of 15 mill. Tshs (about 1.9 mill. US$) in 1975 prices. About 300 jobs will be created by this plant when it reaches its installed capacity of 2,815 tonnes of hand tools (including 1,000,000 jembes), 730 tonnes of animal drawn implements and 365 tonnes of tractor drawn equipment (mainly disc ploughs and harrows). The proposed production programme of this new plant also indicates that mass production/import substitution is in the forefront of NDC's policy.

3.2 Medium-scale Production

All registered or formal sector production of farm implements other than the new Mbeya plant and UFI we call medium-scale industries in this context. No hard data exist as yet about the type of rural implement production or the volumen of production which take place in these industries. Only by the time of this writing a systematic survey is being made.

But visits in 1976-77 to a number of general engineering workshops in Dar es Salaam and in 8 regional center towns showed that although the machines and skills for making farm and other rural implements are present, practically no such production takes place. A few ploughs were made or rather rehabilitated and some wheel barrows were occasionally produced. None of the firms had any plans for organized production for the market either. They were willing to take limited orders, but for years no orders had been made. Nobody saw this as a direct consequence of the UFI control over the market, the explanation given was rather that the firms themselves considered their present production of steel furniture, steel doors and windows, hospital equipment etc. as more profitable. They also carried out a substantial amount of odd repair jobs. One exception from this general picture was a firm which had developed a simple maize grinding mill in various sizes. The firms capacity was said to be 30-50 mills/month. However, their production had almost stopped because of difficulties in importing the diesel engines that go with the mills.

Although not based on a comprehensive sample we nevertheless quite confidently can say that a typical, but rough profile of the kind of firm we are trying to describe is as follows: It is privately owned and the owners are of Asian origin. Fixed capital assets are between 50,000 - 100,000 Tshs (6,000 - 12,000 US$). 10 % of the machinery is less than 5 years old, 60 % between 5 - 10 years of age, the rest installed more than 10 years ago. The number of permanent workers is 10 - 16, mainly skilled, 2 - 4 of which are of Asian origin. The annual value of output was almost impossible to get any clear picture of, our best guess is that it might be about 1.5 times the fixed assets. There are about 25 firms of this type in the country.

A particular institution needs to be mentioned in this context, namely the Tanzania Agricultural Machinery Testing Unit (TAMTU). This is a Ministry of Agriculture unit, and although it is mainly occupied by testing, adapting and designing farm implements (mainly ox-drawn implements) it also carries out some production for sale. It further has 6 satellites, called Rural Craft Workshops (RCW), in the regions, and these have mainly been concentrating on production so far. As such TAMTU and its RCW's can be counted as a medium-scale enterprise. The total capacity is rated as equivalent to

about 400 ox-carts and 150 ox-ploughs per year. Capacity utilization has not yet reached its full though. One RCW visited in May 1977 had 18 ox-carts standing in its yard waiting to be sold. Potential buyers had been identified, but no means of transporting the carts to the more remote farmers had been found. The RCW had therefore started making window- and door-frames until the distribution problem had been solved. Another RCW, located in a traditional ox-using area, had raw materials supply and management problems and could not meet the demand of the area for carts and ploughs.

6 new RCW's are planned for the next couple of years. The aim is eventually to have one RCW in each region and to add an ox-training and demonstration component to all of them. The RCW's are also supposed to provide craftsmen's training and to encourage the creation of village workshops. On the latter point the function of the RCW's is to some extent overlapping that of SIDO. Moreover the RCW's might come in a competing position to similar workshops which SIDO tries to promote in the regions, e.g. to SIDO's industrial estate general engineering workshops, in case careful coordination between SIDO and the RCW's is not made. The competition may not be as much for the market as for the supply of raw materials, especially iron.

The cost of one RCW is about 4.5 mill. Tshs (about 0.5 mill. US$) of which the workshop equipment and plant accounts for about 1 mill. Tshs. Each RCW is scheduled to employ some 30 persons.

Finally we should mention that SIDO in one of the regions has worked on plans for a medium-scale farm implement enterprise. Its capacity would be for 260 tonnes of animal drawn implements per year. The investment is of the order of 2.7 mill. Tshs. (0.3 mill US$) and employment of some 70 people. The enterprise is proposed as part of an IBRD sponsored rural development project for the region in question.

3.3 Formal Sector Distribution of Farm Implements

As already said UFI is charged with controlling the formal sector distribution of all agricultural hand tools and animal drawn implements. In practice, as we have seen, this means distribution of its own production and of what is imported. The main channel used is the RTC's. These place their orders directly to UFI. Once delivered, the tools are placed in the stores of RTC in the regional centre towns. Gradually RTC is also establishing sub-wholesale stores in the district centre town, i.e. the tools shall eventually be distributed from the districts also. Shop-keepers then buy the tools from the RTC stores.

It is the policy of RTC and other state controlled wholesale agents primarily to sell essential tools and consumer goods to cooperative shops and government agencies, i.e. to disfavour privately owned shops in order to promote cooperative retail distribution.

The idea is of course to retain trade profits within state control. However advantageous this policy may be, it has had repercussions for the consumers. The distribution of farm implements is a case in point. The policy has namely resulted in a shortage of implements in the villages in the building up period of the RTC's and the cooperative shops.

When no RTC district sub-wholesale system existed the shop-keeper had to travel to the regional centers to buy stocks. This was sometimes done by bicycle or hitchhiking to the district centres and from there by bus to the regional centres, often without the shop-keeper knowing for sure in advance if the items he came for were available. Presently, with the RTC sub-wholesale stores in the districts the situation is better, in so far that the items are in stock. But a check-up in quite a number of district RTC's made medio 1977 showed that these had hardly anything in stock. The main reason given was "the problem of transport". In general, what we have described is a communication problem. This was previously overcome by a network of privately owned vans and pick-ups, e.g. many shop-keepers had their own means of transport, something the cooperatives of course eventually may also have, and the RTC's may also get sufficient trucking capacity to ensure timely deliveries to the districts.

Another snag of the system described has to do with the internal function of the RTC's themselves e.g. their ordering procedures, market surveying and price fixing arrangements. This appears not yet to have reached the same efficiency and necessary flexibility as the previous system. As could be expected it is still characterized by bureaucratic rigidity. E.g. one regional RTC had quite a quantity of Brazilian made jembes in stock which however were of a very poor quality. They broke after a few minutes in use on the hard soils of the region. However, there appeared to be no procedure for the RTC management whereby it could sell the jembes at a much lower price than originally fixed, nor could it send them back. It further seemed reluctant to order other ones before the poor ones had been sold. This example is probably an exception and does not make up for a fair evaluation of the RTC's. We cite it nevertheless, to illustrate the point of what problems of internal function the system has to cope with.

We have no means to measure the relative effectiveness of the distribution system, and no direct, quantitative figures for the overall magnitude of unsatisfied demand for implements. Only indirect indications. One indication is that while the total demand for new jembes for 1976 was projected at about 3.2 million, RTC and UFI had some 1.4 million in stock at the beginning of that year. As shown below (section 3.4) the expected demand should for 1976 only have been 2.5 million under "normal" distribution circumstances. We may therefore guess that 1975 had an undersupply of the order 0.7 million jembes, as distinct from a deficit in production or importation.

In section 6.2 we will discuss the importance of having as detailed as possible a picture of the function of the distribution system when rural industrialization is on the agenda. It needs perhaps to be said that we by no means try to ridicule or "accuse" any particular institution by detailing the present deficits of the situation. We substantiate the case study by reference to actual orders of magnitudes of the problems because such problems too often are discussed in abstract form which consequently rarely enables the reader to appreciate both the relative and total seriousness of the many symptons of underdevelopment we deal with.

3.4 The Demand - supply balance of Farm Implements

In line with what was just said about looking at both relative and total magnitudes we conclude this chapter by recording what we know about the demand-supply balance of farm implements. In other words we want to identify and quantify the "gap" between demand and supply.

Regretably it is only jembes that we have some reliable data for of the past trend in the demand-supply gap. But as the jembe is the most important implement we may regard this trend as indicative for the rest of the more simple farm implements.

And even the jembe gap is hard to specify, particularly the demand side of it. A rural household survey[2] made in 1969 did however record the average figure 3.1 jembes per rural household. Assuming that this average holds for 1975 as well, i.e. assuming more or less constant technology, and taking the average household size to be 4.6 people, then the 14 million rural people in 1975 had 9.4 million jembes in their possession, or would have liked to have it. Various other surveys tend to confirm that this figure is quite a realistic order of magnitude estimate.

To arrive at a rough picture of the size of annual jembe demand we need to make some more assumptions. The first is about average lifetime of a jembe which we believe is 4 years, i.e. we will calculate with a 25% annual replacement rate. The second is about the growth in demand in proportion to population growth. We assume that both growth rates were the same, namely 2.7 % up to 1975. Thereafter we might expect a decrease in jembe growth rate to about 1.5 % due to the agro-mechanization efforts of the government. But still 2.7 % might be more close to reality, so we will use both rates as possible limits in our projection which is depicted in fig.1. We see that the present yearly demand is about 2.5 million.

On the left side of fig. 1 we have also plotted the recorded sales from imports and the production of UFI. Table 1 gives the actual numbers.

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2) Ian Livingstone: "Results of a Rural Survey: The ownership of durable goods in Tanzanian Households and some Implications for Rural Industry" ERB paper 70.1, Univ. of Dar es Salaam, 1970.

Table 1: Import, Production and Sales of Jembe (1966 - 74)

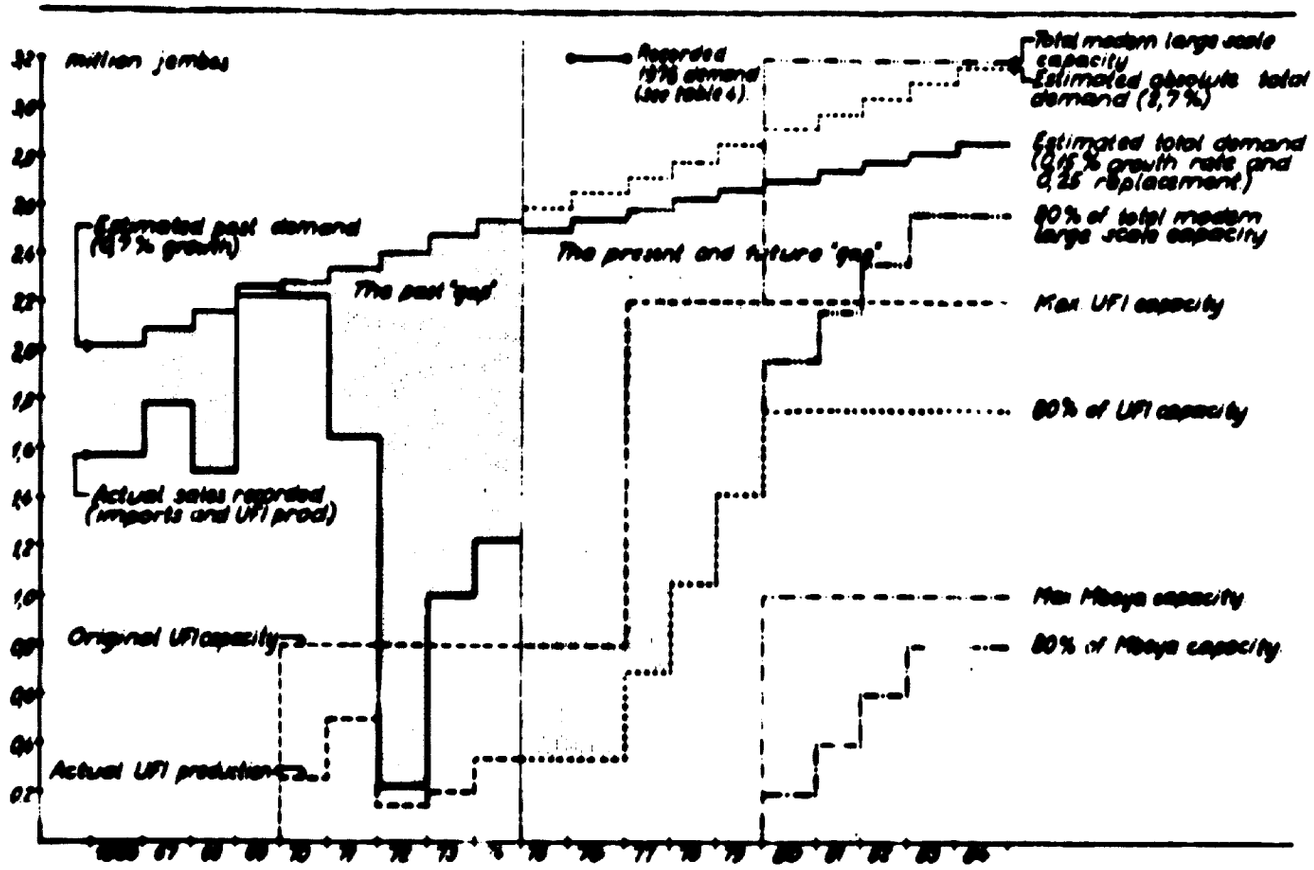
Year	Imports	Consumption out of imports	Local large-scale production	Total home consumption
1966	1,555	1,549	-	1,549
67	1,773	1,761	-	1,761
68	1,516	1,510	-	1,510
69	2,266	2,254	-	2,254
70	1,960	1,941	273	2,214
71	1,222	1,121	493	1,614
72	76	72	153	225
73	733	729	269	998
74	927	887	328	1,215
Total	12,028	11,824	1,516	13,340
Average 66 - 69	1,777	1,768	-	1,768
Average 70 - 74	984	950	303	1,253

(Source: NDC 1975)

What is called "the past gap" on the figure is now easily visualized and calculated. On an average yearly basis it was of about 0.4 million jembes in the 1966-69 period. Thereafter, i.e. in the 1970-74 period, it was 1.2 million averagely. The average figure was 0.8 million for the whole period.

The figures invite a number of considerations about the situation in 1975. The jembes in use must have been pretty worn down possibly resulting in difficulties to keep agricultural production up. But production statistics do not give us any hints we can go by, since the 1973-75 period was affected by extreme dry weather conditions. The year 1975-76 experienced improved weather conditions and crop output did increase, although it did not reach the pre-1973 levels. We thus have to look otherwhere for signs which may confirm our undersupply hypothesis. This will be discussed in section 5.4 where we take a hitherto overlooked source

Fig.9: DEMAND - SUPPLY BALANCE of JEMBES 1966 - 84.



of supply of farm implements into consideration, namely the production which takes place in the villages. In other words we already here intimate that the above quoted 0.8 million jembe/year gap of the 1966-74 period is not a true picture since it is based on formal sector supply figures only.

As for the "present and future gap" shown on fig. 1 we note first that possible imports of jembes are excluded. Secondly, the increased capacity of UFI and of the new Mbeya plant is depicted. These increases are scheduled to reach 2.2 million for UFI during 1977, and 1.0 million for Mbeya in 1980. In sum this will give a total modern large-scale capacity of 3.2 million in 1980. These capacities are maximum figures and may not represent targeted production volumen initially. As we have seen, it takes time to reach full capacity. On the graph we therefore have assumed a three-year building-up period, and we have made the perhaps realistic assumption that only 80 % of full capacity will be reached. Finally we are able to draw a resulting line marked "80 % of total modern large-scale capacity". It is the area between this line and the line marked "estimated total demand" that we propose as a reasonable estimate of the present and future (until 1985) demand-supply gap of jembes.

The total gap in the period 1978 - 84 is about 5 million jembes, starting by being 1.55 in 78, reaching a minimum of 0.25 in 83 and increasing again to 0.29 in 1984. In case the agro-mechanization programme, together with the efforts to increase yields by improved seeds etc., is successful, the demand curve may decline. If not, it may even increase, making it necessary to use the upper demand curve called "estimated absolute total demand" in the gap calculation. In case actual modern large-scale production is not stepped up as foreseen on the graph the gap will obviously be larger than estimated. Considering these uncertainties, and moreover considering the past deficits in supply, we confidently conclude that our "gap" estimate is realistic, perhaps rather too optimistic than too pessimistic. At least we feel the estimate a reasonable starting point order of magnitude for the discussion in chapter 6 about how the gap can be filled.

We could continue our presentation of what data exist about demand and supply of other farm implements. But firstly these data are more incomplete, and secondly further quantifications are not really necessary for our case study discussion. Suffice it therefore to note that there appears to be demand-supply gaps for practically most other essential farm implements. At least if we continue only to take large and medium scale produced implements into account.

4. THE FORMAL SECTOR SUPPLY OF OTHER RURAL IMPLEMENTS

As said in the introduction this paper also intends to deal with the provision in the rural areas of craftmen's tools and basic household utensils. Although we regard the farm implements as the most important of rural implements, the main reason for including the other two types of implements in the case study is that the village smiths also make these. The full range of potential diversification of the smiths' production needs to be considered.

No large-scale production takes place of craftmen's tools and basic household utensils, except for some aluminium pots and pans of quite sophisticated quality and mainly for the urban market. And this production is a secondary line of an enterprise which primarily makes corrugated aluminium and galvanized plates as well as pipes.

Of medium scale enterprises there are one which makes enamelware, one making galvanized buckets and stainless steelware, and one which manufactures kitchen knives. All are producing to the market, but in relative small quantities compared to the size of the market. Then some of the previously mentioned general engineering workshops occasionally make a series of buckets and other sheet metal utensils to order.

Some of the mentioned products can hardly be called rural implements in the sense that they are demanded by rural households, simply because of their price. Apparently at least, only the buckets and the knives reach the rural households. We also note that no craftmen's tools of any significance are made.

In other words, most of the rural tools and utensils supplied by the formal sector are imported. Just to indicate the approximate order of magnitude of this import we can quote that the aggregated value in 1973 was 20 mill. Tshs (2.5 mill. US$) for imported hand tools and about 10 mill. Tshs for cutlery, buckets and other metal domestic utensils.

As for the distribution through the RTC's the picture is presently as described in section 3.3., i.e. rather grim. Essential hand tools appear simply not to be available in many regions of the country. This is probably not just because of inefficient distribution, but also because of insufficient imports.

5. THE VILLAGE BLACK- AND TINSMITHS AND THE RURAL DISTRIBUTION SYSTEM

5.1 Origin of the village blacksmiths

Recent, yet unpublished, investigations and tests indicate that iron was excavated, smelted and forged in North Western Tanzania as far back as year 300 B.C. However, whether 300 B.C. or A.C. blacksmiths have been at work well before Arab or European intrusion. The early European explorers of East Africa tell about powerful and prosperous kingdoms where much of the reason for this was their mastery of iron works technology. One German lieutenant reported in 1892 that he had estimated the number of jembes which annually was traded at the Tabora market, the main centre for inland trading then, to be 150,000. This corresponds to the size of production of UFI 80 years later.

However, the German and later the British colonial authorities forbade the blacksmiths' trade in many regions of the country, presumably in those regions where they were most active. In case the smiths defied the ban and were discovered by the district authorities, their tools were confiscated. The exact reasons for these attempts to exterminate the trade are difficult to guess. The smiths were told to grow a given amount of, say, coffee or cotton just as the other peasants in the regions. But behind this reason is probably the general colonial policy of reserving a market for imported items for themselves, e.g. as in the more well-known case of the extermination of the Indian textile industry. Another reason could be that all smiths were told to stop

smithing because some of them were able to make guns.

The measures to sabotage the blacksmiths were only partly successful. At least we note that the smiths continued their production in hiding and survived the colonial harassing better than most other original craftsmen. A reason for this seems to have been that the rural population was dependent on the supply of tools to the subsistence agriculture for its survival. It further seems plausible that, apart from the illigal status, a reason why the iron works technology did not develop into a more sophisticated and diversified trade, i.e. remained largely at its pre-colonial level, is that little development took plaoe in agricultural production techniques. We could probably also turn this argument the other way round to some extent. Finally, in most places the blacksmiths' activities were so deeply integrated and significant to the cultural life of the villages that the administrative ban by the colonial authorities oouldn't stop them effeotively.

At independence the blacksmiths were perhaps ostensibly legalized. But as was the case with other rural non-agrioultural activities, the activities of the blacksmiths were of oourse neither suddenly recognized nor registered. Another thing is that their very specialized and remarkable skills did not fit into the code for skilled labour inherited from the British, e.g. a master smith could not pass a tradetest even of the lowest grades. The smiths are thus still regarded as un-skilled labour by the system. Their technology appears way apart from that of the formal sector metal works technology, a point we repeatedly shall discuss later in this paper.

5.2. A survey of the present population of rural smiths

No comprehensive, country covering survey or oount exists of the present population of rural smiths. This fact has been observed in quite many UN and other donor agents reports on rural industries promotion programmes. But instead of proposing some surveys or trying to collect what information does exist, these reports seem to prooede on the assumption that praotically no rural craftsmen's activities take place. Consequently the reports

contain programmes which propose arrangements for building up rural industries from scratch. The detrimental effects of this approach we shall elaborate in section 6.1.

As said, some data and information, however scattered, are actually available. The following is a summary of an investigation aimed at piecing these together. This investigation we further supplemented by a random collection of case studies in 1976-77 in collaboration with SIDO.

The 1967 population census [3] had the economic active population counted by occupation. The category "blacksmiths, tool makers, machinists, plumbers, welders, and related workers" amounted to 0.09 % of the rural population. The census also enables us to look up the same ratio, region by region. One of the regions, Mwanza region, known for its active blacksmith groups recorded 0.11 %, i.e. not very much higher than the national average.

In 1974-75 practically all regions of Tanzania had visiting planning teams to prepare integrated regional development plans in connection with the preparation of the third Five-Year-Plan for the country. Two of these teams undertook detailed surveys of existing rural industries, i.e. the teams in Tanga region and in West Lake region. The Tanga report [4] counted both black- and tinsmiths and a ratio of 0.29 % of total rural population can be deducted. This relatively high figure compared to the others presumably stems from the thoroughness of the survey, but probably also reflects the fact that Tanga historically was one of the more industrious regions of the country. The result from West Lake [5] gave a corresponding ratio of 0.12 %, but excluded tinsmiths.

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3) "1967 Population Census", Vol. 4, CSB, Dar es Salaam 1969.

4) "Tanga Integrated Regional Development Plan", Vol. 3, sponsored by the Federal Republic Germany, 1975.

5) "Integrated Regional Five-Year Development Plan (1975-80), West Lake Region, Tanzania", West Lake Planning Project, February 1975. (Sponsored by DANIDA). The survey is more detailed recorded in J.Müller: "Decentralized Industries and Inadequate Infrastructure", Institute for Development Research Papers A.76.5, Copenhagen 1976.

Finally, from a village skill survey[6] in selected districts we can compute a ratio of 0.09 % between village iron and metal-workers and the total rural population.

In table 2 the various ratios are presented together with the implied total rural metal working population.

Table 2 : Guesstimate of Total Rural "Metal Working" Population

Source of the various percentage computations	Percentage of metal workers to total rural population	"Implied" total rural metal working population (assuming 14 mill. rural inhabitants)
Extract of the 1967 population census, all regions	0.09	12,600
Mwanza region as example from the above census	0.11	14,100
Survey in connection with Tanga regional dev.plan 1974	0.29	40,600
Survey in connection with West Lake reg.dev.plan 1974	0.12	16,800
Extract computation of BRALUP's village skill survey 1975 covering Bagomoyo, Same/Pare and Kyela districts	0.09	12,600

which we get by applying the survey results to the whole country. On the assumption of 14 million rural inhabitants this total figure ranges from 12,600 to 40,600. As we later intend to use this figure for an assessment of the size of an actual promotion programme it is necessary not to be too optimistic about the size of the population of smiths. Whereas we would think that 0.1 % or 14,000 is a quite realistic guesstimate, we would rather prefer to operate with a figure of 10,000 for planning purposes.

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6) J.Rudengren and M.L.Swartz: "Village Skill Survey. Report of the pre-pilot and pilot surveys", Bureau of Resource Assessment and Land Use Planning, University of Dar es Salaam, January 1976.

5.3 Details of the Smiths' Working Methods

The before mentioned random collection of case studies to supplement the quantitative guesstimate above took place in Tanga, Arusha, Mara, Mwanza and West Lake regions in the North and in Mtwara, Ruvuma and Iringa regions in the South of the country.

One general conclusion was that the more remote regions have the most active blacksmith groups. However, within the regions it seems that the more distant a smith lives from the district centres the less active he is; unless he lives in an area where iron for excavation and smelting and firewood for charcoal burning are still available, because then he might be active during parts of the year in iron extraction. We know for sure of two places in the southern regions (Mbamba Bay and Mufindi) where iron extraction still takes place and we have been told of two others in West and North where it allegedly also might take place.

In the following we summarily describe the knowledge, the organization, the technique and the products, i.e. the technology, of the village blacksmiths. This description should not be regarded for more than it is: An "average" picture based on the sample of 22 groups interviewed during the survey.

The first ones to mention should be the smelters, since these have raised most attention and curiosity, and even questions about the feasibility of reviving their activities. It should be said at once that it doubtlessly is <u>not</u> feasible, neither from an economical nor from an ecological point of view, to attempt encouraging the type of charcoal fired kiln-smelting which goes on. The pig iron the smiths gain is of high quality (the temperature in the kiln can reach up to 1600°C), but estimates based on recent tests in West Lake region reveal that it requires about 20-30 man-days per kilo pig iron and as a minimum costs 40 Tshs (or 5 US$) per kilo. The corresponding price from the steel rolling mill in Tanga is about one tenth of this. Moreover, it takes about one ton of wood per kilo iron for the charcoal burning. In some of the places visited the smiths told us that one of the reasons why they stopped smelting was that the particular types of wood they needed were not obtainable any more.

The Mufundi smiths, who are still actively smelting during each month of August, were aware of the diseconomy of what they were doing. They all told of the hard labour involved, both for themselves and their relatives who have to walk long distances in order to bring them food while at work. There obviously are habitual cultural elements in the activity, but they all said that they would happily abandon it if they could get sufficient iron, of what they called good quality, from other sources. They collect all the scrap iron they can get hold of, but demand pressure for their products must be so high that they still chose to supplement this with their own production.

In more theoretical terms we can say that the smelter-smiths seem to regard their opportunity cost as very near zero in the agricultural slack season, given the fact that suitable scrap iron is as scarce as it is. But they would change this view if iron could be made available from other sources in sufficient quantities to keep them busy. From a national division of labour point of view it also seems inefficient to have these highly skilled people chopping and burning wood for charcoal production, digging holes for iron excavation etc. while they could make useful implements otherwise.

But as said, the actively smelting smiths represent the exception. Most of those smiths who previously did extract their own raw iron have stopped doing so for a combination of reasons, mainly because scrap iron became obtainable and because of deforestation. The smiths in West Lake region stopped smelting about 40 years ago. Still, when it in the following comes to a description of the "average" village smithing groups' technology, i.e. their knowledge, organization, technique and products, it is significant to note that some of them were smelters previously.

The knowledge base of the smiths' technology is difficult to describe in terms we are used to apply when describing our scientificly based knowledge. It is an "inherited" craftsmen's knowledge. It is built into the knack and skill of its executant, i.e. it can hardly be separated from him. This means that the only way in which the knowledge can be transferred is through intensive apprenticeship. When given a piece of steel, the smith

weighes it in his hand, puts it in his hearth, observes how long time it takes for the steel to get what colour, and finally he beats it with his hammer, observing what kind of sparks it makes. By then the smith knows what kind of steel he has in hand in the sense that he knows what type of implement the steel can be forged into as well as what it can't be used for. He can't "translate" his knowledge into percentages of carbon content etc., yet he "knows". We must also note that the testing procedure just described is very much dependent on the use of exactly the smiths' own tools, e.g. hearth and bellows, hammer and anvil. Given other tools he might be lost, or it would at least take him some time to adjust his knowledge.

The smiths are typically organized as individuals, or in groups of individuals. This does not mean that the smiths are working alone. They eaoh have one or two assistants or apprentioes. One of these operates the bellows, the other assist in the forging, sitting opposite to the master-smith. The apprentices are typically sons or close younger relatives. The smith takes part in all operations himself, even the travelling for collection of scrap iron, the charcoal burning and often the selling of the products as well. At the same time he is a farmer, i.e. he is only part-time occupied by smithing.

When organized in groups of individuals, the master smiths occationally assist each other, but essentially what they have in common are the workshop premises. However, 4 of the 22 groups had started some closer collaboration and had introduced some division of labour. In one village 15 master-smiths were sitting under one long roof. They had recently moved in there during the general movement of the scattered rural population into villages mentioned in chapter two. They had started collective collection of scrap iron and burning of charcoal, and talked of collective marketing, once production becomes larger than the consumption of the village itself. In another village all the villagers had assisted in the construction of a semi-permanent workshop building with corrugated metal sheet roofing. Here the smiths, 8 in all, had introduced what they themselves oalled "staged" produotion. Stage one was cutting up the scrap into pieces of almost equal size, the next was a rough semi-finishing forging stage, and the last

stage was the final shaping stage. In other words, a division of the forging process itself had been introduced.

The actual technique of the smiths have already been partly desoribed. The tools are mostly anvils of stones half buried in the ground, the charooal fired hearth is placed next to the stone in a hollow in the ground, the bellows are of goatskin activated by sticks and the air is blown through wooden and clay pipes. The smiths are sitting on the ground using hammers and tongs, often both home-made. Chissels are used to cut the red-hot iron, peouliar home-made drills are used for making smaller holes, and files are used for sharpening of edges. The workshed is typically low, open, with thatched roof and situated on the farm oompound of the smith. Only in few cases we saw signs of reinvestment in improved or new tools or buildings, e.g. the bellows had been replaced by a bicycle wheel driven mechanioal air blower or the stone anvil by a heavy piece of steel. But the work-process remained essentially the same: Hand forging, and shaping according to an inner vision of the smith of what the end product should look like. We can almost say that the smiths are modelling each item.

Apart from the 22 village blaoksmiths visited, a few, more advanced blacksmiths' workshops were visited. The knowledge originated from formal trade training, organization was partnerships or oo-operatives, el-powered, mainly welding equipment was in use, and products were made acoording to drawings. The workshops oould be called "infant" general engineering shops. Employing only 6 - 8 people we still count them as small-scale enterprises.

5.4 Summarily Description of the Smiths' Products

In the last section we noted that the work-process of the village smiths is a modelling prooess. A common oharaoteristic of all the products made is therefore that no one item is exactly identioal with another. E.g. a smith can make 2000 axes, but as none of these are precisely of the same shape he strictly speaking makes 2000 different axes. However, if given exactly the same shape of raw iron, and told that the axes are going to be used by the same user for the same type of wood cutting, we would get axes of such

similarity that only micro-measurement tools could detect the difference. In other words the use-value of the axes would be the same. But as no two smiths have the same inner vision, as they get all sorts of shaped scrap iron pieces, as they know the variation in preferences of the individual customers and the different type of wood cuttings these mainly have to do, the axes do come out looking different, even to an untrained eve. Yet we should note that the use-value of each different ax probably has been optimized.

The main type of product made is the jembe. And the variations in shapes made are much bigger than described for the axes. One can almost say that the shapes are as varied as the soils and crops are varied throughout the country. Some are heart-shape pointed, some are straight edged and others are wide and curved for hard, medium and soft soils respectively. Some are big and heavy, some are small and light.

Incidentally, we came across quite a few smiths, who reshaped the standard UFI jembes for their customers, i.e. pieces of these jembes were cut off. UFI makes only one shape of jembe in two sizes, $2\frac{1}{2}$ lb and $3\frac{1}{2}$ lb, and although this shape may be the best "average" standard shape, some peasants apparently are not satisfied and go to the trouble of bringing some of the new jembes to the smiths for reshaping.

The smiths are also making pangas, siokles and slashers. These are other examples of items whioh are also imported or made by UFI. However, the smiths' product diversifioation extends far further and includes a large number of items whioh are neither imported nor produced elsewhere in the country. Spears and arrows are commonly known tools, but we soon get into such items whioh there practically are only local words for - not even precise Swahili words. These are all highly essential for the subsistance type of production which is still widespread.

We have no information at all about how many different types of implements are made, but alone how many of the special implements are in use compared to the more common types. Only one small

hint of the last question we get from table 3. This is the result of a survey of 30 peasant households in an area of West Lake region. We read for example that out of the 5.1 jembes per household, 18 % were locally made, i.e. by the village smiths, the rest were imported or UFI-made. 46 % of these locally made, were made by smiths in the same area. The last column gives the peasants answer to our question of durability. They apparently regarded the local jembes as more than double as durable as the manufactured; perhaps because the smiths can repair their own products more easily than the manufactured ones. We also see that the planting jembes, the siokles and the banana pangas appear to be just as commonly in use as the ordinary pangas (between 1.4 and 1.8 per household) and that these specialized items are wholly locally made, as are the spears and knives. No wonder, because of these items, only the knives are obtainable from imports or medium-scale production.

Table 3 : Distribution between Local and Manufactured Hand Tools, Ibwera Area, Bukoba District 1974:

Item	Average number per household	% of which is locally made	% of which is bought in the area	Duration in Years	
				manu.	local
Jembes	5.1	18	46	5	11
Pangas	1.8	29	21	8	13
Axes	0.5	28	48	16	19
Banana pangas	1.4	100	74	-	12
Siokles	1.7	100	56	-	21
Knives	0.7	100	65	-	13
Spears	0.8	100	64	-	32
Planting jembes	1.8	100	49	-	13

Source: West Lake Planning Project

In the hypothetical case that the situation in Ibwera area is typical of the situation in the rest of the country, e.g. that 18 % of all jembes are locally made, then we can see that the "gap" calculation made in section 3.4 and illustrated in fig. 1

needs revision. E.g. on page 12 we cite the average yearly gap in the 1966-74 period to be 0.8 million. But if we fill up this gap by an annual village production of 18 % of the demand then the average yearly gap comes to about 0.4 million only, i.e. the actual gap gets halved. Similarly happens to the gap for the 1978-84 period estimated on page 13 to become 5 million in total. This in fact gets reduced to 1 million only, and the 1983 estimated minimum of a 0.25 million deficit in jembe supply becomes a 0.25 million surplus production.

For lack of better figure we used 18 % in the above speculation. Whether the actual figure is 10 % or 20 % we don't know. What we are after is of course an impression of how significant the village jembe production may be. We get some explanation of why agricultural production perhaps was not as badly effected by the deficit in formal sector jembe supply as could be expected by looking at fig. 1. We also get a notion of the implications of keeping the village production alive, or even of promoting it.

Here we just need to wind up this exposition of village made products by saying that, apart from farm implements, the blacksmiths also make various tools for the village carpenters and masons. They also make kitchen knives, scissors, frying pans etc. The tinsmiths make lamps, stoves and other scrap sheet-metal utensils. Some of those visited made items such as buckets, chicken feeders and watering cans from plain galvanized sheets. Those "infant" general engineering shops mentioned in the last section made wheels, axles and frames for ox-carts, self-invented sheet metal grooving machines and water tanks, to mention but a few examples.

And all the workshops mentioned did a substantial amount of repair jobs and even simple spare part manufacture, particularly of course to implements originally of their own making. But repairs and spares were also made for bicycles and shotguns.

5.5 The Rural, "Local" Distribution System

Most of the products made by the village smiths are probably made "to order", in many cases only provided the customers bring the necessary raw materials. This type of production poses no distribution problem, although its existence might be an indirect sign of marketing difficulties.

But a noteworthy portion of the products are made to be sold through the "local" distribution system. Local is put in quotation marks because this word is what government administration officers use to call the informal, non-registered trading system in the rural areas. In other words, the registered co-operative shops are not included in the system. The markets and the products which this system involves are called the local markets and the local products.

The reason why we explain this word so carefully is that it often is used in a derogatory sense. Yet the local markets are the only outlets for the products described in the last chapter. During the survey of the blacksmiths, many of these markets were visited and the tradesmen selling the implements were interviewed. Thereby it was disclosed that quite many of the products had been brought over appreciable distances, say, up to 100 kilometres. The tradesmen had bought them directly from the smiths and then travelled by bus or hitchhiking by trucks. Some tradesmen told that they had not come to the area of the market particularly in order to sell the products, they had other errands, but knowing that the implements in question were in big demand in the area they brought them, more or less in order to earn to the travel. Other tradesmen were the smiths themselves or relatives. On such occasions, visits to the worksheds and subsequent interviews were easily arranged.

Persistent bargaining procedures with the tradesmen were carried out in order to get as close to the local selling prices of the items as possible, something it was more difficult to do during an interview with the smiths themselves, simply because of politeness reasons. The prices obtained were generally a bit lower

that those asked by the smiths. When more than one implement of a type were for sale we also discovered that although all had the same price quoted at the cut-set of the bargaining, we quite quickly had varied prices offered according to minor differences in the shapes etc. In other words in spite of the fact that the implements were not identical they all had a price, not necessarily the same price though.

This observation may seem insignificant. But in quite many discussions with representatives of the formal UFI-RTC marketing system over whether or not some of the local products could be sold through that system, it was in one way or another invariably said that this was not possible, because it was not possible to fix one standardized price for products as different in standards as these products. But it is possible for the local marketing system to fix various prices. When confronted by this argument the answer was that fixation of a different price on each item was an insurmountable task. And even if this task could be overcome one RTC manager told that the formal price setting system had no way of fixing the price level anyway. In theoretical terms, what we were discussing was the difficulties in fixing the exchange value of the implements in question.

In many districts the local markets were held in different places during the week. In other words, the markets were held on a rotating weekly schedule. This makes it possible for travelling tradesmen to cover quite an area during one week. However, in at least one case we know of, this system was administratively stopped and replaced by a directive that local markets were only allowed on Saturdays after 12 o'clock. This admittedly happened during a general attempt to mobilize the peasants to cultivate as much food crop as possible, and the argument was that during market days nobody did any serious work. One counter-argument would be that if the peasants, who need to buy new implements for the food crop cultivation, can't get these implements, they are probably more seriously hold back from working efficiently than otherwise. This case may be an isolated one. We nevertheless feel that it illustrates, perhaps in extreme, the status which the local markets have in the minds of some district authorities.

6. THE UTUNDU-PROGRAMME FOR RURAL IMPLEMENT MANUFACTURE

6.1 Past Approaches to Rural Craftsmen's Promotion

It is only now that we begin to focus directly on the proper subject of this paper and the questions raised in the introduction. The main ones of these were: which strategy for provision of rural means of production would be most expedient and realistic ? And in particular: What seems to be the potential role of the village black- and tinsmiths in such a strategy ?

The previous chapters presented what we - given the limited space of this paper - regard as an absolute minimum description and analysis of the past and present policies and the role of the village smiths to date. By "minimum" we refer more to methodological than to quantitative comprehensiveness. E.g. it is a methodological must to review past and present structural trends in large-scale industrial development, at least within the same branch of trade for which small industries promotion is being considered. Whether or not this review is complete in the sense that all quantitative magnitudes are included is of less importance.

Similarly the functional and structural nature of the present cottage or rural industries needs to be investigated as detailed as possible. It is important, but of secondary importance, to quantify the actual activities.

In section 5.2 we already hinted that the above sketched approach has not been followed, neither in respect of methodology nor in terms of quantification, in past attempts in Tanzania to tackle the question of supporting the rural black- and tinsmiths. We also intimated that this omission could have detrimental effects. In the following this proposition will be elaborated.

Not that there has been made very many such attempts; we only know of three which partly deal with the subject. These we will refer

to as the Rao report[7], the Kienbaum report[8], and the SIDA report[9]. Admittedly, these reports contain useful information and the critique we suggest of them should not be taken as complete rejections of them. And we do not just quote them in order to have something to critize. We do so because they seem to be representative of three different viewpoints, and as we hold, rather common and thus typical viewpoints.

Generally speaking, the reports contain only partial, narrowly defined analyses. Yet, practically all are trimmed with remarks about the "urgent need" for an "integrated approach". This would have been all right in case the various analyses supplemented each other and made up a whole. But this is not the case. Rather there tend to be substantial overlappings. Some of the explanation for this could be that they almost all have been made by some aid agency, expressly with the purpose of designing some aid project. Invariably they all end up in a project proposal. Reading the reports, one gets an inking of competition between donors, a competition which seemingly sometimes results in paralyzing the implementing authorities in the country.

One of the things which makes the analysis partial is that they more or less ignore a substantial amount of the existing "local" production of farm implements, viz. the manufacturing activities of the village blacksmiths described in chapter 5. This production is probably ignored because of lack of information. At least, the village blacksmiths, if at all mentioned, are typically brushed aside with remarks as the following:

> "At present there is no worthwhile village/small scale industry which can undertake manufacture of hand tools and manually operated machinery in appreciable numbers. Due to the conspicious absense of the traditional artisans and basic workshop tools, with the existing skills and resources, only very limited quantities of crude hand tools of poor quality can be manufactured"
> (The Rao report pg. 19).

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7) Agricultural Implements and Machinery Production and Maintenance, (K.K.Rao), UNIDO/FAO Co-operative Project, URT/74/006/A/01/12, January 1975.

8) Demonstration Manufacturing Plant, (Kienbaum Beratung), UNIDO Contract No. 75/41, TF/RAF/74/009, April 1976.

9) "Development of Small Industries in Tanzania", SIDA, Stockholm, February 1976.

The report moreover repeatedly stress the need for "modernity" and, although it is not said directly, one is left with the impression that the indigenous craftsmen are disregarded because their technology does not fit into the modernity conception of the writer. The viewpoint of the report we could call the "start from scratch" approach.

The Kienbaum report does recognise that "in some villages there are blacksmiths producing axes and jembes (crude but improveable)". It goes on arguing that

> "The idea has to be accepted that each of the 6000 villages in Tanzania eventually will need a metal workshop (blacksmith, mechanic) and a woodworking workshop (carpenter) if agricultural mechanization and better animal husbandry is to find a secure and broad base" (The Kienbaum report pg. 36)

However, although the report recommends that these workshops should employ existing craftsmen, it also estimates that each pair of workshops should be provided with tools, equipment and working capital worth 120,000 Tshs (15,000 US$), i.e. 72,000 for the blacksmith workshop and 48,000 Tshs for the carpenter workshop, and each should receive extension service and advice costing a similar amount of money. The workshop buildings are assumed provided through self-help efforts.

These sums of money are extraordinary high. In case the implied standard of workshops should be accepted and introduced as the general conception of a village workshop for all the 6000 villages mentioned, it would be detrimental to the whole idea: It would namely cost about 14 mill. Tshs (or almost 1 % of the total current development budget for the whole country) to establish just 60 such pairs of workshops per year, and it would take 100 years to "cover" the country (assuming that the number of villages remains constant). We are thus faced with a typical case of - in itself - a good idea being spoiled so to speak by blowing it up into near impossible financial and administrative dimensions. The idea is consequently easily abandonned, once more in the implicit name of "modernity", partly because of a peculiar eager to spend money on imported equipment and advisers. The approach could be called the "over-boosting" approach.

The SIDA report includes a proposal for support to village craft development of production of "means of production". The report recognizes that lack of knowledge of existing local skills is an obstacle towards support with respect to (i) upgrading of skills (ii) introduction of new skills (iii) choice of products and product design (pg.15 of the report). It then goes on proposing the establishment of a village workshop cluster, a so-called "UTUNDU Industrial Development Village". The village is proposed having equipment (including an electric generator) and vehicles worth about 1.6 mill. Tshs and expatriate personnel service corresponding to 11 man-years over a period of 2 years. The whole project would cost 6.4 mill. Tshs. (0.8 mill. US$). We suggest that the approach which it represents is called the "thorough direct" approach.

This project was not approved by SIDO, but it needs to be mentioned that SIDA agreed to make the money available to SIDO for a redesigned project or programme in support of village craft development. This programme is the UTUNDU-programme, detailed proposals for which are presented in section 6.3.

Common for the three approaches is that they by and large build upon development inputs not only from above, but also from abroad. Although adapted to some extent to the local conditions, the knowledge, organization, techniques and products, i.e. the technology, transferred to the rural scene are essentially "modern". As such transfers are prohibitively costly for repetition all over the country, their effects are limited to relatively few locations. And it is not only the transfers themselves which are costly. The required adaptations of the local conditions to the technology is also costly. By this we mean that the relatively high and essential infrastructural service demands of the technology is expensive to establish and to maintain. E.g. to run a generator requires diesel supplies, the electrically driven machines require spare parts, the presumably large production output needs constant supply of raw materials and marketing arrangements. The district authority which is gifted with such transfer of technology to one of its villages soon finds itself directing comparatively more of its financial and administrative resources towards that villages than to the other villages.

But there would be a spread or demonstration effect, goes one commonly cited argument. Neighbouring villagers will come and admire the new technology, starting wanting the same thing, starting learning by looking, and then go back and try to do the same things. Experiencing how difficult it is to do "the same things" with nothing, frustrations and passivity are very likely to be the result after some time. But even if these neighbours in a miraculous way could rise the funds to buy the same technology they might not - at least not all - be able to convince the district authorities to provide them with the same infrastructural services as the original village. Perhaps one of the new applicants for services sucoeeded through politioal pressure to direct the services from the original village to themselves. This then in all probability will result in the collapse of the technology of the original recipients. In other words we hypothesize that the demonstration effect may be negative, almost whatever happens. Possibly the direct effects of the new technology are higher than the negative. We only want to point out the fallacy of the demonstration effect conception.

But before we continue this disoussion of different approaches to promotion of rural industries we will outline the prinoiples of a different approach and also exemplify this approaoh by speoifying a particular programme based on the approaoh.

6.2 Towards an Alternative Approach

The approach which will be outlined in this seotion is alternative to the "start from soratoh", the "over-boosting" and the "thorough direct" approaches mentioned in the last seotion on various crucial points. These points oonoern as muoh the underlying assumptions on whioh the approaohes build their recommendations for implementation as the reoommendations themselves. We therefore have to discuss these assumptions, and we do so by presenting the following propositions:

(a) The potential for small industries produotion is by and large already fully exploited, given the polioies towards large-soale industries and imports, given the effeotive demand, and given the extent and development of the indu-

strial service infrastructure in the rural areas. The lack of reference to large-scale industrial policies and the incomplete picture of the demand structure of the previous approaches have been mentioned. We therefore emphasize the question of infrastructure in the following propositions. It should be noted that we operate with a widely conceived conception of infrastructure, in fact we define infrastructure as the common material and institutional conditions of production. E.g. service institutions such as credit institutions, the distribution system and post offices are included. The next propositions thus elaborate the first as follows:

(b) It is a false assumption that further small industries development can be implanted without a simultaneous general development of the infrastructure, particularly directed towards the requirements of the small industries. The existing infrastructure is directed towards the needs of the export-import oriented economy - even at the regional level - and it is only by coincidence that an overlapping exists between this infrastructure and that necessary for the small industries.

(c) Implicitly in the above contention follows that it is not sufficient to demand that the technology transferred to the small industries is adapted to the so-called "local conditions" in order to derive an appropriate technology[10]. It is suggested that, by and large, the technology in use is already adapted to the local conditions to a point that no more substantial improvements can be obtained without the said change in the infrastructure.

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10) The connecting feature between the discussion of the appropriate technology conception and rural industries is the contention that appropriate technology is synonymous with small-scale or low-cost technology. Numerous references could be made on this point, suffice it here to refer to U.N.: "Appropriate Technology and Research for Industrial Development" ST/ECA/152, New York, 1972. In this publication the demand is made for adaptation of technology to "local conditions" or "circumstances", but it is not very clear what these two vague concepts contain. The endowment of the factors of production is usually included, and we assume that infrastructure in the way defined in this paper is likewise included.

The implications of these points are that an absolute precondition for a rural industrial development programme is that an infrastructural development programme is initiated simultaneously. We would even go as far as asserting that the infrastructural development programme is the more important programme and therefore needs to be a step ahead of the industrial development efforts. This is so because we have been convinced that the existing craftsmen are skilled and capable of developing themselves and their technology, given improved common conditions of production.

This clearly came out of the West Lake survey mentioned in section 5.2. This included not only a rural industries survey, but also a survey of existing infrastructural facilities. The survey recorded what facilities were in the district centers and the designated rural centers. These facilities were grouped into "administration and access", "social infrastructure" and "economic infrastructure". Within these groups the most important types of services were listed. The result of the survey would then easily be mapped out as shown in figure 2. The bottom half of the circles depicts the economic infrastructure. As an average only 30 % of these half-circles are filled up, and they are the more open the more distant the rural centres are from the district centres. Exactly what types of services facilities were accounted for are shown on the maps and charts in appendix A to this paper. Incitentally, the infrastructure of the region is good an annually export of about 15,000 tonnes clean coffee and 21,000 bales of cotton, no wonder, because the infrastructure was made and shaped to serve this type of export production. It was much less adequate for food crop production or small industries.

The next thing to note is that the less economic infrastructural services and accessibility were recorded, the less rural industries were recorded. This conclusion may not appear very surprising. It nevertheless counters an often cited argument that the more remote places offer relative advantages to small industries because of their nearness to the consumers vis-a-vis the large industries which have long and costly transport distances. But in general this is a false argument because the more remote a place is located, the more difficult are the raw materials and other inputs for the small industries obtainable.

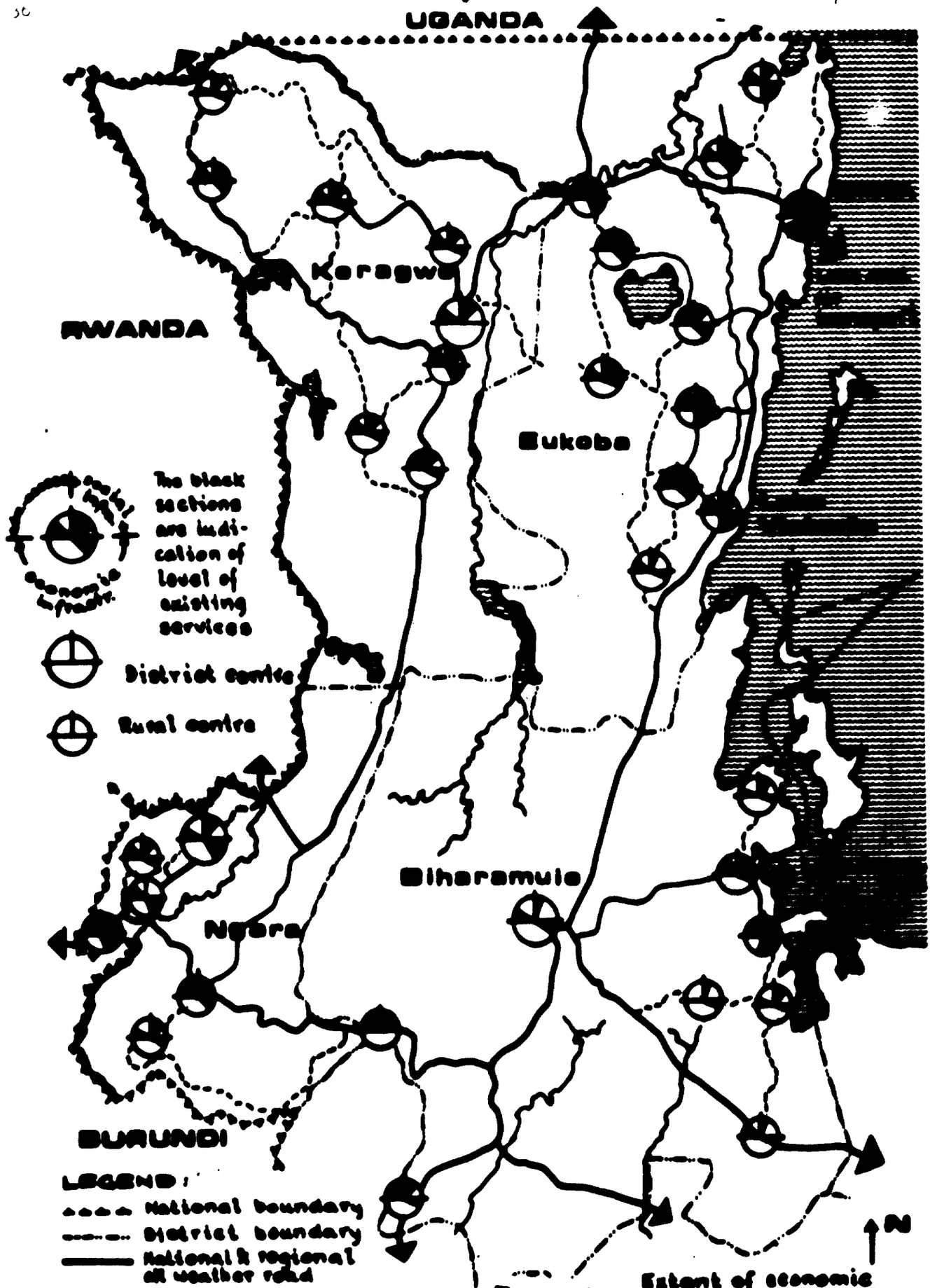


Figure 2. Extent of economic centres development

WEST LAKE REGION

Scale 1:1,000,000

Source : West Lake Planning Project.

Returning now to the discussion of the different approaches, it is admitted that the infrastructural question may be observed by the three approaches we are trying to oppose. It is observed, however, by proposals for direct, special services being rendered to those particular small industries units included in the programme in question. What is proposed is a veritable pampering of the fortunate few, resembling a Father Christmas-approach. E.g. free tools, materials, marketing services are often proposed given to those enterprises, just to keep them going and perhaps, just to try to prove that some successful industries can be run in the rural areas.

The alternative approach we try to advocate has less pampering and paternal characteristics. It doesn't attempt to run ahead - at least not very much - of infrastructural developments and thus integrates better with other rural development efforts. But first and foremost, it is believed to be more in accordance with the stated rural industries policy of Tanzania in general and the declared objectives of SIDO in particular. As this policy and these objectives are congruent we can merge them and briefly quote those features which are most relevant for an appreciation of the alternative approach presented.

a) A small industry is defined as "any unit whose control is within the capabilities of our people individually or co-operatively, in terms of capital required and know-how".

Some of the policy objectives are:

b) "To utilize existing or traditional skills and resources in order to achieve increased production and the national objectives of socialism and self-reliance".

c) "...to eliminate step by step the disparities in living conditions existing between urban and rural areas" (and we may presumably add: between rural areas).

Neither the "start from scratch", the "over-boosting" nor the "thorough direct" approaches take these points as seriously as the "recognize and utilize existing skills, don't go very much further than the infrastructure warrants" approach presented in the next section and which we keep calling the "alternative" approach.

Note: The alternative approach is applied here to promotion of the rural black- and tinsmiths' trade. It might not be applicable to other trades, e.g. trades with no rural skill base. In such cases it may be necessary to turn to the "start from scratch" approach, if at all the trade should be promoted in the rural areas.

6.3. Details of the UTUNDU-programme

"Utundu" is the Swahili word for "stubborn" in its positive sense of insisting, inventing, innovating, try-again.
It was, as said, coined in the SIDA report proposed "thorough direct" approach to rural implement manufacture. However SIDO preferred a less thorough and less direct support programme, and in very close collaboration with SIDO we elaborated the following alternative approach which is about to be implemented. Not all the details which follow are finally approved and agreed by all parties concerned. To be sure, therefore, the reader should conceive it as a proposal in its making and consideration.

AIM:

The aim of the UTUNDU-programme is to promote small-scale manufacturing and repair of iron and metal items, namely (1) farm implements, (2) tools for other small industries, and (3) household utensils.

STRUCTURE

The programme has two components, namely (A) a product and process development component, and (B) a regional implementation component.

The first component is a SIDO headquarter concern. It consist of documentation and information compilation of new product prototypes and improved iron works techniques. Experiments will be coordinated and subcontracted to local workshops, e.g. to industrial estate general engineering shops sponsored by SIDO. As the district centre and village, UTUNDU-sponsored workshops gradually become consolidated (as described below), the new products and techniques will eventually be disseminated at a temporate and controlled pace to these, through a moderately expanding technical extension service and skill upgrading programme component.

There are two reasons for the initially modest emphasis on this programme component. It is a time- and resource-demanding thing to carry out experiments, the results of which have to be thoroughly tested before disseminated for widespread application. This is not to say that the component is not important and vital for the programme, and it certainly needs to be initiated. But the modesty also has to do with the pace and nature of the implementation of the second component of the programme which we will describe at some length in the following.

The first phase of the second component, the regional implementation component, is designed to consolidate existing black- and tinsmiths' groups rather than to expand them. The reasoning behind this consolidation approach is really given in chapter 5 and in section 6.2, i.e. the recognition that there are groups to consolidate, and that these should not expand their activities very much ahead of infrastructural developments. Doing so might easily smash or blow up what was consolidated.

IDENTIFICATION OF GROUPS

The first step of the regional implementation component is just a continuation, but intensification of the survey done by the Small Industries Promotion Officers (the SIPO's) and their assistants in all the regions of the country. The survey aims at identifying most, if not all, active smithing groups in the districts.

Whenever an active group is spotted it will be visited and interviewed. As a minimum the following information is obtained and reported:

a) Precise location of the group (distance to the nearest district centre, type of road etc.), name of the group if any.

b) Brief description of the most important features of the location (size of the village, available social and economic infrastructure).

c) Composition and size of the group and description of how it is organized.

d) Full account of products made; prices.

e) Count and description of tools in use.

f) Source and price of raw materials.

g) Marketing questions.

By the interviewing of the groups, care is taken not to create too optimistic expectation in respect of forthcoming UTUNDU-support. Possibly encouragement to organize better may be given, nothing more. Just the formation and registration into co-operative producer groups is a large step to be taken by many of the groups. The act itself of doing so is at places regarded as a sacrifice which then sparks off demands for something in exchange. That the sacrifice is a real one for many should not be underestimated, because being registered requires various fees, tax obligations and sometimes minimum wage demands. And if these costs are not compensated the whole economic basis for the enterprise might disappear.

SELECTION OF GROUPS

Following the identification survey each group is then categorized into A, B or C workshops according to the chart in appendix B to this paper. This is the first step towards deciding what kind of support the UTUNDU-programme possibly could give the respective groups.

In each case the actual support will be decided upon in consultation with the H.Q. officer in charge of the UTUNDU-programme. This condition is made because this officer will have the overall country covering picture and experience necessary to determine what support is available and best suited in each case.

As a rule of thumb and planning indicator, the following figures will be used for initial selection and spacing of prospective UTUNDU workshops, mainly based on market size considerations:

Group C Workshops: At least a 9,000 families market base required;
- B - " " " 18,000 " " " " ;
- A - Needs to be determined in each case.

This means, for example, that if a district has 18,000 families (or a population of about 80,000) either two group C workshops or one group B workshop could initially be supported through the programme. Roughly speaking it also means that a maximum of a

little more than 300 group C workshops can be supported, or something like 15 per region: As the UTUNDU programme gradually gets successful, and particularly the raw materials supply and the marketing problem gets solved, the 9,000 families per C-workshop planning figure can be decreased. But not before.

PRODUCTS

Just as the UTUNDU programme builds upon existing skills it also - at least initially - builds upon production of the type of implements which are already being made. The aim is to improve the working processes and the quality. First when a group has shown itself capable of making such improvements, suggestions should be made as to what other items could be made, and what other smithing techniques could be introduced.

It is therefore to begin with not necessary to specify the type of products the workshops should make. The smiths know that already. Moreover it would at present be an impossible task to specify all the produots; and what is useful to make in Karagwe Distriot is not neoessarily useful in Tunduru Distriot.

However, examples of products are listed below and grouped aooording to category of workshop which possibly could make them.

1. Products suggested suitable for group C workshops:

Farm implements:	jembes (of various types, kinds and shapes);
	axes (choppers);
	bill hooks (local design);
	adzes;
	pangas;
	outting knives (oane & sisal);
	sickles;
	slashers;
Household utensils:	knives;
	scissors;
	frying pans;
	charcoal stoves;
	kerosene lamps.

2. Products suggested suitable for group B workshops:

All the group C items plus:

buckets;
water cans;
dust bins;
chicken feeders;
garden shears;
repair of bicycles and similar repair work, e.g. repair of water installations.

3. Products suggested suitable for group A workshops:

Group B products, plus:

Farm implements:

axes, round eye;
groundnut shellers;
maize shellers;
groundnut lifters;
hand-operated sprayers;
planters (hand-opr.);
wheel barrows;
ox-carts;
hand-carts;
assembling and repair of ploughs.

Tools for small industries:
(including tools used by group C and B workshops)

forging hammers;
pedal operated air blowers;
holding tongs;
chissels;
planer blades;
sheet metal corrugating machines;
sheet metal cutting scissors;
soldering rods.

TOOLS AND EQUIPMENT FOR THE GROUPS

This is one of the crucial points where the UTUNDU-programme can be of direct assistance. Two things are seriously preventing the smiths to expand and improve their production:

1. Lack of tools in the regions
2. Lack of funds to buy the tools

The former point is perhaps the most serious drawback, because even if the smiths have the money they can't buy the necessary tools anywhere. So simply by arranging the tools available for sale at the respective RTC's,SIDO can bring these smiths considerable support.

The latter point is also a general problem and hire purchase, soft loans or subsidized prices will be arranged. A SIDO policy decision will be made and communicated to the regions shortly, together with detailed instructions on the necessary administrative procedures. The UTUNDU-programme does not provide for free gift tools. This principle applies for working sheds as well.

Tools recommended for a model group C workshop:

anvil on wooden trunk (50 kg);
foot-operated air blower;
various sizes of forging hammers;
holding tongs;
files;
hacksaw with blades;
medium size vice;
chissels.

Tools recommended for a model group B workshop:

All the group C tools plus:

hand-operated grinding stone and drill, with set of drills;
water pipe die machine (hand-operated);
soldering tools;
fastening tools;
metal grooving machine;
hand-operated metal cutting machine.

Tools recommended for group A workshops:

Each case needs to be considered separately, e.g. depending on the available electricity supply. But the following seems reasonable to aim at:

Basic blacksmith and machine shop tools;
Arc welding set (100 - 200 mps);
Gas welding and cutting torch set;
Table drilling machine (up to 1" die);
Table grinding machine (two wheels);
Die and tap set (1 mm to 20 mm);

RAW MATERIAL SUPPLY

In many regions the supply of raw materials is absolutely the most serious problem for the expansion of the smiths' production. Thus this must probably be the first thing to consider, i.e. before the supply of tools. At present most smiths rely on collecting whatever scrap material they can get hold of, often buying it at something like 2 shs/kg exoluding their bus fares and other travelling expenses.

A first step of assistance will be to arrange a systematic search in the regions for scrap e.g. in the garage yards of the various ministries. SIDO is investigating the possibility of making a general arrangement with all regional engineers which can make the handing over procedures of scrap to the UTUNDU-workshops smooth. Secondly, SIDO is negotiating with UFI in order to buy scraps at various qualities from there.

Thirdly, it is being considered that UFI will sell semi-finished blanks of various specific steel qualities, shapes and sizes. These will be distributed through the RTC or directly through the regional SIDO officers. This collaboration between the large and the small industries will be further discussed in the next chapter.

Particularly the third point might prove to take a long time to implement. Regions should therefore be prepared to exploit the first and second possibility fully first. As a rule SIDO cannot commit itself to carry out the actual material deliveries.

TECHNICAL EXTENSION SERVICE

Initially no specific technical advice is foreseen. At some later stage, e.g. when the semi-finished UFI blanks are distributed, technical extension service might be needed. Also when the product and processes development UTUNDU-programme component gets results to disseminate, this will go together with extension advice.

MARKETING

This final point is of course of utmost importance. In the initial stage of consolidating the existing groups' reliance on the existing very local market is necessary and believed to be sufficient, e.g. where smiths are claiming that the raw materials supply is their main problem, this has been found to be a sign of excess demand for their products.

It is when improved tools are introduced that care must be taken that a market survey is made. To give a group a loan or the like means perhaps encouraging too optimistic production volumen. This must absolutely be avoided. Whenever a group aims at producing for a market outside the district, consultations with RTC need to be made in advance. RTC generally makes it a condition for handling products that these are highly standardized.

7. APPRAISAL OF THE UTUNDU-PROGRAMME

7.1 The Remaining Questions

We have now dealt with three of the four questions raised in the introduction with particular reference to small-scale, rural manufacturing of implements. Chapter 5 presented what the present role of the smiths seems to be in meeting the demand for rural implements. Section 6.1 hinted at what proposals for assistance to the smiths had been considered so far, and section 6.3 told about what plans there are for promotion of the smiths' trade.

The fourth question was: "How are the prospective conditions for the plans to be realized ?". We could also put it more directly: "To the best of our knowledge, all possible precautions are taken

to ensure the success of the programme. But are these sufficient ?" This question we obviously can't answer in isolation, and this is where particularly chapter 3 comes in with its presentation of what else is planned in the same sector. In fact the last question has to be answered together with the more widely embracing, overall question raised in the introduction, namely: "Which strategy for provision of rural means of production would be most expedient and realistic ?"

We approach this question and the question about the likely success of the UTUNDU-programme the following way. First we define, partly in speculative quantitative terms, what achievements of the programme would count as "a success". Secondly we revisit the assumptions of the programme. Thirdly we review possible overall strategy options, and finally we try to merge a concluding appraisal.

7.2 Successful Achievements of the Programme Measured

The stated aims of the UTUNDU-programme (see section 6.3) are rather meaningless for any measuring of success. However, we get a bit more quantitative magnitudes to go by looking at the planning indicators under the sub-section heading "Selection of groups" on page 38. Here a tentative figure of 300 group C workshops, or 15 per region, is mentioned as a preliminary target for the first phase of the programme. Incidentally, this target should in fact ideally be converted into, say, 10 group C workshops, 2 group B workshops and 1 group A workshop per region. Note: Regions vary tremendously in many respects, so the target figures must not be regarded rigidly as something that must be implemented for each region. Doing so would be disastrous.

We hesitate to put time limits to the consolidation of these workshops. But a 3 - 5 years period seems a reasonable first phase duration. Say, rather 5 than 3.

Measuring the consolidation in terms of total production output is impossible although we might get a notion by going back to the jembe gap estimates on page 13 and page 25. If, for arguments sake, we say that 18 % of all jembes demanded are supplied by the present village blacksmiths, this amounts to about 0.4 million.

We further (wildly) guess that half of these are made by the selected 300 UTUNDU-workshop groups. This corresponds to each making 2 jembes per day which they easily do (they can make 10 per day per mastersmith). Doubling this output is therefore easily achieved, assuming UTUNDU-assistance.

In 1983 we could thus expect a village production of 0.6 million, or 21 % of the projected demand, or a jembe surplus production of the order of 0.5 million, if large-scale production keeps up to 80 % of planned capacity. We shall discuss the implications of this possibility later in this chapter.

Leaving these output guesstimates of limited scope we would put forward some more qualitative considerations as measures of successful consolidation. In fact what we need is to define the consolidation concept more precisely. We suggest that a smithing group has been consolidated fully (a) when it is organized in a way which - at least potentially - is conducive to the introduction of some interchangeable division of labour between the group members (b) when the primary occupation of the group members is smithing (e.g. as opposed to farming); (c) when it is capable of earning a surplus large enough for some reinvestment and accumulation of improved tools to take place; and (d) when its range of products and repairs has shown a diversified tendency.

In case the equivalent of 300 village workshops have achieved consolidation so defined over a 5 years period, the first regional implementation phase could be regarded as successful.

Although we have no firm cost calculations we foresee that the UTUNDU-inputs as described in section 6.3 will not amount to more than 10,000 Tshs (1,200 US$) per workshop equivalent , or 3 mill. Tshs (0.4 mill. US$) in total direct costs to SIDO over the next 5 years. To this could be added another 3 mill. Tshs to administration etc. In other words, 6 mill. Tshs is the maximum amount estimated to be involved for the regional implementation component, phase 1. Doubtlessly the product and process development component will be costly, but we have difficulty to believe that

more than another 6 million Tshs could be spent. Grand total for the entire UTUNDU-programme would be 12 mill.Tshs then, or 2.4 mill. Tshs per year for five years.

Compared to the previous approaches mentioned and costed, the 12 mill. Tshs UTUNDU amount of money could alternatively have bought 50 of the Kienbaum "over-boosting" approach types of workshops or 2 of the SIDA "thorough direct" approach industrial development village workshop clusters.

7.3 Testing the UTUNDU-Programme Assumptions

Admittedly, in drawing up the UTUNDU-programme we discussed it rather in terms of an alternative approach to some other approaches. In so doing we made a number of implicit assumptions - at least two - which needs to be tested in this appraisal chapter.

We assumed that groups of individual blacksmiths will respond to the consolidation intentions of the programme, in case the material and surrounding institutional opportunities for doing so were improved. Directly, only 4 groups interviewed had started reacting this way. Even without the programme. But will 296 other groups do the same ? The chances are that not all of the 296 first groups selected will do so. SIDO should rather be prepared that quite a number will be slow and even reluctant "to comply".

The efforts to bring about a "technological revolution" in the rural areas, i.e. converting the pre-industrial type of craftsmen's technique into an industrial type of technique, requires a highly political motivated and change-prepared rural population. And it requires a near absolute trust that what is proposed is not an attempt to exploit the participants. This latent mistrust was exemplified under the sub-section heading "identification of groups" in section 6.3.

What we are expressing is doubt about one of the vital assumptions of the alternative approach. Nevertheless, if some drop-outs are accepted, if it is accepted that some of the smiths will die with their skills "underutilised", the programme attempt seems worthwhile, because in all probability almost all would eventually drop-out if the attempt is not made.

To put it in another way, the UTUNDU-approach may have many similarities in underlying thinking with a model of early capitalist development in Europe, where some craftsmen gradually began to accumulate capital at the expense of others. For one thing, we are not sure whether the cooperative producer groups in socialist-aiming Tanzania are a similar social force as the early private capitalist. If not, the other approaches mentioned might be more realistic, although we doubt, their contribution to development of the productive forces in the rural areas will be noticeable.

Another assumption made is that the general rural infrastructural development gradually changes towards serving the small craftsmen's groups. If we demanded that this should happen just to benefit the UTUNDU-programme, the assumption would be utterly unrealistic of course. The indirect costs of the programme would reach astronomical amounts, and we would once more have to resort to the other more direct approaches. Fortunately this is not necessarily so. The kind of economic infrastructural development needed is very much congruent with the kind of services needed by the peasants in order for them to grow ordinary food crops, e.g. maize. Both maize growing and blacksmithing requires reliable access roads, distribution of inputs through district wholesale facilities, bus routes, postal and banking services etc., at least if we think of the kind of productive activity which is to create a surplus that is not to be accumulated elsewhere, i.e. that is supposed to be ploughed back into expanding productive activities in the rural areas.

Such an infrastructural development requires careful integrated planning. In other words, the UTUNDU-programme presupposes such kind of planning actually progressively taking place in the regions of Tanzania. On this crucial point we can say that the administrative structure for this to happen is present and presently gaining experience. See chapter 2, last paragraph.

However, with reference to figure 2 over the West Lake region economic infrastructure we firstly observe that the region was far behind in establishment of the kind of services needed by e.g.

small-holder maize growers and small-scale industries. The picture is from 1974, but revisiting the region two years later the picture was practically unchanged, in spite of the presence of an integrated infrastructural development plan for the region. The point is of course that paper plans never do the trick. Resources need to be diverted towards its implementation.

We do not intend to apply one case of a partly ineffective planning effort to the rest of the country. We just want to raise a serious note of caution about the assumption of progressively integrated rural infrastructural development taking place. In fact, this observation is much of the reason behind the cautions and modest thinking already expressed about the UTUNDU-programme.

But again, in spite of these doubts we don't suggest the UTUNDU-approach being changed. We expressly gave an allowance for the programme to be some step ahead of the desirable infrastructural development. We thereby namely don't exclude the possibility that the producer groups established would be instrumental in speeding up infrastructural services being established at a slightly faster pace than would have been the case otherwise.

7.4 Strategy Options for the Provision of Rural Means of Production

Taking then the UTUNDU-programme approach for granted as the one which is most in accordance with SIDO's policy objectives we finally need to appraise how it fits with the formal sector policies and plans as outlined in chapter 3.

There is one, soon two large-scale factories in the rural implements branch of trade. There is untapped capacity in the medium-scale general engineering enterprises, and SIDO have the possibility to promote others of the kind mentioned in section 3.2, last paragraph on page 8. Further, TAMTU and the RCW's described in the same section are being expanded.

The first question to raise is of course whether there are chances that these undertakings could be seriously competing with the UTUNDU-workshops for the market. Given the present undersupply of nearly all types of implements, in general, the chances are nil. Only

rather locally confined competition may take place, as already said, between RCW's and UTUNDU group A type of workshops. Improved distribution would remove this possibility; but distribution being a real problem, locally confined competition should be something for which planning precautions need to be taken whenever the location of RCW's or Group A workshops are considered.

In section 7.2 we projected a possible market confliot between the jembe production of the large-scale factories and the UTUNDU-workshops in 1983. Whether that year or later, this possibility needs a comment, because the jembes may once more be taken as a more general case in point for the various strategy options in the event that large and small industries might compete. Fortunately, the options are many which avoid destruotive competition. The only snag is that they need to be considered in advance of possible conflicts. Mainly we see the options as follows:

(a) The large-scale manufactured products can be exported, presupposing only that they are competitive on the world market in terms of quality and prioe.

(b) The large-scale factories diversify and take up other product lines. This may not be the most profitable thing to do, but the sooner the large factories of means of produotion start diverting from simple mass producing import substitution, the sooner, for one thing, the national technological capacity is strengthened.

(c) The small-scale enterprises try to diversify, simply beoause their productivity may be too low to compete. Their ohoioe of alternative products being limited, they may have to content with repairworks, sub-contracts or anoillary production.

The chances that the medium-scale industries clash with the small industries are less. The medium-scale ones don't make the simple implements, like the jembes. They may rather oome into oonflict in the plough category of products with the large-scale factories.

In such cases, the options (a), (b) and (c) seem again valid.

Option (c) appears to be the less attractive one. Given the marketing difficulties it is important for the viability of the small- and medium-scale enterprises that they produce as large a variety as possible of products. A regional division of labour between more specialized enterprises might be preferred for efficiency and cost reduction reasons; but such division presupposes intra- and inter-regional integration of trade links which by far are sufficiently developed. This argument is also the reason for proposing that the smithing groups, besides farm implements, make craftsmen's tools and household utensils.

Option (b) is probably the best choice, seen from all other than strictly economic points of view. By this we mean, that it requires that the large-scale factories renounce some of their scale advantages, i.e. the very argument and basis for their size in the first place. It may also be argued that the medium-scale enterprises are better suited to make innovations and adaptations, in other words, that these enterprises are assigned the main diversification role.

One particular type of large-scale product diversification would be very important, and has already been mentioned in section 6.3 page 42, namely the production of semi-finished blanks. This would both cater for the desperate need of the small-scale units for raw materials and the need of the users for adapted shapes of implements. Doing so will however leave the large-scale unit less value added per ton of iron. But, as said, UFI is considering this possibility.

The last option, option (a), may after all be the most inviting, provided the condition about the world market competitiveness holds. This question we have not assessed, but it is something the NDC management has under consideration.

In fact, the reader may have noticed that this appraisal lacks any detailed cost effectiveness comparison between the various scales and technologies dealt with. The discussion of options

has rather been based on broader qualitative arguments. Nevertheless, we hold that the frame for a proper choice of technology assessment has been made, and we argue, that without this frame such an assessment is of little value. And we could regretfully add, that quite many choice of technology discussions have been produced without a similar frame.

7.5 Concluding Recommendations

But even without a proper choice of technology assessment we are now able to indicate answers to the "remaining" questions made in section 7.1. We do so by stating which role the UTUNDU-programme could play in which overall strategy for meeting the demand for rural implements, this demand being the starting point for the whole paper.

It is recommended that:

(a) The UTUNDU-programme is initiated as outlined in section 6.3. Group B and C workshops are consolidated in rural centres and villages.

(b) SIDO, TAMTU and its RCW's coordinate the establishment of medium-scale production units in regional and district centres. The type of enterprise mentioned on page 8 should be encouraged by SIDO in regional centres, UTUNDU group A workshops in district centres.

(c) Only following a careful technology assessment and world market survey should new large-scale factories be considered.

Summary of comments:

On the one hand, the UTUNDU-programme seems to be the fastest way to increase the supply of rural means of production. It builds upon under-utilized skills and capacities. On the other hand the programme expansion depends on integration with seemingly slow infrastructural developments. Its likely contribution to increased supply of implements is thus limited.

The medium-scale units have the advantage of finding much of the infrastructural requirements for their production already existing in many regional and some district centres. Some initial import of skills from outside the country seems however required. Also the necessary machinery will count heavily on the import bill of the country. But this then is an area where aid agencies could be encouraged to invest, e.g. "thorough directly" as outlined on page 31, or through "sister industry" arrangements.

Whatever cannot be supplied by (a) and (b) should be "topped up" by expansion of the existing large-scale units. This topping up needs improved distribution in any case.

As for the prospects of these recommendations to be fully adopted, thus including the prospects of the UTUNDU-programme to succeed, we hope to have demonstrated that these depend on more than just the acceptance by SIDO. The prospects depend on national overall industrial and infrastructural development policy decisions.

8. CONCLUSION

A review of the rural implement supply sector in Tanzania and the recommendations for its promotion were presented in case study form in this paper. Although the case study may have little specific value for other developing countries it is believed to have some general value for a discussion of industrialization in relation to integrated rural development.

It is demonstrated that careful surveys may show that there, contrary to what is often said, does exist some production of means of production in developing countries, notably in the rural areas. This activity may be dispersed and take place in relative hiding, because of administrative bans from colonial times. But what administratively wasn't achieved, i.e. the extermination of the trade, may be in the process of being achieved today through the systematic efforts of the formal sector to penetrate the market, and through an infrastructural development policy which disfavours the rural productive activities.

In other words, to-days independent states may find themselves achieving by economic means what the colonial state didn't achieve by administrative means. Unless counteraction is taken, that is.

It is not argued that the village metal- and tinsmiths should be promoted for any reasons of nostalgia or romantic feelings. On the contrary, the main argument is that these craftsmen, if genuinely supported, constitute a basis for rural industrialization which otherwise would be wasted. And by rural industrialization we don't mean "establishment of any industries in rural areas". We mean establishment of enterprises which are backwardly and forwardly linked to other productive activities within the rural communities. The smiths are linked forwardly to agriculture; and as important their making of implements is, is their repair potential.

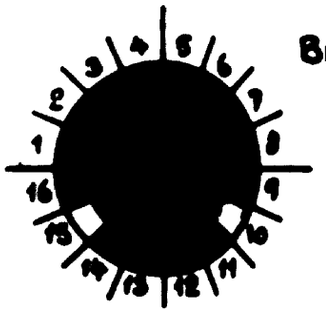
The case also illustrates an example of possible and very essential large to small-scale industry interlinkage, i.e. the provision of semi-finished blanks to the rural smiths. We could even call this a case of the large industry being sub-contractor to the small ones, and not the other way round, as is usually advocated.

The case is also an argument for an indirect approach to rural industries promotion: An integrated infrastructural development programme geared to the needs of small-holder farms and small-scale enterprises is the best promotion programme for both types of productive activity. The direct support approach should at least keep pace with the indirect. The snag about betting on small-scale units is that they need large-scale, widely dispersed, support efforts to show any significant effect.

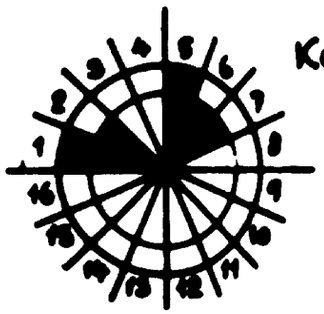
This brings us to the final point, namely that we can agree about the advantages and appropriateness of small-scale units and their technology. We should not be unduly dazzled by the advantages. Medium-scale units established in points of existing infrastructural concentrations may be a more feasible thing to go for in the short run, while the common conditions of production are improved in the rural areas simultaneously.

APPENDIX A: EXAMPLE OF RURAL INFRASTRUCTURAL DEVELOPMENT

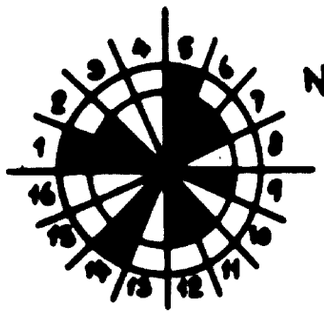
West Lake Region: District Centres inventory. 1974.



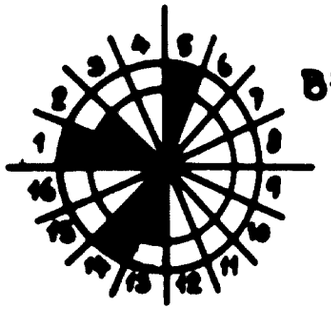
Bukoba



Kayanga



Ngara



Biharamulo

Administration and access

1. District offices
2. E & M garage
3. Busstation
4. Telephone

Social infrastructure

5. Hospital
6. National housing scheme
7. Community centre & library
8. Stadium

Economic infrastructure

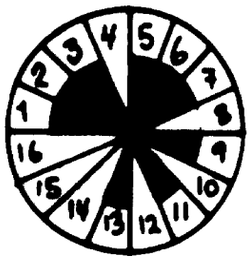
9. Cooperative export crop marketing branch
10. Food crop marketing org.
11. Coop. wholesale branch
12. Coop. transport branch
13. Regional Trading Corperation branch
14. Market
15. Small industries site & service
16. Electricity supply

NB! Where a section is fully shaded it means that the service is available to a "satisfactory extent". Partly shaded means that the service is available to a limited but not sufficient extent.

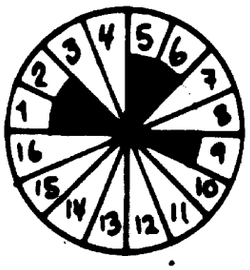
Source: West Lake Planning Project.

Quotation from J.Müller: "Decentralized Industries and Inadequate Infrastructure", Center for Development Research Papers, A.76.5, Copenhagen 1976.

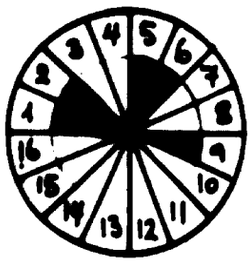
Karagwe District: Rural Centres inventory 1974



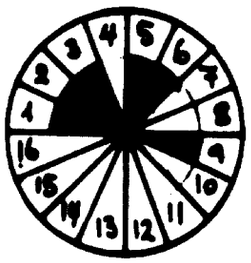
Bugene



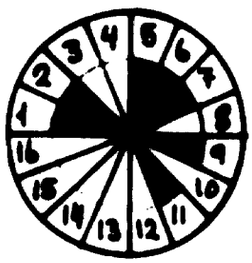
Kiluniu



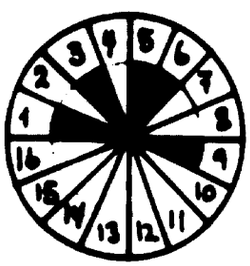
Mabira



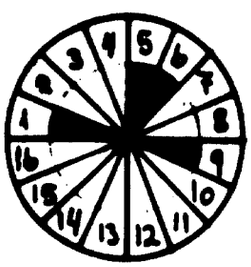
Nyaishozi



Kaisho



Nyabiyonza



Murongo

Administration & access

1. Ward or division office
2. All weather access road
3. Bus route
4. Bus stand

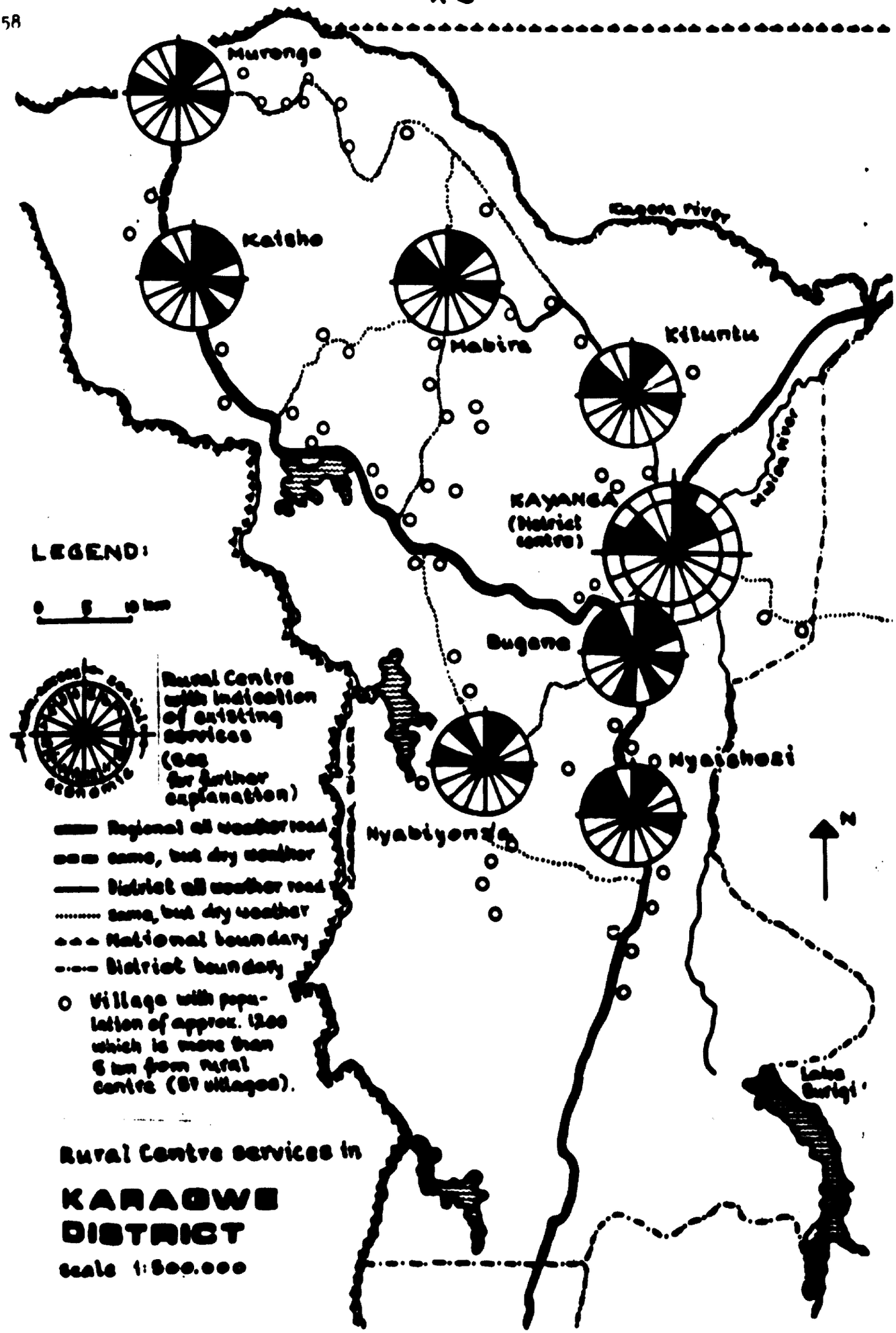
Social infrastructure

5. School
6. Dispensary or Health Centre
7. Piped water supply
8. Community development centre

Economic infrastructure

9. Primary marketing society
10. Sub-wholesale
11. Postal service
12. Banking servie
13. Petrol & garage
14. Small industries site & service scheme
15. Grain mill
16. Electricity supply

A 3


Murongo
Kagera River
Kaisho
Mabira
Kituntu
KAYANGA
(District centre)
Kagera River
Bugene
Nyaishozi
Nyabiyonza
Lake Burigi
N
LEGEND:
0 5 10 km
Rural Centre with indication of existing services (see for further explanation)
Regional all weather road
same, but dry weather
District all weather road
same, but dry weather
National boundary
District boundary
Village with population of approx. 1200 which is more than 5 km from rural centre (87 villages).
Rural Centre services in
KARAGWE DISTRICT
Scale 1:500.000

Characteristics	Group A	Group B	Group C
Location	District or regional centre	Rural centre, village or district centre	Village or rural centre
Physical set-up	Permanent workshop building with electricity from mains. Comprehensive set of hand tools, some power tools and machinery, welding equipment.	Simple workshed. Hand tools only - mix of traditional and modern. Some hand-operated machines partly/ mainly selfmade	Simple workshed. Mainly traditional hand-tools partly/mainly self-made. Few hand-operated machines, selfmade.
Hand-power skills	One or more formally trained in medium level technical and managerial skill, semi- and unskilled workers and apprentices.	One or more informally trained in low level technical skill. Semi- and unskilled workers and apprentices.	One fundi assisted by 1 - 3 relatives (sons), skill inherited mainly.
Organisational set-up	Partnership or co-op.	Partnership or co-op.	Individual.
Production	Mainly machinery and tools for other small industry units. Ancillary items.	Agricultural and other implements. Repair of same.	Agricultural and other implements although mainly repair. Traditional weapon.
Material supply and marketing	Material supply through formal trade channels (RTC) marketing through RTC or to order. Local and national market.	Mainly scrap material. Sales to local market mainly to order.	Only scrap material. Sales to local market, mainly to order.

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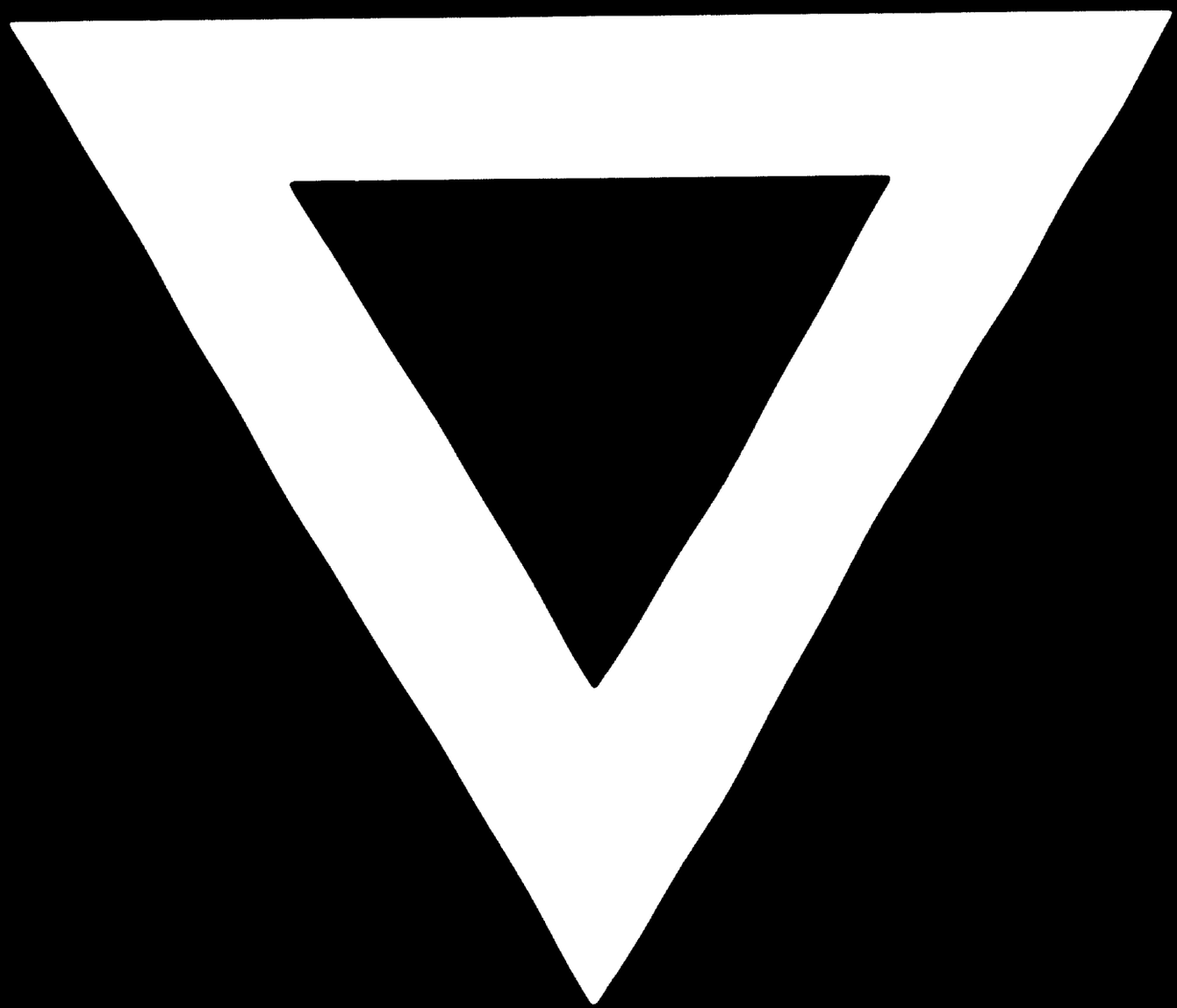

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