

**TWELVE NEW SETTLEMENTS IN TANZANIA:  
A COMPARATIVE STUDY OF SUCCESS**

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The ideal settlement in Tanzania provides for its members a satisfying and improving life and livelihood marked by measurable progress against the enemies of poverty, ignorance and disease. At the same time, it contributes towards building the nation by providing a social organization that brings people together, by sharing its production with the national treasury, by fostering through practice the values of the national ethic: hardwork, self-reliance, socialist cooperation, democratic participation, and serving as an example of these values to the surrounding countryside.

Of the 12 new settlements that we have studied over the past year, none meet this standard, but half approach it in varying degrees. If this result appears encouraging, it is partly due to the selectivity of the sample, for these settlements are part of the saving remnant of a thousand attempts of the past decade, marked for the most part by failure. These settlements have met the first test of success — survival.

The entire sweep of the planned settlement experience has been recently reviewed by Cliffe and Cunningham (1968). In this paper, we examine both planned and unplanned settlements applying three broad measures of success: the objectives of the settlement at its initiation, a comparison with traditional settlement, and a comparison with the ideal of new settlement. We then examine the variable success for contributing factors and distill from this some implications for current Tanzania policy.

*New Versus Traditional Settlement*

In attempting to select a sample of villages that are in some way representative of the whole range of new settlement experience, we were faced with the problem of defining what constitutes a "new" settlement, and what

distinguishes it from the range of settlements that might be termed "traditional". We define a settlement as any grouping of human habitations for agricultural production, and therefore use the term in a much wider sense than that adopted by some other social scientists, for whom 'settlement' and 'resettlement' are synonymous. Thus in one sense a new settlement could be considered as being any recently established agricultural community. In part, our sample does reflect this literal definition. All of the 12 have grown up in the last 10 years, and some as recently as 2-3 years ago. However, some other features of new settlement are much more significant.

Some basic descriptive data on the settlements studied are found in Table 1, and the location of each is shown in fig. 1. Our choice of the sample was partly based on the need to cover as wide a range of experiments as possible, and partly based on specific governmental requests for related investigations.<sup>1</sup> The choice was also constrained by the availability of student field assistants conversant with local languages and with local contacts and experience. This student team provided an essential part of the research effort.<sup>2</sup>

The major feature which distinguishes our settlements from traditional settlement is the degree of planning, which is found in a significant amount in all but two of our sample. We here adopt a wide definition of planning, and would not use it only when some external agency, particularly Government, has been directly involved. Such comprehensively planned and sponsored Government settlements have been important in recent Tanzanian history, and two of our sample villages, Matongoro and Kiwanda, do fall into this group. But on the whole we have looked much wider than this, partly because the Government Pilot Village Settlements have received so much previous research attention,<sup>3</sup> and partly because this 'transformation' approach<sup>4</sup> is now generally reckoned to have been a failure. The actual range of new settlements is very broad. Cliffe and Cunningham (1968) describe 6 types of supervised and 4 types of co-operative settlements. In addition we recognize a broad spectrum of new settlement both planned and spontaneous, that has taken place in response to new opportunities of land, water and services. If these are viewed as experiments in development much can be learned from their experience.

At this point one must distinguish between our new settlements and the kind of breaking away of new communities which has been found within the traditional systems of many parts of Tanzania. Traditional settlements, far from being the static units which are often imagined, constantly gave birth, usually by extension, to new farming communities in response to frictions within the existing communities or to the need for land for an expanding population. However, in this case the new village was initiated within the traditional tribal or clan organization. The new settlements in our sample have grown out of some non-traditional structure, and in most cases the new political force of TANU has been the agent of change. The TANU League settlements of Mbambara and Kwamungugu are most obvious examples of party inspiration. Once these two settlements had been initiated, the inhabitants took over the running of their own affairs, with a leadership drawn from within the membership and not based on any kind of traditional power structure. Even the most traditional of our new settlements, Changalikwa, whose members mainly migrated from Lushoto and Gare, was strongly encouraged by the local M.P. and by a visit from the President.

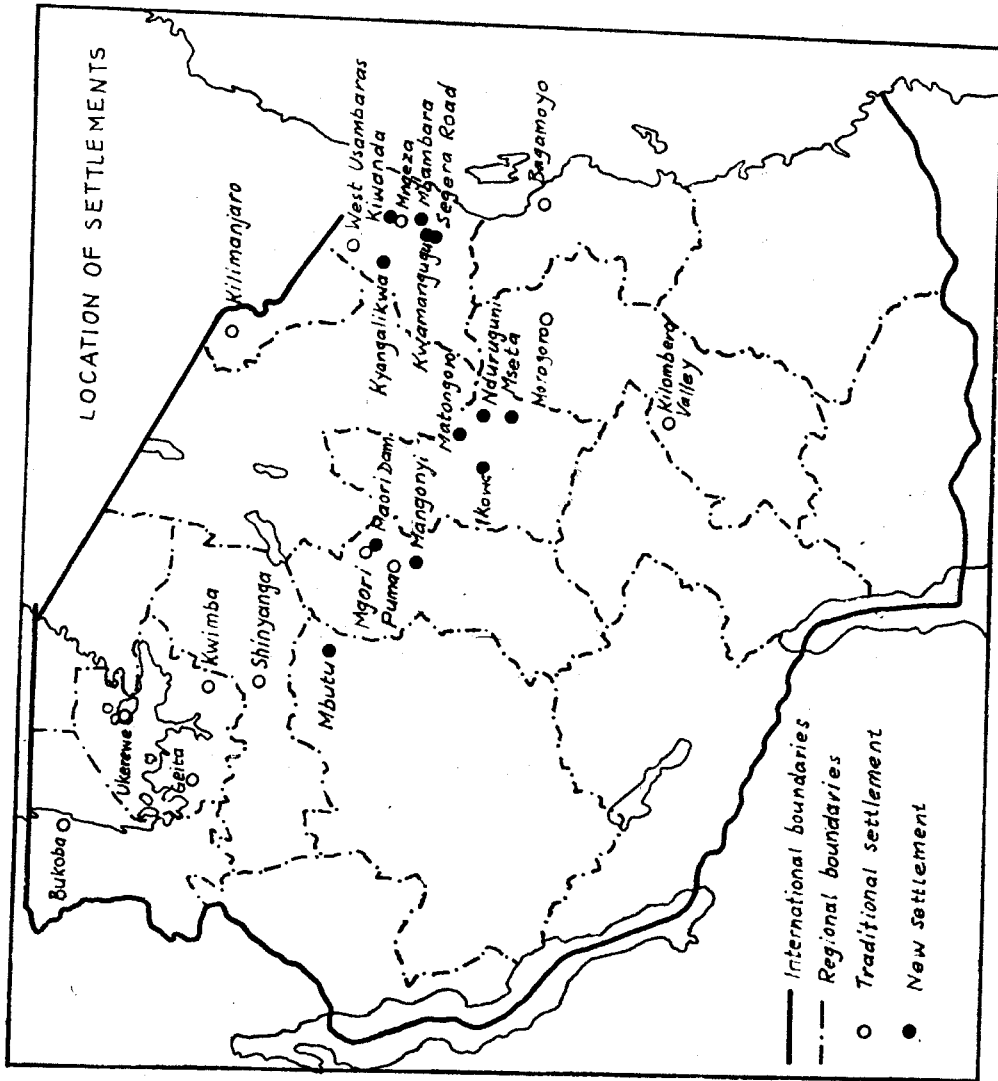


Table 1  
GENERAL CHARACTERISTICS OF THE TWELVE NEW SETTLEMENTS

SETTLEMENT (DISTRICT)	SETTLEMENT TYPE	LOCATION	YEAR BEGUN	POPULATION	NO. OF HOUSEHOLDS	% SAMPLE HOUSEHOLDS	AREA HECT.	STUDIED ACRES
Mbambara (Tanga)	Ujamaa—Sisal	15 mi. S.W. of Muheza ..	1963	162	80	26	800	1,975
Kwamangugu (Handeni)	Ujamaa—Sisal	9 miles South of Segera Jct. 70 Mi. E. of Dodoma, 4 Mi. S. of Dodoma-Morogoro Road ..	1963 1961— 1962	123 142	73 32	25 25	800 520	1,975 1,280
Changalikwa (Korogwe)	Cooperative—Maize	On S. E. edge of Kwalukonge Estate, 10 Mi. from Mombo ..	1961— 1962	372	101	19	550	1,350
Mseta (Mpwapwa)	Block Farm/Tractor/Maize	15 Mi. E. of Mpwapwa ..	1963— 1964	295	50	26	570	1,400
Segera (Handeni)	New Road—Maize	Along the Chalinze-Segera Rd. 5-10 Mi. S. of Segera Jct.	n.a.	126	37	22	n.a.	n.a.
Mbutu (Nzega)	Induced by Provision of Dam/Cattle Water—Cotton	50 Mi. E. of Nzega 3 Mi. N. of Igunga	1963	383	86	25	1,830	4,500
Mgori Dam (Singida)	Induced by Provision of Domestic Water, Fishing	20 Mi. from Singida 5 Mi. from Ngori Village	1961	80	20	25	n.a.	n.a.
Ikowa (Dodoma)	Irrigation Based—Maize	37 Mi. from Dodoma ..	1958	285	58	29	480	1,185
Man'gonyi (Singida)	Onions, Rice	19 Mi from Kongwa	1958	462	101	24	9,240	20,300
Matogoro (Mpwapwa)	Irrigation Based—Maize Mixed	37 Mi. from Singida .. 8 Mi. from Manyoni Road	1962	464	77	18	8,100	20,000
Kiwanda (Tanga)	Village Settlement Programme—Cattle Based on Former Mission To be Village Settle. Area	24 Mi. N. of Kongwa .. In E. Usambara Mountains 15 Mi. N. of Muheza ..	n.a.	191	45	24	1,040	2,570%

With the replacement of the traditional structure as the planning agency, the aims and stimuli for new settlement have radically changed. The purely local objectives of the traditional society have been replaced by aims such as nation building and the growing of more cash crops. In migration parlance, many of the 'push' factors of friction within the existing social and economic structures and the need to take up land in less crowded areas are still important, but the 'pull' factors have assumed new forms and greater importance. Many of our new settlements have grown up around new facilities, such as new sources of water supply, as at Ikowa, Man'gonyi and Mbutu, or on land opened up by a new road, as at Segera. It is in settlements such as Segera that planning has been of least importance, the external planning agency being only responsible for the provision of the single service, and taking no part in the resulting development.

The importance of non-traditional forces such as these, is reflected in a number of structural aspects of the new settlements. Whereas most traditional settlements had a homogeneous tribal or clan structure, the new settlements have a more heterogeneous make-up. For instance, 22 tribes are represented at Mbambara. At the same time the traditional family structure has been breaking down. The extended family of a man, his wife, their sons and their families, is being replaced by the biological family of a man and his wife and children. Under the influence of TANU Youth League the characteristics and age-grade village appear in modern guise, as in Kwamangugu where 66 out of the 73 households consist of lone bachelors.

In summary, the features which distinguish new from traditional settlement are the degree of planning found in their initiation and organisation, the influence of the new political structures, and the attractions of services and modern market agriculture.

#### *The Major Dimensions of Settlement*

We have seen that our new settlements form a group which is distinct from anything existing within the traditional system. But there is of course much diversity within our sample settlements, including variations in the qualities that distinguish them from traditional villages.

Within the constraints of the research design, the sample settlements were chosen with a view to conveying a range of experience in terms of three major variables, (1) the planned-spontaneous dimension, (2) the communal-individual dimension, and (3) the commercial-subsistence dimension.

#### *The Planned-Spontaneous Dimension*

The comprehensively planned settlement has its initiation, location and internal organisation set out as part of a wider national regional or ministry plan. Below this level different combinations of these features may be planned by agencies either external to or within the settlement. The degree of planning found in the twelve new settlements is set out in Table. 2.

The village settlement project at Matongoro is the most planned settlement studied, with a high degree of outside involvement at all stages of the project. The two irrigation settlements at Ikowa and Man'gonyi show a considerable degree of planning, though in each case the settlements were not part of a comprehensive scheme but arose out of water control installation for other purposes. The four co-operative ujamaa projects show a considerable degree

**Table 2**  
**RANK ORDER OF SETTLEMENTS BY DEGREE OF PLANNING\***

SETTLEMENT	INITIATION	LOCATION	INTERNAL ORGANIZATION				Average	TOTAL
			Village Layout	Field Layout	Crop	Markets		
Matongoro	2	2	2	1	2	1	5.5	
Ikowa	0	2	0	1	1	0	2.75	
Man'gonyi	0	2	0	2	0	0	2.75	
Nduruguni	0	1	1	2	1	1	2.25	
Mbambara	0	1	1	1	2	1	2.25	
Kwamangugu	0	1	1	1	2	1	2.25	
Changalikwa	0	1	1	1	1	1	2.25	
Mseta	0	1	1	1	0	0	1.50	
Mbutu	0	0	0	1	1	1	0.75	
Mgori Dam	0	0	0	0	1	1	0.50	
Segera	0	0	0	0	0	0	0	
Kiwanda	n.a.	n.a.	n.a.	n.a.	n.a.	0	n.a.	

\*Scores are determined by the planning agency, if any, involved: external planning, part of some national, regional or ministry (2); internal planning with settlements' own organization (1); no planning (0).

of internal organisation and planning, while the rest show fewer elements of planning in their set up. The planning spectrum thus surveyed is a wide one.

*The Communal-Individual Dimension*

The communal-individual dimension can be expressed in terms of a communality index. This index is derived on the basis of how many of 54 settlement activities, which might be performed communally are in fact organized in this way (for a list of these items see Appendix A). The level of communal organization within the settlements is set out in Table 3.

TABLE 3

COMMUNAL - INDIVIDUAL DIMENSION

<i>Settlement</i>	<i>Communality Index</i>	
Mbambara	62	Ujamaa
Kwamangugu	51	
Nduruguni	36	Cooperative
Changalikwa	31	
Matongoro	15	Individual
Mgori Dam	10	
Mseta	8	
Mbutu	8	
Ikowa	8	
Man'gonyi	6	
Kiwanda	4	
Segera	0	

Under a typology of organization the villages again arrange themselves in three groups; the ujamaa type villages prove to have achieved many of their objectives in terms of structure and show the highest degree of communality. Here leadership is by election, there is an effective groups decision making process, work patterns all in part co-ordinated (there is a communal food shamba as well as individual plots) and profits of the cash crops are shared by members. The two co-operative settlements of Nduruguni and Changalikwa form a distinct second group and the rest show a distinctly lower order of co-ordinated activity.

#### *The Commercial-Subsistence Dimension*

A basic division of the settlements, in terms of their economic activities can be made by using the degree to which commercial farming has developed. A number of factors were considered in the construction of such a classification. An attempt was made to assess the proportion of the land in each settlement that was needed to produce subsistence for the settlers. This was done using a variation of Allan's cultivation factor (Allan, 1965). A measure of the potential surplus for each settlement could readily be made by comparing total food crop acreage with the acreage needed for subsistence. The potential marketable surplus is obtained by adding this figure to the non-food crop acreages, and these results can most easily be compared by considering them as percentages of the total acreage involved. Another factor taken into account when determining the level of commercialisation was the amount of land devoted to export crops.

Using this criterion of the level of commercial farming, the settlements can be divided into three groups. Mbambara, Kwamangugu and Mbutu, relying heavily on export crops, are the most highly commercialised. Ikowa, Mgori Dam, Matongoro and Changalikwa form an intermediate, mixed economy group, while the rest still have a high proportion of subsistence agriculture.

Thus the 12 settlements can be classified and described in terms of these three major dimensions of degree of planning, level of communality and development of commercial agriculture. The relationship between these dimensions is shown graphically in Fig. 2. We will now attempt to analyze the importance of each of these major dimensions as determinants of settlement success, as well as considering other factors which might be significant.

#### *Measures of Settlement Success*

The twelve settlements cover a decade of activity marked by Independence, U.D.I. and the Arusha declaration, the rise and fall of the transformation approach, and the initiation of Ujamaa villages. Over the ten years, population has increased by a third, agricultural production has grown by almost a half, and export prices, particularly of sisal, have fluctuated detrimentally to the national economy. A meaningful measure of success must be multidimensional if it hopes to capture the essence of new settlement activity unfolding against a varied backcloth of evolving goals, changing policies and shifting resources.

Thus we approached the measurement of success with a very wide net. We began with the observation that all the settlements met the minimal standard of success—survival. We then seek to identify the objectives, stated and implied, for each settlement at the time of initiating and for any major



FIGURE 2

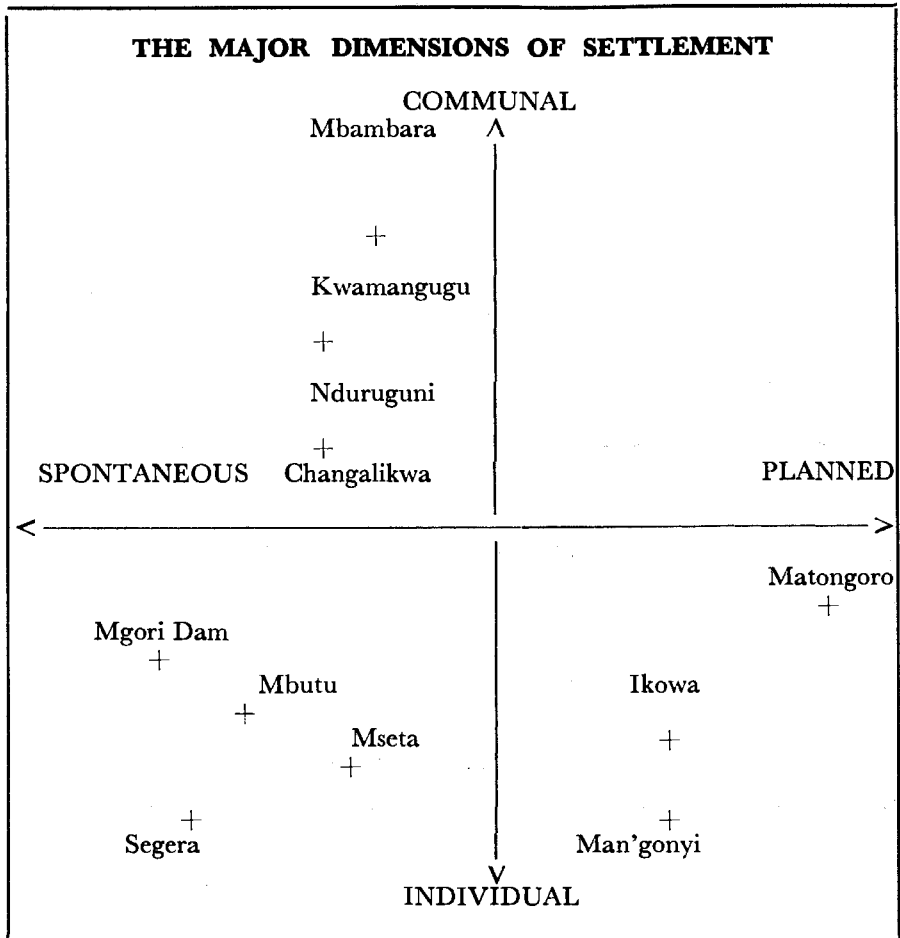
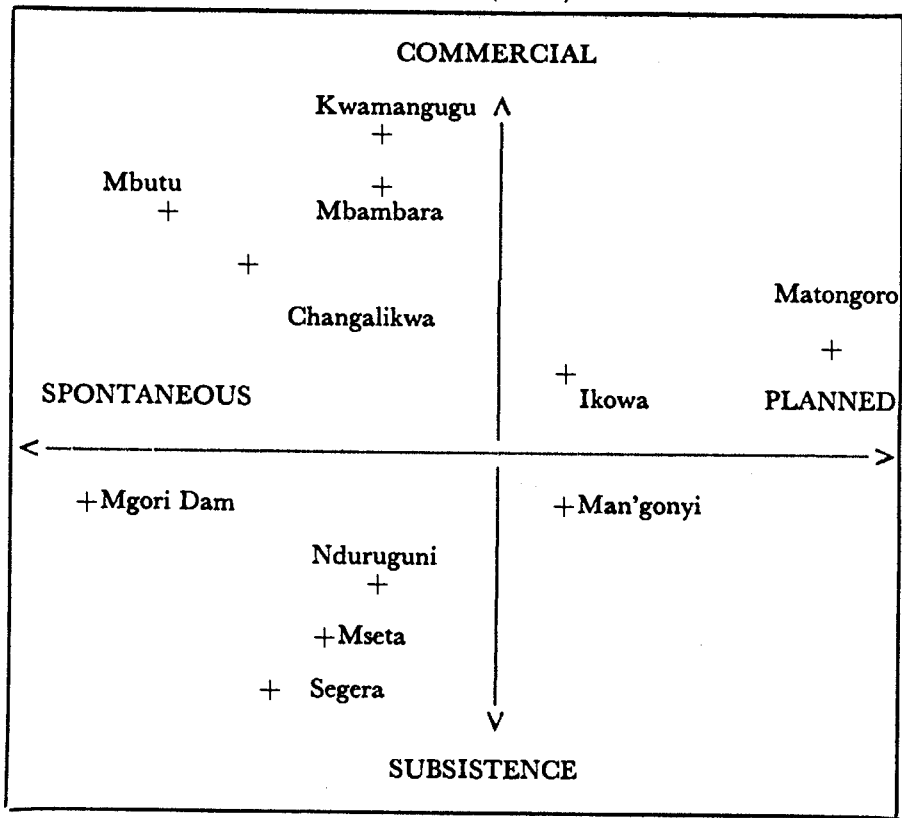


FIGURE 2 (Contd.)



subsequent revisions in goals. Finally, we develop four classes of measurements generally applicable to evaluating success in settlement: the use of available land and water potential, the economic and social well-being of the settlers, the degree of settler satisfaction, and the contribution made by each settlement towards current national goals.

For each class we sought, sometimes unsuccessfully, to design measurements and observations capable of being made within the constraints of the study and yielding comparative, preferably quantitative, data.

#### *Sources of Data*

The basic data used in this evaluation were derived from an intensive household survey made in each of the twelve new settlements. A complete settlement census was made using a simple one-page questionnaire designed to ascertain the age/sex structure of the family, the background and education of the head of household, the date when the family moved to the settlement, and a variety of information on the family land, herds and material wealth. In all some 800 households were covered in this way. A much more detailed questionnaire was administered to some 25 per cent of these households. Information was gathered on diet, income, expenditure, marketing, the decision to move to the settlement, and detailed measurements were made of areas under various crops. Information on the history and organization of each settlement was gained from interviews with the leaders, the use of minutes of meetings where available, and from the records of a number of Government ministries and regional offices.

So that comparisons could be made with more traditional types of villages, three control sites were surveyed in much the same way. There were Puma and Mgori in Singida Region and Mngeza in Tanga Region (see Fig. 1). This has been added to information available from other studies, notably; Attems (1968), Baum (1968), Collinson (1961-5), the Dar es Salaam Sub-Region Plan (1968), Friedrich (1968), Rald (1969), Rotenhan (1968), Routh et al (1968), Ruthenberg (1968), and a number of reports by the Central Statistical Bureau (1963, 1967, 1968).

#### *Individual Settlement Objectives and their Realization.*

An important measure of success is the settlement's achievements in relation to its own objectives, including its revised objectives which evolve as the scheme develops. It is not always easy to define these objectives precisely. For Segera which grew spontaneously along the Chalinze-Segera road, this is a difficult criterion to apply. For Kiwanda, just in the stage of formation, it is too early to assess progress. For the others a range of objectives occur and these are listed in Table 4 by chronological order of settlement initiation.

The objectives are marked by the rapidly changing ethos of the countryside. Ikowa, Man'gonyi, and Mgori Dam are the responses of a Colonial Administration to a belated desire for initiating development activity. Changalikwa and Nduruguni are responses to the Uhuru-inspired wave of nation-building. Mbambara and Kwamangugu are more ideologically inspired, sired by the Tanu Youth League, and aimed at breaching for Africans the foreign plantation enclave of sisal production. Matongoro is a product of the capital intensive transformation approach suggested by the World Bank. Kiwanda coming much later represents the search for a low-capital initiative in government organized village settlement. Mseta and Mbutu are products of other

Table 4 REALIZATION OF SETTLEMENT OBJECTIVES		
SETTLEMENT	OBJECTIVES	DEGREE OF REALIZATION
Ikowa .. (1958) ..	Initiate new type of agriculture by irrigation Economic improvement for members Cash crops for Dodoma Mkt. New settlement on sparsely populated land	Only 40% of land in irrigated area Fairly high Fairly high Limited - $\frac{1}{2}$ of irrigated area used
Man'genyi .. (1958) ..	Initiate irrigated agric. New cash crops for Sindiga market Economic improvement	Only 50% of land in irrigated area Very limited - transport problem Partial
Mgori Dam (1958) ..	Provide domestic and cattle water supply <i>subsequently</i> Initiate irrigated agric. Develop fishing	Only small percentage of water used Nil Successful
Changalikwa (1961-2) ..	Relieve population pressure in uplands Economic improvement	Partial Partial
Nduruguni (1961-2) ..	Economic improvement National building	Limited Minimal - little external impact
Matongoro (1962) ..	Cattle improvement centre Large-scale cattle prod. Cooperative crop farming New permanent settlement	Fairly high Very limited Minimal Considerable turnover of settlers
Kwamangugu (1963) ..	Development of communal sisal production Economic improvement for members Development of Ujamaa community	Very limited Limited Partial
Mbambara .. (1963) ..	Development of communal sisal production Economic improvement for members Ujamaa community development	Limited - transport problem Partial - high hopes for future Considerable achievement

SETTLEMENT	OBJECTIVES	DEGREE OF REALIZATION
Mbutu .. (1963) ..  (1963) ..	Stabilize settlement on good soils by providing dom./cattle water supply  Increase cotton prod.	High  7-fold increase prod.
Mseta .. (1963-4) ..	Utilize old European block farm to produce maize-using block farm methods Economic improvement Initiate co-op. settlement	Only $\frac{1}{2}$ of the land used  Limited — tractor costs too high Minimal
Segeera (1964-5) ..	n.a.	n.a.
Kiwanda ..	Productive utilization of farmer mission centre Create new low-capital village settlement Relieve population	Too early to form any judgement

development activity, the former to encourage tractor cultivation, the latter to encourage cash crop production by the provision of water services.

As the objectives vary greatly, so does the degree of their realization. The four most successful settlements in terms of their own objectives are those which had fairly modest perspectives and which relied mainly on their own resources. Although the two settlements based on communal sisal are running into great difficulties with that crop, they are modifying their objectives in this respect. Mbambara, it can be noted, is moderately successful in its development of communal activities and in its economic returns. Kwamangugu is less so, but the settlers are still optimistic. Changalikwa has not evolved a high degree of co-operative endeavour but it has provided an alternative to the land pressure in the mountains, and the settlers are obtaining reasonable returns. Mbutu, where investment was made in water supplies, appears to be achieving its results though the costs of the operations so far have been significant.

The least successful appear to be the capital intensive projects, the village settlement scheme at Matongoro and the three irrigation schemes. Partly this is a product of the expectations themselves. In order to justify the high cost of these projects, the planners set goals which by comparison are substantially greater than that of the other settlements and thus even modest progress may appear relatively as failure.

Most of the settlements reviewed are still evolving and farmers in them have a general optimism about future prospects. However in terms of their own objectives only 4 out of 10 can be said to have progressed far on the road to success.

*Use of Available Land and Water Potential.*

For each new settlement, its site provides a set of ecological opportunities and constraints, a natural problem capable of solution. How well are these opportunities utilized? We use three extremely crude measures by which we rank the settlements in Table 5.

From the first, the percentage of cultivable land actually cultivated, we readily note that new settlement rarely takes place in areas of land shortage. The proportion of cultivable land utilized is quite low, but this is the case in much of Tanzania. Even in an area such as Bukoba, generally regarded as suffering from population pressure, some 17 per cent of the very best land is unused. (Rald 1969). It should be noted that this particular measure by focusing on cultivation rather than on grazing distorts the picture for cattle areas such as Matongoro and Mbutu.

Since labour rather than land is most often the scarce factor of production, the land-labour index is a somewhat better measure and it serves both as a comparative measure of land per unit of available labour and by implication as a measure of willingness to work. By this measure the new settlements are markedly successful comparing well with, and exceeding the very best of traditional agriculture (Tables 6a and 6b.)

<b>RANK ORDER OF SETTLEMENT SUCCESS BY USE OF AVAILABLE LAND AND WATER POTENTIAL</b>						
SETTLEMENT	% Cultivable Land Utilized <sup>1</sup>	SETTLEMENT	Culti- vation Factor <sup>2</sup>	Land Labour Index <sup>2</sup>	SETTLEMENT	Index of Diversi- fication <sup>3</sup>
Changalikwa	35	Mbambara ..	0.6	4.8	Mgori Dam ..	4
Man'gonyi	25	Kwamangugu	0.65	4.7	Changalikwa	3
Mbambara	24	Segera ..	0.65	4.2	Kwamangugu	3
Mseta ..	24	Matongoro ..	0.9	3.9	Kiwanda ..	3
Ikowa ..	20	Ikowa ..	0.6	3.7	Man'gonyi ..	3
Kwamangugu	17	Changalikwa	0.7	3.4	Mbutu ..	3
Nduruguni	13	Man'gonyi ..	0.6	3.4	Mbambara ..	2
Mbutu ..	11	Nduruguni ..	0.85	3.3	Mseta ..	2
Kiwanda ..	6	Kiwanda ..	0.5	3.1	Segera ..	2
Matongoro..	4	Mbutu ..	0.8	3.0	Ikowa ..	2
Ngori Dam	N.A.	Mseta ..	0.85	2.6	Matongoro ..	1
Segera ..	N.A.	Mgori Dam ..	0.9	1.5	Nduruguni ..	1

<sup>1</sup>The percentage of land capable of cultivation (land exclusive of steep slopes, rock outcrops, swamps, etc.) actually cultivated.

<sup>2</sup>The land-labour index is the cultivated area (in acres or hectares divided by the cultivation factor (in acres or hectares) with the quotient divided by the number of man equivalents. The cultivation factor is an estimate of the amount of land required to support one person by subsistence crops in most years at the prevailing technology and/or inputs. The factor is derived from regional estimates of cultivation factors (*The African Husbandman, Sample Survey of Agriculture*, and recent studies) and then is modified to take in account special conditions of site, agricultural technique, irrigation etc. found for each settlement. The underlying assumption is that variation in the cultivation factor "captures" the variation in productive capability of land in different settlements under prevailing technology. One major exception would of course be in perennial crops. As sisal is our main perennial, a special analysis of labour inputs into sisal as opposed to annual crops suggested that sisal acreage should be deflated by a factor of .7 which was done. Man-equivalents are the widely used (widely criticised) system of adjusting labour equivalences by age and sex to a standard male, aged 19-50.

<sup>3</sup>The index of diversification is the number of export crops (each with at least 10% of the total acreage devoted to export crops) summed with the number of food crops (each with at least 10% of the total acreage devoted to food crops).

TABLE 6a					
SOME CHARACTERISTICS OF AGRICULTURAL HOLDINGS IN A VARIETY OF TRADITIONAL SYSTEMS					
REGION OR DISTRICT OF SAMPLED SYSTEM	Persons per Household	Man-Equivalents per Household	Acres per Household	Acres per Person	Cultivation Factor
<i>Tanga</i>					
(a) W. Usambaras .. ..	6.0	2.3	2.35	0.39	0.5
(b) Mngeza .. ..	4.6	2.0	2.5	0.54	0.55
<i>Sukumaland</i>					
(a) Ukerewe hoe .. ..	9.0	6.1	6.1	0.67	0.8
(b) Shinyanga plough .. ..	5.9	2.5	8.1	1.40	0.9
(c) Kwimba hoe .. ..	6.6	6.0	5.7	0.86	0.8
(d) Average .. ..	7.2	3.2	5.9	0.1	0.8
<i>Kilimanjaro</i> .. ..	7.5	2.1	3.2	0.43	0.45
<i>Kilombero Valley</i>					
(a) Mountain rice .. ..	5.5	1.9	2.75	0.5	0.7
(b) Valley rice .. ..	5.5	2.67	5.4	0.98	0.7
<i>Morogoro</i>					
(a) Mountain .. ..	3.9	1.8	3.7	0.94	0.55
(b) Plain .. ..	5.1	2.2	4.8	0.94	0.7
<i>Bagamoyo</i>					
(a) Coastal .. ..	4.4	2.0	3.3	0.75	0.65
(b) Inland .. ..	5.3	2.1	1.5	2.28	0.7
<i>Bukoba</i>					
(a) Bukoba District .. ..	5.3	1.64	2.17	0.4	0.45
(b) Ihangiro .. ..	4.4	1.75	2.1	0.48	0.45
<i>Singida</i>					
(a) Puma .. ..	5.5	2.3	2.5	0.45	0.8
(b) Mgori .. ..	4.6	2.1	3.1	0.67	0.9

**Sources:** Attems (1968), Baum (1968), Collinson (1961-5), Central Statistical Bureau Reports (1963, 1967, 1968), Frederich (1969), Rald (1968), Rotenhan (1968), Ruthenberg (1968a).

<b>Table 6b</b>		
<b>LAND USE IN TRADITIONAL SYSTEMS BY POTENTIALLY MARKETABLE SURPLUS AND LAND-LABOUR INDEX</b>		
REGION OR DISTRICT OF SAMPLE SYSTEM	% of Cultivated Area In Potentially Marketable Surplus <sup>1</sup>	Land Labour Index <sup>2</sup>
<i>Tanga</i>		
(a) W. Usambaras .. ..	0	2.0
(b) Mngeza .. ..	0	2.2
<i>Sukumaland</i>		
(a) Ukerewe hoe .. ..	36	1.9
(b) Shinyanga plough .. ..	46	3.6
(c) Kwimba hoe .. ..	44	2.4
(d) Average .. ..	45	2.3
<i>Kilimanjaro</i> .. ..	44	3.4
<i>Kilombero Valley</i> .. ..		
(a) Mountain rice .. ..	0	2.1
(b) Valley rice .. ..	29	2.9
<i>Morogoro</i>		
(a) Mountain .. ..	41	3.7
(b) Plain .. ..	26	3.1
<i>Bagamoyo</i>		
(a) Coastal .. ..	13	2.5
(b) Inland .. ..	0	1.0
<i>Bukoba</i>		
(a) Bukoba District .. ..	44	2.9
(b) Ihangiro .. ..	50	2.7
<i>Singida</i>		
(a) Puma .. ..	0	1.4
(b) Mogori .. ..	0	1.6
<sup>1</sup> This index is explained in Table 11, footnote 1.		
<sup>2</sup> The land-labour index is explained in Table 5, footnote 2.		

## Sources:

Attems (1968), Baum (1968), Collinson (1961-5),  
Central Statistical Bureau Reports (1964, 1967, 1968),  
Frederich (1968), Rald (1969), Rothenhan (1968),  
Rothenberg (1968a).



More difficult to evaluate is the crude index of diversification, but it is our impression that new settlements suffer somewhat in this regard being less diversified than their traditional counterparts.

*Economic and Social Well-Being*

Each settlement provides the opportunity to its members for income both in cash and subsistence, the opportunity to accumulate wealth, and many provide, as well, new and improved access to social services. All of our measures of economic return and wealth are faulty (See Table 7). They provide a poor sample of time, one, or even three, visits are inadequate for peasant societies where the flows of income are very uneven during the year. By comparison the current Tanzanian Household Budget Survey envisages thirteen visits over a year and uses forty-four pages of questions to determine income flows.

More reliable is the measure of material wealth but it is subject to bias in settlements located in cultures which frown on conspicuous consumption, and thus public display or acknowledgement of cattle is seldom made. For such societies it may also be a poor correlate of income. We have also added a measure of material wealth appropriate for socialist societies, communally owned non-household property. A major measure of social well-being is access to services, and our measure, which involves access to water, shops, schools, medical facilities, local government and transport, seems adequate to its task.

For all the above provisions one should compare income figures with caution. One sample comparison of income would be to use a standard Shs. 30/= per month for each household, a widely used minimal subsistence figure in government sponsored settlements. By that standard more than half of our settlements fail to meet even that minimal standard when non-farm earnings are excluded. Nevertheless this minimal figure for government subsidy may well be too high for the realities of Tanzanian life. In a study of Bagamoyo and Morogoro in 1963, only households in the plains area close to Morogoro town had an income for March significantly above Shs. 30/00, and much of this income probably came from employment on sisal estates (Central Statistical Bureau, village. Economic Surveys, 1963). Comparisons using income from farming only can be made using a recent study of household incomes in Sukumaland, generally regarded as one of the richest areas of Tanzania. The average income for a pre-harvest month of the sample households drawn from Mwanza, Shinyanga and Mara Regions was Shs. 63/00. (Central Statistical Bureau, Cotton Growers in the Lake Regions, 1967).

**Table 7**  
**RANK ORDER OF SETTLEMENT SUCCESS BY ECONOMIC AND SOCIAL WELL-BEING**

ECONOMIC RETURNS		MATERIAL WEALTH		COMMUNAL WEALTH		AVAILABILITY OF SERVICES	
SETTLEMENT	Cash Income Previous Month <sup>1</sup> (Shs) Settlers with Onlt Farm Income	SETTLEMENT	Material Wealth Index <sup>2</sup>	SETTLEMENT	Per capita Value of Communal Property <sup>3</sup> (Shs)	SETTLEMENT	Services Index <sup>4</sup>
Ikowa*	87	Mseta ..	5.0	Nduruguni ..	800	Kwamangugu	7
Changalikwa*	51	Matongoro	4.8	Kwamangugu	150	Kiwanda	6
Mbutu*	47	Ikowa ..	4.6	Mbamba	90	Mbutu	5
Kiwanda*	32	Mbutu..	4.4	Changalikwa ..	80	Segera	5
Matongoro	31	Man'gonyi	4.0	Not applicable for other Settlements		Ikowa	5
Kwamangugu	24	Mgori Dam	3.5			Man'gonyi	5
Mseta ..	21	Nduruguni	3.3			Mbamba	4
Mbamba	19	Kwamangugu	3.0			Mseta	4
Segera*	16	Changalikwa	2.2			Matongoro	4
Man'gonyi	8	Kiwanda	1.8			Nduruguni	3
Mgori Dam	4	Segera	1.6			Mgori Dam	2
Nduruguni	1	Mbamba	1.3			Changalikwa ..	1

<sup>1</sup>This is cash income, or readily converted equivalent, for the month of March, a preharvest, rainy season month. In 5 cases marked with an asterisk(\*) data on August—September, a post harvest month are also available. The effect of including these figures would be to raise the rank of Mbutu to that of first place.

<sup>2</sup>The material wealth index is based on the sum of scores for possession of the following items per household: traditional house (1), traditional house with improvements (2), cement or brick house (3), bicycle (1), radio (1), above average furniture (1), above average clothing (1) 1-2 animal units (1), 3-7 animal units (2), 8 or more animal units (3).

<sup>3</sup>Communal settlement property (non-household) was valued at original cost, and the per capita value taken. This property mainly consists of buildings, farm implements and vehicles.

<sup>4</sup>The service index is based on the sum of scores for the availability of the following services on or adjacent to the settlement: education — lower primary (1), upper primary (2); medical — dispensary (1), hospital (2), trade — single duka (1), dukas, mills etc (2); water supply — unimproved year round source (1), improved year-round source (2); transport — harvest season bus service (1), all-weather bus service (2). Maximum score is 10.

By the material wealth index the most significant distinction is between the cattle-keeping and non-cattle-keeping areas, and this distinction holds up even if the index is calculated without the animal unit items.<sup>5</sup> By comparison with more traditional settlement one would expect *a priori* a lower level of material wealth in new settlement as with some of the items, such as housing, accumulation of possessions may be partly a function of community age. Nevertheless, a comparison of a modified form of our wealth index with data from a household income survey recently carried out in 7 districts of Tanzania, as well as with our own three control villages shows that our new settlements are at least average in terms of wealth, only the figure for Kilimanjaro District being significantly higher (Table 8).

In terms of collective material wealth Ndurunguni is outstanding. This settlement of 32 household owns a church, lorry, mill, godown, tractor and trailer. Indeed probably 25% of their income has gone into group ownership and consumption.<sup>6</sup>

By the same reasoning, one would expect *a priori* a higher level of services in new settlement, possibly with the exception of bus services, since services figure strongly in government support for new settlement, and relatively high scores bear this out.

Comparisons can only be made with the level of services in the area surrounding Dar es Salaam, which is better served than almost any other part of the country. In the area covered by the recent Dar es Salaam sub-region survey (Dar es Salaam Sub-Region Plan, 1968) 104 settlements with populations roughly similar to our new settlements were recorded. Of these, 78 had no services at all. The 26 with services had a mean population figure exactly similar to our new settlements. The social service index scores were also very similar, roughly 70 per cent of both the new and Coast Region settlements having an index score between four and six.

In summary our new settlements yielded to their members somewhat lower cash returns, average material wealth, and above-average services

<b>Table 8</b>			
<b>COMPARISON OF NEW AND TRADITIONAL SETTLEMENTS ACCORDING TO MODIFIED MATERIAL WEALTH INDEX<sup>1</sup></b>			
TRADITIONAL VILLAGES <sup>2</sup>	Modified Material Wealth Index	NEW SETTLEMENTS	Modified Material Wealth Index
Wari and woo (Kilimanjaro) ..	5.3	Matongoro	4.6
Mgori (Singida) ..	4.7	Man'gonyi ..	4.5
Puma (Singida) ..	4.5	Ikowa ..	4.4
Bwegilo and Ruhanga (Bukoba) ..	3.1	Mseta ..	4.4
Kimbwara (Mbinga) ..	2.7	Mbutu ..	3.8
Samba (Rungwe) ..	2.7	Mgori Dam ..	3.5
Mahenge (Ulanga) ..	2.2	Nduruguni ..	2.9
Mngeza (Tanga) ..	1.9	Kwemangugu	2.3
Villages near Mufinde (Mufinde) ..	1.8	Changalikwa	2.2
Villages near Kisarawe (Kisarawe) ..	1.4	Kiwanda ..	1.5
		Segera ..	1.4
		Mbambara ..	1.2

<sup>1</sup>Modified material wealth index is based on the sum of scores per household for possession of the following items: traditional house (1); improved traditional house (2); cement or brick house (3); bicycles (1); radio (1); 1-2 animal units (1); 3-7 animal units (2); 8 or more animal units (3). The modified material wealth index is distinguished from the material wealth index of Table 7 by not including clothing and furniture units.

<sup>2</sup>Data on the traditional villages (with the exception of Mngeza, Mgori and Puma) is taken from Routh et al, (1968).

*Settler Satisfaction*

The crude measures of economic returns and access to services do not directly measure the satisfaction of the settler's own wants and needs, although they imply potential satisfaction. More direct measures involve settler behaviour and attitudes. The most common behavioural vote of success is to vote with one's feet, and three measures seek to capture that effect: the percentage of present settlers that were part of the original group, the percentage of the all time peak population now found in the settlement, and a stability index that takes into account the variable life of the settlement by averaging losses in original settlers by the years of settlement existence (Table 9). Settler satisfaction is measured by attitudes received through verbal replies to a set of three questions and the results of these have been succinctly summarized (See Table 10).

A high turnover is a well-known feature of new settlement, indeed back and forth migrations are somewhat universal. None of our measures fully captures this effect. While Kwamangugu has the highest proportion of original settlers it has also lost the most, with a sixty per cent loss from the peak being a conservative figure. Settlements where exhortation or deportation has been a major factor have a half-life measured in days. Then if the settlement is to survive at all, the erosion of membership ceases and the settlement reaches some steady state. A low stability index may be an indicator of settler dissatisfaction, as in Matongoro, or simply of settlement growth as in the case of Mbutu.

<b>RANK ORDER OF SETTLEMENT STABILITY</b>					
SETTLEMENT	Per cent of Original Settlers <sup>1</sup>	SETTLEMENT	Per cent of Peak Popu- lation <sup>2</sup>	SETTLEMENT	Stability Index <sup>3</sup>
Kwamangugu	92	Changalikwa ..	100	Kwamangugu	1.6
Mbambara ..	85	Man'gonyi ..	100	Mbambara ..	3.0
Mseta ..	72	Mbutu ..	100	Nduruguni ..	5.6
Nduruguni ..	63	Mantongoro ..	85	Mseta ..	6.2
Changalikwa ..	50	Mbambara ..	80	Changalikwa ..	7.4
Mgori Dam ..	45	Kwamangugu	40	Mgori Dam ..	7.8
Mbutu ..	26	Nduruguni ..	40	Man'gonyi ..	8.0
Man'gonyi ..	90	Not available for other settlements.		Ikowa ..	8.1
Ikowa ..	19			Matongoro ..	14.5
Matongoro ..	13			Mbutu ..	14.8
Segeera & Kiwanda	N.A.			Segeera & Kiwanda	N.A.

<sup>1</sup>The percentage of present settlers that arrived in the first year of settlement.

<sup>2</sup>The percentage that the present number of settlers represent of the all-time peak number of settlers. The all-time peak number is estimated from the settlement history.

<sup>3</sup>One hundred minus the percentage of original settlers, divided by the years of settlement existence.

<b>Table 10</b>	
<b>RANK ORDER OF SETTLEMENT ACCORDING TO SETTLER ATTITUDES</b>	
SETTLEMENT	SETTLER ATTITUDES <sup>1</sup>
Mbambara	Very optimistic for success, but on a long-term basis.
Kwamangu	Very optimistic but with doubts on future of sisal.
Mbutu	Optimistic
Ikowa	Optimistic
Nduruguni	Optimistic
Changalikwa	Generally optimistic, but some doubts
Man'gonyi	Fairly optimistic
Mgori Dam	Reasonably good prospects
Matongoro	Some benefits but current dissatisfaction
Not available for Kiwanda, Segera, or Mseta.	
<p><sup>1</sup>A qualitative, composite summary of responses to 3 questions (a) "Is this a good place to be a farmer?", (b) "Why have other people left the settlement?" (c) Now that you have been here for a while, what benefits do you expect to get from the settlement?"</p>	

More satisfying are the opinions and attitudes of the settlers themselves but these must be tempered with reference to a well-known phenomenon in locational preference studies. A significant majority almost everywhere affirm that their present location is satisfactory and it takes considerable effort to ferret out the nature of existing dissatisfactions. Nevertheless as a relative measure there are certain clear differences in satisfaction, with half the settlements having members displaying high optimism. In general, our impressions indicate that settler satisfaction is higher than warranted by other indicators of the quality of life. This is a product of the phenomenon referred to above, as well as the survival test. Those settlers who remain are inevitably the most satisfied.

### *Contribution Toward National Goals*

The foregoing seeks to measure, albeit crudely, success in terms of the lives of the settler, but what of the life of the nation? Three ways in which settlements might contribute towards national goals are: by contributing towards economic development, by helping to solve the dual population problem of excessively high and low densities, and by the strengthening of the national ethic. Our measure of a settlement's contribution towards national economic goals is an estimate of its potentially marketable surplus expressed as a percentage of cultivated area. In addition, we take note of its potential contribution toward the balance of payments by estimating the percentage of cultivated area devoted to export crops. (See Table 11).

The measures we use are inadequate to fully assess the settlement's contribution to economic development. Having a potential surplus, even of an export crop, does not guarantee its final entrance into the national product. Truckloads of sisal have been abandoned on the tortuous road to the decorticator at Mbambara. Little of Man'gonyi's irrigated surplus enters the marketplace. And the measures employed fail to consider the contributions of cattle (Matongoro) or of fishing (Mgori Dam). Nevertheless in comparison with more traditional settlement, the potential contribution is high (Table 6b).

To assess the settlement's contribution to population problems we calculate the percentage of settlers originating from regions or neighbouring countries of high density population. To measure the converse, the contribution towards nucleation, we calculate the ratio between the density of the settlement to the density of the enumeration area in which it is located, a ratio of one or greater being a measure of above average nucleation (Table 12).

Five of our settlements make substantial contributions towards relieving population pressure by providing alternative livelihoods. And all the settlements where measurements were available, with one exception (Kiwanda), contribute towards bringing people together. The advantages of nucleation are supported by the data of services. With nucleations, the settlements enjoy, by and large, higher levels of services than the surrounding areas.

A significantly Tanzanian measure of success is the settlement's contribution towards the national ethic. To assess the settlement's contribution we rely on a variety of measures each capturing a different aspect of the ethic (Table 13.) To compare *hard work* we use the land-labour index previously described. *Self-reliance* is inversely related to the amount of per capita external aid. The communality index comprising some fifty-four possible communal social, productive and marketing activities serves as the surrogate measure for *socialist cooperation*. A participation index based on the social organization and participation in decision-making gives some indication of the depth of *democratic participation*. Finally the *leadership* effect of the settlement, as an example to surrounding communities, was investigated but as this effect appeared almost non-existent no further measurements were made.

In terms of hard work our settlements are exemplary, clearly possessing the ability to call forth greater amounts of labour than traditional settlement (Table 6b). However in the case of self-reliance the results are mixed, with the capital-intensive projects sharply contrasting with the low capital projects. Similarly in terms of socialist cooperation and democratic participation our settlements are bi-modal.

Table II					
RANK ORDER OF SETTLEMENT SUCCESS BY CONTRIBUTION TOWARDS NATIONAL ECONOMIC DEVELOPMENT					
SETTLEMENT		% of Cultivated Area in Potentially Marketable Surplus <sup>1</sup>	SETTLEMENT		% of Cultivated Area in Export Crop <sup>2</sup>
Kwamangugu	..	78	Kwamangugu	..	54
Mbambara	..	70	Mbambara	..	46
Segera	..	54	Mbutu	..	45
Changalikwa	..	45	Mgori Dam	..	14
Mbutu	..	45	Man'gonyi	..	3.5
Matongoro	..	44	Changalikwa	..	2
Kiwanda	..	37	Ikowa	..	0
Man'gonyi	..	33	Kiwanda	..	0
Ikowa	..	27	Matongoro	..	0
Nduruguni	..	26	Mseta	..	0
Mseta	..	23	Nduruguni	..	0
Mgori Dam	..	14	Segera	..	0

<sup>1</sup>Potentially marketable surplus is the per cent of the cultivated area in crop acreage exceeding that required to support the population (using the cultivation factor) added to the export crop acreage. No allowance for losses etc. is made.

<sup>2</sup>Export crops include sisal, cotton, castor and cardoman.

The concept of success in new settlement is a mixed one, and its measurement is rough and indirect. Comparisons with initial objectives are hampered by the dramatic shifts in national objectives. Comparisons with traditional settlement are limited by the paucity of agricultural systems studies. Comparisons with the ideal are always difficult to appraise. Another form of comparison is available, an interval comparison between the new settlements. It is this comparison that we use to seek out the determinants of success.



<b>Table 12</b>			
<b>RANK ORDER OF SETTLEMENT SUCCESS BY CONTRIBUTION TOWARDS SOLUTION OF POPULATION PROBLEMS</b>			
SETTLEMENT	% of Settlers Originating From High Density Areas <sup>1</sup>	SETTLEMENT	Nucleation Ratio <sup>2</sup>
Changalikwa ..	85	Matongoro ..	11.8
Kiwanda ..	62	Mbambara ..	4.4
Kwamangugu ..	62	Mbutu ..	4.4
Mbambara ..	56	Kwamangugu ..	3.5
Mbutu ..	38	Mseta ..	3.1
Segera ..	18	Ikowa ..	6.1
Mseta ..	10	Changalikwa ..	1.8
Ikowa ..	7	Kiwanda ..	.9
Man'gonyi ..	1	Remainder ..	n.a.
Matongoro ..	1		
Mgori Dam ..	0		
Nduruguni ..	0		

<sup>1</sup>Settlers from the following regions or countries:  
Kilimanjaro, Mbeya, Mwanza, parts of Tanga, Burundi, Malawi, Rwanda.

<sup>2</sup>The nucleation ratio is the ratio of density of the settlement in people per kilometre to the density of the enumeration area (the smallest unit of the 1967 census) in which it is located<sup>7</sup>.

**Table 13**  
**RANK ORDER OF SETTLEMENT SUCCESS BY CONTRIBUTION TOWARDS STRENGTHENING THE NATIONAL ETHIC**

HARD WORK		SELF-RELIANCE		SOCIALIST CO-OPERATION		DEMOCRATIC PARTICIPATION	
SETTLEMENT	Land-Labour Index <sup>1</sup>	SETTLEMENT	Per Capita Value of External Aid <sup>2</sup>	SETTLEMENT	Community Index <sup>3</sup>	SETTLEMENT	Participation Index <sup>4</sup>
Mbambara	4.8	Mbambara	Shs. 90	Mbambara	62	Kwamangugu	3
Kwamangugu	4.7	Changalikwa	100	Kwamangugu	51	Mbambara	3
Segera	4.2	Kwamangugu	200	Nduruguni	36	Nduruguni	3
Matongoro	3.9	Mbutu	200	Changalikwa	31	Ikowa	2
Ikowa	3.7	Mgori Dam	300	Matongoro	15	Man'gonyi	2
Changalikwa	3.4	Nduruguni	300	Mgori Dam	10	Matongoro	2
Man'gonyi	3.4	Matongoro	560	Ikowa	8	Mbutu	2
Nduruguni	3.3	Mseta	700	Mbutu	8	Not available	for other
Kiwanda	3.1	Ikowa	900	Mseta	8	settlements	
Mbutu	3.0	Man'gonyi	1140	Man'gonyi	6		
Mseta	2.6	Kiwanda	n.a.	Kiwanda	4		
Mgori Dam	1.5	Segera	n.a.	Segera	0		

<sup>1</sup>Explained in Table 5, footnote 2. In this context the index seems to measure the propensity to work by providing acreages comparable for varying climate, fertility and technology.

<sup>2</sup>Estimates were made of the values of external aid in the form of gifts, infrastructures supervision, etc. The degree of self-reliance is inversely related to the amount of external aid.

<sup>3</sup>The communality index is based on the presence, absence or degree of intensity of 54 possible communal activities ranging from agricultural production and marketing to traditional familiar responsibilities. (See Appendix A.)

<sup>4</sup>The participation index scores the regular occurrence of: meetings representing only leaders (1); leaders and committeemen (2); and leaders, committeemen and settlers (3) with the absence of regular meetings (0).

*Determinants of success*

How do we account for the record of success in the new settlement? Can we relate success to settlement type or to some characteristic of people, place, or productive system?

For this analysis we adopt a "poor man's" correlation technique, in keeping with the impressionistic and qualitative aspects of our data. Consider the example in Table 14.

Table 14						
MEAN RANK SCORES ON SUCCESS MEASURES BY COMMUNALITY CLASS						
Degree of Communality	(n)		Material Wealth	Services	Settler Stability	Settler Attitudes
Ujamaa	(2)	..	10.0	4.5	1.5	1.5
Cooperative	(2)	..	8.0	11.0	4.0	5.0
Individual	(8)	..	5.2	5.8	7.3	6.4
Correlation	..	..	— —	0	++	+

In the table we have grouped our settlements into a three fold classification ranked by the degree of communality, high (Ujamaa), intermediate (co-operative), low (individual). From Tables 7, 9 and 10 we have selected by example four measures of success and averaged the ranks for each group. We then examine the mean rank scores for the direction and intensity of trend or correlation which we have shown on the final row of the table. Material wealth is inversely correlated, and settler stability is positively correlated with communality. Settler attitudes are also correlated, but in less intense a fashion. Communality and the level of services are not consistently related.

We are aware of course that there is a .33 probability of positive or negative trends simply by chance and thus we temper our conclusions with many grains of salt. Indeed we will only conclude that a significant correlation exists where there is a strong and consistent pattern of correlation between the characteristic and several measures of success. In all we employ 11 measures of success and 11 characteristics of settlement and the results of this analysis are shown in Table 15. Several measures, communality, settler stability and external aid appear both as characteristics of settlement and measures of success but they do not enter the correlation analysis with themselves.

The measures of success are already familiar along with their rationale. We have also discussed the first set of settlement characteristics, our major dimensions of the planned-spontaneous, communal-individual and commercial-subsistence. We also take three other sets of characteristics to examine in part some of the hypotheses of settlement success found in the literature.

First we examine population characteristics. We measure the age-family structure of the settlements by grouping the settlements according to the number of persons per man-equivalent. By recalling that the man-equivalent norm is a male 19-50 years of age, then a low ratio represents a young and/or male population, the intermediate class a more normal family structure,

Table 15

## MEASURES OF SUCCESS

SETTLEMENT CHARACTERISTICS	ECONOMIC AND SOCIAL WELL-BEING		SETTLER SATISFACTION		CONTRIBUTION TO NATIONAL GOALS					
	Economic Returns	Services	Turn-over	Attitudes	Economic Development	Population Problem	Hard Work	Self-Reliance	National Ethic	Demo. Part.
	Material Wealth Index	Service Index	Stability Index	Verbal Responses	Marketable Surplus	High Density Origins	Land Labour Index	p. cap. External Aid	Community Index	Participation Index
<i>Major Dimensions</i>	0	0	0	0	0	0	0	0	0	0
Planned/Spont. . .	—	0	++	+	+	++	++	++	n.a.	+
Communal/Indiv. . .	—	0	0	0	n.a.	0	0	0	+	0
Commercial/Subsist.										
<i>People</i>										
Age-family	—	+	+	+	++	++	0	++	0	0
Homogeneity of	0	0	0	0	—	0	—	0	0	0
Ethnic Origins . .	0	++	+	++	0	0	0	0	0	+
Wage Work Exp. . .	++	0	n.a.	—	0	—	0	0	0	—
Settler Stability . .										
<i>Place</i>										
Site Fertility . .	+	++	+	++	0	0	+	0	0	+
Accessibility . .	0	++	0	++	0	0	0	0	0	0
<i>Productive System</i>										
External Aid . .	—	0	0	+	0	—	0	n.a.	++	0
Intensive Agri. . .	0	0	—	—	0	0	—	0	—	0

A list of settlements in high, intermediate and low classes of each dimension is found in Appendix B.

the high ratio an age-family structure with many children and/or women. The homogeneity of ethnic origins is found in our tribal diversification ratio and our settler stability index is already familiar. The members' previous experience in the money economy is measured by the average number of years of wage work. With these four characteristics we ask whether a youthful or some normal age structure, a more diverse tribal membership, members with long wage work experience and a more settled or footloose settler make for success?

In terms of place, we use a site classification which is based on soil fertility and moisture. For accessibility we have combined a series of observations on the availability of services, cost of transport and frequency of travel. Here we ask whether the factors of site and situation appear to influence settlement success.

Finally we examine the effect of the productive system on success/employing as a characteristic the amount of external aid and the degree of intensification in the employment of factors of production (using a capital intensity index based on the use of purchased seed, hired labour, fertilizer and mechanical cultivation).

It is most noteworthy that our major dimension of settlement, the planned-spontaneous spectrum shows no consistent positive or negative trend. The thesis that "if settlement is to succeed it must be done thoroughly, with careful planning . . ." (Ruthenberg 1968b) is a familiar one but not easily substantiated by our, admittedly crude, evidence.

Nor is the significance of the commercial-subsistence dimension indicated strongly. Some positive correlations are indicated but this appears to arise from the strong correlation of the commercial-subsistence grouping with communality rather than its own intrinsic effect. Only communality appears as a major dimension strongly correlated with settler satisfaction and contributions to national goals and inversely related to personal material wealth.

Turning to the contributions of people, place and productive system towards success, only site and age-family structure consistently appear to contribute to success. The contribution of site is the more modest one in keeping with the lesser significance of land to labour in the smallholder's production function. The suggestion made previously that material wealth accumulation is partly a function of age is also brought out by the strong negative correlation between a youthful age-family structure and the material wealth index. Finally the inverse correlation between capital intensive agricultural practices and success underscores the frequent failure of smallholder systems to profit by the adoption of more capital intensive practices.

Before attempting to sum up the results of this simple analysis of the determinants of success it is important to again recall the selective nature of the settlement sample and the heavy emphasis on defining success in non-economic goals. Nevertheless, the prescription for success sounds remarkably like the prescription for Ujamaa Vijijini (Nyerere, 1967)—encourage, more or less spontaneously, communal, low capital, settlement on fertile land with youthful enthusiastic members.

#### *An Appraisal of New Settlement*

A deep-seated scepticism exists among academic experts on the value of new settlement. Much of this scepticism is selective, directed against a specific type or program.

In their review of the planned settlement experience Cliffe and Cunningham conclude:

The various programmes and the individual schemes met different degrees of success, but by and large the record was not encouraging. Few schemes produced sufficient return to the farmer or the nation to warrant the money spent on them; some even had to be wound up. Even the specialised Village Settlement Agency was never given the staff or the time to do proper planning; and placed as it was in the interstices of the bureaucracy responsible to a committee of Ministers that met only once, it never got the necessary administrative or political backing to make its supervision effective. The other shortcoming—of trying to start settlements in marginal conditions where returns could not be spectacular; of recruiting people from areas where land was not scarce; of too great a reliance on mechanisation—are now commonly acknowledged. But the classic Ujamaa Village of the Ruvuma Development Association receives their approval:

The experience of the Ruvuma settlements shows what can be achieved in the way of hard work, commitment, self-reliance, returns with a minimum of investment—through another approach, where the schemes are voluntary and co-operative.

In contrast, Ruthenberg (1968b) deprecates cooperative effort in his conclusions on the smallholder development experience.

Efforts to revitalize co-operative land use met with little or only temporary response on the part of the rural population. Co-operative work usually displays a low degree of labour efficiency. In our case studies we can point to the following observations:

- In the Usambara Mts. men could not be induced to cultivate communal fields. This work is carried on by groups of women.
- Work in communal sisal fields in the Tanga Region only achieves half of the efficiency reached on private sisal smallholdings, and thus only a fraction of that on sisal estates.
- Substantial efforts to induce co-operative action within the coconut-cattle schemes led to no noticeable change at all.
- Most of the village settlement schemes showed poor economic results, largely because the participants are not primarily interested in co-operative work, but in food rations which were distributed free of charge.

The reasons for the unwillingness to perform co-operative work are easy to grasp. In smallholder farming the man who tills the land is still the owner of his means of production, and to this extent the master of his own economic destiny. Co-operative actions on the level of production usually lack the direct relation between the individual's efforts and the gain to which smallholders are accustomed. Farmers all over the world are distrustful people, all the more so if they are in an early stage of commercialization. One always fears that the other one might work less. The participants rarely feel themselves responsible for the success of the co-operative action which has been initiated by outside institutions anyway. The individual's field comes first, and there is nobody who is willing or able to press the participants into working efficiently.

But he also has a favoured approach and calls for settlement based on "production under close supervision" which he says "combines a number of advantages which characterize small-scale, co-operative and large-scale production".

Thus while the academic reviewers may favour one or another type of settlement, there is scarcely any type of new settlement that has not received serious criticism. Yet despite the general acceptance of this criticisms, new settlement seems to flourish as a major instrument of development policy.

Presently, there are more settlements under development by the Village Settlement Division of the Ministry of Lands, Settlement and Water Development than at the height of village settlement activity under the transformation approach. A new settlement policy *Ujamaa Vijijini* has become the central theme of rural development. Major investments in key services are being undertaken to stabilize spontaneously developed settlement areas. Why does new settlement activity flourish in the face of much unfavourable experience and sustained criticism?

In part, settlement activity thrives because of changing needs and goals. Much of the current settlement activity differs in form and content from activity previously undertaken. The Village Settlement Division is developing state farms for large-scale production of special crops and experimenting with low-capital settlement projects. And the policy of *Ujamaa Vijijini* is designed as much for the prevention of extreme social stratification in rural areas as for economic development.

Along with new needs and goals, settlement activity flourishes with old ways. The organizations created to encourage settlement have their own inertia and persistence. Moreover, the transformation approach is inherently attractive to all who grapple with the burden of development. So much so that even the conservative World Bank succumbed to its wiles at least once. But neither new goals or old ways fully explain the persistent attraction of new settlement as a major instrument of economic and social change.

We think much of the attraction of new settlement arises from its success. New settlement, in all its varied forms, appears from our study to be substantially more rewarding to its members and the nation, than all but the most favoured sector of smallholder agriculture. This is the major conclusion of our study and the evidence is summarized in Table 16.

For each of our measures of success we have defined a quantitative level of success derived in the main from the characteristics of the upper ten per cent of traditional settlement. Using this threshold, our settlements' performance varies between 40-60 per cent success, least successful in short-run economic returns but most successful in nucleation and the bringing of services to people.

We must of course temper this conclusion with again reminding the reader of the circular reasoning inherent in our work. Our sample is by definition successful, all its members have survived. Their record of achievement by their own objectives (40%) is not impressive and the higher levels of achievement occur by imposition of new and different standards. Yet we would argue that the measures of success that we employ, while crude, are seeking to measure the right things, right in terms of the declared goals and objectives of Tanzania.

Thus it is this actual or intuitive knowledge of success that accounts in large measure for the persistent search for new forms of settlement and new techniques of development despite the all too many painful and discouraging failures.

<b>Table 16</b>	
<b>PERCENTAGE OF SETTLEMENTS EXCEEDING THRESHOLD LEVELS OF SUCCESS</b>	
Thresholds of Success	Percentage
Settlement Objectives	
Realizing their own objectives .. .. .	40
Economic and Social Well-Being	
Cash income of over 30/00 per month for farm income only .. .. .	42
Cash income of over 30/00 per month for all settlers' income .. .. .	92
Material wealth index of more than 3.5 .. .. .	50
Per capita value of communal property over 100/00 ..	17
Service index of at least 5.0 .. .. .	50
Settlers satisfaction	
Instability index of less than 7.0 .. .. .	40
Optimistic settler attitudes .. .. .	56
Economic Development	
Potentially marketable surplus over 30% .. .. .	67
More than 10% of land export crops .. .. .	33
Population Problem	
More than 20% of settlers from high density areas ..	42
Nucleation ration above 1.0 .. .. .	88
Contributions to National Ethic	
Hard work — land/labour index of at least 3.0 .. ..	93
Self-reliance — external aid of 200/00 or less per person	40
Socialist co-operation — communality index over 20	30
Participation index of 3 or more .. .. .	43

*Implications for Policy.*

Three implications for policy arise out of this comparative appraisal. First, new settlement already in existence can be made more successful with sustained encouragement, specialist advice and modest equipment. Our study suggests that there are hundreds of new settlements that might benefit from systematic attention by regional and district authorities. The attractiveness of focusing attention on these settlements is both practical and moral. If initiative and willingness to change are significant requirements for development, then our settlers possess these qualities in relative abundance. All the settlements are different from traditional agriculture. In many, people have come there in direct response to the exhortation for change. If their hopes have not been fully realized, they have at least kept the faith, and deserve a suitable response from government in return.



Ikowa may yet become fully self-supportive after a decade of existence because of specialist attention and regional encouragement. Other strong candidates for assistance would be hard-working Nduruguni, rapidly developing Mbutu, idealistic Mbambara. Not all settlements, of course, will benefit from such attention. Man'gonyi's location argues against much further intensification of output and considerable efforts have failed to produce impressive results at Mseta. But it is only by careful attention and review of the existing new settlements that candidates for concentrated attention can be selected, and as the potential rewards are high, this should be an early task of regional and district development committees.

Secondly, new settlement policy should focus on the two types of settlement indicated from our study as having the most favourable return ratios. The consistently favourable response to communality suggests that genuine voluntary ujamaa villages have great potential. The successful communal settlement is capable of delivering more and sustained labour than all but the most remunerative peasant agriculture.

A second very different form of promising settlement is the spontaneous settlement in response to infrastructural investments such as roads and water supplies. Here the emphasis should be on encouraging the development of the better soils or the provision of alternatives for densely populated areas. Unlike the ujamaa village, the high returns come not from mobilization of labour but from the low cost built-in incentives these improvements give to encouraging development activity.

Finally our analysis of the determinants of success suggests that settlement that is self-directed with low capital intensity and simple but careful site selection needs to be encouraged. But it is also precisely these qualities, especially those of local initiative, that are easily destroyed by institutionalizing them. Already conventional village settlements appear in the press relabeled as Ujamaa Villages, and genuine Ujamaa Villages appear with designs more suggestive of estate housing or police lines rather than self-directed voluntary settlements. Thus it will be on the finding of the proper mixture of spontaneity and institutional support that the success of the next wave of settlement in Tanzania will depend.

**Footnotes:**

1. These include an impact study of the Bulenya Hills pipeline, a base—line survey of the new Village Settlement at Kiwanda, a comparative appraisal of four irrigated settlements, and a study of the transport problems of Mbambara.
2. The students who have assisted in the authorship of this paper are 1st and 2nd year undergraduates at University College, Dar es Salaam, members of the Rural Development Research Group of the Bureau of Resource Assessment and Land Use Planning. Each member of the group has been trained in farm and household survey research and land use mapping, and can function with a minimum of supervision in the field.
3. About 50 reports on the operation of Village Settlements were prepared by members of the Syracuse University, Village Settlement Project. These reports are still restricted to official use.
4. The 'Transformation Approach' which envisaged the creation of new and modern forms of agricultural production, in contrast to the more conventional approach of improving small-holder production, was first advanced in the World Bank report *The Economic Development of Tanganyika* (1961). Both approaches become embodied in the First Five Year Plan.
5. This correlation between cattle keeping and high material wealth is apparently recognized in the variations in local rates paid in Tanzania (See S. Jensen, *Regional Economic Atlas, Mainland Tanzania*, Research Paper No.1, (Dar es Salaam: Bureau of Resource Assessment and Land Use Planning, 1968) p. 65. (Mimeograph).

6. If one takes 25 per cent as an average overall rural tax rate, then the people of Nduruguni have achieved an impressive 50% capital formation rate.
7. It is recognized that the nucleation index has an important theoretical weakness. If the enumeration area containing the new settlement also contains a compact traditional village with a population greater than the new settlement, the real level of nucleation of the new settlement will be lower than the surrounding area. Such a situation would not be reflected in a low figure in our nucleation index. However this problem does not arise in any of the enumeration areas used.

#### BIBLIOGRAPHY

- Allan, W., (1965), *The African Husbandman*, London, Oliver and Boyd.
- Attems, M., (1968), "Permanent Cropping in the Usambara Mountains", in H. Ruthenberg (ed.) *Smallholder Farming and Smallholder Development in Tanzania*, I.F.O., No. 24, London, C. Hurst, pp. 137-174.
- Baum, E., (1968), "Land Use in the Kilombero Valley", in H. Ruthenberg, (ed.) *Smallholder Farming and Smallholder Development in Tanzania*, I.F.O. No. 24, London, C. Hurst, pp. 21-50.
- Cliffe, L., and Cunningham, G., "Ideology, Organization and the Settlement Experience in" in D. Belshaw, and E. A. Brett, *Politics and Agriculture in East Africa*, (forthcoming).
- Collinson, M.P. (1961-65), Farm Management Surveys. 1-4., Ukiriguru.
- Cotton Growers in the Lake Region*, (1967, Dar es Salaam, Central Statistical Bureau, Ministry of Economic Affairs and Development Planning.
- Dar es Salaam Subregion Plan*, (1968), prepared by the United Nations Team in Physical Planning, Town Planning Division, Ministry of Lands, Settlement and Water Development.
- Frederich, K. H., (1968), "Coffee-Banana Holdings at Bukoba", in H. Ruthenberg, (Ed.) *Smallholder Farming and Smallholder Development in Tanzania*, I.F.O., No. 24, London, C. Hurst, pp. 175-212.
- Nyerere, J. K., (1967), *Socialism and Rural Development*, Dar es Salaam.
- Rald, J., *Land Use in a Bahaya Village*, Research Paper No. 5, Dar es Salaam, Bureau of Resource Assessment and Land Use Planning, (forthcoming, mimeograph.)
- Rothenhan, D., (1968), "Cotton Farming in Sukumaland", in H. Ruthenberg (ed.), *Smallholder Farming and Smallholder Development in Tanzania*, I.F.O., No. 24, London, C. Hurst, pp. 51-86.
- Routh, G., *et al.* Report on a study of income levels in seven districts of Tanzania made by a number of staff and students of the Department of Economics, University Collge, Dar es Salaam, (manuscript). (1968).
- Ruthenberg, H., (1968a), "Coffee-Banana Farms at Mt. Kilimanjaro", in H. Ruthenberg (ed.), *Smallholder Farming, and Smallholder Development in Tanzania*, I.F.O., No. 24, London, C. Hurst, pp. 213-218.
- Ruthenberg, H., (1968b), "Some Characteristics of Smallholder Farming in Tanzania", in H. Ruthenberg (ed.), *Smallholder Farming and Smallholder Development in Tanzania*, I.F.O., No. 24, London, C. Hurst pp. 325-355.
- Sample Survey of Agriculture*, (1968), Dar es Salaam, Central Statistical Bureau, Ministry of Economic Affairs and Development Planning.
- Village Economic Surveys*, (1963), Dar es Salaam, Central Statistical Bureau, Ministry of Economic Affairs and Development Planning.

APPENDIX A  
COMMUNALITY INDEX

The communality index is based on the presence or absence of communal organization of the following 54 tasks or activities:

1. Land clearing.
2. Cultivation for cash crops.
3. Planting of cash crops.
4. Weeding of cash crops.
5. Fertilizing or spraying of cash crops.
6. Harvesting of cash crops.
7. Cultivation of subsistence crops.
8. Planting of subsistence crops.
9. Weeding of subsistence crops.
10. Fertilizing or spraying of subsistence crops.
11. Harvesting of subsistence crops.
12. Road or bridge building.
13. House building.
14. Marketing.
15. Small groups of settlers helping each other to cultivate, plant, weed or harvest.
16. Poultry raising.
17. Crop storage.
18. Building and/or maintenance of irrigation works.
19. Sweeping village, digging choos, digging garbage pits, or planting flowers in the village.
20. Running shop.
21. Self-help dispensary.
22. Self-help school.
23. Womens' club.
24. Nursery school.
26. Cottage industry.
27. Herding of private animals.
28. Herding of communal animals.
29. Settlement pays head tax for settlers.
30. Settlement pays bride price for settlers.
31. Settlement buys kerosone, salt, etc. for settlers.
32. Settlement buys clothing for settlers.
33. Settlement pays off-settlement school fees for settler children.
34. Settlement pays off-settlement medical expenses for settlers.
35. Settlement pays settler's travelling expenses to their homes for special occasions like weddings or funerals.
36. All settlers live in one closely gathered village.
37. Settlers do not all live together, but have a common meeting place.
38. Per cent of all village land farmed communally.
39. Per cent of yearly cash surplus kept in a communal reserved fund.
41. Everyone eats together at least once a week.
42. Singing, acting plays.
43. Pombe making.
44. Traditional dancing.

45. Football.
46. Wedding ceremonies performed by manager and committee and or attended by most settlers.
47. Community cemetery.
48. Community discipline of children.
49. Disputes between settlers are settled by other settlers.
50. Community church and/or mosque.
51. Communal crops guarded from animals and birds by all settlers.
52. Private crops guarded from—animals and birds by all settlers.
53. Hunting.
54. Fishing.

## APPENDIX B

## CHARACTERISTICS OF SETTLEMENTS

For each of the characteristics the twelve settlements were placed in either the high, medium or low class. A list of the settlements in each class of the characteristics is given below;

CHARACTERISTICS	HIGH	MEDIUM	LOW
Planned/Spontaneous	Ikowa Man'gonyi Matongoro	Mbambara Kwamangugu Changalikwa Nduruguni N. A. Kiwanda	Mseta Segera Mbutu Mgori Dam
Communal/Individual	Mbambara Kwamangugu	Nduruguni Changalikwa	Mseta Segera Mbutu Mgori Dam Ikowa Man'gonyi Matongoro Kiwanda
Commercial/Subsistence	Mbambara Kwamangugu Mbutu	Changalikwa Mgori Dam Ikowa Matongoro	Nduruguni Mseta Segera Man'gonyi Kiwanda
Age-family	Mbambara Kwamangugu	Changalikwa Mseta Mbutu Segera Kiwanda	Nduruguni Mgori Dam Ikowa Man'gonyi Matongoro
Homogeneity of Ethnic Origin	Nduruguni Changalikwa Man'gonyi	Matongoro Kiwanda	Mbambara Kwamangugu Segera Mseta Mbutu Mgori Dam Ikowa
Wage Work Experience	Mbambara Kwamangugu Segera Kiwanda	Nduruguni Mseta Mbutu Ikowa Man'gonyi N. A. Mgori Dam	Changalikwa Matongoro

CHARACTERISTIC	HIGH	MEDIUM	LOW
Settler Stability	Mbutu Matongoro	Changalikwa Mseta Mgori Dam Ikowa Mangonyi N. A. Segera, Kiwanda	Nduruguni Kwamangugu Nduruguni
Site Fertility	Mbambara Kiwanda Ikowa	Kwamangugu Mbutu Nduruguni Man'gonyi	Mseta Segera Changalikwa Mgori Dam Matongoro
Accessibility	Kwamangugu Segera Ikowa	Mseta Mbutu	Mbambara Nduruguni Changalikwa Mgori Dam Man'gonyi Matongoro Kiwanda
External Aid	Mseta Man'gonyi Matongoro Ikowa N. A. Kiwanda, Segera	Nduruguni Mgori Dam	Mbambara Kwamangugu Changalikwa Mbutu
Intensive Agriculture	Mseta Mbutu Mgori Dam Ikowa Man'gonyi	Nduruguni Changalikwa Sogera N. A. Kiwanda	Mbambara Kwamangugu Matongoro