

BASELINE INFORMATION AND SITUATIONAL OVERVIEW  
REQUISITE TO THE DESIGN OF INTEGRATED RURAL DEVELOPMENT  
PROJECTS IN MBULU DISTRICT, TANZANIA

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Introduction. Mbulu District is one of six districts in Arusha Region in northern Tanzania. It is a District of contrasts in a Region of contrasts. Almost all of its 7,620 square kilometers lie at an altitude of over 5,000 feet above sea level, some of it overlooking some of the most lush and spectacular country in Tanzania, while other parts of the District are dry bush country and nondescript. As in other parts of Arusha Region, the District has both well watered and fertile highlands, where very progressive farmers produce a sizeable proportion of the nation's wheat, and marginal agricultural lands, where tradition-oriented, semi-nomadic pastoralists graze large herds of cattle. And again, as in Arusha Region as a whole, while there are people who are thoroughly enmeshed in the cash economy and who can afford good, permanent housing and supplement their diets with some store-bought supplies, almost three-quarters of the District is inhabited by subsistence farmers who have suffered from drought for most of the last six years and have lived to some extent on famine relief. Some of the District is well known to the world for two game parks, Lake Manyara and Ngorongoro Crater, which are on its northern periphery. Other parts of the District are in "the back of beyond", remote areas isolated by geographic divides and poor roads, which few people from outside the District would ever visit and which, until a generation or so ago, few people, born and raised in the area, would ever leave.

The purpose of this background paper on Mbulu District is to present certain kinds of baseline information (cultural, infrastructural, and systemic) and provide an overview of the various perspectives different people have of the possibilities and constraints that confront the District. The inquiry and this report have been structured by the guidelines and "grocery list" set out in a paper entitled "Data Requirements for the Design of Area Development Projects" (October 1976), prepared by Development Alternatives, Inc., a Washington based consulting firm. The interview data and much of the field data, on which the bulk of this background paper is based, was collected during several trips to Mbulu District during March and April 1977. The researcher, however, is no stranger to the District, having lived in Mbulumbulu in Karatu Division for most of 20 months as a member of the Research Unit of the Village Settlement Agency in 1965 to 1976, during which time he traveled extensively in the District with farmers from Upper Kitete Village Settlement. Also, immediately prior to being employed to do the research for this report, he lived at Upper Kitete approximately five weeks over a five month period. The field work, upon which some of the report is based, draws heavily upon several situations and several people known very well, while other information was provided orally by government civil servants known much less well, but with whom comfortable relationships were easily established.

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Despite this background and level of rapport, this paper can hardly claim to be an "indepth study" of an entire District. Its greatest weakness, perhaps, is that it is overly dependent upon interview-derived data, and there was little opportunity to cross-check information or to observe behavior. Thus, there is, for example, a long exposition under the heading "Political and Administrative Decision-Making Process" which has almost nothing to do with process, but rather focuses upon the political and administrative structure and an ideal model of flow pattern. Similarly, there are sections entitled "Educational/Training Infrastructure" and "Education System", which present enrollment statistics and information on the distribution of physical structures and teaching staff, but says nothing about the information that is transmitted in the classroom (or in the school garden, for that matter) or the quality of the interaction between the teachers and the taught. And there is a lot of data on crop costs and yields under sections entitled "Farming Systems by Ecological Zones" and "Profitability of Agricultural Activities" but it has been eleven years since a full agricultural year in Mbulu District has been observed by this researcher; 1966 was not a bad year for maize, but no one got 12 bags to an acre then, let alone the 20 to 35 bags that farmers talk about getting for hybrid maize varieties in a "good year." Lacking the kind of time that several indepth studies would require, this paper often has to settle for the presentation of the "perceived reality" of civil servants and farmers rather than a more detached "truth," but perceived reality is often the only kind of truth with which one has to deal in development situations. Hopefully, "social soundness studies" done in specific areas designated for future development projects will supplement this kind of truth with more indepth analysis.

This background paper stops short of suggesting specific development projects of any order, but it would appear that any funding agency, including USAID and the Tanzanian Government, has a wide range of choices in Mbulu District, depending upon the scale of the project envisaged and the kind of expertise available. The District needs major investments in infrastructure (especially roads and water supplies), which could certainly improve the social and economic well-being of the people in the area, but would require little popular participation or "social engineering." A much smaller project, that would need no surveys, follow no "time lag", involve neither heavy machinery, the mobilization of work crews, nor nights-out allowances, and would have a fairly immediate impact upon agricultural production and people's incomes, would be the purchasing of enough seed dressing and the simple, hand-operated equipment necessary to dress approximately 250,000 kilos of a highly-touted new variety of sorghum (serena) that will be harvested shortly on a 200 acre farm belonging to the Mbulu District Development Corporation. If a funding agency were interested in helping to finance a compact, integrated development project (roads, pyrethrum, dairy cattle, and soil conservation)

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in an area with seven villages, there is the HAKAMU Project proposal, which has several excellent proposals and has been seeking donors for about two years. A larger integrated development project proposal (roads, water supplies, drought-resistant crops, range management and soil conservation) of an area of 24 villages needs to be written for Dongabesh Division. (Because this latter project would require the alteration of people's attitudes towards their cattle and certainly necessitate a very high rate of de-stocking, there would be the added challenge of taking on a project which had the high probability of at least partial failure.)

Whatever the type of project envisaged for Mbulu District, it is felt that the kind of information catalogued in this pre-planning report will greatly facilitate the designing of projects that are appropriate to the various situations that exist in Mbulu District, and, with intelligent and sensitive implementation, the projects will have a positive development impact.

#### MACRO-LEVEL CONSIDERATIONS AND OVERVIEW

Government Development Philosophy and Priorities. The Tanzanian Government's philosophy towards rural development can be extracted from a number of government statements, such as the Arusha Declaration (1967), Education for Self-Reliance (1967), Socialism and Rural Development (1967), The TANU Guidelines (1971) and the Decentralization Act (1972), as well as from stated development targets. Tanzanian socialism (ujamaa) is not merely an egalitarian attitude of mind, but rather has as its goal a classless society in which privilege and exploitive relationships are eliminated, and where the people participate in decisions pertaining to their social and economic well-being and have control over the nation's resources and means of production. The emphasis upon self-reliance is obviously an attempt to break with the "dual economy" of the colonial era with its (i) "export enclave" producing raw materials for processing abroad (and, in turn, consuming imported manufactured goods), and its (ii) traditional agrarian economy which contributed its "disguised unemployed" as the export enclave expanded (and later, in hopes and anticipation of that sector's expansion). But the goal of self-reliance is just as importantly a response to the embarrassment felt in the fact that the 95% of the Tanzanian population living in the rural areas often failed to feed themselves, let alone produce sufficient food surpluses to the urbanized five percent working in the wage-earning sector of the economy. A number of campaigns have been carried out in recent years, under the theme that "agriculture is a matter of life and death," to increase production, and there is a stated bias on the part of planners that development investment should be made in such a way as to generate increased incomes and increased productivity. At the same time, the government has also indicated that it feels that, during the colonial period and the first years of independence, a disproportionate amount of government services and investment had been apportioned to those living in the cities and towns. In hopes of redressing this

balance, a series of targets have been set for the provision of basic social services; that there be one medical dispensary for every 10,000 rural inhabitants; that there be universal primary education by 1977; and that safe, permanent water supplies be available to every villager by 1981. So, despite the above mentioned bias towards productive and income generating enterprises, there is still an emphasis on improving the people's social welfare through social services inputs. Finally, as regards government development philosophy, since as early as December 1962, President Nyerere has argued that the creation of modern villages is the basic prerequisite to the implementation of policies which would further such goals as increased agricultural production, the provision of basic social services, and the existence of a more active, responsive, politicized citizenry.

President Nyerere has frequently written and spoken on ways in which Tanzania has fallen short of its goals, how implementation of policies has sometimes contributed to contradictions in the Tanzanian system, how Tanzania in 1977 is not socialist, is not self-reliant, is neither sufficiently participatory nor democratic, and how many of her people are still poor, ignorant, and prone to the disabilities of preventable disease. Such candid admissions make up a good portion of a review, presented to the nation most recently in the form of the Arusha Declaration Ten Years After (1977). In the same document, however, he asserts that Tanzania is hardly unique amongst countries in these regards, and he presents his evidence that good progress is being made on all of these fronts. He further argues, in this paper, that basic to what progress has been made in the rural areas has been this very movement of perhaps 70% of the nation's population into villages of 250 to 600 families.

Although "villagization" has been central to Tanzania's development philosophy for nearly 15 years, there have been a series of radical changes in villagization policies and implementation strategies. In 1963, capital-intensive "pilot village settlements" were initiated on a small scale. There followed a "national urge for resettlement" and several village settlements were started by Regional authorities, which had the effect of spreading government investment over a wider area. Four years later, after most of these "pilot" and "mushroom" villages had shown themselves to be economically unviable and overly dependent upon government largesse, "development villages" were begun with the promise only that government extension and social services would be lavished more on them than on "natural villages" of dispersed homesteads. In some parts of the country, especially in areas where the predominant agricultural pattern was one of subsistence farming, people willingly moved into such villages and, to some extent at least, reorganized their land use patterns and traditional work organization. In other parts of the country, there was little interest in villagization at all, and it was finally realized that something more than government promises of more social services and a better life would be required to force both the most traditional peoples (for example, those

living largely pastoral lives) and the most individualistic and entrepreneurial cash crop agriculturalists into new living and producing patterns. On November 6, 1973, almost exactly eleven years after he had first publicly stated that "before Tanzania can be a modern nation, our people must live in modern villages," President Nyerere announced that villagization was no longer a voluntary matter. People would be moved into ujamaa villages, ~~secretly~~ if necessary, and villagization in Tanzania, like mandatory primary education statutes decades ago in other parts of the world, would be seen as a necessary and good step in retrospect by those who might resist the idea of moving. President Nyerere chose to make this pronouncement to the nation at Endabash, in Daratu Division of Mbulu District, to a people, many of them wheat farmers, who were amongst those who had shown no inclination to move into denser neighborhoods nor any interest in altering their work patterns along more communal lines.

In some parts of the country, where cash agriculture was well established, such as the banana and coffee farms on the slopes of Kilimanjaro and Mount Meru, the families were not required to move their homesteads or reorganize their land holdings when much of the rest of the nation was moving into villages. It was argued that population densities were already high enough and the crops that they had planted were permanent. All that was required was that their villages have their boundaries demarcated so that they could be registered.

However, the wheat farmers working the rich, volcanic soils of Karatu Division in Mbulu District, who typically lived on farms of 10 to 14 acres each, were required to move their homesteads onto half-acre and one-acre plots, positioned in lines, often miles from their reapportioned land holdings, now reduced to five or six acres. The more tradition-oriented, mixed agriculturalists (who farm, but also keep large herds of cattle) in the southern Divisions of Mbulu District, were also generally moved into densely-settled villages of 300 to 450 families. The emphasis has been on "villagization," however, the grouping together of families into surveyed and registered village units, and not on "ujamaa-ization," the reorganization of the means of production along more socialist lines. This will come, presumably, in later phases of ujamaa.

In Mbulu District, there are villages which are better examples than others of what the government would like to see in terms of productivity, work organization, and generally progressive attitudes. There is no evidence, however, that government services are being allocated in such a way as to favor these more progressive villages. In fact, external funding is being sought especially for the poorest areas in the District, areas in which the most tradition-oriented farmers live. In regard to rural-urban disparities, the vast majority of recurrent and development expenditure is being spent on the rural areas rather than on the towns and minor settlements, an allocation pattern which would have central government approval.

The Management of the Economy. As a socialist country, Tanzania's public sector dominates even the rural economy. All seed is sold by government-owned outlets and all food and cash crops (except perishables) are required to be sold to government buyers. Government banks and other government institutions loan money to villages. Most market prices and all interest rates are government regulated. While there are many wealthy African farmers in Mbulu District, who are able to invest in their own enterprises, it is still the government, in the form of the Ministry of Agriculture and the Tanzania Rural Development Bank, which finances most recurrent and development budgets for the rural sector.

Until four years ago, most of Tanzania's food and cash crop prices were held down to an artificially low level, in an effort to keep consumer prices for such products as bread and maize meal as low as possible for the urban workers. This policy contributed to lowered production figures of some crops and to large quantities of food being kept off the government-regulated market. Under pressure from various sources, including the World Bank, prices for most crops were nearly doubled between 1973 and 1977. Some crops, even after having their price doubled, still have low producer prices. Maize, the country's primary staple, is sold to the National Milling Corporation, the government's only authorized buyer, for 80 cents a kilo or T.Shs. 72/= per 90 kilo bag. The "black market" price in Mbulu District is as high as T.Shs. 35/= per debe or approximately T.Shs. 200/= per bag. The disparity between the government- and locally- prevailing price for finger millet, the most popular grain for pombe making in the urban markets of Arusha and Moshi is even greater. National Milling Corporation pays Shs. 95/= per 100 kilo bag of finger millet, while local entrepreneurs pay the farmer between Shs. 400/= and Sh. 700/= per bag, and can receive up to Shs. 1000/= per bag for the delivered product in Moshi. Although no wheat is available to the consumer in the Arusha market, wheat in small quantities is openly sold by vendors in the Moshi market at Shs. 3/= per kilo, to those wishing to grind their own flour, compared to the Shs. 1/20 the government pays to the producers. Adjustments to producer prices have been made for some crops annually for at least the past three years, in order to encourage increased production. It was recently announced, for example, that effective May 1, 1977, the price of beans was raised 70% and the prices for all oilseed crops were raised between 20% and 50%. No announcement has been made yet regarding increases for grain and other food crops.

It was impossible for the District Agricultural Development Officer in Mbulu District to estimate what percentage of these crops especially maize and millet, was withheld from the government-sanctioned market, or the extent to which agricultural produce was smuggled into Kenya and sold for Kenya shillings prior to the closing of the border between the two countries, but it was volunteered that interest in foreign currency is especially high amongst those who looked to Kenya for spare parts to keep their combine harvesters and tractors running. There are some crops, pyrethrum for example, where there is no black market and where virtually none is smuggled out of the country, and certainly the vast majority of Mbulu's wheat crop is sold to the National Milling Corporation.

The present low prices offered to the farmer affects the amount of a crop that reaches the government-sanctioned buyer, if not the amount of the product grown. The most open example of where government-regulated prices prevent a large proportion of produce from reaching its intended market is the example of cattle sales. While the various districts have established the price at which meat can be sold, there is no price control on what livestock can be sold for in the government-run auctions. More than 24,000 head of cattle were sold in Mbulu District in 1976, but comparatively little beef is available in Mbulu town where the price is Shs. 5/= per kilo, and rarely does someone slaughter a cow in the villages (where the price is the same), as it is realized that more money can be made by selling an animal to a private trader at an auction. Arusha town, where the base price for beef is Shs. 8/= per kilo, also experiences meat shortages. It is widely thought that more than half the livestock sold in Mbulu District found its way to Kenya, rather than to Arusha, at least until the border was closed. The manager of one of the butcher shops in Arusha explained the incentive in the following manner:

It is not that the prices paid for livestock are lower in Tanzania than they are in Kenya. The cattle traders are looking for Kenyan currency. They might pay Shs. 900/= for a cow in Mbulu District and sell it for as little as Shs. 600/= in Kenya, and they would still make a profit, even after they deduct marketing fees and whatever costs were incurred in getting the animal to Kenya.

Political and Administrative Decision-Making Process. Over the past ten or twelve years especially, a highly effective system of disseminating political information was developed in Tanzania by the country's political party, Tanganyika African National Union (TANU). The political communication network is built on a hierarchical structure of elected and political bodies and personages at the District and Regional level, which connects the main political centers (Dar es Salaam and Dodoma) with the "grassroots" -- and vice versa. The movement of perhaps 70% of the country's population into "nucleated" villages in the past three years contributed further to this political communication system, and the national political leadership expects the newly-created successor to TANU, Chama cha Mapinduzi (CCM), to inspire even greater commitment, discipline, and responsiveness within the system. (See below under the heading "Major Political and Social Institutional Changes.")

Elected village committees are expected to meet several times each year (and sometimes, several times each month) to discuss, amongst other things, the economic and social development of the village. These meetings are also attended by village- or Ward-level civil servants (the Agricultural Field Officer, for example) and often by the Ward Secretary, the party representative in the village area. Each year, the villages are invited to submit rank-ordered development priorities, a development plan, and requests for assistance. The minutes from this meeting are then mailed to the District Development

Director (DDD) and District Planning Officer (DPLO). To this extent, development initiatives come from the village level.

There are in addition, however, certain development priorities which have been set by the political party at the national level, such as the above mentioned targets of Universal Primary Education by 1977, clean water in every village by 1981, increased agricultural production so as to achieve self-reliance, and a prescribed coverage of medical care. Thus, classrooms have to be built in areas where present facilities are inadequate, even if, perchance, the building of additional classrooms was not a locally perceived need or priority. This year, the District Agriculture Development Officer (DADO) requested a large sum of money for the introduction of drought resistant crops, such as sorghum, and oil seed crops for thirty-one villages in Mbulu District. This development program was clearly initiated at the District level--or above. And as was made clear by the Area Commissioner, villages will not have a choice as to whether or not they will plant certain amounts of crops: "People cannot choose not to be self-sufficient, not to be more productive." It would appear that the communication flow in the planning process follows a hierarchical flow pattern from center to periphery, however it is unlikely that any village in Mbulu District would object to the construction of additional classrooms, a dispensary, or a water supply system, at least, for its population. What remains in the hierarchical planning process is the "educative function" of establishing the village-level input; for example, while the cost of building a new classroom is estimated at Shs. 37,000/=, the Ministry of National Education only provides the District with Shs. 5,000/= per classroom to cover some of the building materials, a government-salaried mason or carpenter (or both), and furniture, and the balance of the cost is to be met by the village's contribution of money as well as labor. A similar pattern exists for the construction of dispensaries and housing for teachers or dispensary staff, and a self-help component exists for all water projects as well.

Whether a request for assistance to a particular village is initiated by the village itself or is articulated for the village in its own interest, the request must go through a long and involved process before it is incorporated into an annual development plan. Once the DDD and DPLO have received copies of minutes from the committees of a particular Ward's villages, a team from the District goes to the Ward Headquarters to meet with representatives from each of the villages to discuss the requests. Then, the District Management Team (DMT), made up of each of the District's department heads (called "functional managers"), heads of various parastatals (for example, the head of the District Development Corporation), the DDD who chairs the meeting, and the DPLO meet to go over all of the requests from the villages. At this stage, the civil servants work out what they think are the priorities and what is feasible. Next, the preliminary plan is presented to the District Development and Planning Committee (DDPC), whose membership includes all those on the DMT plus Ward councillors (madiwani), villages elected from each of the District's 21 Wards. (Shortly, the position of Ward councillor will be eliminated and each village will send a councillor to the DDPC, most likely the village chairman.) The DDPC is chaired by the District Chairman of CCM. From the DDPC, the plan goes to the District Development Committee (DDC),

which is also chaired by the Chairman of CCM. The DDC membership includes all those who are expected to attend the DDPC (and DMT), plus the Ward and Divisional Secretaries, the District Executive Committee of CCM and the heads of the various organizations or interest groups affiliated to CCM, the woman's group *Umoja wa Wanawake wa Tanzania* (UWT), Tanzania African Parents' Association (TAPA), Tanzania Youth League (TYL), and National Union of Tanzanians Workers (NUTA). The Area Commissioner and Member of National Assembly (Mbunge) for the district attend all of these meetings as well (the Mbunge might even attend the village-level meetings), as articulators of national policy, and are both influential in the whole process. A District Development Plan for the fiscal year, which includes the proposed allocations for each department (the location of projects, amount of government funds initially requested, the size of the self-help component, an explanation of the use of the funds, and the amount of money actually agreed upon by the District Development Committee), emerges from this process and is then sent on to the Regional Development Director (RDD) and Regional Planning Officer (RPO), where it goes through several committees with names, functions, and membership paralleling the district level machinery, only at the Regional level. Next the Regional Development Plan is sent to the Prime Minister's Office (PMO), then to the Ministry of Planning and Finance, and finally to the National Assembly and its sub-committees for more work and final approval. In the end, what is approved might bear little resemblance to what development proposals and plans were agreed upon even at the Prime Minister's Office level (let alone the village level). This year, for example, since the RDD and RPO from Arusha Region met with the PMO, the President of the country has announced that major expenditures will have to be made in the transportation sector (the acquisition of airplanes for Air Tanzania, for example) due to the breakup of most of the Common Services run by the East African Community. This means that for any semblance of Mbulu District's original Development Plan to be carried out in 1977/78 (and for following years), there will need to be considerable outside funding as well as larger financial contributions from villagers.

#### DEVELOPMENT HISTORY OF PROJECT AREA

Agricultural Production Trends. The crop production figures available in Mbulu District and in Arusha are extremely inadequate. National Milling Corporation (NMC) has records for the amounts of different crops sold to them from Mbulu District only for June 1, 1975 to May 31, 1976 and from June 1, 1976 to January 31, 1977. "All records for prior to 1975," reported a person who works in the Records Department, "have been sent to Dar es Salaam." There are not even two complete years of records to compare with one another. The Agricultural Development Office in Mbulu provided "Crop Production Figures" which were, for the most part, clearly approximations, even for crops like wheat and coffee where there would be no in-District consumption. The figures provided for wheat (in metric tons), for example, are as follows:

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<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
27,500	12,154	10,154	10,000	20,000	25,000	?	3,901	23,688

The Regional Agricultural Development Office in Arusha has figures for crops sold only for the Region as a whole. (Its figures are given for the fiscal year, while Mbulu District's figures are for the calendar year, and NMC's "year" runs from June to May.) Their figures are shown in Table I. As a rule of thumb, the Regional Agricultural Development Officer figures that 25% of the maize and millet/sorghum grown in the Region was sold to NMC, and that the rest was consumed by the grower or by an unauthorized buyer. The figures for maize and millet/sorghum, then, should be multiplied by four in order to get estimated harvest figures.

TABLE I: CROPS SOLD IN ARUSHA REGION BY YEAR

<u>Year</u>	<u>Maize</u>	<u>Millet/ Sorghum</u>	<u>Wheat</u>	<u>Pyrethrum</u>	<u>Seed Beans</u>	<u>Coffee</u>
1963/64	17,310	500	8,708	480	9,259	6,177
1964/65	18,500	643	12,066	888	12,066	6,312
1965/66	6,173	595	19,927	624	4,975	8,927
1966/67	16,516	1,500	9,824	531	3,575	9,305
1967/68	21,999	2,300	19,401	705	6,344	6,529
1968/69	18,362	?	14,495	542	?	11,183
1969/70	1,819	?	10,435	536	?	10,141
1970/71	42,689	?	27,051	249	?	9,369
1971/72	8,369	200	37,103	306	13,868	9,246
1972/73	18,500	1,522	13,498	340	14,370	13,007
1973/74	7,944	1,350	20,339	252	?	4,417

The Regional Agricultural Development Office estimates that as of 1975/76, Mbulu District had about 20% of the land that is in maize production in the Region (33,477 hectares), about 20% of the land in millet/sorghum production (280 hectares), about 50% of the land in wheat production (16,000 hectares), a bit more than 10% of the land in pyrethrum production (100 hectares), less than 2% of the land in seed bean production, and 10% of the land in coffee production (1,278 hectares). From these percentages, it might be thought that rough estimates could be made as to how much of Arusha Region's crop sales each year came from Mbulu District. But the only year-long figures available from NMC for each district show how far off such estimates can be. In 1975/76, of the 18,895 tons of wheat sold to NMC in Arusha Region, Mbulu District grew 14,734 tons, or just less than 80%; from the Regional Agricultural Development Offices's estimates of land in wheat production, one would have predicted 50%. Similarly, Mbulu District farmers sold about 8% of the maize NMC bought in 1975/76 and about 30% of the seed beans, both figures well off the ones estimated by the Agricultural Development Office.

From the figures available in Mbulu District and Arusha Region, it is evident that there have been variations in agricultural production over the past ten years, but the reason for this variation might just as well be clerical error as environmental factors, government development priorities, market pressures, or changes in technology.

Non-Agricultural Economic Activity. The Iraqw who inhabit most of Mbulu District have one of the highest birth rates in the nation (conservatively estimated at 3.5%), and while there remain large tracts of land in the District which presently support only small numbers of people, the best agricultural land is relatively densely settled. Also, only about 10% of the students in the District who completed Standard VII in 1976, were selected for further education in any kind of government institution. The District, then, faces the problem of developing alternative employment opportunities for a relatively well-educated, young rural population that, increasingly will not have good agricultural land available to it.

The Small Industries Development Organization (SIDO) has financed some ventures in the District: a carpentry shop in Mbulu town, a blacksmith operation and ox plow project in Dongabesh, two bakeries, and is considering helping to start a small sweater and blanket factory in Mbulu. The District is reported to be rich in minerals, but no comprehensive geological survey has ever been done of the area. The Mineral Resources Division informed SIDO (Arusha) in November 1976 that lime samples from the Maskoloda area of Endagikot Division were too poor to consider developing a lime industry and questioned also whether the deposit was large enough to justify such a venture. There are a number of private enterprises which exist in the District; the presence of perhaps as many as 150 to 200 tractors and 15 to 20 combine harvesters in Karatu Division has provided work for drivers, turnboys, and (mostly on-the-job-trained) mechanics; there are several privately-owned lorries in the District which are engaged several months a year in taking agricultural produce to Arusha; there is at least one maize mill located within five miles of most of the District's residents; in the villages, women figure that they can get 100% return on brewing and selling pombe; and in one small part of the District, women make very sturdy, circular reed mats for sale, which are very popular in urban centers as far away as Dar es Salaam. The soils in part of the District (between Karatu and Cideani in the north and, at least, Maskoloda in the south) are suitable material for making burned bricks and tiles for roofing. While those brick kilns in the northern part of the District do produce large numbers of bricks for sale for people who are building modern houses, in the poorer parts of the District the brick kilns are run on a village basis, and cater (seemingly) exclusively to the needs of public building programs where the people are normally expected to contribute some building materials as well as labor and money. Such projects requiring locally-burned bricks include classrooms, dispensaries, teachers' and dispensary staff houses, and political party offices. The government contributed Shs. 50,000/- to the construction

of a kiln for making bricks in Maskoloda in 1975, and helped start up a small, hand-operated sawmill in the same area for producing timbers for local public works projects.

The overwhelming majority of the wealth that is generated in the District comes from the agricultural and livestock sectors of the economy. Despite the interest in encouraging small, non-agriculture-related industries, it is the opinion of a SIDO officer in Arusha that future development projects which have as their goals increased incomes, in the central and southern parts of the District in particular, will also have to be in this same sector. "The area around Mbulu and Dongabesh is too depressed at present to generate enough wealth in any other way."

Social and Political Influence. The vast majority of the people living in Mbulu District are Iraqw, sedentary mixed agriculturalists whom linguists are increasingly identifying as a Cushitic-speaking population, separated by more than 400 miles from the nearest large concentrations of Cushitic speakers, the Galla of Ethiopia and the Somali. Their immediate neighbors are Nilotic-speaking pastoralists to the north, east and south (Masai and Barabaig), Bantu agriculturalists primarily to the southwest (Nyaturu, Iramba, Isanzu and Iambi), and a very small, Khoisan-speaking remnant of hunters-and-gatherers in the western part of the District (Hadza or Tindiga). It is thought that the Iraqw descend from a prehistoric horticultural people who lived throughout eastern Africa as far back as 5,000 years ago, well before the relatively recent successive waves of Bantu and Nilotic migrations into this area.

The linguistic uniqueness of the Iraqw and their particularistic history as a cultural remnant themselves would be of mere academic interest were it not for the fact that the Iraqw feel their cultural difference and isolation very strongly. In the seventeenth century, Iraqw survivors of clashes with the pastoral Barabaig retreated to a "protective enclave" they call "Mama Isara," the present-day political units (kata or wards) of Kainca and Murray, and remained in that small, bounded, highland area for about six or seven generations, hemmed in by geographical barriers on three sides -- a sheer escarpment descending into the Rift Valley, heavy forests and four mountains with peaks between 7,000 and 8,000 feet -- and the hostile Barabaig on the remaining, more exposed flank. By the middle of the nineteenth century, large numbers of Masai, coming from the north, out of the Rift Valley, had moved their herds onto the plateau and were challenging the Barabaig in areas known today as Karatu and Daudi Division, and replaced the Barabaig as the Iraqw's main antagonists. There is ample evidence that during the 1870's, the Masai warred with the Iraqw and raided into Mama Isara itself in search of cattle. Still, despite the proximity of warlike pastoral neighbors during the whole period they were "bottled up" in their highland enclave, the Iraqw prospered

and their numbers rapidly increased. Although it was not their original "homeland," it is with great affection that the Iraqw speak of Mama Isara and, when speaking to Europeans, they sometimes use the analogy "it is our Europe," to amplify the point.

The migration of the Iraqw into the Mama Isara enclave at the end of the seventeenth century perhaps prevented their annihilation, but the choice of this area for settlement was fortuitous for reasons other than defense. The rainfall was ample, the land is dominated by ridges and valleys but is fertile, and it is fed by year-round streams and marshes. Such an environment could often support two crops a year of such staples as sorghum, assorted millets, sweet potatoes and squash, as well as provide for their cattle and smaller livestock.

A number of specific adaptive behavioral forms developed in direct response to Iraqw perceptions of their changing ecological relationships, to a benign but bounded physical environment on the one hand, and to a hostile "social environment" on the other. The most tangible of these adaptive responses was the large, earth-roofed, semi-subterranean house they developed which was large enough to house as many as 20 head of cattle and was more easily defended against marauding Masai than the traditional round, thatched-roof house. Secondly, the Iraqw developed a cattle loaning system which differed significantly in both form and function from those devised by neighboring peoples. Because the Iraqw housed their cattle at night, there was a physically-imposed limit on the size of the herd the family can keep, and one man's cattle were often widely dispersed among friends, kin, and affines. This system also served to spread a family's resources, thereby protecting against the loss of great numbers of stock to an epidemic or the Masai, and it could also be employed to relieve over-grazing. Thirdly, given a bounded living space and a growing population, the Iraqw responded by developing agricultural techniques and animal husbandry methods which enabled them to increase production and at the same time to conserve their environment. Prominent among adaptive technologies were the rotation of pasture lands for grazing, the use of manure as fertilizer, and the development of methods of erosion control, including contour planting and storm trenches on hillsides which would otherwise be too steep to plant.

The first German explorers who visited the Mbulu highlands area in 1892 reported that the bulk of the population was concentrated in Mama Isara, but noted that the Iraqw had begun to spill out of their protective enclave. This out-migration was caused by the pressures put on the bounded living space after approximately 200 years of occupation, and appears to have become feasible when the Masai gradually withdrew from the area at a time when the herds in much of Masailand were weakened by a rinderpest epidemic. The bulk of Iraqw land expansion, however, took place under the enforced peace and protection of two colonial flags, those of Germany and Great Britain. During the rule of the British in particular, Iraqw were encouraged to enter and settle those areas of high agricultural potential which had, until then, been grazed only by cattle belonging to semi-nomadic pastoralists.

The imposition of a pax Europa on the area radically altered the social and physical environment in which the Iraqw were to function for the next three generations. To a large extent, the adaptive subsistence technologies retained their form and function in Mama Isara, presumably because population density remained high, while in the absence of a hostile "social environment" their meaning was altered. On the other hand, the semi-subterranean house type, which was an adaptive cultural form, was virtually abandoned in Mama Isara, as Iraqw farmers opened up new frontiers which served as protective buffers against hostile pastoralists for those remaining in the "homeland."

Availability of what was perceived as unlimited frontier elicited changes of far greater significance, however, than the abandonment of one house type and reversion to another. First of all, the new lands were generally settled by individuals or nuclear families rather than groups, with the most frequent pattern being for the older sons to leave Mama Isara as they came of age, leaving the youngest son and his family to care for his aging parents and ultimately to inherit their land intact. No effort was made to reserve frontier land for particular clans or lineages; very often even relatives as close as brothers settled miles apart, perhaps on different frontiers. Such a dispersion of patrilineal kin over the last three generations led to the development of a social and political organization based on the principle of propinquity rather than kinship. These spatially-determined, corporate social groups lived in communities with definite boundaries, although homesteads were dispersed over the area rather than being located in a nucleated-type settlement. A community had from 50 to 200 households wherein ties of mutual obligation and feelings of interdependence between households reinforced the parameters largely defined by geography. This feeling of interdependence and the high level of integration was further reinforced by such functions as cooperative herding on the lowest neighborhood level and communal work, as in gardening and house-building.

As one might expect in a society where kinship was not the primary organizing principle, no formal structure of authority and no political hierarchy of personage existed. Elders living in a community were charged with the responsibility of ensuring that the "common good" was carried out, they tended to village ritual matters, acted as intermediaries and mediated disputes, but such functions were the prerogative of any man over roughly fifty years of age. All this is not to say that kinship was unimportant to the Iraqw; it was merely unimportant above the level of the nuclear or compound family in day-to-day living or in political organization. On the other hand, it might be suggested that because the network of kinship and affinity was diffuse and covered an area as wide as the entire area, a strong feeling of ethnicity and ethnic unity was created.

An interplay of forces then--time, cultural differences, disease, colonialism and the pressure of rising population--came together in Mtulu District to enable the Iraqw in less than three generations to expand their land area

to a size perhaps fifteen times larger than their Mama Isara "homelands." This process of land "colonization" at the expense of the Barabaig continues to this day in the southern part of Dongabesh Division. Most Iraqw expansion, however, has taken place to the north of Mama Isara into the present-day political divisions of Daudi and, especially, Karatu. The illusion of rapid or eager expansion into this latter frontier is false, however; the highest concentrations of Iraqw are still to be found in Endagikot and Daudi Divisions, and there was once considerable resistance to leaving this densely populated, over-grazed area for the vicissitudes of frontier living. In Mbulumbulu, for example, the northernmost Ward in the District, between 1948 and 1956, land was parcelled out for the most part in units roughly ten to twelve acres in size, to anyone willing to put a portion of that land into production. The land was so removed from Iraqw population concentrations, however, and the Masai threat was still real enough on this frontier that ten acres, much of it already cleared, provided little incentive to settlement. In the early 1950's during a mandatory (and very unpopular) scheme to cull cattle herds, the Colonial Administration even resorted to forcibly resettling tax defaulters in Mbulumbulu, and all new settlers were offered a moratorium on the payment of District taxes. Ten acres of virgin, arable land, however, was more than twice the amount of land that the average subsistence farmer needed; not until the conversion to wheat farming and fully-mechanized agriculture was completed in the early 1960's did access to larger units of land become important to the Iraqw.

During the 1960's, Karatu Division underwent an "agricultural revolution." The area, including the Karatu and Oldeani estates ("alienated land" belonging to non-Africans), is one of the most productive agricultural areas in Tanzania, its major crop being wheat. Between 1959 and 1966, while "estate wheat" (European and Asian) production figures for Mbulu District rose from 1146.6 tons to 4240.11 tons, "native wheat" (African) production figures rose from 484.2 tons to 11,072.38 tons, and most of this wheat was grown in the Karatu Division. By 1966, the African-grown wheat in the Division made up approximately 30% of the total wheat grown in the nation, as opposed to a figure of 7% in 1950. By then, the Iraqw farmers in Karatu Division were emphasizing wheat to the extent that they often had to buy maize, their main food staple, from southern portions of the District where surpluses could be grown (in good years), and whose cattle and wheat could conceivably compete for the same land, the land was put into wheat. Largely because of a combination of ideal agricultural conditions, the availability of agricultural credit, and comparatively large land holdings, unprecedented wealth came to the area, and many people made a rapid adjustment to a highly sophisticated, fully-mechanized form of farming, a type of farming where the role of the farmer was reduced largely to that of a farm manager.

This rather long digression on the cultural ecology of the Iraqw and the acceptance of agricultural innovation on their northern frontier is included as support for the following observations. First of all, the Iraqw have a sense of identity that was forged in a sense of cultural difference, made all the stronger by the largely hostile contacts they had with the warlike pastoralists

who were their neighbors. Secondly, they have a history of cultural adaptation, seen centuries ago in Mama Isara in the house-type, intensive agricultural technology and animal husbandry system they adopted, and more recently in the transition they have made in Karatu Division to mechanized wheat farming. And thirdly, that their unique history of out-migration and land colonization which resulted in communities being based upon shared space rather than shared kinship perhaps enabled them to accept new agricultural technologies and some of the trappings of social and economic change more easily (and more individually) than has been the case with many other peoples. For the Iraqw, there has been a "tradition of change," and part of that tradition has been that families have ventured out on the Iraqw frontiers on their own.

There is, however, what might seem to be contradictory evidence to the above characterization of the Iraqw as an adaptive and "progressive" people when large parts of the three other divisions of Mbulu District are brought into the discussion. For one thing, there was stubborn resistance to giving up the house-type, that the Iraqw regard as being traditional, in many villages in Daudi and Endagikot Divisions, long after the Macai and Barabaig threat had passed--and despite campaigns against such "caves" as being unhealthy or "primitive" mounted by District health officials and national level politicians. These dwellings were finally abandoned (and destroyed) in 1974 when people throughout the District were forced to move into new villages. Also, to this day, there are Iraqw on the southern frontier of the District (in Dongabesh Division) who have adopted a semi-nomadic, pastoral existence, not unlike their Barabaig neighbors, who concern themselves especially with ways and means of increasing their cattle herds, even in times of drought--and at great cost to the physical conditions of their environment. And a minor campaign, going on presently, which has put the Iraqw on notice that the magorori (capas or blankets) that they have traditionally worn are appropriate only as bedding and should not be worn on the streets or in the fields, is being steadfastly ignored throughout the District. But each of these "conservative" behavioral forms or adaptations (including the goal of maximizing cattle) has its own rationality, and the attack on traditional Iraqw dress style, which could be seen as being appropriate for people living at an altitude of between 5,000 feet and 6,500 feet, is symbolic, giving further credence to Iraqw feelings of distinctiveness and isolation in Tanzania.

Major Political and Social Institutional Changes. In the three years since it was announced that villagization was no longer optional, there have been significant social and political institutional changes in Mbulu District. There are now 82 "nucleated" or resettled villages in the District, ranging in size from 250 to 500 families. Fifty-three of these villages have met the requirements to be formally registered as a kijiji cha maendeleo (development village), the first phase towards becoming an ujamaa village (a designation that no village in the country has officially reached to date). There are, in addition, four other scattered settlements in the southern part of the District,

which will eventually be resettled. In all of these new villages, land holdings were reorganized. In Karatu Division, for example, where typically a family had 10 to 12 acres of land and a few of the early Iraqw settlers in the area had holdings of 150 to 200 acres, each married farmer family had its land reduced to six acres, one acre for a household plot and five acres at some distance away, sometimes as far as three miles. This redistribution of land in the most fertile part of the District attracted new migrants to the area from the more densely populated Divisions and provided land for a new generation of farmers (aged 18 to 25) who were landless in Karatu Division and were resisting the idea of migrating to the southern part of the District where there is still an abundance of arable land but of much poorer quality. Finally, it should be added, a good portion of the land that was divided up (whether on what were formerly large or small holdings) was, in fact, often rented out to wealthier farmers, even since the Arusha Declaration in 1967 when such practices were made illegal. To the extent that this practice is still followed on families five acre plots, the scale of the rental operation is now much reduced.

A second major change to be institutionalized over the past few years can be seen in the politico-administrative structure. The new political party in Tanzania, Chama cha Mapunduzi (CCM) inherited from TANU, its predecessor, one of the most pervasive and effective political networks in sub-Saharan Africa. Each village has an elected Kwenyekiti (chairman), who is also the party chairman for the village. He presides over a halmashauri (committee) of 25 elected village members, and presides over a hierarchy of mabalozi (cell leaders), people elected by clusters of 10 to 15 households. Villages are also usually divided into vitongoji (hamlets) as well, a sub-division of the village numbering about 100 households, and each hamlet has an elected leader as well. Villages are grouped into kata (Wards), Mbulu District having an average of four villages to a Ward, in a total of 21 Wards. These Wards, in turn, are grouped into four mtarafa (Divisions): Karatu, Daudi, Endagikot, and Denga-besh. The Wards and Divisions each have appointed secretaries (Katibu kata and katibu tarafa) who are responsible to an elected District party chairman and to an appointed Area Commissioner. As might be expected, the various village leaders and committees are variously effective in running the affairs of their villages, but in most cases in Mbulu District, the described political network is, at least, a highly effective means of communicating information, particularly from the District headquarters to the "grassroots".

Past Development Efforts. Probably the best known development project attempted in Mbulu District during the colonial period was a cattle culling scheme (already mentioned), which had as its goal the reduction of herd size and institutionalization of range conservation measures. It was a very unpopular campaign and is not thought of as having been very successful, because of Iraqw resistance and the means they devised to circumvent British

10

officers' guidelines. The program did, however, establish a cattle auction circuit that exists to this day and did have the effect of redistributing the District's population, to some extent, by opening up the northern frontier, Karatu Division.

Certainly the best known of the post-colonial development projects located in the District is Upper Kitete Village Settlement, which was the first of five pilot resettlement projects attempted at the national level; and located, as it was, in spectacular country within easy reach of two game parks, Lake Manyara and Ngorongoro Crater, it was the most often visited by visiting dignitaries of all the model village settlements. One hundred (mostly) Iraqi farmers were settled along a narrow strip of plateau along the Rift Valley escarpment in the northern-most part of Karatu Division, where they communally farmed 1600 acres of virgin wheat land in addition to their household plots. The initial investment in Upper Kitete was \$280,000 (or \$2800 per resettled family), spent on roads, contouring the land with heavy equipment, water supply, farm machinery, buildings and farmer housing. During its best years, it was only a marginal economic success and little was done to cultivate a "demonstration effect" in order to spread the sizeable investment over more than the original 100 families resident at the scheme. An impressive physical plant was built, water, health services, and a school were provided, and approximately a quarter of the farmers were trained as tractor drivers. In addition, the families became much more oriented towards the modern sector of the Tanzanian economy and were better enmeshed in a political communication network, and the 100 families selected for the scheme were able to get into neighborhoods, adjust rapidly to an administered-community situation, and make Kitete their permanent home--all with the lowest level of farmer turnover of any of the government-financed villages. But wheat yields were never any higher than those averaged by other wheat farmers in Karatu Division, despite the government expertise made available to them and the presumed economies of scale. In addition, there was considerable frustration with one of the least Iraqi-like features of the scheme, the high level of communalism expected of the farmers. While some farmers were content to attempt to live (for the most part) on their one-one hundredth share of the net crop proceeds, others spent much of their time tending to investments in wheat and cattle that they held outside the scheme. The thriving private sector at the settlement was perceived by several farmers to detract from the scheme, and some resentment was expressed towards those who were using the scheme as a "business address." Few of the members who had outside investments held any formal leadership positions, and more importantly, these were some of the people who most often exercised the option of employing a substitute worker while they pursued their own gain. Said one farmer,

The rich people here don't devote time to the scheme. They go looking after their investments, and it is we who get milked. Therefore...let's divide the land up rather than be hurt by those who do not depend upon the crop proceeds for income.

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But one of the richer farmers, who would be included in the above criticism, argued from his vantage point in the following manner:

I've been in this cooperative since 1964 and I've worked hard. For several years, I've been driving a tractor six hours a day for most of the year, and I received hardly any payment. I worked even when my body ached from driving so much, but now I'm tired of cooperating with people who are lazy, who say they are sick and don't report to work, or who would rather look for pombe to drink. Why should I work for village leaders who sit in their offices all day and never do any work in the fields? If the people wanted to work, I would be the first to join with them. But they have no purpose. This country is not like China where the leaders work and the people have one purpose. But what can I do? Where can I go if I leave Kitete? Ujamaa will follow me wherever I go.... It is true that a person cannot work communally and privately. One cannot carry loads on both shoulders or else he will fall down. I will live at this cooperative and will work only as hard as the people I am with, but I do not expect to earn much payment from my work here. I shall make my living on my own.

Upper Kitete today still has a large communal sector (although more of the land has been divided up). Its production levels are now lower than they were ten years ago. It no longer enjoys its special status as a model of the "new Tanzania" now that such highly capitalized village settlements have been phased out. Most of the original scheme debts on farm machinery and physical plant (and even farmer housing) were written off in the late 1960's, on the grounds that such debts were incurred without the farmers' assent. Making the best of a costly mistake, it is argued that the present, more self-reliant (but less dramatic) efforts in rural development could not have been embarked upon without experimenting first with what was called the "transformation approach." Such was Kitete's contribution.

Lessons Learned from Past Development Efforts. One of the positive things learned (once again) was that if one takes Iraqw farmers who have had a three-generation history of geographic mobility and resettles them on an Iraqw wheat scheme in an area where Iraqw were already growing wheat, the new settlers will make adjustments to changed agricultural and economic patterns not unlike those of their new neighbors and will achieve a sense of community and permanence. The resettlement program was supposed to initiate a type of rural "transformation" based upon a considerable degree of cultural disruption. While the families at Upper Kitete were "resettled," they were hardly "uprooted." Rather, it can be argued, because the settlement scheme represented the last portion of Iraqw land to be "colonized" and because the scheme (like Iraqw society) was organized on the basis of shared space and

spatial proximity rather than kinship, Upper Kitete represented more a cultural continuity than a severe break with tradition, and many of the societal supports were left virtually intact. The government, therefore, could hardly claim credit for the stability that the village achieved nor was such a smooth transition to resettled life a government goal.

What was accomplished (and learned) was achieved at tremendous opportunity cost. The Tanzanian Government's decision to curtail the village settlement program (and abandon the "transformation approach") was tacit admission of the fact that it could not afford rural development at a cost of \$2800 per family. There was, in addition to the monetary investment, the cost of channelling so much in the way of staff, planning time and expertise into a program that yielded only a fraction of what was expected in terms of gross national product or rural development. Another cost, even less measureable than opportunity cost, was in the sphere of political economy. The village settlements were seen by those in political power to be not only vehicles for rural change but also models of the "new Tanzania." Their demise strained the credibility of politicians, planners, administrators and the Five Year Development Plan they embraced. The final cost was the concept of a transformation model in the first place. Not only were projects of resettlement involving high mechanization and high social overheads costly, but perhaps the underlying premise was unjustified as well: whereas cultural disruption is implied in the transformation approach to rural development, in the case of Upper Kitete the factors of cultural continuity contributed to the creation of a type of integrated, stable community, a situation which might ultimately be considered a requisite to development at other levels. With the decision late in the 1960's to regroup existing populations into lowly-capitalized "development villages" and to employ cheaper, more "appropriate" technologies, the Tanzanian Government appears to be operationalizing this hypothesis at the same time retaining a high premium on social change. And the government's decision to emphasize villagization at the expense (for the time being, at least) of developing a paramount communal sector (ujamaa-ization) would seem to suggest that Kitete's experience in the area of communal work is also being heeded.

#### PROJECT AREA ENVIRONMENT

Ecological Factors. Mbulu District occupies a rolling, and sometimes mountainous, plateau, ranging in altitude from 5,000 feet to nearly 8,000 feet above sea level. Most of its eastern boundary is the precipitous 2,000 foot escarpment, which descends into the Rift Valley and Lake Maryara National Park. A second, less spectacular escarpment runs through the western part of the District. Between this escarpment and Lake Eyasi, which forms much of Mbulu District's western border, is the very sparsely populated Yaida Valley. The Ngorongoro Forest Reserve and Conservation Area forms the northern border, while no particular natural barrier divides the District from Hamang District in the south.

Although, according to the DADO, no systematic soil survey has been carried out in the District, Karatu Division in the north, adjacent to Ngoren-goro, is known to have excellent volcanic soils only recently (the 1940's) put to the hoe and plow; the central Divisions of Daudi and Endagikot have "sandy loam" and "red" soils, which have been farmed the longest, and most of Dongabesh Division, in the south has sandy soils. Except in the protected Forest Reserves in the District, much of the vegetation cover has been cut, evidence of severe soil erosion is seen through the District, and there have been flash floods in the District and, especially, in the town of Mto-wa-Mbu at the base of the Rift Wall in neighboring Monduli District. Wind erosion is a serious problem in Karatu Division, and is especially severe towards the end of the dry season when the pulverized soils of the harvested wheat fields have no vegetation cover to protect them from the strong winds coming out of the Rift Valley.

Temperatures at this high altitude would probably be labelled "temperate", with recordings in the thirties (Fahrenheit) during the nights in June, July and August, and probably never going above 90° during the hottest part of the year, December and January.

Table II shows the Mean Annual Rainfall figures for (respectively) three northern stations, two central stations, and two southern stations. No data on rainfall reliability was available, but in the last six years, the annual rainfall figures have varied tremendously: Mbulumbulu--92.10 mm. in 1974 and 840.20 mm. in 1972; Karatu--367.00 mm. in 1973 and 874.00 mm. in 1971 (and 581.10 mm. in the month of March 1974 in a year when the total rainfall was 724.10 mm.); Mbulu town--654.50 mm. in 1974 and 1209.0 in 1972; and Dongabesh, which has suffered from drought all six of the last six years, received 64.40, 49.00, and 196.90 of rain in the only three years with records available at the District headquarters, 1972, 1973, and 1974.

As recently as 1970, farmers in the two best-watered parts of the District, Karatu Division and Mama Isara (Kainam and Murray Wards in Endagikot), were able to count on two harvests a year in most years. This has been impossible in most parts of the District in the last six years, except for areas near Karatu town in 1972.

Demographic Factors. The Iraqw make up the largest population group in Arusha Region, and in the 1967 Population Census ranked sixteenth amongst the 120-plus ethnic groupings in the country. They numbered 198,560 in 1967 (which included Iraqw living in what is today called Hanang District), and with an Annual Population Growth rate of 3.5, they were named as having almost the highest birthrate in the nation. Half of Mbulu District's population was then under the age of 18; there were almost twice as many children between the ages of 0-4 as between 10-14, more than six times the number of adults between the ages of 40-44. Taking into consideration redistricting, which occurred since the last census, it is estimated by the District Office that there were 151,893 people living in Mbulu District in 1967 (almost all of them Iraqw), 199,000 in 1975, and a projection of 237,000 by 1980.

**TABLE II: MEAN ANNUAL RAINFALL (mm.) FOR MBULU DISTRICT**

YEARS	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL	
Ndamakia Estate Oldeani	34	124.0	110.1	156.7	208.9	114.0	15.1	3.4	4.2	4.7	15.5	65.4	112.9	934.9
Mbulumbulu Primary School	21	75.2	80.1	129.8	268.3	127.7	9.7	5.2	2.7	5.5	27.5	85.1	123.0	939.8
Karatu Agricultural Office	30	81.8	90.6	137.9	238.8	119.8	12.1	6.9	4.2	8.9	25.8	86.0	86.2	859.0
Mbulu District Office (Boma)														
Kainam Primary Court	53	98.7	91.5	151.8	176.1	62.7	4.9	1.5	1.6	3.9	24.6	90.4	124.2	832.0
Yaida Chini Ujamaa Village	17	72.3	82.1	128.1	75.8	23.0	3.7	1.6	.3	5.1	7.2	46.8	125.9	571.9
Dongabesh Mission	28	133.6	110.5	156.4	115.2	32.0	6.0	0.0	.3	4.9	13.3	56.5	121.1	749.8

Source: East African Meteorological Department; East African Community, Nairobi

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Since 1974, the Iraqw have moved into 86 villages, a process that, for the most part, involved a regrouping of the population into "nucleated villages" rather than the creation of wholly new communities. These villages vary tremendously in both size and form (to mention only the demographic differences): in Mbulumbulu Ward, in the extreme northern part of the District, the three villages average 2,460 people living in slightly more than 400 households each, each family living on half-acre plots (soon to be increased to one-acre plots) and often up to three miles from their six acres of arable land; in Haydon Ward, in the extreme south, the five villages average 1,505 people living in approximately 225 households each, considerable distance separates the houses in all but one of the villages, and there is enough land in most of these villages for families to farm as much as they want to put into production. (see Appendix A: District Population Figures by Division, Ward and Village.) There are three villages in pastoral Barabaig areas of Dongabesh Division and one small village of hunting-and-gathering Hadza (or Tindiga) in the same Division, where efforts to bring the people together into permanent villages have been unsuccessful thus far, because of their semi-nomadic life styles.

#### FARMING PATTERNS

Farming Systems by Ecological Zones. The poorest farmers in the District live in much of "central Iraqw", within a few miles of the main road, in the Divisions of Daudi and Endagikot, from Kilima Punda in the north to Dongabesh in the south. Here, the rainfall is unreliable enough that maize (the staple) is often a marginal crop, the population density is high, the soils are no longer fertile and are badly eroded, and subsistence farming with a hand hoe is the way of life. There is no cash crop at present, and livestock are the people's only wealth. Most families in this area do not have more than five to eight head of cattle, about the same number of sheep and goats, about half might have a donkey, and fewer than that are raising a pig or two. Rarely is a surplus being grown; more often it is necessary to sell livestock in order to purchase maize from villages in the northern part of the District. Donkeys are used for transporting the purchased food, each animal being capable of carrying four debes of grain, about 60 kilos. Almost never does a family get more than one harvest a year. Due to population pressures, the same pieces of land are usually put into production year after year. Women do most of the farm work, day in and day out, although work parties of men will often weed and harvest in return for pombe (locally brewed beer). The men have prime responsibility for the cattle, except for milking. Ox plows are becoming more common in these two Divisions, and plowing with oxen is the man's responsibility.

Two of the Wards in Endagikot Division are very different from the above portrayed situation. Murray and Kainam, in the Iraqw homelands of Mama Isara, also have very high population densities and the farms have been worked constantly for generations, but the area is better watered. Typically, families

have about three acres of land each in non-contiguous land holdings, a fact that can be attributed to both the very hilly terrain and to the history of population expansion in the area. About half the households might have three to five mature cows, fewer sheep and goats, everyone has chickens, and surprisingly few have donkeys, considering that there is only one resident vehicle in this area of about 2,000 families. About one-third of the families, however, raise one or two pigs, a few with as many as five, and raising pigs is a good source of money. A young piglet can be bought for Shs. 150/= and sold ten or twelve months later for Shs. 1200/=, sometimes even more. People, who raise pigs, plant between half an acre and one acre of sweet potatoes, the main food for pigs although they are used also for human consumption. Other food crops typically include about one quarter to one half an acre of eleusine millet, and about one and one half acres of maize, interplanted with beans. In a good year, people harvest about two debas (four gallon containers) of sweet potatoes from each of 40 rows typically planted, about two to three bags of eleusine, not more than 10 to 12 bags of maize, and two to three bags of beans. "No one grows enough to eat in most years," was a consensus opinion, however, and in a bad year (such as last year), people can get less than three bags of maize from an acre. The growing season in Kainam and Murray runs from June to December for maize, beans and eleusine. Crops are not rotated and hybrid maize is thought to be no better than the local maize that has traditionally been grown. Sweet potatoes can be planted between January and May, and are ready to harvest nine months after planting. Other than raising pigs, the main means for people in Mama Isara to make money is growing pyrethrum. Pyrethrum is a very labor-intensive crop. About half the families grow the crop, most on plots as small as a quarter of an acre, few with more than half an acre. If tended well, a half an acre of pyrethrum can produce 500 kilos of dried flowers in a year. For August 1976, the only month for which records were readily available for the defunct Central Iraqw Cooperative Union, the pyrethrum content for the crop delivered averaged out at 1.32% or Grade II (on a four-grade scale) for which farmers received Shs. 5/50 per kilo. Pyrethrum can be planted and harvested throughout the year, and sales records examined for 1974/75 and 1975/76 showed very different monthly marketing patterns. Probably the comparatively small number of livestock in Mama Isara has led to a more equitable division of agricultural labor in these two Wards, although women are still responsible for more tasks than are men.

Dongabesh Division is characterized as being both wealthier and more tradition-oriented (or "resistant to change") than the two divisions discussed above. Its wealth is in cattle, with families averaging about 20 head of cattle each and only slightly fewer smaller livestock, and many families own between 80 and 100 head of cattle. It is this Division which has most of the Barabaig families in it (the only other large concentration of Barabaig being found in Mong'ola Ward in the western part of Karatu Division). These are people who traditionally lived a semi-nomadic, pastoral existence, and who have engaged in agriculture for only the past 25 years or so. Still, most of those who live in Dongabesh Division are Iraqw. Of these, there can be found farmers

with up to 100 head of cattle and 12 to 14 acres of crops, and others who live very much like the Barabaig with large herds and almost no land in crops. There are many Barabaig who have married Iraqw women, very much with the idea of starting farming, and one Iraqw farmer was met who had recently married a Barabaig woman as his third wife, so that she could help him with his herd of nearly 100 head of cattle. A much more typical situation in Dongabash is for an Iraqw man to have one or two Iraqw wives, he tending to his herd of about 20 head of cattle, his wife or wives having prime responsibility for about three acres of maize and beans. The area has been hard hit by drought during the past six years, the yields of most farmers have been very low, and most families have suffered losses of up to half of their livestock.

The richest part of the District is Karatu Division, more specifically, Mbulumbulu, Rhotia, Oldeani and Karatu Wards. (Endabash, the southern-most Ward in the Division is much more like neighboring Kilimapunda and Kansay in Daudi Division, and Kag'ola Ward, southeast of Oldeani in the Yaida Valley, is very cut off from the rest of the Division--and District.) Those Wards have been growing wheat since the 1950's, intensively since the 1960's. The extremely fertile, very young, volcanic soils also produce excellent yields of maize, beans, and eleusine millet, as well as coffee on the alienated estate holdings in Oldeani. Wheat yields have almost doubled some years on some farms, from six to eight bags an acre in the mid-1960's to 10 to 15 bags an acre two years ago, due to improved seed varieties. Traditional maize, planted 10 to 12 seeds per hole (and later thinned to four to six plants per mound) can yield up to 12 bags an acre, farmers reported. Hybrid maize is more and more common now, and many farmers in the Division know the correct spacing and planting instructions, even if they do not follow them. The following rough figures were given for three varieties:

Hybrid No. 512: Four month growing period, harvest in fifth month, one ear to a stalk, up to 20 bags per acre in a good year.

Hybrid No. 622: Six month growing period, harvest in seventh month, two ears per stalk, 25 to 30 bags per acre in a good year.

Hybrid No. 632: Eight month growing period, harvest in ninth month, three ears to a stalk, 30 to 35 bags per acre in a good year.

A three month variety of non-hybrid maize, known as katamani, was said to yield about five to eight bags to an acre under the best of growing conditions. The hybrids and katamani all required about half a debe of seed (about eight kilos) for planting an acre, and it was fairly uniformly felt by farmers interviewed in Karatu Division that the use of either Triple Super Phosphate (TSP) or Sulfate of Ammonia (SA) had no positive effect on yields, the soil in the Division being so fertile. It should be added that in bad years, or if a variety of seed is planted that is inappropriate for a given growing season,

the yields can be very low. One farmer said that he harvested less than a bag an acre last year, due to the fact that his crop "dried up" just at the time the plants were "coming into flower".

With the success of cash crops in the four richest Wards, there has been a "natural de-stocking" of cattle. To cite the extreme example, according to a cattle census taken in 1975, there were an average of only three head of cattle per family in one Ward, Mbulumbulu. This is the only Division in the District where individual farmers have brought dairy cattle, although all of those who have bought dairy cattle, also keep traditional cattle as well. A pedigree heifer in calf, bought from as far away as Iringa, costs Shs. 2500/- to Shs. 3000/-. Full grown traditional stock sells at the local cattle auctions for up to Shs. 1000/- each.

Typically, a family in Karatu Division will have six acres, half of which will be in food crops, and half in wheat. All six acres are usually plowed and harrowed by tractors, at Shs. 90/- and Shs. 45/- an acre, respectively. Crops are generally sown by hand. Only wheat is harvested by machine, the owner of the combine harvester usually receiving one bag of wheat (at Shs. 120/- per 100 kilo bag) per acre as payment. If a farmer cannot pay cash for the original plowing and harrowing, often a tractor owner will be loaned one third of the acreage plowed on which he can plant his own wheat as payment. In this manner, many farmers, primarily those owning tractors, end up planting many times the amount of land planted by the typical farmer. The redistribution of land in this Division, oddly enough, will have relatively little impact on the distribution of wealth.

Differences in Technology. It can be said that the Iraqw men who grow wheat (especially) are, to one degree or another, farm managers. They must arrange for someone to plow and harrow their fields, decide what seed variety to buy, arrange its purchase, decide when to plant, whether to plant by hand or by tractor-drawn planter, who to hire to harvest the crop, how to get the crop to the market, and how and when to pay for all the mechanized services that he cannot perform himself. He has to make some of the same kinds of decisions for the maize he grows as well, although the only phase that is mechanized with this crop is plowing and (usually) harrowing. Again, perhaps because of the relatively small number of livestock kept, men occupy themselves more with the planting and care of their fields; planting and weeding is an activity shared with women (and older children of both sexes), while women have almost complete responsibility for harvesting and preparing the crop for storage. Men are solely responsible for selling cash crops and surplus food crops, and it is they who control the use or division of the income earned. (In addition to the money given her by her husband, a woman might also have a cow or small livestock of her own, and, in some places, might belong to a group of women--UWT is the best example--who farm an area communally.)

The families living in the approximately 15 Wards in the District, where no specifically cash crop is grown, use virtually no tractors, and the decisions made and division of labor followed are of the traditional order. The District DADO estimated that there are no fewer than 100 ox plows in use in Dongabash Division, many fewer in Daudi and Endagikot (and none in the pyrethrum-growing Wards of Kainam and Murray). Where land is prepared by ox plows it is solely a male responsibility, as would the decision to hire someone to plow a field (at Shs. 50/= an acre). Otherwise, women have prime responsibility for preparing a field, as well as for most farming activities that follow. Only land clearing is a purely male domain. As in Karatu Division, men have sole responsibility for selling any surpluses, or for purchasing more food. Whereas there are relatively few donkeys in Karatu Division's wheat growing Wards and crops are only transported by tractors or other vehicles, donkeys are the main means of transport in the rest of the District. About the only means of food storage throughout the district, for all crops, is in jute bags that hold 90 to 100 kilos, stored in people's houses.

In the "production-oriented" Wards of Karatu Division, the only constraint against the adoption of improved agricultural practices, assuming the availability of the needed inputs, is a demonstration that a particular recommended change is, fairly immediately, economically rational. A new production technique will be adopted if it increases production, does not increase the risk of failure, and if the inputs do not cost more (in actual initial cash outlay). The people in this Division have enough consumer needs that they are interested in any new technology which will increase their incomes. (There is a seemingly insatiable demand for sugar in Mbulumbu Ward, for example, a commodity that is in much shorter supply, most of the time, than money.) Their attitude towards buying improved stock of dairy cattle is very much the same: The interest in obtaining modern breeds of cattle is high, but people are unwilling to concentrate solely upon these animals because the cattle are expensive and the risks of losses are much higher than for traditional stock. The government will have to guarantee the uninterrupted provision of cattle dip facilities and the threat of Masai cattle raids (currently averaging almost one a month in Mbulumbu) must diminish substantially before the complete conversion to improved stock will be accomplished.

In most other parts of the District, a more traditional economic value system prevails and people are not as enmeshed in the money or consumer-goods economy. Cattle herders in the southern part of the District, whether Barabaig or Iraqw, are also economically-rational people, and feel that the more cattle they have the better, not merely because of "prestige" but because they feel better protected against the risks of drought and famine with more cattle than with less. They are no more impressed with range conservation arguments against "over-stocking" than the wheat farmers in Karatu Division would be sympathetic to the idea of taking land out of wheat production and allowing it to lie fallow. Their feeling that having more cattle is a good investment is buttressed by the excellent prices that are obtainable at District cattle

auctions as well. These cattle owners' "economic rationality" will need to be challenged with the demonstrated logic of the District Livestock Development Office, if compulsory destocking is not to be resorted to.

#### AGRICULTURAL SUPPORT SYSTEM

Agricultural Research. No research is done in agriculture or livestock in the District, and no records exist of research ever having been done in the District. There never has been a survey of the District's soils. "When we recommend fertilizers to the farmers, we are merely making guesses as to what additives will improve production," reported the District Agricultural Development Officer (DADO). The Agriculture and Livestock Departments do draw upon advice and research from various research stations in the country, outside the District.

Lyamungu (Moshi)--wheat, coffee, insecticides, fertilizers.

Ukiriguru (Mwanza)--sorghum, maize, peas, millet.

Ilonga (Kilosa)--maize, legumes.

Mlingano (Tanga)--soils.

Livestock Breeding Stations (Tanga, Mpwapwa, Mabuki/Mwanza, West Kilimanjaro, Iringa, Mbeya)--improved dairy and beef cattle.

Agricultural extensions staff are expected to have and maintain at least one demonstration plot in each of the 21 Wards in the District, although this target is most certainly not met. Typically, primary school farms and those few farms run by Mbulu District Development Corporation are used as models for such projects as introducing drought-resistant sorghum or advancing a particular variety of hybrid maize, as well as demonstrating proper spacing and application of fertilizers; in the case of sorghum, however, this year a newly-developed variety of seed (serena) was sold to farmers (at Shs. 3/= per kilo, sown three kilos to an acre), and of the 1,500 acres planted experimentally in the District, 1,000 acres were planted by private farmers, often on plots no bigger than half an acre. The two hundred acres of sorghum planted on a District Development Corporation farm in Maghan, in Dongabesh Division, is the field used this year for seed multiplication.

That there is not, so far, a great deal of interest in the drought-resistant crop can be seen in the fact that the Agricultural Department had enough seed for 3,000 acres to be planted in the District, but villagers only planted 1,000 acres in the target area. One problem is that people in this area have not grown sorghum traditionally as a food crop, relying instead upon maize. Where a traditional variety of sorghum, bullrush millet or eleusine has been grown, it is used almost exclusively as a cash crop or for beer brewing. But people in the Districts south of Mbulu do use sorghum and millet as a daily staple, and it is hoped that the Iraqw will acquire a taste for sorghum and switch over from maize, which requires so much more rainfall. A second reason there was

resistance to planting this special variety of sorghum this year is that the year before people were urged to plant sorghum provided by the Agriculture Department, and the crop did very poorly. It turned out that Dodoma Region was promised all the seed that was originally designated for Mbulu District, and an inappropriate variety was sent. This year two special efforts were made to convince people that the new variety would be more satisfactory. First of all, the DADO went to pick up the seed himself. Secondly, he planted the variety in the former flower gardens in front of the District Headquarters, complete with a large signboard which listed the planting instructions and advantages of the crop. This way, the tens of people who visit the Headquarters each day were exposed to the crop. Once this small demonstration plot had matured, the DADO or Area Commissioner would uproot a few samples of the crop, take them with them to the villages they were visiting, and tell people to carry the sorghum plant with them from house to house, "like they were bearing a torch." The crop at the District Development Corporation farm in Maghen (in the heart of the area most affected by drought and most fed on famine relief the last six years) is excellent. At a time one month before the harvest, the DADO estimated a yield of 12-13 bags (100 kilos each) per acre from the 200 acres, or enough seed for about 75,000 acres. Clearly, regardless of how impressive the crop or well-planned the demonstration effect, the drought-stricken area is not going to increase acreage in sorghum production from 1500 acres to 75,000 acres in one year (which also happens to be roughly the amount of land estimated to be in maize production in this part of the District at present). A large portion of the crop will have to be sold for seed outside the District--or sold for the beer-making market. However, the DADO does expect much more sorghum to be grown on farmers' own plots next year.

The DADO characterizes the farmers in Karatu Division to be much more "progressive" than those in Endagikot, Daudi, and Dongabesh Divisions, even "production-oriented." For at least 15 years, they have been planting recommended varieties of wheat (which often change from year to year), sight unseen. They also have had many of their fields marked out for contour-plowing. Perhaps because they are so "production oriented," however, they rarely have followed advice on soil conservation measures which would force them to plant less wheat, such as leaving grass strips in their fields to check erosion or not farming land that has too steep a gradient.

The Livestock Department also strives to introduce new technologies into the District. It has large fields in Karatu Division this year, which have been sown experimentally in Rhodes grass as both a demonstration and seed multiplication program. Of the 90 acres planted, however, only ten acres were reported to be thriving. The only source for Rhodes grass seed, thus far, has been Kenya, and it was said that "the experiment was not far enough along in Karatu Division when the border was closed (in early February), for anything to be expected of the project." There are also plans to introduce dairy cattle to villages (on a communal-ownership basis) throughout the

District north of Mbulu town, and to upgrade the beef industry south of Mbulu town through the establishment of bull ranches. Both of these projects have been funded on a small scale (either by the government or by loans to villages by the Tanzania Rural Development Bank), and will be supervised by Livestock staff at the Dairy Livestock Centers and the bull ranches. Such new technologies have not been tried or demonstrated by Livestock staff prior to their introduction, but in the case of introducing improved dairy stock, a number of private farmers in Karatu Division already own dairy cows which can facilitate their introduction or acceptance on a larger scale.

Extension. The Agriculture Department has 15 staff members, the District Agricultural Development Officer (DADO), two Field Officers, and 12 Assistant Field Officers (plus three who are presently in National Service). The lowest education level is Form IV plus a two year diploma course in agriculture. Several staff members went to Form VI before taking a diploma course. The DADO has two diplomas in agriculture, one from the University at Morogoro and one from a one year training program in Bulgaria. One of his Field Officers has studied in Hungary. The ultimate goal is to have one Assistant Field Officer for each of Mbulu's 86 villages, but with only 17 field staff, some of the 21 Wards have no staff, and it will be many years before the target figure is reached. It is the job of extension staff to know all of the villages in their work area, to be familiar with the crops grown and know what new crop introductions could be made, to attend all meetings, and to help each village draw up an agricultural development plan. Although more than half the "man hours" involved in growing, harvesting, and preparing the staple crops for storage, sale, and/or consumption in Mbulu District is performed by women, only two of the extension staff are females. As the DADO explained,

It is not that good an idea to have female field staff. First of all, most of the agricultural information is passed on to men, even by our female Assistant Field Officers. Secondly, the job requires a lot of walking, often to villages far away, and we have to be concerned for the women's safety. I find that if the female extension staff are not posted to the better areas, they are pretty demoralized.

Staff meetings are supposed to be held once a month, when the staff reports to pick up their salaries, but nothing very extensive is done because the office lacks sufficient transport and money for overnight allowances. A seminar for all field staff in Agriculture is planned for May for the first time since 1974.

The Livestock Development Department has one Livestock Field Officer (the DLDO) who went to Form VI in secondary school, and has had four years of further training, including a certificate program at Edgerton College in Kenya; there are, in addition, eleven Assistant Field Officers (Form IV plus a two year certificate course), and 45 Field Assistants, 40 of whom work as dip attendants (for the 54 cattle dips in the District), the rest of them working in hide dressing or tsetse fly control. Since the present DLDO came to Mbulu six months ago, he has held two seminars at the District Headquarters for his Assistant Field Officers.

Other means of transmitting information include the magazine Uwalima wa Kisasa (Modern Agriculture), the cinema van based in the Region and radio programs. The DADO himself was interviewed in February on destocking for the national radio.

It is difficult to say how effective the agriculture and livestock extension programs are in the District. The DADO said that he gets complaints that people do not see enough of his extension staff, some farmers in Karatu Division complained that the fertilizer recommended by the staff "burned" the crop, and the Director of the Mbulu District Pyrethrum Board reported that extension staff in the pyrethrum-growing Wards were not very helpful and did not seem to know anything more about growing crops than the farmers. It is not known how wide spread such feelings are. The "progressive" and "production-oriented" portion of the District closely follows information on seed wheat varieties, and cattle dips are used throughout the District. There are no records on the use of fertilizer, which would be a better measure (in the less fertile portions of the District), but where hybrid maize is planted, the DADO reported that approximately correct spacing is usually followed, even in the southern part of the District. No systematic effort was made to check this information. Interactions between extension staff and farmers were not observed. The DADO field approach would be an excellent model, however, for the junior staff to follow. On one occasion, the DADO was talking with a farmer from Haydom in Dongabesh Division, who had planted two varieties of sorghum, one provided by the Agriculture office and one he had obtained on his own from neighboring Iramba District. The latter crop, nearing maturity, was seriously hit by a "head smut" disease. The newly-developed variety was planted in a field about 100 meters away and was, so far, unaffected. The DADO said to the farmer,

"What are you going to do about this diseased sorghum?"

"You tell me what I should do. You are the expert."

"No, you tell me what you would normally do."

"I would cut the heads off and plant something else in the field next year."

"All right. But what would you do with the heads you cut off?"

"I'd just leave them in the field, just like I do when I cut the suckers off that shoot up."

"No. You've got to cut off every diseased head, take them out of the field, and bury them or burn them. You can't just leave them or the disease will spread. Now, why did you plant this variety from Iramba District?"

"Because I wasn't sure about the seed provided by the extension officer. Last year, I planted what he recommended and it was a loss. I was cheated."

"Well, now you know what variety you should plant next year. You have to destroy a lot of your crop this year, but this is a real service to your village. This is a very good example for your neighbors to learn from, and I'm glad you planted both varieties."

The farmer was left feeling praised rather than chastised. The DADO repeated the questioning approach with another farmer, later in the day, whose beans were eaten by a kind of worm (like those throughout most of the District this year). Commented the DADO later on, "Uwalimu Nyerere is right. So-called leaders do entirely too much talking to the peasants. No one ever wants to listen to them."

The only "transfer mechanism" observed in the District was the "progressive farmer strategy," employed again in the case of the DADO. One of the wealthiest farmers in the Haydom area plows with two teams of six oxen so that he can work both morning and afternoon. Last year, he harvested 54 bags of oleusine millet from eight acres, and more than 100 bags of maize from six acres. Haydom has had some form of famine relief each of the last six years, but this farmer said that he has grown enough surplus to sell each of these years. He has been offered Shs. 20,000/= for 50 bags of oleusine, picked up at his house (67 miles south of Mbulu to be, seven miles from the very poor District road), and has so far refused the offer, knowing that he can get more. (National Milling Corporation would pay Shs. 95/= a bag, or Shs. 4,750/= for the same 50 bags.) The DADO told him of the availability of an especially good ox cart in Arusha, designed by the Tanzania Agricultural Machinery Technology Unit (TAMTU), and promised he would call the next day to reserve one for him and arrange for its being transported to Mbulu town. Of this man, the DADO said, "He can't even read, but you can see how closely he listens to ideas, and he is very intelligent. I'm glad for him to get ahead. There's a village farm machinery trade show in Arusha coming up in August. He's one of the farmers I might take to it. Other farmers will learn from his example."

There are not many farmers like this man in Dongabesh Division, but it is a good guess that field officers in both the Livestock and Agriculture Departments spend much of their time with the most progressive farmers there, if for no better pedagogical reason than that they are more responsive to new ideas.

Extension Centers. The Livestock Department has eleven extension centers built or under construction in the District. There is one Piggery Unit presently under construction in Dongabesh, and Shs. 49,000/= has been requested for 1977/78 (approved by the Regional Development Committee in March 1977) for the purchase of the pigs, feed, and equipment. This Center will service the whole District. There are Dairy Veterinary Centers in areas suitable for the introduction of improved dairy stock, in the northern half of the District. The centers cost about Shs. 75,000/= and include a three-room office and staff housing, and are located in the Wards of Karatu, Oldeani, and Mbulumbulu in Karatu Division. Another center has been requested for Rhotia for 1977/78, also in Karatu Division, and was approved at the Regional Development Committee level in March 1977. There are Beef Veterinary Centers in the Wards of Dongabesh, Yaida Chini, and two in Maghan, all in Dongabesh Division. The Wards of Daudi (Daudi Division), Murray (Endagikot Division) and Endabesh (Karatu Division) have centers which cater to both beef and dairy cattle. Of these ten Veterinary Centers, only seven are fully constructed and only five are staffed at present; three of these are understaffed. Remarked the DLDO, who was transferred to Mbulu in November 1976,

In the past, there has been a bias towards working on physical structures rather than the developmental sector, you know, training staff, procuring supplies, embarking on tsetse fly eradication programs, upgrading stock, etc. That's why I requested only one new construction project (in Rhotia) this next year.

The four staffed Centers all have laboratory equipment and drugs, and provide advisory services. The Centers in Dongabesh and Endabash Wards are "Bull Centers," where it was expected that herdsmen would bring cows to be mated with up to 40 pedigree bulls. Explaining their use, the DLDO said,

The Barabaig are really a problem. We have four Centers in Dongabesh Division, and the Barabaig there will bring their cattle in for treatment, but they will not destock voluntarily or bring their cows in for mating to the Bull Center. What I hope to do now is offer to trade one of our bulls with herdsmen for heifers in calf. We would keep the heifers and later breed them at the Center. The herdsman would mate their cattle only with the proven bulls they get from us. All they would have to do is agree not to sell their new bulls, dip them each week, and somehow prevent their other bulls from mounting their cattle. Their upgraded stock could be sold after two or three years, and would weigh more than their four or five year old cattle weigh now.

Credit. While the farmers in Daudi, Endagikot and Dongabesh Divisions are largely subsistence farmers and rarely seek or receive credit from any national institution, it was more the provision of credit than any agricultural extension program that provided the impetus for the "agricultural revolution" in Karatu Division. During the 1960's and until the National Milling Corporation (NMC) became the sole buyer of the nation's wheat, the Tanganyika African Farmers' Association (TFA) extended credit to the Division's wheat farmers in the form of seed wheat, diesel and jute bags. Since the TFA was then one of the two authorized buyers of wheat, it was able to collect its loans at the time of the harvest. The TFA has been replaced by NMC, but the role of extending credit has been taken over by Tanzanian Rural Development Bank (TRDB).

In line with Party policy, the TRDB has stopped giving loans to individual farmers since July 1976. Now, the loans are made directly to registered villages, and the loan agreement must be signed by the village chairman, secretary, and a third person from the village. (The village receiving the loan, however, is not required to use the money only on communal projects; it can apportion out the loan to individual farmers.) Loans are also given by the TRDB to district development corporations.

The Arusha Region Branch of the TRDB has a Manager and Assistant Manager who do the feasibility studies for loan applications. These involve on-site visits, examination of village records, a meeting with the village committee, and talks with extension officers, the DADO or DLDO, and the officer in charge of the department of Ujamaa and Cooperatives. The Regional Loans Committee, which meets three to four times a year, can approve loans for up to Shs. 200,000/-. Any larger TRDB loan must be approved at the national level. The TRDB can give loans for farm machinery, maize mills, agricultural inputs (diesel, seed, fertilizer, and insecticides), improved livestock, buses and lorries, and storage facilities.

Over the past six years, loans have been made to the following in Mbulu District:

- Mbulu District Development Corporation: three tractors.
- Upper Kitete Ujamaa Village: tractors, bus, Toyota pick-up, and agricultural inputs.
- North Iraqw Cooperative Union: agricultural inputs; the Union each year would make their own loans to individual farmers from the loan it received from the TRDB.

This year, Shs. 830,500/= in loans have been made to nine Mbulu District villages, most of them in Karatu Division, primarily for diesel and seed wheat. This is roughly the same amount of credit that was extended to Karatu Division last year through the North Iraqw Cooperative Union, while it was still operating. The system of extending loans only to villages is too new for it to be known whether or not individuals' credit needs are going to be met as effectively as in the past.

It was recently noted by President Nyerere that more than 20% of the loans made by TRDB are in arrears nationwide. Repayment has been a problem in Mbulu District. Both the District Development Corporation and Upper Kitete have fallen behind in debt repayment, and the dissolution of all cooperatives in the country last May, between the wheat planting and harvesting seasons, made it difficult to recover much more than half the Shs. 800,000/= loaned to individual farmers by the North Iraqw Cooperative Union.

There are other money-lending institutions. The National Bank of Commerce makes loans to cooperative shops in villages. Tanganyika Farmers' Association still makes some loans to its members. And even the DADO has development funds which he can loan (or grant) for projects.

Finally, another program which extended credit to villages is the National Maize Project, a program initiated in 1975 with the assistance of the World Bank and USAID. Hybrid or composite seed, fertilizer, insecticides, and herbicides were made available to villages in Mbulu District. According to the DADO, almost none of the more than Shs. 400,000/= worth of agricultural inputs was repaid last year. He explained,

The National Maize Project used the wrong approach in trying to get the loans repaid. The Assistant Field Officers were expected to collect the repayments. This responsibility should have been the Ward Secretaries'. Some villages elected new committees between the time they received the loans and when the crop was harvested. These committees were able to plead ignorance of the conditions for the extension of credit and loan repayment. The Ward Secretaries could have handled this problem. Another problem was that the terms of repayment were not revealed to the villages enough ahead of time.

The DDD agreed with part of this analysis, but felt that CCM (in the person of the DDD Secretaries) should not get involved in debt collection any more than should the Assistant Field Officers. He said that the District Management Team has decided that those villages owing money on their National Maize Project loans will be required to repay them this year, and that National Milling Corporation will be asked to be the collection agent.

Distillery Systems. In the area of cash crops, it appears that maize and wheat seed are available, and the pyrethrum nurseries in Kainam and Murray are reportedly capable of meeting the demand for seedlings. The main critical shortage thus far in 1977 has been the shortage of diesel for the tractors plowing and harrowing wheat and maize fields in Karatu Division; in some cases, this shortage was brought on by the delay in obtaining credit, in other cases because fuel was in short supply in the Region, and in some cases where fuel was available, the tankers found it impossible to reach the villages (especially in Mbulumbulu Ward) due to the heavy rains and condition of the roads. There is also a chronic shortage of spare parts for some makes of tractors and combine harvesters. There seems to be no shortage of fertilizer in the District, perhaps only because of low demand.

The livestock program in the District is severely handicapped by the shortage of diesel to run the engines operating on the boreholes which supply water to several of the District's cattle dips. (The water shortage is, in other areas, merely the result of the drought.) Last year, some "low priority" dips operated only four months of the year due to the shortage of Coopertox (Kenya) and Sapatox (USA), two chemicals used in the dips. The Livestock Department is, apparently, the only department that relied heavily upon Kenya for a major portion of its inputs. In addition to Coopertox, the Department received vaccines and drugs, veterinary equipment, feed, mineral additives, sprayer pumps and parts, Rhodes grass seed, and some pedigree cattle from its northern neighbor, all of which are in low supply since the border was closed. Tanzania is producing some of its own vaccines now, but these are not sufficiently tested for international recognition. The expectation is that now such supplies will have to be ordered directly from overseas producers, which increases shipping time and costs.

The most important agricultural processing that goes on in the District is the drying of pyrethrum flowers. At present, the only method used is sun-drying which results in a loss of pyrethrum content in the flower and lower prices to the producer. A proposal for an integrated development project in the pyrethrum-growing areas has been prepared by the District and Region ("Preliminary Report: HAKAMU Project"); included in the report is the proposal that charcoal-fueled, artificial driers be built in each of the three pyrethrum-growing Wards in Endagilo Division.

Marketing System. The marketing system for most food crops is discussed under the heading "The Management of the Economy" (above). It cannot be estimated, for example, what effect doubling the price of maize to Shs. 1/60 a kilo, so that its price would approach that of the free (or "black") market, would have on maize

production. To a large extent, it would depend upon how easy it is for a farmer now to sell maize at double the government-sanctioned price. If the National Milling Corporation were better able to compete with the "black marketeers," however, the government would have much more control of the delivery of maize meal to legitimate urban markets which rely upon maize as a food staple.

Prices for some cash crops have gone down as well as up. The prices paid for pyrethrum were halved several years ago when synthetic insecticides dominated the world market. Now that some of these products have been banned by some countries, pyrethrum is more in demand and the prices paid to farmers now are back at the level they were at several years ago. Pyrethrum farmers are price responsive, production levels having fallen and risen with the fluctuation of the market.

Several products grown in Mbulu District (amongst them, beans, pyrethrum and coffee) have market prices contingent on the quality of the product. The prices paid in Mbulu District are the same as those paid in Arusha, National Milling Corporation paying the transportation charges rather than the farmer.

If wheat production were to decline in Karatu Division this year (despite the highest rainfall in several years), it would be because of (1) the lateness of plowing and planting due to the shortage of diesel and spare parts for tractors, (2) the substitution of maize for wheat in some fields because of lower production costs--and because it is locally used as a food crop, (3) the loss of economies of scale due to the redistribution of land, and (4) crop losses incurred to baboons and other pests because of the distances of the fields from the owners' houses. A decline in production would have nothing to do with the market mechanism or price paid for the crop.

One serious problem in, at least, the southern part of the District is the lack of desired consumer goods available in the event that crop surpluses (of sorghum, for example) could be grown. In Karatu Division, farmers will invest in tractors, dairy cattle, and (increasingly) better housing. In the southern part of the District, tractors and dairy cattle are not suitable, improved housing (other than perhaps a metal roof) holds no interest at present, and the main non-consumable consumer item (other than an ox plow or radio) that would attract new wealth in the area would be more cattle--and of the traditional variety. It is not that consumer prices are out of balance with producer prices. The "problem" is that there is a relative absence of felt needs that could be met with commercial products.

Profitability of Agricultural Activities. In a good year, excellent profits can be made in agriculture in Mbulu District. Maize is a marginal crop in much of the District, due to unreliable rainfall, but in Karatu Division, where the rains are normally good and the soils more fertile, high yields are often attained. Wheat is probably the crop involving the greatest risk because the input costs are highest (a yield of five bags per acre is needed in order to break even), and it is the most dependent upon machines which can break down, lack fuel, or be in high demand in peak seasons. Drought-resistant crops, such as eleusine millet and the

33.

newly-developed variety of sorghum (serena), are profitable each crops in the poorer portions of the district, in that the costs of inputs are extremely low and the yields are high, but these crops are very labor-intensive and are not considered to be food staples. Pyrethrum gives the highest return per area cultivated of any of the District's crops, and its production costs are virtually non-existent; it is such a labor-intensive crop, however, that no family could work more than perhaps three-quarters of an acre, and the areas above 6,000 feet, where it can be grown, are limited. (Figures on the profitability of these crops are presented in Table II.)

TABLE II: PROFITABILITY OF AGRICULTURAL ACTIVITIES

<u>Crop</u>	<u>Production Costs Per Acre</u>	<u>Yields Per Acre</u>	<u>Government Price 1976/77</u>
Maize	Seed, 8 kilos; ox plowing Shs. 50/=; tractor plowing Shs. 90/= and harrow Shs. 45/=.	15-20 bags (90 kilos) not unusual; range from 0-35 bags, depending on year, variety planted.	Shs. 72/= per 90 kilo bag.
Wheat	Seed, 50-100 kilos (depending upon whether sown by machine or by hand); tractor plowing Shs. 90/=; two harrows Shs. 45/= each; combine harvesting at 100 kilo bag per acre; jute bags.	10 bags (100 kilos) not unusual; range 0-16 bags, depending on year.	Shs. 120/= per 100 kilo bag.
Traditional millet and sorghum	Seed, 3 kilos; ox plowing Shs. 50/=.	5-6 bags (100 kilos) not unusual.	Shs. 90/= to Shs. 95/= per 100 kilo bag.
New variety of sorghum ( <u>serena</u> )	Seed, 3 kilos; ox plowing Shs. 50/=.	10-15 bags (100 kilos) with good care; 25-30 bags is considered possible.	Shs. 90/= per 100 kilo bag.
Pyrethrum	Seedlings provided free; hand cultivation.	1000 kilos considered possible with good care.	Shs. 4/= to Shs. 6/50 per kilo, depending upon grade.

OTHER ECONOMIC ACTIVITIES

Alternative economic activities presently engaged in are discussed under the heading "Non-Agricultural Economic Activity" (above). The Area Commissioner and District Development Director (DDD) agreed that most people in Dongabesh Division,

for example, who could earn sizeable incomes by growing sorghum and by selling off excess cattle, do not have that many felt needs that could be satisfied, at present, by the purchasing of manufactured goods. Both felt, however, that convincing the people there (and, really, throughout the District) that they should build improved, permanent housing will be crucial to the development of non-agricultural industries. The Area Commissioner suggested this model:

New housing will spur on several new industries. Areas such as Tlovi and Pasmolela will have to produce more bricks. The area will need more masons and carpenters. We'll need people to make doors and windows. And once people have modern houses, they won't stop there. They'll need beds and tables and chairs. They'll buy curtains and bedding. Pretty soon they'll want bicycles and radios, which they'll buy from our cooperative shops. We hope there are the kinds of things people will be interested in buying. Certainly we don't want them merely to buy more cattle at the local auctions.

Such a model is years away from actualization in most of the District, however. In a village called Wheitscheme, in one of the wealthiest parts of Karatu Division, in the opinion of the Member of the National Assembly (who comes from that area),

There is only one really good, permanent house that has been built since the people moved into villages. People in Wheitscheme would still rather buy tractors, Landrovers, and dairy cattle, things that would help them economically, than bricks or blocks or concrete floors.

If this community of wheat farmers has not spent its considerable money in such a way as to spawn new non-agricultural enterprises in the area, then it is too much to expect a housing (and related-industries) boom in other parts of Mbulu District in the very near future.

#### ECONOMIC SUPPORT INFRASTRUCTURE

All of the Department heads (or "functional managers") were interviewed regarding on-going development projects, projects for which funding had been requested for 1977/78, the capacity of their existing staff and facilities to take on additional projects, and how each would spend a large (but hypothetical) lump sum of money, in an amount well beyond their projected needs for this year.

Physical Infrastructure. Infrastructural needs are great, just in terms of supporting any development activities and project staff. The officers in charge of Agriculture, Natural Resources, Water, and Public Works all reported

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needing an additional seven or ten ton lorry (in some cases as a replacement), especially if new development projects were to be undertaken. Agriculture, Natural Resources, Water, Health, and Livestock all reported needing another Landrover, and the DDD (independently) said that he would like three more Landrovers, posted at headquarters, for any department's use. Fuel allocations for each department are regarded as being very inadequate, and spare parts are in short supply in Mbulu town. The DADO noted that perhaps 30% of a crop grown for export out of the District is lost due to poor storage facilities at the village level during the one to two months time between harvesting and marketing, and said that godowns were needed at the District level for the storage of seed, for example to store the approximately 250 tons of sorghum that is estimated to be the large District Development Corporation farm in Maghan. Clearly, every bit of office space at the headquarter's buildings is filled with staff.

Mbulu town is approximately 150 miles from the Regional Headquarters of Arusha, 50 miles of that on tarmac (Arusha to Makuyuni), 50 miles on a generally good dirt road (Makuyuni to Karatu), and 50 miles of generally terrible dirt road (Karatu and Mbulu town). The ride takes approximately four and one-half hours. The town of Mbulu has a population of approximately 3,000 people. There are about four grocery stores, a market, a petrol station, several bars and restaurants (only two with kerosene refrigerators), a bakery, a religious book store, and one (recommended) guest house. The town is regularly out of petrol and kerosene, it experiences all the food shortages that Arusha experiences (cooking oil, rice, sugar, flour), and does not attempt to stock dairy products from Arusha (butter or milk) as none of the stores have refrigeration. There is no electricity. There is a government hospital with two medical doctors in town, and there is a private Lutheran hospital in Haydom, 60 miles (two and one-half hours) away, which has three doctors and a surgeon and is recognized as being the best in Arusha Region. Small chartered aircraft can land at the airstrip at Lake Manyara Hotel, in the northern part of the District, 75 miles from Mbulu town. There is not enough government housing for the civil servants who would normally receive housing if posted to most other Districts, and there are no plans for the National Housing Corporation to build such housing. Said the DDD,

Even if money were available (from any source) for the construction of additional housing, the length of time required for the project would need to be greatly extended due to the lack of transport, materials, construction people, spare parts, fuel, and the condition of the roads.

Transport System. The roads in Mbulu District are officially assigned to three categories, based upon data from a traffic census and depending upon an area's development potential.

I. Local Main Roads.

MUO-WA-Mbu to Ngorongoro Crater  
 Karatu to Mbulu town  
 Cideani

## II. Regional Roads.

Manyara to Kambi ya Simba  
 Mbulu town to Dongabesh  
 Mbulu town to Nagara

## III. District Roads.

Dongabesh to Maydom  
 Oidcani to Mang'ola  
 Aicho (Daudi) to Mang'ola  
 Mbulu to Kainan/Murray  
 Beshay to Yaida Chini  
 Kambi ya Simba to Rhotia  
 Kambi ya Simba to Upper Kitete via Wheatscheme

The first two categories receive money for maintenance in the Recurrent Budget directly from the central government. Mbulu District's Communication and Works Department (Comworks) received Shs. 90,000/= for Category I roads and Shs. 58,000/= for Category II roads in 1976/77. The Department also received Shs. 282,000/= for its Development Budget in the same year. Category III roads are not supposed to receive any District help, but the District Engineer does occasionally hire casual laborers to work on these roads to supplement self-help labor. "The roads in Mbulumbulu and Rhotia," he said, "are just too important to the development of the District to rely completely on self-help."

Comworks has 39 "skilled casual laborers" on its payroll for road works, plus four with higher job designations. It has two seven-ton lorries, shares a grader with Arumeru and Hanang Districts, and shares other earthmoving equipment with the whole Region. The costs for road work, for 1976/77, are estimated as follows:

### Maintenance.

Grading: Shs. 600/= per mile.  
 Graveling: Shs. 17,000/= per mile.  
 Grading and Graveling: Shs. 20,000/= per mile.  
 Grading, Graveling, and Drainage: Shs. 22,000/= per mile.

### Bridges.

Less than 20 foot long span: Shs. 225/= per foot.  
 More than 20 foot long span: Shs. 300/= per foot.

### Construction of New Road.

Grading, graveling, drainage work, so as to have  
 road of Local Main Road caliber: Shs. 80,000/=

Five District roads were named by the DDD, District Engineer and DADO as being on which they would want to invest Development Budget money in order to bring them up to Local Main Road caliber, in approximately the following rank order:

(1) Mang'ola to Oldesni.

A very poor district road, about 20 miles long, runs from the minor settlement of Cideani, on the slopes of Ngorongoro, to Mang'ola, at the foot of the Yaida escarpment. The area is thought to have the same excellent potential that the Mto-wa-Kbu area has developed below Manyara in the Rift Valley. The Regional Irrigation Unit (Arusha) of the Ministry of Agriculture submitted a report in February 1977 entitled "Mang'ola Flood Control Cum Irrigation and Power Project: Feasibility Report" which estimates that 8,000 acres could be irrigated and 400 kw. of "firm power" could be generated in the area. This road would link Mang'ola to Karatu and Arusha.

(2) Kambi ya Simba to Wheatscheme and Upper Kitete.

This eight mile road runs through some of the most productive wheat land in the District, and is impassable except with four-wheel drive vehicles and tractors during the rainy season (when seed wheat and diesel need to be delivered). The Regional Road from Manyara to Kambi ya Simba (eight miles) is also dangerously eroded in two places as well.

(3) Dongabesh to Haydom.

This road runs 30 miles through an area that has been on famine relief for the past six years, but has good agricultural potential if drought-resistant crops can be introduced. It also would more adequately connect the rest of the District with its best medical facility, the Haydom Lutheran Hospital.

A survey by a Norwegian Engineer, Eduard Igrens, entitled "Preliminary Project Report: Dongabesh-Haydom-Basuto Road" was made in April 1969. His estimate for the somewhat longer road (Basuto is about seven miles from Haydom) was \$72,617. An April 1977 estimate by the District Engineer was for Shs. 3,114,130 for the grading, graveling, and drainage work for a road 37 miles long with 31 culverts, two bridges and one drift.

(4) Mbulu to Murray to Kuta to Kainam to Hareabi to Mbulu.

About 45 miles of District roads in the Mama Isara, pyrethrum-growing area are in very poor repair. The road is open to lorry traffic only about half the year. A paper entitled "Preliminary Report: HAKAMU Project" estimates a cost of Shs. 2,430,000/- (including labor costs) for a road requiring about 16 bridges and about the same number of culverts.

(5) Mang'ola to Aicho (Daudi).

This road, of unknown length, would connect Mang'ola more directly to Mbulu town, once Mang'ola is producing the quantity of fruits and vegetables that is expected.

If funding proposals were not limited to augmenting the Development Budget of the Public Works Department (and, therefore, the District Roads), the Local Main Road from Karatu to Mbulu town (and especially between the Aicho escarpment and Mbulu) is in very bad need of major repairs.

Communication System. In a sense, Mbulu District is two districts, the Divisions of Daudi, Endagikot, and Dongabesh, south of the Aicho escarpment, and Karatu Division in the north (with the exception of Mang'ola Ward in the Yaida Valley, which is almost a third district unto itself). While the southern three Divisions are oriented towards Mbulu town, Karatu Division is oriented towards Arusha. During much of the year, lorry traffic is heavy between Oldeani/Karatu and Arusha, and on any given day, it seems, at least one privately-owned Landrover from Karatu, Rhotia or Mbulumbulu is in Arusha on business. Mbulu town has nothing that can facilitate the growing of wheat (spare parts, seed, credit, diesel, etc.) and few of the consumer goods that are available in Arusha for people who have the money.

There are, of course, connecting links between the northern and southern parts of the District. Two buses a day go from Arusha to Mbulu, and a third bus, owned by a farmer in Mbulumbulu makes the round trip between Rhotia and Mbulu each day as well. Several days a week, government Landrovers go to Karatu Division from Mbulu town, and at least one government vehicle goes to Arusha each week. Either the DDD or the DPLO go to Arusha for official business once a month, as might at least one other functional manager. Some government officer is in telephone contact with Arusha four or five times a week, and the cheaper police message system is also used. No department feels that it has enough money allocated for petrol or for overnight allowance or for telephone bills to maintain the kind of contact with the regional headquarters that is thought necessary.

Mbulu District is isolated, of course, from the political centers of Dar es Salaam and Dodoma as well. No one "passes through" Mbulu town on the way to somewhere else, as is the case with towns on the main roads. Mbulu town receives the national newspapers three or four days after they are published in Dar es Salaam, although most people in the town listen to a radio daily. (The DDD's guess was that one house in ten in the District has a radio, an estimate that would seem to be high.) There is a widespread adult education campaign, and primary school teachers are required to teach adult education classes after school hours as part of their regular teaching schedule. The Institute of Adult Education in Dar es Salaam publishes numerous short textbooks in the areas of

nutrition, animal husbandry, agriculture, and political education (as well as literacy), which are distributed free of charge. Those people living in nucleated villages in the District are relatively easily reached through the political-administrative communication process (discussed under the heading, "Major Political and Social Institutional Changes," above).

Educational/Training Infrastructure. There are numerous educational and training facilities in the District, some of which could possibly be utilized (or possibly be expanded) to support additional development activities. There are four technical schools (shule za ufundi) in the District, located in the villages of Karatu, Wheatscheme, Endagikot, and Dongabesh. All were opened in 1976 (at a cost of Shs. 150,000/= per school) and admit 20 students each year, selected on the basis of aptitude tests. The program is a two year course for Standard VII school leavers, and offers a curriculum of domestic science for female students (cooking, sewing, knitting, and nutrition) and masonry and carpentry for males. No tuition is charged. The next four priority areas for technical schools, said the District Education Officer (DEO), are Maghan, Daudi, Oldeani, and Barodewish, although funding has not been requested for 1977/78.

There are 80 primary schools in Mbulu District, 50 of them having the full complement of Standard I-VII. There are, in addition, two secondary schools offering Form I-IV, a government school in Karatu and a private school in Mbulu. Many of these schools have gardens, and a not inconsiderable portion of the school year is spent in agricultural activities. Starting next year, ten primary schools will be given the responsibility of caring for tree nurseries, and the DEO would like to see some schools owning modern dairy cattle as well. Fifteen of the primary schools' buildings are used for adult education classes after school hours, and these classes are supposed to offer instruction in domestic science, carpentry, masonry, agriculture, and animal husbandry, although their main emphasis is on reading rather than on "practical work."

There are two training programs in the area of health in the District. There is a Maternal Child-care Health (MCH) Training Center, financed by USAID, located on the grounds of the Government Hospital in Mbulu town. The students are trained in nursing and midwifery for a 12 month residential course, and then go to a dispensary for a six month "field study visit". This MCH Training Center services all of Arusha Region, and the trainees return to their home districts for their field study visit and upon completion of the course. Hayden Lutheran Hospital runs a year long course in pre-nursing training for 40 Standard VII school leavers. They have a very high-level success rate in preparing their students for entering formal nursing training at hospitals elsewhere in the country.

Mbulu town is also the location for a World Bank funded Village Management Training Center, which services the "northern zone" of Tanzania, Mara, Arusha, Kilimanjaro, and Tanga Regions. This is a training center set up to train former field staff from two different ministries, the Cooperatives Division and the Community (or Rural) Development Division, with the goal of producing a "new breed" of field worker, someone trained in accounting, product marketing, mobilization, and planning skills. The course has capacity for 50 to 60 people for three courses a year, each lasting roughly three months each.

Power Resources. Neither Mbulu town nor the "minor settlements" of Karatu and Oldani have electricity now, and none are designated for electrification in the next two years. Small diesel engines operate everything from maize mills to water pumping stations to the operation theaters at the three hospitals, and diesel fuels the District's tractors and combine harvesters. Rivers running off the Mbulu plateau in the direction of Babati (the headquarters of Hanang District) and Mang'ola are both judged sufficient for hydroelectric power projects. At present, no industry located in the District requires electric power in sufficient quantities to justify an electrification program for any town on economic grounds rather than as a creature comfort. There is only one windmill in the District, this in Haydon Ward.

Soil and Soil Conservation. The combination of over-grazing, high population densities, and intensive agriculture has led to severe erosion problems in most parts of the District. Many roads in the District are virtually impassable during the rainy season, women have to walk miles for firewood in areas where hillsides are now denuded, and the pulverized wheat fields, during the three months between harvest and first good rains are particularly exposed to wind erosion. In April 1977, Mto-wa-Mbu at the foot of the Manyara escarpment experienced heavy flooding due to the unchecked runoff from Mbulumbulu's wheat lands. Soil erosion, along with the concomitant problems of over-grazing and deforestation, is recognized by the District's leaders as being the most serious problem in the District. There is hardly a Ward in the District that is not in need of a major program in soil conservation.

The President has set a goal of a 10% destocking rate each year for the country. The District Livestock Development Officer (DLDO) for Mbulu figures that the District achieved a destocking level of 6.5% last year, through live-stock sales, deaths, and the slaughtering of cattle for home consumption or festive occasions. Four of the District's nine auction centers were closed four months last year due to hoof and mouth disease, but even if they had been open, the target figure would not have been reached. Some District officials talk about an education program to convince people to destock; more often it is suggested that force will have to be used. There is no range conservation/management program for any part of the District at present.

The DAFO requested Shs. 21,975/= for 1977/78 for soil conservation/land contouring/farm planning projects in all of Dongabesh Division's 24 villages. The District Development Committee approved an allocation of Shs. 175,000/= at its meeting in March 1977, more than eight times the amount requested, so important did the participants regard the project. There is no word as to what amount will actually be allocated by the National Assembly.

The Natural Resources Department is being asked, this year, to close down its nursery in Karatu, one of two in the District. Money was allocated for 200,000 seedlings to be grown at its Mbulu nursery, and ten primary schools through the District will be required to start nurseries of about 40,000 seedlings

each, to be planted later in each school's village. The Natural Resources Officer is skeptical that school children and their teachers will be able to implement such a program.

The goal is for every school with an adequate and permanent water supply to participate, but the job of tending a nursery is very tedious. The seedlings have to be watered twice a day for six to nine months. The schools must have a certain type of forest soil. We'll have to provide them each with polyethylene tubing and fertilizers. And five of my (18) staff in forestry will have to be working closely with these schools. Even when we are using hired labor in our Mbulu nursery, under ideal conditions, our seedlings die sometimes. I can only hope that this program will be successful, but I don't know.

He was also discouraged by the people's attitude towards tree planting in the District.

The people in this District don't like afforestation programs. They know they have to go far for firewood, but they don't care. What is important to them is grazing land for their cattle. They say, "If you plant trees here, where will we graze our cattle?" There are too many cattle in this District. All of our areas planted in seedlings last year were grazed by cattle or burned by people wanting to keep the tick population down. We need some tough by-laws in this District, like they have in other Districts.

The only parts of the District where there are laws preventing grazing is in the Forest Reserves.

SOCIAL SUPPORT INFRASTRUCTURE

Health Care System. There is a nationwide goal of having one dispensary for every 10,000 people. Including seven mission dispensaries and one privately-run dispensary, there are 21 dispensaries in Mbulu District, plus two Rural Health Centers (Songabash and Kudabash), two government hospitals (Oldeani and Mbulu), and one private hospital (Haydom). There being an estimated population of 220,000 living in the District in 1977, the District Medical Officer (DMO) considers this target met. The only development project requested for 1977/78 is money for the construction of staff housing at a dispensary presently under construction at Maskoloda. (The Regional Development Committee allocated Shs. 30,000/= for this project at its March 1977 meeting; the allocation has not been approved at the national level as of yet.) There are other construction or development projects in health, that do need funds in the District, however.

Asked how he would spend a large sum of money allocated above what was requested, the DMO said that more staff housing and substantial improvements to the operating theaters were needed at both Oldeani and Mbulu hospitals, that there is no water storage tank at the Mbulu hospital, and that one of the Health Department's three dispensary roads to be replaced. "But, please, no money for more dispensaries. Many of our staff are just marginally qualified, and our existing dispensaries need upgrading. These are the areas we want to concentrate on." It is believed that funding will be forthcoming from a Nordic project for the physical improvement of some of the existing dispensaries and for new equipment.

The areas in the District that are regarded as healthiest are the high altitude areas of Karatu Division and Kama Isara (Kainam and Murray Wards). The Yala Valley, running the length of the western part of Mbulu District (Ganyoko, Ilang'ola Chini and Yaida Chini) is a malarial area. The DMO named the following as the major health problems in the District: (1) respiratory diseases, (2) tuberculosis, (3) malnutrition, (4) venereal diseases, and (5) dysentery. The respiratory diseases are attributed to the cold weather in Mbulu District (especially May through August) and to the very prevalent use of tobacco. The District has long had a reputation for a high incidence of tuberculosis, blamed on the traditional house type and the fact that the Iraqw board their cattle indoors. The DMO's Annual Report for 1975 noted that tuberculosis would probably begin to subside because the traditional dwellings in which many Iraqw lived were destroyed during Operation Villagization. Also, the clustering of people made it easier to immunize between 4,000 and 4,500 children for DPT, polio, BCG, smallpox and measles with the mobile MCH units. He noted, however, one negative effect of the creation of new villages on people's health.

Probably due to the sudden coming together of large numbers of people this year, we have had a severe outbreak of measles all over the District, which has resulted in a significant number of mortality (cases).

Finally, the DMO's report noted "an influx of cases of marasmus and kwashiorkor (being brought) to the health services of the District."

The Iraqw areas are all viewed as being receptive to medical treatment, and more dispensaries are a frequent <sup>request</sup> from village committees. The Barabaig and Hadza areas of Yaida Chini and Endamaghan were labelled areas of "non-cooperation", and the dispensaries there are poorly attended. Preventive medicine programs of the MCH are less well understood throughout the District. Noted the DMO in his 1975 Annual Report, "Attendance at (these) mobile clinics is far from satisfactory, but shows a gradual trend of increase."

Education Systems. As noted above (under the heading "Educational/ Training Infrastructure"), there are 80 primary schools in Mbulu District, 50 of them with Standards I-VII. Two new schools are being started in 1977/78, beginning with Standard I and II and adding a classroom every year. Fifty-two other classrooms will be built throughout the District in 1977/78, as well as 52 new staff houses. The total number of children in primary school in 1976/77 is 19,748. The District Education Officer (DEO) estimated that 90% of the

Standard I age children will be enrolled in schools in the District by November 1977, the target date for Universal Primary Education. There are also 616 students enrolled in the two secondary schools in the District, about 40% of them females. Only a small percentage of the students in the two secondary schools are from the District, however, as it is national policy to distribute each District's secondary school students throughout the country. A total of 85 students from Mbulu District, almost all of them Iraqw, were selected for Form I in government secondary schools in 1976, 32 who completed Standard VII entered two year programs at Teachers' Training Colleges to become Grade III primary school teachers, and 80 students entered two year programs at the District's four technical schools. Only the Barabaig and Hadza were characterized by the DEO as resisting the sending of their children to school.

The Barabaig will sell cattle in order to buy maize, but not in order to buy school uniforms for their children. And it is almost impossible to get them to contribute money for building classrooms or teachers' houses. The government gave Shs. 260,000/= from a special budget to build a school in Endamaghan for (Hadza) and Barabaig children, but about 90% of the children enrolled now are Iraqw. Things might change, however. Last year, President Nyerere made a special arrangement for eleven Barabaig children to go on to Form I, even though their test results were not all that high.

The DEO feels that the only way that large numbers of Hadza and Barabaig children will get a primary school education in the near future is if the schools in their areas are converted into boarding schools.

Considering all the places open to Mbulu District students for post-primary education, something less than 15% of those 1552 completing Standard VII last year, are in some kind of education or training institution this year. The Ministry of National Education hopes that its primary school curriculum and the emphasis on agriculture in the schools prepare the nation's school leavers to remain in the rural areas as modern farmers. An English verb, which has passed into Swahili shows the attitude that both parents and children have towards ending their education at the Standard VII level. Asked how a child did in the Standard VII exam, much more often than not, the answer is "Amefail." Very often parents will try to arrange for a student to repeat Standard VII through a "special arrangement" with the head teacher, entering the child under a different name. The lot of the Standard VII school leaver is not thought of as being very attractive.

Water Supply System. The emphasis that is placed on water development projects in Mbulu District can be seen in that the Regional Development Committee approved an expenditure of Shs. 1,575,000/= for the Water Department at its March 1977 meeting, more than 50% larger than the allocation for Education, the next largest development budget. While no statistics were available for the condition of water supplies in the District's 86 villages, data was available for 20 of

the villages that have dispensaries: Nine had piped water (which would be a water source for the whole community), seven drew their water from nearby streams, three from a stream farther than three-quarters of a mile away, and one from a nearby shallow well with a pump on it. But even these statistics are deceptive. In March this year, for example, four villages with boreholes and piped water supplies were required to use other sources of water because there was no diesel fuel available to operate their pumps. In December last year, at the end of the dry season, the villages of Wheatscheme and Upper Kiteta in Mbulumbulu Ward had to restrict water for families to about eight gallons a day and cattle were watered only at night, because the water source for their piped gravity-feed system was nearly dry. Even in "nucleated" villages, having a good, permanent, piped water supply, there are often houses as much as a mile from a water tap.

The officer in charge of the Water Department ranked the following areas as needing the most attention: (1) all of Dongabesh Division, (2) Mbulumbulu Ward, (3) Endamaghang village (west of Oldeani), and (4) Endabash Ward. Money was requested this year for two boreholes in Dongabesh Division (at Shs. 150,000/= each), and there are several other boreholes for the Division's 24 villages, but the officer's preference would be that a gravity-feed system be constructed, drawing water from the Yaida and Dongabesh Rivers, which could supply at least 12 of the villages.

This would be much preferable. You'd need about 80 miles of 8" pipe, and the initial outlays would be greater. But a gravity system requires so much less maintenance, and it is nice not to be dependent upon diesel engines.

A Senior Water Technician surveyed the Mbulumbulu situation in February 1977, but has not submitted an estimate yet. The Water Officer gave a rough estimate of Shs. 400,000/= or more for the construction of a new water intake system and water storage facilities. A 1976 survey of Endamaghang village estimated that a gravity feed system could be installed there for Shs. 305,000/=. Endabash has a combination gravity feed system with a pumping station. The high fuel and maintenance costs of the present system could be eliminated, noted the Water Officer, if a gravity feed system could be brought in from neighboring Kansay. "If money were no object, most of the villages in the District could be supplied with a gravity feed system, and then we'd be much better off."

The Water Officer noted one other constraint. He receives neither enough money for recurrent expenditure (diesel, petrol, replacement pipes and fittings, spare parts, nights out allowance) nor does he have enough vehicles (one lorry, one Landrover) to maintain and oversee the water system that already exists in the District, let alone service the new systems which have been funded. His recurrent budget for 1976/77 was Shs. 86,400/= for the rural areas, Shs. 21,600/= for Mbulu town.

Nutrition Services. The main diet throughout the Iraqw portions of the District is a maize meal porridge (ugali) and beans. What little milk there is is reserved for nursing or pregnant women and young children. Chickens are killed only occasionally. Vegetables, such as onions, tomatoes, and a spinach (mchicha) that grows wild, are all seasonal. Because the price for which meat can be sold is lower than what people feel they can receive for their livestock at auctions, meat is much more rarely part of rural people's diet today than it was ten years ago. The only staples bought from stores are sugar, when available, and tea. A relatively wealthy wheat farmer eats much the same diet as someone from the northern divisions, although probably in greater quantities. He might also purchase bottles of milk from neighbors who have dairy cattle or buy tins of powdered milk from the village shop. The only other foodstuff that might deserve the status of "staple" is locally-brewed pombe, lightly referred to as "Iraqw tea."

Community Services Infrastructure. There is a self-help component built into most development requests and projects. The best examples of where this component is taken seriously are in the areas of Education and Health. As noted previously (under the heading, "Political and Administrative Decision-Making Process"), the Ministry of National Education contributes only Shs. 5,000/= towards the cost of a new classroom and Shs. 7,000/= for a teacher's house. The Ministry of Health gives somewhat more for the construction of dispensaries and staff housing. Villages are required to contribute both labor and money for all such construction projects. An admittedly atypical example (but from an area no better off economically than much of the central part of the District) is the village of Maskoloda in Endagikot Division. Last year, it built a kiln with a capacity of 40,000 bricks, largely funded by a government grant of Shs. 50,000/=. This year, it is building three teacher's houses, a classroom, and a dispensary. For next year (1977/78), the Regional Development Committee tentatively allocated Shs. 30,000/- for the construction of two staff houses for the new dispensary. The success that these two government departments have had with self-help demonstrates that there is both the money and labor available for village development projects. (A number of CCM offices, many of them made of locally-burned bricks, are presently under construction in the District as well.) As for projects that have only required the contribution of labor, villagers from Wheatscheme and Upper Kitete in Karatu Division assembled work parties of between 100 and 150 men several days in January, February and March this year to work on the District Road that connects their villages to the main road at Manyara. Tankers were refusing to deliver diesel fuel to the area, a lorry taking wheat to National Milling Corporation had overturned on the road, and the locally-owned bus that normally begins its daily trips to Mbulu from Wheatscheme, was unable to get closer to home than Rhotia.

The Water Department has experienced the most frustration with self-help projects. Digging a pipeline and back filling with hand-made gravel in Haydom took five months, an exercise that the Water Officer estimated would have taken paid laborers two months. He is experiencing the same problem in Maghan, also

in Dongabesh Division. And twice in the month of March this year, he sent a Landrover and two of his skilled staff to Endabash, Karatu Division, for repairs to the Endabash water system, only to find that no one was on hand to help. He blamed the communication breakdown (if that was the problem) on the village chairman and the Ward Secretary, and said that he would like to be able to pay laborers to do such work.

### SOCIO-POLITICAL SYSTEMS

Socio-Political Systems as Relate to Land Use and Water Rights. The only land that can be bought and sold in Mbulu District is in the town of Mbulu, in the "minor settlements" of Karatu and Oldeani, and the so called "alienated estates," for the most part near Karatu and Oldeani. There was a large European community (English, Afrikaner, and German) in this area prior to independence, but many of the estates are now Indian or African owned. All the land in the rest of the District was parcelled out by "land givers" to men who held usufruct rights to the land, meaning that as long as they (or their descendants) worked the land, it was theirs; they could not sell the land, in theory they could not rent the land to someone else, and if the land was not in use, it could be given to someone else. While in Mama Isara, land did get sub-divided to some extent, once the natural boundaries of the area had been reached, throughout the rest of the District, land was so plentiful that it was the pattern for older male children to move on virgin frontier lands, where they were given as much land as they would farm, and leave the youngest brother at home to inherit the father's land. (For further discussion of the traditional Iraqw land use system, see above "Social and Political Influence.")

Since 1974 and 1975, when the Iraqw (and, to a lesser extent, the Barabaig and Hadza) were settled into villages, new patterns have become institutionalized throughout the District. In most of Karatu Division, where the population pressure was great, land holdings were reduced in size to accommodate the beginnings of a generation that had "run out of land," and people today, in most cases, are farming land that they had no rights to four years ago. In many other parts of the District, the communities became "nucleated," but the land holding pattern did not change radically, in that where cash crops were not grown, people rarely farmed more than three acres. In parts of Haydom Ward, Dongabesh Division, most people moved their houses and many of the villages have small clusters of neighborhoods, but the fact that people owned so many cattle made it impossible to concentrate people's homesteads onto contiguous one-acre plots as was done in most of the rest of the District. In Mama Isara, there appears to have been less change in the distribution of families' landholdings, the traditional villages there already having high population densities and the rugged terrain not being very accommodating to the fairly uniform village layout that exists in much of the rest of the District. Whatever the new settlement- and land-use pattern today, the village committee makes the decisions on the allocation of land to new families, who might wish to join the village, or the use of land held in common for communal farming. (See also above, "Major Political and Social Changes.")

The Iraqw seem traditionally to have held rights to water sources in common. The pastoral Barabaig, on the other hand, perhaps because the water table was so much lower in Hangang and northern Singida District, where they are more numerous, had deep wells, lined with logs and chinked with stones, which were owned by clans. In the early 1960's, at least, it was not uncommon for the Community Development Division to provide concrete well rings, the use of a lorry, and other materials to a Barabaig community where there were already four or five clan wells every bit as good as the communal "government well" would be. Presumably, in those Barabaig villages which have been "uncleated," water rights have been changed as well.

It is the jurisdiction of each elected village committee, working in conjunction with the Ward Secretary and Ward-level civil servants, to mobilize local resources (money contributions and labor) for development purposes. This organizational structure is used for mobilizing work on district-level (feeder) roads, for contributing labor and money to building projects, and for collecting money for village cooperative shops or (in a very few cases) buying diesel fuel for putting communal land into production. (See above, under the heading "Community Services Infrastructure" for further discussion.)

Family Production Decision-Making. Typically, Iraqw households consist of a husband, wife, and children, plus semi-transient relatives such as, perhaps, the husband's widowed mother or an unmarried younger brother or two, or an unmarried wife's sister. Rarely does one find a nuclear family with no live-in relatives, although the composition of the household does change. When a family has daughters who are old enough to help the mother with childcare, collecting firewood, or drawing water, there is less need for a wife's sister to move in and help, or a man's mother might go off to visit other sons. In 1967, the Census stated that the average Iraqw household had 5.4 people. It is unclear what the definition of "household" was, but this would be considered a small household, at least in Karatu Division, where relatives regularly live-in, and few people, who have been married more than ten years would have as few as three or four children. In Dongabesh Division, where land is more plentiful and where Christianity is less strong, there is more polygyny, plural wives being able to put that much more land into production. (In Karatu Division, whatever the number of wives a man might have, he can have no more than six acres of land.) Throughout the District, regardless of the composition of the household, the husband has the dominant role in all aspects of production decisions, although hardly a dominant role in the production process.

Patterns of Diffusion. The "progressive farmer strategy" discussed above as an undoubtedly popular model (under the heading "Extension"), definitely has validity in Mbulumbalu Ward of Karatu Division. When discussing the introduction of dairy cattle and the work of the Livestock Development Field Officers in the area where he was raised, the Member of the National Assembly for the

District asked rhetorically, "Who knows more about dairy cattle in Mbulumbulu than Mzee Paulo Manno?" naming a man who has bought four dairy cattle from Iringa. Paulo Manno is a progressive farmer with at least 15 years of experience growing wheat. He also has a tractor and the only maize mill in Wheat-scheme. His popularity can be seen in the fact that he has been chairman of his village for more than ten years. He is also a lay leader in the Kitete Catholic Church. Another very popular and widely respected farmer in the **Wheatscheme area, John Annaay, owns a tractor, a Landrover, a half share in a combine harvester, and three or four dairy cows.** For many years during the 1960's, he was an Agricultural Field Assistant in Mbulumbulu, before retiring to full-time. The farmers in Mbulumbulu talk about wheat and hybrid maize varieties and great deal during the months before planting, and the opinions of the progressive farmers would be listened to before almost anyone else's. But wheat agriculture has a momentum of its own in this area, and the area is not dependent upon a few personalities for development decisions. It is unknown how effective the "progressive farmer strategy" is in other parts of the District-- or whether they play much or any role in the diffusion of ideas.

Patterns of Local Organization. The most important "organization" in the District is the local governance body in each village, the village committee, whose structure, functions, and contributions to the development process have already been discussed (see above, "Political and Administrative Decision-making process" and "Community Services Infrastructure"). Each village committee is, in a sense, the "executive body" of the local CCM membership. Many people belong to three of the party's affiliates, the women's organization (UWT), the youth league (TYL), and the parent-teachers' association (TAPA). UWT and TYL often have communal gardens in the villages. At Maghen in Dongabesh Division, perhaps the best example in the District, UWT has four gardens of hybrid maize, about six acres each, and TYL has one garden of 65 acres. The main function of TAPA seems to be the raising of money through dues collection for the private secondary school in Mbulu.

The Catholic and Lutheran churches are very strong in the District. Karatu Division might be as much as 50% Christian, the vast majority of them Catholics. The missionary groups have long been involved in health and education. The Catholic Missions at Karatu and Mbulumbulu have been especially active in wheat farming, each of them owning a combine and tractors, and both raise chickens. In the past, these two churches have been among the larger renters of land, paying the normal rent in the area of one bag per acre (or sometimes, one bag of every eight bags harvested). The Catholic Church runs one organization which indirectly (but very certainly) contributes to the District's development, the Pioneers, a group of badge-wearing members, men and women, who totally abstain from drinking alcohol, whether locally-brewed or bottled.

Equity. The redistribution of land that accompanied Operation Villagization in Karatu Division provided a partial basis on which farmers' incomes to be equalized in the wheat-growing areas. The means of production were not made communal, however, and there are great differences in the amount of capital available to different farmers; in addition, technical knowledge is spread

unevenly over the population, and (perhaps most of all) there is a tremendous range of personalities, motivation, and entrepreneurial skills. The net result is that there are still extremes of wealth in Karatu Division, let alone between Karatu Division and, say, Daudi Division. What can be said now is that no one is landless in Mbulu District, so that extreme has been eliminated, but wealthy farmers with tractors and combines can still maximize their economic situations--and without being exploitive--while other farmers merely subsist, at best. (See above discussions under the headings, "Major Political and Social Institutional Changes" and "Farming Systems by Ecological Zones.") Thus far, the Tanzanian Government policy vis-a-vis private enterprise in the rural areas has been one of encouraging (and even subsidizing) the agricultural entrepreneurs' competition. The idea is that village people can pool their wealth or apply for credit on a corporate basis and compete successfully against an individually-owned piece of farm machinery or private business. There is absolutely no evidence in Karatu Division's wheat-growing areas to lend credence--or hope--to this model. In the one example which approaches a "laboratory situation," for the comparative study of communal and private cash-crop economies, the farmers at Upper Kitete have repeatedly chosen to place greater emphasis on working on (and increasing) their own land at the expense of the communal sector.<sup>1/</sup> Communal ownership of modern means of production would seem to have a better chance of fairly immediate acceptance in the subsistence agriculture Wards of Daudi and Endagikot where farmers have not been so enmeshed in a cash-crop economy.

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<sup>1/</sup> Upper Kitete has about 4,000 acres of arable land, and is unique in the District in that it is about equally divided into private and communal holdings. However, this year, probably less than 500 of the 2000 communally-owned acres is in communal production. For this and other failures, Upper Kitete is as maligned today in the Region as it once was praised. To assert that "the problem at Upper Kitete is one of poor leadership," which is the easy answer often given, is to ignore the complexities of the situation. The situation is complex because the crop is wheat, virtually all phases of the production process are mechanized (and expensive), and a high-level of managerial competence, ingenuity, and perhaps genius is required to figure out how to employ more than 400 members rather equally in such a highly-mechanized but communal agricultural process; furthermore, large-scale wheat farming is a very technical operation, frequently requiring decisions of an agricultural, mechanical, and economic order that would most certainly overwhelm most university-trained Agricultural Development Officer, let alone the relatively poorly educated farmers who get elected to positions of such responsibility at Kitete.

The other great inequity that exists in the District (and throughout Tanzania) is that which exists between men and women. Despite the fact that rural women do the majority of the productive work, it is their husbands who dominate in family production decision-making and who control the fruits of their wife's labors, the sale of surplus production and the expenditure of the cash returns. (See above, "Family Production Decision-Making.")

As for mechanisms or programs that might be adopted to reduce these disparities, the District Development Director (DDD), District Planning Officer (DPLO), Functional managers, District Development Committee, and Member of the National Assembly have all agreed that the priority areas of development should be the poorer sections of the District, that is, Daudi, Endagikot and Dongabesh Divisions plus Kang'ola Ward of Karatu Division. <sup>2/</sup> They place great faith in the introduction of oilseed crops (groundnuts, castor, sesame, and sunflower seeds) and the newly-developed variety of sorghum (serena), bred especially for drought-stricken areas. Based upon the success of the District Development Corporation farm at Maghan, it would seem that serena, at least, can be a very profitable cash crop. Whether it will be accepted as a food crop remains to be seen. (See above discussion of serena, under the heading "Agricultural Research.") The issue as to whether people in these divisions will be willing to plant serena is probably a moot one, in that recent directives from the Prime Minister's Office have stated that a by-law has been ordered that will require all villages that have received famine relief in the recent past to cultivate serena and other appropriate drought-resistant crops. ("Sokoine Gives Directive on Famine Relief", Sunday News, 15 May 1977.) The question remains as to whether a successful cash crop program in the poorer areas will increase the wealth of individual farmers (differentially) or whether such agricultural programs will be reserved especially for the communal sector is yet to be decided. The approach to ujamaa within the context of villagization has been a "pragmatic one," the emphasis being placed on production rather than ideology thus far.

The problem of reducing inequities between men and women is at least as complex as that of dealing with disparities in income for the District as a whole. At Upper Kitete, which has the largest communal sector of any village in the District, men are automatically members of the "cooperative" and women are permitted to join (although the "jobs for women" are not that plentiful,

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<sup>2/</sup> That the leaders of the District are very torn on this question of priorities can be seen in the "consensus ranking" of priorities in the area of road development and maintenance. (See above, under the heading "Transport System.") Three of the five roads mentioned were ranked because of their opening up areas of agricultural potential. The other two, in Mbulumbulu and Mama Isaka, were deemed high priority because they would facilitate and increase existing wheat and pyrethrum production. Said the Member of the National Assembly, "To some extent, it is a question of potential production versus immediate production. But both kinds of areas need help. When we talk about an 'integrated district development plan' we don't mean merely development projects for Dongabesh Division."

primarily the tending to the village's communally-owned dairy cows and chickens.) The village's net crop proceeds are divided amongst all members according to the number of days worked. A few women, in this way, made more money from the communal sector at Upper Kitete than their husbands. It might be that only in the communal sector of each village's economy (whether on an ujamaa plot or a UFT farm) can women receive equal pay for equal work at this time. This is only a small step in this direction, because the vast majority of all production (whether in cash or food crops) is still grown in the private sector where men control the distribution of income.

#### POLITICAL AND ADMINISTRATIVE SYSTEMS

Data Collection and Analysis. The availability of data in Mbulu District, that might allow for effective planning, implementation, evaluation, and modification of development activities, is, for the most part, very inadequate. The letter sent to the Commissioner of the Census in March 1977, providing information on Divisions, Wards, and villages in the District could account for only about 70% of the District's population, despite the existence of "nucleated villages" and an apparatus (Divisional and Ward Secretaries, Village Chairmen, Cell Leaders and ward-level civil servants) that could almost make the position of census taker redundant. (See APPENDIX A: DISTRICT POPULATION FIGURES BY DIVISION, WARD AND VILLAGE.) The Agricultural Development Office has no figures for agricultural production by Ward or Division, and it took four days of research for an agricultural Field Officer, based at the District Headquarters, to put together very partial District crop production figures by going through nine years of reports. Similarly, it was request for rainfall figures for various stations in the District that prompted another Agricultural Field Officer to collate this information, again a job that took several days. There are no records available on the distribution of famine relief. Only the Livestock Development Department, Health Department, and the Education Department seemed to have the basic statistics, necessary for their work, at hand.

Planning and Implementation Capacity. The planning structure (if not the "Process") has been fully discussed, including the financial constraints; if there is any attempt to submit an integrated project proposal, by the time that the bodies at the Regional level, the Prime Minister's Office, the Ministry of Planning and Finance, and the National Assembly delete certain projects or reduce allocations for others, what "plans" come back to the District are pretty much aimed at sectoral development. (See above, "Political and Administrative Decision-Making Process.") Then, in the absence of a funded integrated plan, the question of whether or not there is coordination amongst departments in the implementation phase is a mute one. Another constraint, related to the financial constraint, is the fact that many of the functional managers lack sufficient transport to implement their projects, either because of the lack of spare parts, the general deterioration of the vehicles, or the lack of petrol. Some of the problem, however, is organizational. There are tremendous demands upon the time and energies of the District Development Director (DDD) and the District Planning Officer (DPLO), who not only coordinate the planning process, but also monitor the expenditures as well. The paperwork demands are very high, to the extent that planning and implementing come close to being mere paper processes.

Financial Management. Mbulu District has had more than four million shillings to spend in 1976/77, more than three million shillings in development projects. In the opinion of the DDD, the accounting staff working under him has been adequate, and is competent enough to manage considerably more resources.

Relationship Between Administrative and Political Structure. Tanzania is an intensely political nation. When asked what one single lesson the District has learned about development projects at the village level in recent years, the District Development Director (DDD) replied almost immediately, "The people in the villages know what they need and know what they can do." While this is an overstatement of the level of political consciousness that exists in the District, the reply was indicative of the primacy of politics in the thinking of the District's senior civil servant.

The relationship is very close between the political structure and the local administration. The DDD is the senior administrator and the head of the civil service in the District. He is responsible, however, to the Area Commissioner, a political appointment. The Area Commissioner is, in turn, the District Secretary of CCM, the political party, and (ostensively) works under the direction of the popularly elected District Chairman of CCM. These two political leaders are the senior party spokesmen in the District, and it is the task of the civil service to implement the national guidelines articulated by the political party. (For further discussion of the role of the District political structure in the planning process, see "Political and Administrative Decision-Making Process".)

#### THE SOCIAL-PSYCHOLOGICAL SETTING FOR EXPATRIATE TECHNICIANS

Mbulu town's isolation and general lack of amenities has been discussed. (See above, "Physical Infrastructure.") The physical setting can be regarded as being beautiful to any expatriate family that did not come to Tanzania with the hope or expectation of living in a city like Dar es Salaam or Arusha, and, to an extent, what physical amenities are deemed necessary can be imported. The social and psychological milieu into which expatriate personnel are received cannot be so easily adjusted. Part of that milieu is the host community's horizon of experience vis-a-vis foreign aid programs and technicians and the level of expectation district officials might hold.

The Area Commissioner for Mbulu District is very articulate, and was very outspoken on the prospect of USAID working in the District. He articulates an aspect of the reality and the setting in which Americans will most likely be working.

This District has large areas where clearly we are going to need far more money for development purposes than this country can afford, and we probably are going to need some outside technical assistance as well. We have Tanzanians who could do the work that American technicians can do. Some have even gone to the same universities these Americans go to, and many even received higher marks in their examinations. But Americans are going to want their own people in these jobs. I can understand that. I just hope that we receive the right kind of "experts." We want people

who know that they are not experts the day they arrive in Mbulu District and who realize that we have a lot of knowledge about development problems here that they need to understand.

It might be too much to expect that a capitalist country would send us socialist technicians, but at least people could be selected who are sympathetic to what we are trying to do in this country and feel a commitment to working with us on our problems. We know that we have to increase agricultural production in this District, and we know we have the means to do it. We don't want to have American technicians working in the District who are going to be upset if we tell villagers that they are going to have to grow a certain amount of drought-resistant crops. We don't want Americans who think that their ways of doing things are the only way to do them. We aren't interested in developing in the ways that you have developed.

We want these experts to live in the District--not to commute here in their Jeeps a few days each month from Arusha. We don't expect them to be extension officers or to work all the time in the villages, but they should work with our District staff in their offices. They should not be part of some autonomous program, a state within a state. They can be advisors, but not our bosses. We can learn from them, but they have to be in a position to learn from us--and they can't do either by sitting in Arusha.

We can't expect them to come to Mbulu town and live just as we do. They can live in better houses. They can have their freezers and refrigerators. I know that they'll make many times the salary I do. I don't care. What would be wrong is for Tanzanians to want to live as Americans do.

This town does not have a cinema or nice restaurants or other things that Americans expect. But it does have intelligent people, people who have studied at the university, for example, even some who have travelled outside this country. These are people they can talk to, even before they learn Swahili. They should want to live with us, argue with us, drink in our bars, enjoy our company.

All we ask is that when an American-funded project is over that more is left behind than some broken down Jeeps that we have to repair by buying spare parts from the United States. We want some projects, some real development. We don't want some American technicians to come out and build a cattle track, something that two cows can't pass on let alone two of your Jeeps. And we want projects that really help our people, not just their cows.

This researcher was once told by a recently-arrived technician on the USAID-funded Masai Livestock and Range Management Project, that when he hired for the position he was told, "Expect a lot of yourself, not too much of Africa, and you'll do just fine." This Area Commissioner, who was Area Commissioner of one of the Masai Districts before coming to Mbulu, holds an almost diametrically-opposed view of the donor-recipient relationship.

APPENDIX A: DISTRICT POPULATION FIGURES BY DIVISION, WARD, AND VILLAGE

<u>Division</u>	<u>Ward</u>	<u>Households</u>	<u>Villages and Population</u>		
KARATU	Mbulumbulu	1,240	Wheatscheme (Slahamo)	3,166	
			Kambi ya Simba	1,670	
			Upper Kitete	2,543	
				Ward Total	<u>7,379</u>
	Rhotia	1,607	Kilimamaja	2,765	
			Kainam-Rhotia	1,611	
			Rhotia	3,816	
			Kilimatamba	1,865	
			Chemchem	1,306	
			Ward Total	<u>11,363</u>	
	Oldeani	2,091	Changarawe	1,073	
			Oldeani Town	2,550	
			Mang'ola Juu	1,565	
			Giyetigh	1,609	
			Makhoromba	934	
			Endashangwet	863	
			Ward Total	<u>8,594</u>	
	Mang'ola	1,567	Jobaj	1,228	
			Mang'ola Barazani	1,229	
Endamaghang			896		
Dumbechan			886		
Malekchand			1,602		
Chemchem			822		
		Ward Total	<u>6,663</u>		
Endabash	2,355	Getamok	1,918		
		Endallah	1,409		
		Endamarariek	1,609		
		Basodewish	1,739		
		Endabash	2,625		
		Caru	1,248		
		Ward Total	<u>10,548</u>		
Karatu	2,718	Gongali	1,728		
		Qurus	1,580		
		Ayalabe	7,113		
		Giyekurum Lambo	3,271		
		Bashay-Karatu	2,483		
		Giyekurum-Arusha	3,308		
Households Total	<u>11,578</u>	Ward Total	<u>19,483</u>		

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<u>Division</u>	<u>Ward</u>	<u>Households</u>	<u>Villages and Population</u>	
ENDAGJKOT	Murray	1,218	Murray	2,378
			Hayloto	1,834
			Kwermusl	2,472
			Kuta	<u>1,578</u>
			Ward Total	8,262
	Kainan	889	Nahasey	2,741
			Kainan	<u>2,558</u>
		Ward Total	5,299	
	Sanu	1,414	Issale	1,722
			Khadey	1,663
			Ayamaami	1,973
			Silalode	<u>1,431</u>
			Ward Total	6,789
	Tlawi	795	Maskaloda (Masqaroda)	2,137
			Tlawi	2,255
Harbaghet			<u>715</u>	
	Ward Total	5,107		
	Mbulu Town	<u>459</u>	Ward Total	2,295
	Households Total	<u>4,775</u>	Division Total	27,752
DAUDI	Daudi	1,077	Moringa	1,250
			Masieda	1,108
			Gwandumehhi	1,546
			Aicho	547
			Gidamba	<u>436</u>
		Ward Total	4,887	
	Kansay	1,390	Kansay	4,347
			Laja	1,842
			Eadon Yawesk	2,084
			Buger	<u>2,424</u>
		Ward Total	10,697	
	Bargish	1,470	Maama	520
			Gunyoda	722
			Antisi	688
			Bargish	<u>580</u>
Ward Total			2,510	

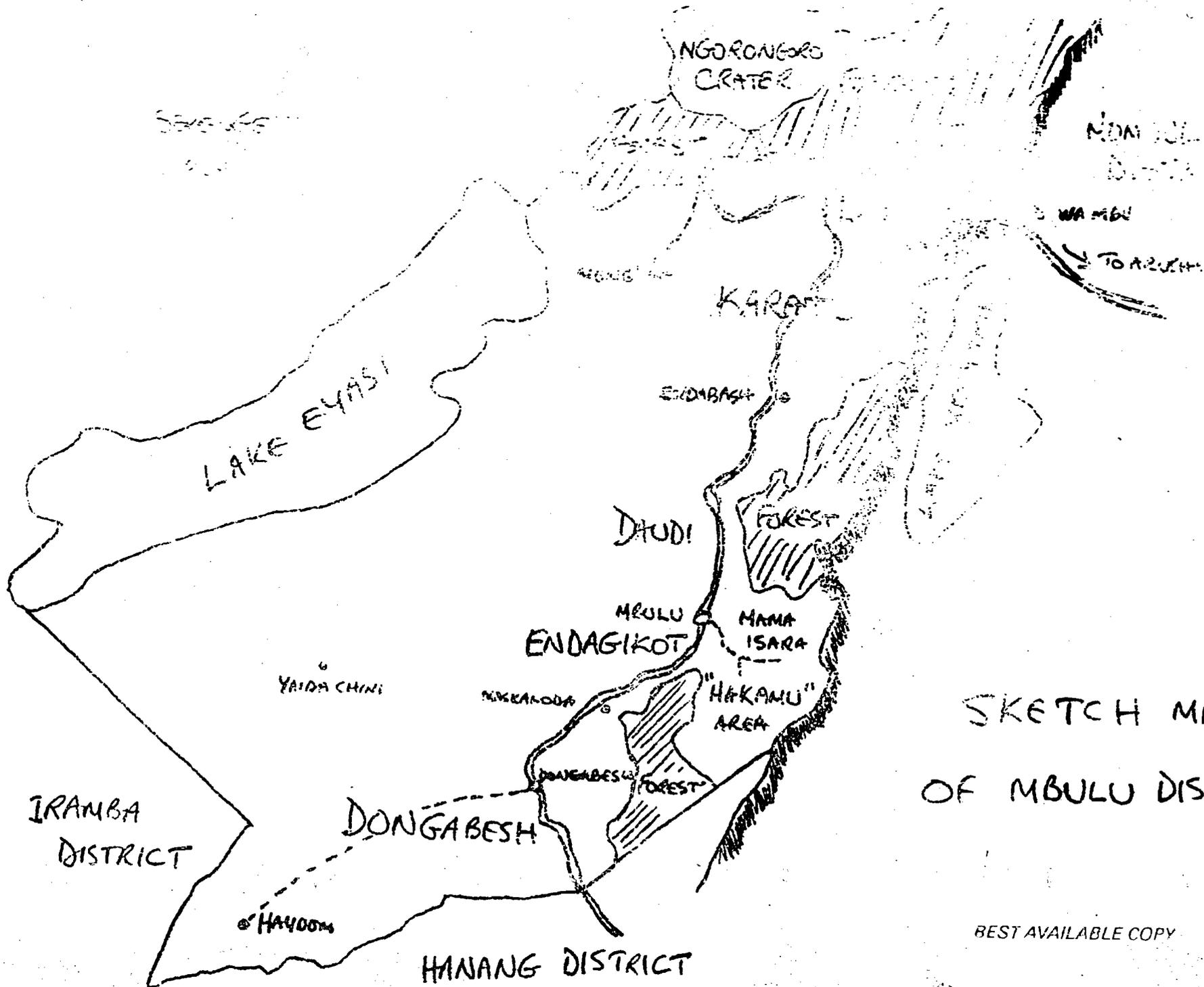
<u>Division</u>	<u>Ward</u>	<u>Households</u>	<u>Villages and Population</u>	
DAUDI (cont'd)	Gehandu	1,387	Gwangw (Tango)	2,478
			Titiwi	2,910
			Tsaawa	723
			Ward Total	6,111
	Hareabi	277	Ward Total	1,586
	Households Total	5,601	Division Total	25,791
DONGABESH	Dongabesh	2,086	Dongabesh	1,762
			Diyomat	2,437
			Qaloda	1,185
			Gidihim	1,400
			Ng'orat	745
			Endmasak	1,933
			Ward Total	9,462
	Yaida Chini	1,083	Yaida Chini	915
			Dirim	1,000
			Diyomat/Muslur	650
			Harshe	1,774
			Ward Total	4,339
	Tumati	1,353	Tumati	2,642
			Arri	2,329
			Mangisa	1,208
			Endoji	1,343
			Ward Total	7,522
	Maghang	1,795	Maghang	2,183
			Labay	2,274
			Endanachan	1,469
			Maretadu Chini	1,997
			Endamilay	1,408
			Ward Total	9,331
	Haydon	1,216	Haydon	2,297
			Haydarer	717
			Getanyamba	1,807
			Endahaghadat	1,263
			Mawedani	1,431
			Ward Total	7,515
	Households Total	7,433	Division Total	38,169
	District Households Total	29,387	District Total	155,742

Source for the above information: Letter Ref. No. P.2/2 V/850 dated 12 March 1977, to Kamukama wa Takwira, P.O. Box 796, Dar es Salaam, from Mkurugenzi wa Maendeleo wa Wilaya, Mbulu, Re: Matayarisho ya Sensa ya Watu 1978.

NB: The District Total of 155,742 is far short of the estimated 1977 population of 220,000, provided by the District Planning Officer, a figure that was thought to be conservative. Based upon the 1967 Census, it is estimated that there were 151,893 living in what is now Mbulu District. The data provided in the above-mentioned letter to the Commissioner of the Census leaves at least 65,000 people unaccounted for.

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SKETCH MAP  
OF MBULU DISTRICT

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## TABLE OF CONTENTS

	<u>Page No.</u>
Introduction	1
MACRO-LEVEL CONSIDERATIONS AND OVERVIEW	
Government Development Philosophy and Priorities	3
The Management of the Economy	6
Political and Administrative Decision-Making Process	7
DEVELOPMENT HISTORY OF PROJECT AREA	
Agricultural Production Trends	9
Non-Agricultural Economic Activity	11
Social and Political Influence	12
Major Political and Social Institutional Changes	16
Past Development Efforts	17
Lessons Learned from Past Development Efforts	19
PROJECT AREA ENVIRONMENT	
Ecological Factors	20
Demographic Factors	21
FARMING PATTERNS	
Farming Systems by Ecological Zones	22
Differences in Technology	25
AGRICULTURAL SUPPORT SYSTEM	
Agricultural Research	27
Extension	29
Extension Centers	31
Credit	32
Delivery Systems	34
Marketing System	34
Profitability of Agricultural Activities	35
OTHER ECONOMIC ACTIVITIES	36
ECONOMIC SUPPORT INFRASTRUCTURE	37
Physical Infrastructure	37
Transport System	38
Communication System	41
Education/Training Infrastructure	42
Power Resources	43
Soil and Soil Conservation	43

TABLE OF CONTENTS

	<u>Page No.</u>
<b>SOCIAL SUPPORT INFRASTRUCTURE</b>	
Health Care System	44
Education Systems	45
Water Supply System	46
Nutrition Services	48
Community Services Infrastructure	48
<b>SOCIO-POLITICAL SYSTEMS</b>	
Socio-Political Systems as Related to Land Use & Water Rights	49
Family Production Decision-Making	50
Patterns of Diffusion	50
Patterns of Local Organization	51
Equity	51
<b>POLITICAL AND ADMINISTRATIVE SYSTEMS</b>	
Data Collection and Analysis	54
Planning and Implementation Capacity	54
Financial Management	55
Relationship Between Administrative and Political Structure	55
<b>THE SOCIAL-PSYCHOLOGICAL SETTING FOR EXPATRIATE TECHNICIANS</b>	55
<b>APPENDIX A: DISTRICT POPULATION FIGURES BY DIVISION, WARD &amp; VILLAGE</b>	57

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