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ARUSHA REGION

41888

INTEGRATED DEVELOPMENT PLAN

SUMMARY REPORT

Prepared By
THE REGIONAL DEVELOPMENT DIRECTORATE
ARUSHA REGION
With The Assistance Of
THE ARUSHA PLANNING AND VILLAGE DEVELOPMENT PROJECT

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18th December, 1982

During the four year period beginning in July 1979 Arusha Region has been assisted by the USAID-sponsored Arusha Planning and Village Development Project in the implementation of a large number of village development activities and in the preparation of the Region's Integrated Development Plan. It is a great pleasure to me that this Plan has now been completed and that I am able to write this short forward.

The Arusha Region Integrated Development Plan includes a comprehensive description of the current status of development in the Region, an analysis of constraints to future development, and the strategies and priorities that the Region has adopted for guiding its future development. It also includes a review of projects in the Region's Five Year Development Plan as well as priority projects for long term investments.

The preparation of the Plan has involved many meetings at the Regional, District and village level, and the goals, strategies, objectives and priority projects included in the Plan fully represent the decisions of the officials involved in those meetings. I am confident that the Plan will provide a very useful frame of reference for guiding the economic and social development of Arusha Region over both the medium-term five year period and the next 20 years. The total size of the identified projects and programmes is well beyond the normal scope of the financial resources of the Regional budget. Therefore, one function of this document is also to present the necessary facts and justification for attracting assistance from potential sources outside of the Region to carry out priority projects which address the specified development objectives of the Region. The Plan is by no means exhaustive, and there is room for interested organizations to explore other potential investments. Our Plan is therefore a base for future comprehensive planning.

I would like to take this opportunity to congratulate the Regional Planning Office staff and the team from Development Alternatives, Inc., which undertook the implementation of the Arusha Planning and Village Development Project, for their hard work and many accomplishments and to thank all those Regional Government, Ministry, Parastatal, and Party officials who, in one way or another, gave them the necessary assistance and cooperation.



J. A. Mhaviile

REGIONAL COMMISSIONER
ARUSHA

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SUMMARY

Arusha Region is endowed with rich natural resources. Almost 95 percent of its population is dependent on its land and water for survival and improved quality of life. At the outset of its planning and development effort, Arusha Region defined five main development goals:

- Village self-reliance;
- Improved equity;
- Economic growth;
- Regional integration; and
- Protection of natural resources.

The region -- through the Arusha Planning and Village Development Project, financed by the Government of Tanzania and the United States Agency for International Development -- undertook an extensive planning effort. It complemented this effort with the testing and implementation of development activities, primarily in the three agricultural districts of Arumeru, Hanang, and Mbulu. Based on these efforts, Arusha Region identified a set of policy strategies to guide its development:

- Strategy One: Integrated development activities that emphasize village-level land use planning and reduce population growth rates;
- Strategy Two: Highest priority given to directly productive activities;
- Strategy Three: More efficient use of existing manpower, equipment, materials, and finances in support of regional development activities; and
- Strategy Four: New efforts to obtain additional resources for development.

These strategies were incorporated into the region's medium-term (five year) plan. For the long-term plan (20 years), the region identified eight long-term investment objectives, highlighting the medium- and long-term projects that required external funding. These objectives and estimated funding requirements in millions of Tanzanian shillings (Tsh) are as follows:

- Objective One

Increase food crop supplies to feed adequately the growing population of Arusha Region and to continue to provide a surplus for national consumption in a self-sustaining way.

Medium-Term Plan

79.5

Long-Term Plan

559.0

- Objective Two

Develop the livestock industry for local and national consumption and for export.

Medium-Term Plan

52.5

Long-Term Plan

425.0

- Objective Three

Generate revenue, including foreign exchange, and employment through export crops, tourism, and industries that add value to the region's natural resources.

Medium-Term Plan

20.6

Long-Term Plan

3,160.0

- Objective Four

Develop and maintain a communications network that contributes to economic development.

Medium-Term Plan

44.8

Long-Term Plan

394.4

- Objective Five

Establish and maintain water supply systems to promote productivity and quality of life in rural villages.

Medium-Term Plan

36.0

Long-Term Plan

360.0

- Objective Six

Increase the availability of energy supplies through the development of forestry, hydroelectric, and other resources.

<u>Medium-Term Plan</u>	<u>Long-Term Plan</u>
16.0	367.0

- Objective Seven

Develop the capabilities of district councils and villages to make investments that improve self-reliance and the quality of life in villages.

<u>Medium-Term Plan</u>	<u>Long-Term Plan</u>
35.4	352.0

- Objective Eight

Improve and protect the environment of the region for accomplishing the above objectives through the conservation and better use of its natural resources and the slowing of its population growth rates.

<u>Medium-Term Plan</u>	<u>Long-Term Plan</u>
137.5	38.0

TOTALS:	<u>Medium-Term Plan</u>	<u>Long-Term Plan</u>
	422.3	5,655.4

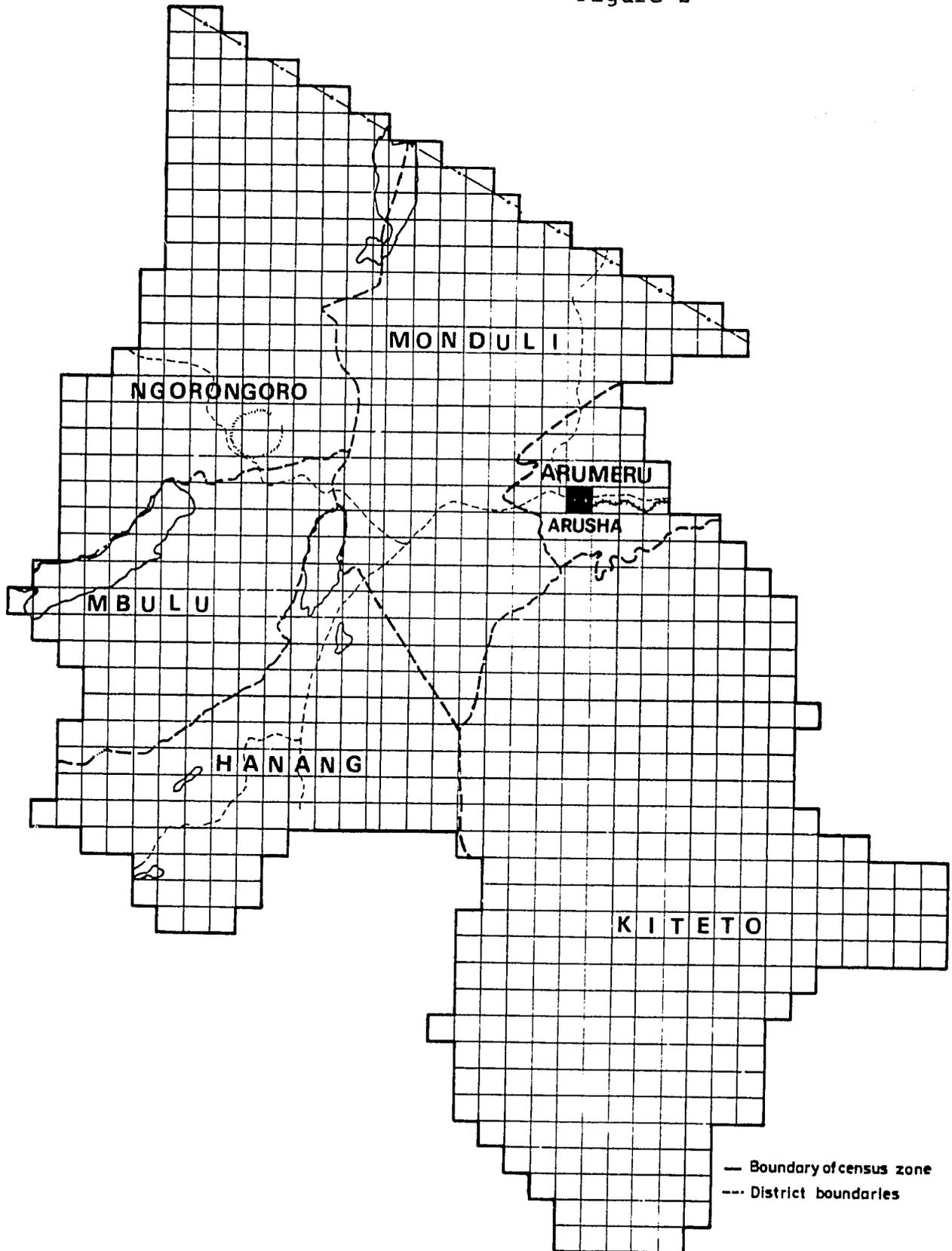
The projects included for external funding consist of 422.3 million Tsh for medium-term projects (which lay the groundwork for long-term development) and 5,655.4 million Tsh for long-term projects. These represent major investments that will help the region realize its development goals.

ARUSHA PLANNING AND VILLAGE DEVELOPMENT PROJECT

Livestock, Wildlife and Land Use Survey, February 1980

ARUSHA REGION AND DISTRICTS

Figure 2



CHAPTER ONE

INTRODUCTION

Arusha Region is located just south of the equator, near Mt. Kilimanjaro, in north-central Tanzania. The region covers 82,428.5 sq km and has a population of more than 1 million people, almost 95 percent of whom are dependent on the region's natural resources for their livelihood. The region is endowed with natural beauty; diverse topography; varied climate and vegetation; and potential to develop its agriculture, livestock, and natural resources.

The Arusha Declaration, a national policy of agrarian-based socialism as a model for development, was proclaimed in the region. The policy's principal goal is to improve the quality of life in rural villages. To attain this goal, the government has devolved responsibility for development decision making to lower administrative levels, increasing local government responsiveness to the particular needs of rural villages. In support of this devolution of authority, the government has initiated Regional Integrated Development Programs (RIDEPs), funded by external donors, to improve the efficacy of planning and development activities.

In July 1979, the Arusha Planning and Village Development Project (APVDP) was initiated to:

- Help the region prepare its long-term development plan; and
- Test and carry out development activities in the directly productive sectors of agriculture, livestock, natural resources, and rural industries and in the supporting economic infrastructure through improved rural water supply and road systems.

The planning exercise provided a framework for the region's development decision making, and the implementation of development activities added realism to the region's planning and helped provide the knowledge for future project development. APVDP was a four-year, \$21 million effort (\$14.5 million from donors and \$6.5 million from the government); it was sponsored by the Government of Tanzania (GOT) and by the United States Agency for International Development (AID). Primary implementation responsibility for the project was contracted to Development Alternatives, Inc. (DAI), a U.S.-based rural development research and consulting firm.

The four main objectives of APVDP were as follows:

- Strengthen the planning, implementation, and evaluation capabilities at the regional, district, and village levels;
- Improve agricultural production (crops, livestock, and natural resources);
- Identify and promote other economic activities (primarily rural industries); and
- Improve the social and economic infrastructure directly related to productive activities (primarily water and roads systems).

Under the objective of strengthening planning capabilities, a major activity has been the preparation of the region's Integrated Development Plan. This has involved a number of technical seminars on planning as well as a large number of District and Regional Planning Committee and Development Committee meetings. APVDP has also assisted the planning office with the preparation of 45 feasibility studies for priority projects. A Resource Center, with more than 1,000 planning documents, was established in the Regional Planning Office. Training activities have included a graduate training program in regional planning at Cornell University, attended by five regional officials, as well as

numerous regional and district-level technical seminars and in-country study tours. At the village level, APVDP carried out intensive planning activities in 18 wards and 94 villages through approximately 380 village meetings and seminars. APVDP also provided vehicles and logistical support to the region and the three project districts of Arumeru, Hanang, and Mbulu.

In the directly productive sectors, APVDP has helped prepare sector background papers and analyses, supported a wide range of training activities, and implemented 81 village and district development projects. The 28 projects in agriculture have included an agricultural extension program, small-scale irrigation projects, grain storage facilities, and testing of new crops and improved farming methods. In natural resources, 28 projects have been undertaken with a major emphasis on soil conservation, development of forest tree nurseries, and tree planting. The 25 projects in livestock have included a livestock extension program, a major initiative in establishing village-level grass seed production plots, and improvements to the existing livestock services.

In identifying and promoting other economic activities, APVDP has emphasized the promotion of small industries. The 28 projects have included an agricultural implements manufacturing facility in Arusha town; three district-level ox-cart manufacturing facilities; and village-level small industries including brick and tile manufacture, grain milling machines, and oil seed presses.

In improving the economic infrastructure, the project has emphasized the rehabilitation of 276 miles of priority district roads and the provision of low-cost water systems to 40 villages, including the establishment of a shallow wells survey and construction unit within the Regional Water Development Department. In addition, over 140 village water technicians have been trained in repairing gravity water systems and have been provided a village tool box.

The experiences gained from testing and carrying out these development activities under APVDP have been analyzed and incorporated in the planning for future activities discussed in the Arusha Region Integrated Development Plan.

This Summary Report discusses the findings of the five volumes that makes up the Arusha Region Integrated Development Plan and the 350 supporting documents prepared under the project. The five volumes are:

- Volume One: ARUSHA REGION TODAY: 1981, which focuses on the current development status, trends, and constraints in the region;
- Volume Two: ARUSHA REGION: DEVELOPMENT STRATEGIES AND PRIORITIES FOR THE NEXT 20 YEARS, which presents the region's main policy decisions to guide development to the year 2000;
- Volume Three: ARUSHA REGION: MEDIUM-TERM PLAN 1981/82-1985/86, which outlines the projects for government and donor funding under the region's five year plan, including a detailed proposal for the follow-on project to APVDP;
- Volume Four: ARUSHA REGION: MAJOR AREAS FOR LONG-TERM INVESTMENTS, which presents the long-term investment goals for the region, critical medium-term projects that require external funding, long-term project proposals and the ideas to be developed; and
- Volume Five: INFORMATION STRATEGY AND DOCUMENTATION, which includes an analysis of the information strategy for development decision making in the region and an annotated bibliography of the regional planning documents prepared by APVDP.

CHAPTER TWO
SUMMARY STATISTICAL PROFILE
ARUSHA REGION

<u>Location</u>	North-central Tanzania, bordered by Kenya on the northeast, and Tanzanian regions of Kilimanjaro, Tanga, Dodoma, Shinyanga, and Mara.
<u>Size:</u>	82,428.5 sq km.
<u>Climate:</u>	Mild, average temperature 22° C. Variation in rainfall between the mountains and the lowlands, ranging from 500 to 1,000 mm a year.
<u>Natural Resources:</u>	<p>National forest -- 2,345.0 sq km (3 percent of the total land area).</p> <p>National Parks and Ngorongoro Conservation Area -- 8,809.0 sq km (10.7 percent of total land area). Wildlife population -- 2 million.</p> <p>Lakes and dams -- 3,571.0 sq km (4 percent of total land area).</p> <p>Cultivable land -- 8,506 sq km (10.3 percent of total land area).</p> <p>Grazing land (including Ngorongoro Conservation Area) -- 66,559 sq km (80.7 percent of total land area).</p>
<u>Population:</u>	1981 -- 1,035,761 (1978 -- 928,478) -- 92 percent located in rural areas, annual growth rate 3.8 percent; thus, the population in all districts will double by the year 2000.
<u>Administrative Structure:</u>	A regional government overseeing 1 town council, 6 districts, 26 divisions, 128 wards, and 463 villages.

Physical

Infrastructure: Airports -- one international, numerous small airstrips.

Roads -- 4,562 km of which 243 km are tarmac, 1,539 km murram/gravel, and 2,780 km earth.

Water systems -- almost 48 percent of the population is provided with safe water.

Dams -- 12.

Hotels -- 21 tourist hotels and 114 guest houses.

Health facilities -- 9 hospitals, 10 health centers, 122 dispensaries, and 60 village health posts.

Schools -- 2,474 primary classrooms, 10 secondary schools, 15 technical schools, and 2 colleges.

Businesses -- 190 village shops, 85 cooperative shops, 26 corporations, 161 grinding mills, 254 bars, 199 stores, 14 hardware stores, and 8 pharmacies.

Principal Economic Activities

Agriculture: Produces about 40 percent of the gross regional product. In 1979-1980, 579,000 tons of agricultural commodities were produced, earning about 650 million Tsh.

(in tons)

● Main food crops:	Maize	324,250
	Mixed Beans	50,315
	Millet	8,810
● Main cash crop:	Coffee	17,956
	Wheat	95,014
	Seed beans	27,770
	Sorghum	45,639

Livestock: Produces about 40 percent of the gross regional product.

Wildlife and Tourism: Produces about 5 percent of the gross regional product.

**Employment
Structure:**

95 percent of the people are agriculturists/pastoralists; 1.3 percent (12,174 posts), civil servants. The remainder are employed by parastatals or private enterprises, or are self-employed.

**Quality of life
Indicators:**

Health -- life expectancy 51 years.

Infant mortality rate -- 130 deaths per 1,000 births.

Percentage of school-age children enrolled in primary school -- 91 percent.

Economic -- per capita income, 2,432 Tsh (1980, based on National Economic Survey); 1,650 Tsh (1980, based on estimated gross regional product).

Food production in kilocalories per capita per day -- 3.818.

CHAPTER THREE
REGIONAL DEVELOPMENT GOALS

Early in its planning and development process, Arusha Region defined the following five goals to guide and evaluate its development efforts. These goals have been incorporated in its development decision making:

- Increase village self-reliance, measured by an expansion of the capabilities of villages to solve their own problems;
- Improve equity, measured by poorer areas obtaining development benefits in a self-sustaining manner;
- Promote economic growth, measured by increases in gross regional product and in generation of foreign exchange earnings;
- Improve regional integration, measured by stronger linkages -- commercial, institutional, and cultural -- within the region and with national and international sources of capital and markets; and
- Protect natural resources, measured by the development of sustainable production systems.

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CHAPTER FOUR THE PLANNING PROCESS

4.1 REGIONAL PLANNING STRATEGY

At the output of its planning process, Arusha Region drew from the lessons of other regions in Tanzania. A comparative analysis of RIDEPs was done, and study tours to other regions were taken. These exercises led to three conclusions concerning the planning process:

- The planning process should be evolutionary. Rather than designing a lengthy blueprint for development, regional planning should be done step by step, drawing on lessons from project development and implementation and on problem-focused research and testing;
- The planning process should be based on a realistic assessment of the availability of future resources and better use of existing resources; and
- Responsibility for decision making in the planning process should rest with regional and district governments and party officials, with external assistance (DAI) fully integrated into the planning structure and process.

4.2 REGIONAL PLANNING APPROACH

Having determined its five development goals, Arusha Region embarked on a planning process, combining data collection and analysis with testing of development activities funded primarily through APVDP. The region decided to focus on the definition of agroecological zones, refined into planning units, taking into account economic, social, and administrative factors. (See Figure 3.) The main steps in the data collection and analysis process were:

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ARUSHA REGION LAND PLANNING UNITS (PROPOSED)

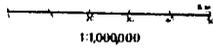
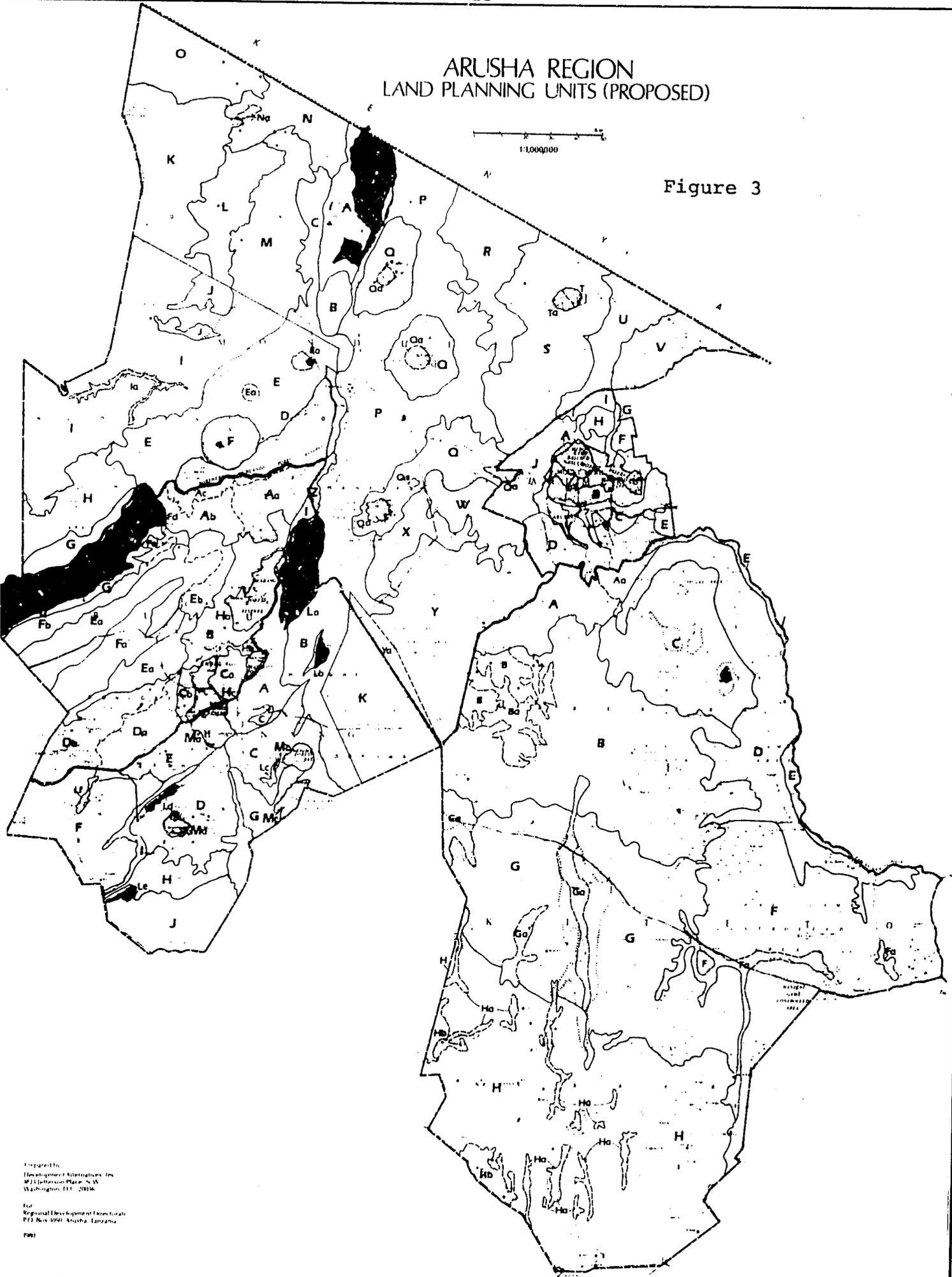


Figure 3



Prepared by:
Development Alternatives, Inc.
431 Jefferson Place, N.W.
Washington, D.C. 20006

For:
Regional Development Directorate
P.O. Box 1041, Arusha, Tanzania

1981

- Definition of agroecological zones through the use of earth satellite photographs, aerial photographs and census, and slope map analysis. The result was 245 distinct zones that district officials later organized into planning units;
- Analysis of population growth and movement to determine resulting land pressures;
- Identification of village economic activities and infrastructure through a rapid reconnaissance survey of 150 villages (about 30 percent);
- Preparation of sector-specific background and assessment papers to identify specific problems and potentials; and
- Identification and development of background papers on such subjects as manpower, availability of financial resources, implementation problems, and soil conservation.

The insights from the planning exercises were complemented by the lessons learned from the initiation of development activities to test approaches and ideas. Major activities were carried out in the directly productive sectors and in rural water supply and road systems.

About 350 documents (see Annex A) from both the planning and the implementation activities have been produced. Their conclusions, including policy, programs, and project formulation, were summarized for regional and district decision making.

Following the preparation of papers elaborating the district and regional development strategies and priorities, a series of meetings were held to identify both priority medium-term projects and projects for long-term investments. During these meetings, the relevant ministries and parastatal organizations operating in the region were contacted so that relevant program plans could be included in the Integrated Development Plan.

CHAPTER FIVE NATURAL RESOURCES

Arusha Region is divided into two parts: the highlands, which include numerous mountains that are covered by forests and are a source of many rivers and streams, and the lowlands, which are characterized by plains and scattered hills covered with bush and grasslands. The region has diverse and abundant natural water sources, which are distributed over 70 percent of its area. The hilly areas have numerous rivers and natural water pools, and the low-lying lands of the Great Rift Valley are littered with lakes.

Although there are zonal climatic variations, Arusha Region has moderate temperatures. The average temperature is 21^o C in the highlands and 24^o C in the lowlands. The average annual rainfall in the lowlands is 500-800 mm; in the highlands, it is 800-1,000 mm. The rains are divided into two periods: the short rains, which fall between October and December, and the long rains, which may begin as early as January or February and end in May or June. Rainfall is irregular in timing and distribution, frequently resulting in drought conditions in the region's drier areas.

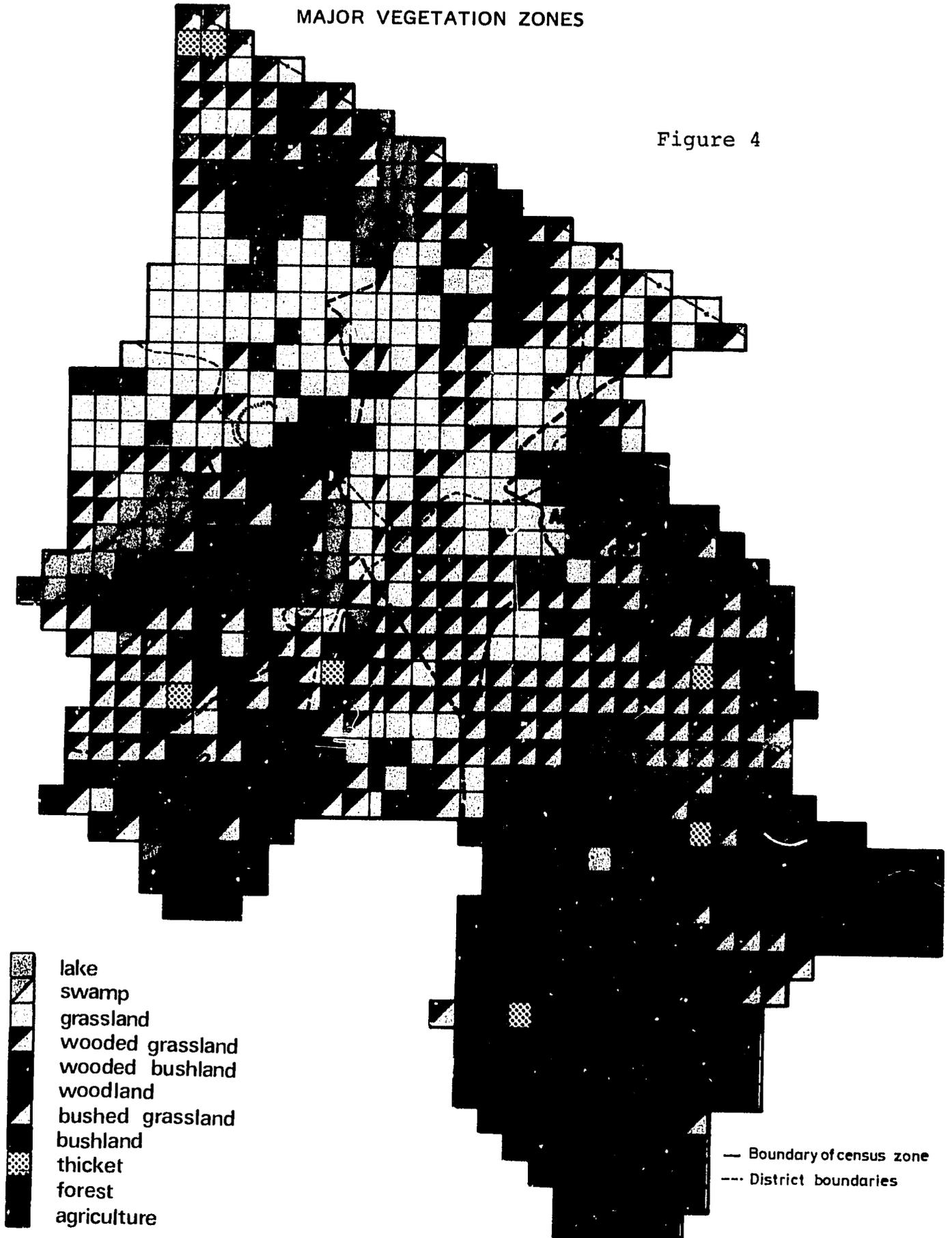
Four natural vegetation zones -- wooded bushlands, wooded grasslands, bushed grasslands, and open grasslands -- cover 80 percent of the region. The districts differ strikingly in the characteristics of their dominant vegetation. (See Figure 4: Major Vegetation Zones.) Ngorongoro has vast areas of open grasslands with wooded grasslands and bushlands in the hills. Mbulu and Hanang have similar vegetation, consisting of bushed and wooded grasslands. Monduli is similar to Ngorongoro; it also has extensive areas of open grasslands. In addition, Monduli has a high proportion of bushed and wooded grasslands. Kiteto is covered with wooded bushlands and bush, with vast areas devoid of

ARUSHA PLANNING AND VILLAGE DEVELOPMENT PROJECT

Livestock ,Wildlife and Land Use Survey ,February 1980

MAJOR VEGETATION ZONES

Figure 4



any use, primarily because of tsetse infestation. Wildlife, however, abound there. Arumeru is unique; more than half of the area is cultivated, and what remains consists of bushed and open grasslands.

In its planning exercise, Arusha Region has been divided into 245 distinct agroecological zones, based on typology, water resources, soils, vegetation, and production activity. This diversity requires the adaptation of development activities, in particular, production systems and technologies, to the particular conditions of individual zones.

5.1 POPULATION GROWTH

Compared with areas of similar size, Arusha Region has one of the highest population growth rates in the world. The region's population increased at an average annual rate of 3.8 percent between 1976 and 1978 compared with the national average of 3.2 percent. Even using conservative projections that assume a constant fertility rate and no immigration, the region's population will double in the next two decades, as will the population in each district. Because of such factors as immigration, improved health care, and increased fertility rates as a result of better maternal and child health care, it is unlikely that the population growth rate will decrease unless strong measures are taken to control it.

Population projections for the districts and Arusha Region to the year 2000 are shown in Table 1.

Table 1: Population Projections for Arusha Region

District	1978	1985	1990	1995	2000
(in thousands)					
Arusha Urban	86.8	111.3	131.5	155.5	183.4
Arumeru	238.0	297.7	351.6	415.9	490.5
Hanang	231.3	292.1	345.0	408.0	481.2
Kiteto	59.8	75.5	89.2	105.5	124.4
Mbulu	193.8	244.7	289.0	341.9	403.2
Monduli	71.7	87.0	102.8	121.6	143.4
Ngorongoro	47.0	59.4	70.1	83.0	97.9
Arusha Region Total	928.5	1,167.7	1,379.2	1,631.3	1,923.9

5.2 RESULTING LAND PRESSURES

Most of the region's population is dependent on the land for income. This rapid population growth rate has therefore intensified the competition for land, creating serious consequences for the quality of the land and its productive potential.

Land in Arusha Region is primarily used for agriculture and for livestock, forests, and wildlife, whose activities use land far more extensively than does agriculture. It now uses only 5 percent of the land area. Continual friction among these land users, with agriculture gradually encroaching on lands used by others, has reduced each user's productivity. More important, this growing pressure on the land has begun to destroy it. The encroachment of agriculture into pastoral areas is breaking up the traditional livestock production systems; agricultural yields are falling because of the movement to marginal land and the incursions by livestock and wildlife; forests are being destroyed to provide energy sources to the growing population and accompanying economic activities.

Furthermore, problems of soil fertility and erosion, floods and droughts, bush encroachment, crop predation by birds and wildlife, and overgrazing are widespread. At the same time, as a result of this resource deterioration, production decreases in areas already under cultivation require that more land be cultivated. Thus, the whole process of expansion is accelerated and intensified. Each successive move is into increasingly marginal, lower potential and more vulnerable environments. Land, therefore, is becoming a scarce and valuable asset, and its overuse and destruction are already well under way in the region.

CHAPTER SIX
STATUS OF CURRENT DEVELOPMENT
EFFORTS AND CONSTRAINTS

Arusha Region's wealth and contribution to national development goals lie in its natural resources. Although production is declining, Arusha produces a larger agricultural surplus than any other region. Competing for Arusha's land is the livestock industry, which is traditionally oriented but accounts for an estimated 40 percent of the gross regional product. Roughly 90 percent of all energy consumed comes from wood supplies, resulting in the rapid depletion of forestry reserves. The region's natural water resources suggest a high potential for irrigated production, hydroelectric energy, and fisheries. Other than for tourism, the region's wildlife potential is largely untapped. Although the full potential of Arusha's natural resources for industrial development has not been realized, the region is one of the three largest industrial centers in the country, contributing to the national drive for self-sufficiency.

The economic and social infrastructure, which supports directly productive activities and contributes to the quality of life of rural villages, continues to deteriorate because of inadequate resources for rehabilitation and maintenance. The results of past investments in rural water supply systems will be lost unless the resources necessary for maintenance and operations are made available from the recurrent budget. Progress has been made in providing adequate educational and health care facilities; yet the same critical need for operational and maintenance support also exists in this area. Without such resources, the region's infrastructure will continue to deteriorate, thwarting production and quality of life goals.

6.1 DIRECTLY PRODUCTIVE SECTORS

6.1.1 Agriculture

About 95 percent of the population practices some mixture of agricultural and livestock production; agricultural commodities contribute 650 million Tsh or about 40 percent of the gross regional product. About 5 percent of the region's land is used for agricultural production, mainly on a subsistence basis, with an average farm size of about 2.5 ha. Arumeru, Hanang, and Mbulu districts are agricultural centers; in addition, some farming on marginal land occurs in the three drier, Maasai districts.

Figure 5 shows the major crop combinations and their distribution in Arusha Region. Eight crops occupy over 95 percent of the cultivated land, and recent production estimates (1979-1980) show a total of about 579,000 tons:

Table 2: Major Crops*

(tons)			
Maize	324,250	Pigeon Peas	9,276
Wheat	95,014	Coffee	17,956
Sorghum	45,639	Seed Beans	27,770
Finger Millet	8,810	Mixed Beans	50,315

* Based on an estimate from regional aerial survey conducted by Ecosystems, Ltd. in February 1980.

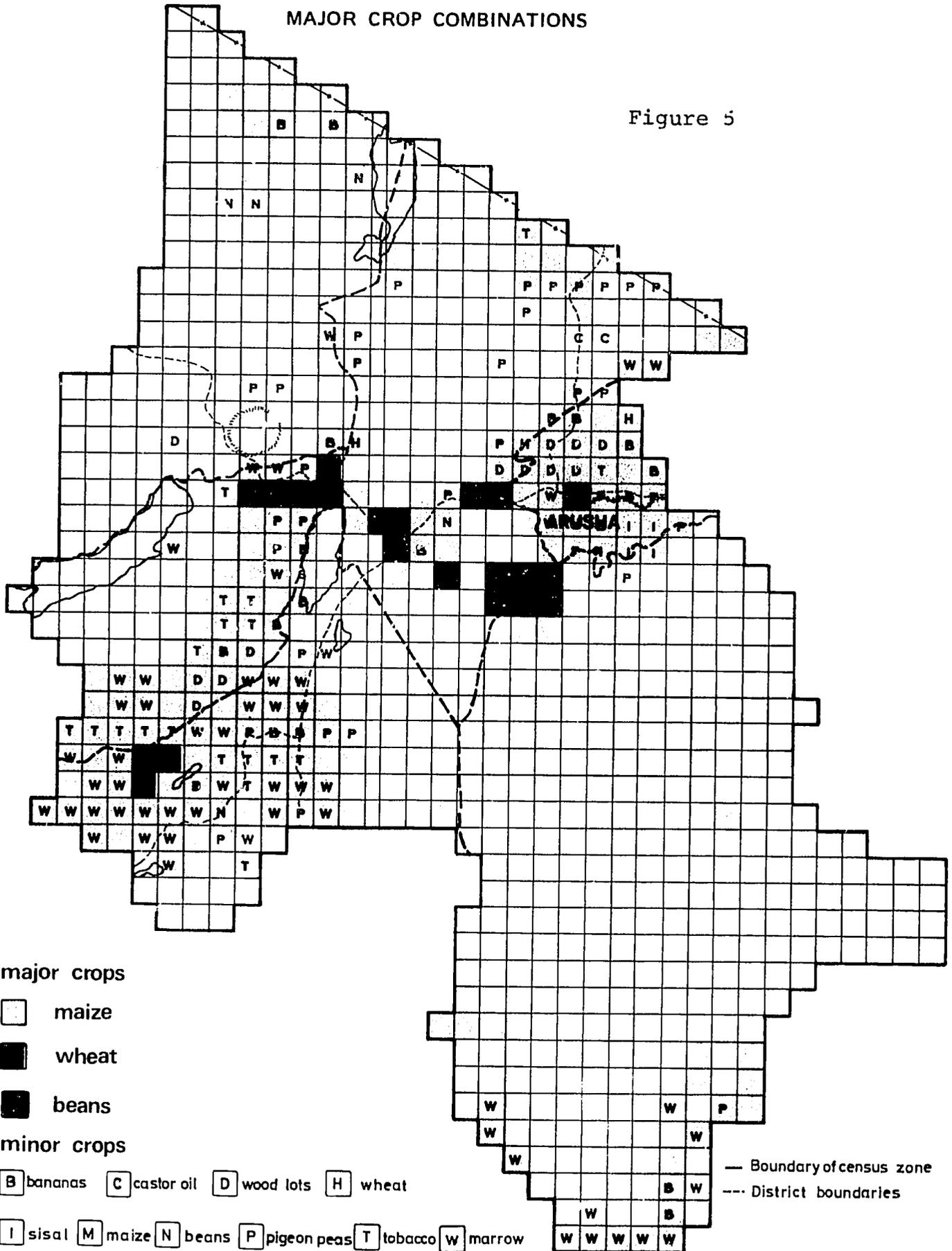
The two main food crops consumed on farm are maize and mixed beans. Currently about 370,000 tons are produced, with about 42 percent consumed by the rural population, 15 percent lost through spoilage, and 43 percent surplus. At the existing production

ARUSHA PLANNING AND VILLAGE DEVELOPMENT PROJECT

Livestock, Wildlife and Land Use Survey, February 1980

MAJOR CROP COMBINATIONS

Figure 5



major crops

- maize
- wheat
- beans

minor crops

- B bananas C castor oil D wood lots H wheat
- I sisal M maize N beans P pigeon peas T tobacco W marrow

— Boundary of census zone
 --- District boundaries

rate, the region will become a food-deficit area by 1990. Prospects for maintaining the current production level are poor because of soil deterioration, poor farm services and incentives, and unreliable climatic conditions. Unless priority is placed on solving these problems and major investments are made in irrigated crop production, the region will not be able to meet its rapidly growing population's ever increasing demands for food.

The region, through its regular program and special projects such as APVDP and the National Maize Program, both of which are scheduled to end within a year, has tried to alleviate these constraints; significant progress, however, will be made only through a major agricultural development program focused on small farmers. The Canadian-financed Wheat Production Project is increasing wheat production, but these increases can be sustained only if provisions are made to address the problems of soil deterioration and heavy recurrent mechanization costs.

Production of the region's export crops, such as coffee and seed beans, has been declining, contributing in part to the current foreign exchange crisis. This decline has resulted from low producer prices, lack of inputs, progressive export taxes that preclude for farmers a reasonable share of the export realization price, and absence of programs to promote and develop export crops.

6.1.2 Livestock

In many rural areas, livestock production is the main source of food, wealth, and employment. Recent land use surveys show that more than 7 million ha or about 80 percent of the region's land is available for grazing, but because of tsetse infestation, lack of water, and soil erosion, only 60 percent of the land is used. Moreover, wildlife and agriculture are competing for this land.

The region's total livestock population and distribution by district is summarized below and shown in Figure 6.

Table 3: Distribution of Stock in Animal Units (AU)

<u>District</u>	<u>Cattle</u>	<u>Sheep</u>	<u>Goats</u>	<u>Total AU</u>	<u>AU per ha</u>
Arumeru	118,842	38,559	32,139	189,540	0.9
Hanang	276,231	31,306	45,558	353,077	1.4
Kiteto	351,151	9,871	18,778	379,800	8.4
Mbulu	177,295	25,155	51,598	254,040	1.7
Monduli	191,433	28,187	40,859	260,479	5.5
Ngorongoro	133,030	30,305	34,360	197,795	7.0

There are about 2.2 million cattle, 1.1 million sheep, and 1.5 million goats of indigenous breeds in Arusha Region. With this high production level, human protein requirements can be met. There are, however, no reliable figures on offtake. The evolving dairy industry has the potential to meet dairy production demands in the region; yet only 25 percent of the supply necessary for the Tanzanian Dairy Corporation is being provided, with the remaining 75 percent available through food imports. In addition, small ruminant production is on a small scale, falling below the region's requirements and potentials.

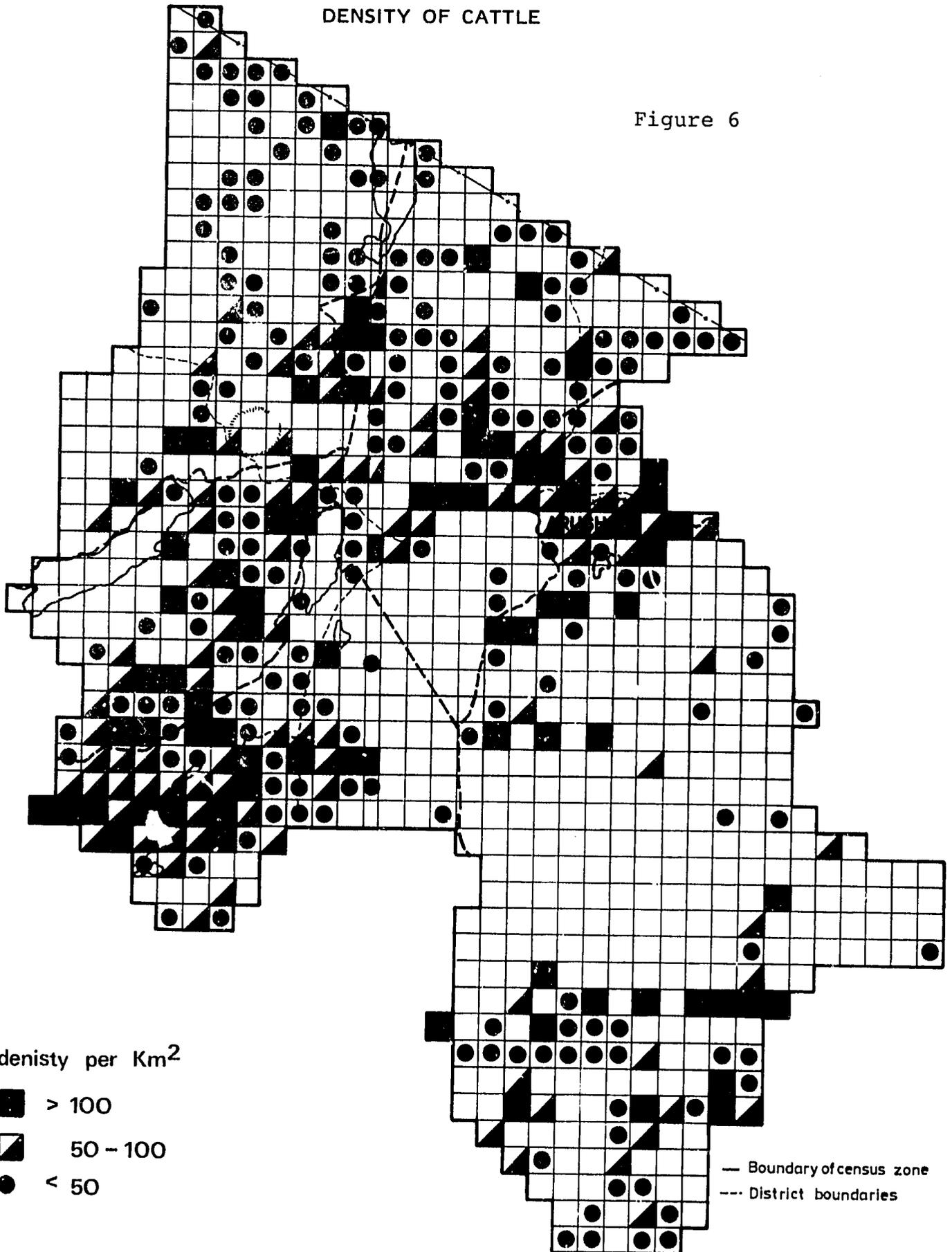
The region's livestock industry can be developed to provide for local and national consumption as well as for export. Because of rapid population growth and resulting land pressures, however, better land use and improved livestock management will be required. In the three agricultural districts, more intensive, improved techniques directed toward dairy production need to be developed; in the three Maasai districts, however, extensive

ARUSHA PLANNING AND VILLAGE DEVELOPMENT PROJECT

Livestock, Wildlife and Land Use Survey, February 1980

DENSITY OF CATTLE

Figure 6



denisty per Km²

- > 100
- ▤ 50 - 100
- < 50

— Boundary of census zone
 --- District boundaries

production can be maintained but with better land management and improved livestock infrastructure, especially water supply sources.

The region has initiated local land use planning and management activities on a pilot basis. Through its regular programs, APVDP, and the 10-year Maasai Range Project, it has improved extension, supplies of veterinary equipment, and infrastructure. For the full development of the livestock industry, however, an expanded effort is needed in the following areas:

- Range and pasture improvement;
- Development of water resources;
- Rehabilitation and construction of dips;
- Veterinary centers and housing;
- Improved production practices and extension marketing; and
- Marketing and pricing to help ensure sales (coupled with the availability of consumer goods and veterinary medicines for purchase as incentives for sale).

In addition, investments are needed in poultry and pig production to exploit new potential.

6.1.3 Natural Resources

(a) Forestry

Arusha has an abundant supply of forests. Twenty-four Forest Division plantations occupy 235,396 ha, or about 3 percent of the region's land. Moreover, there are several village woodlots, primarily in Mbulu and Monduli districts, and tree planting by private farmers is widespread, especially in Arumeru, Hanang, and Mbulu districts. Through APVDP, the International Labor Organization, and the national tree-planting campaign, the region's forestry projects have significantly increased forestry activities.

Fuel wood consumption in the region averages about 2m^3 per person per year, or an overall requirement of 2 million m^3 annually. Also, there are the requirements for conservation and watershed protection purposes as well as for industrial support. The region currently produces about 2.4 million m^3 of fuel wood per year, meeting immediate requirements. Studies show, however, that a sustainable supply of wood resources requires:

- Better control and management of Forest Division plantations;
- Village communal or cooperative nurseries and woodlots;
- A broader approach to rural forestry, integrating more varieties of trees and shrubs more closely with agriculture and livestock production;
- Greater organizational efforts to supply the fuel needs of Arusha and other large towns; and
- Better long-term planning and management to match supplies and demands.

(b) Fisheries

Fishing is a relatively new activity in Arusha Region; it is characterized by small-scale operations in most rivers and lakes. Tilapia and catfish are the two principal species caught. Although past efforts at fish culture have failed, the region, through APVDP, has on a pilot basis started fish ponds. Developing fishing and fish culture will result in a nutritious supplement to the diet without competing with existing directly productive activities. More testing, training for staff, and improved equipment are required, however, to develop this potential.

(c) Beekeeping

Both traditional and commercial harvesting of bee products is practiced in the region. Traditional harvesting of wild bee honey is widespread but most common in the highlands of Hanang and Mbulu

districts. All of the hive contents are used locally. Arusha Region's Beekeeping Division and several villages practice commercial production. Because of the price and local consumption, however, little honey reaches the export market. This unexploited potential could be developed through the introduction of improved hives, better processing, and a well-equipped extension staff.

(d) Wildlife

The major wildlife species number 2 million and provide a major attraction for tourists. Three national parks and the Ngorongoro Conservation Area cover about 10.7 percent of the region's land, and an additional 46 percent falls under the 11 Game Controlled Areas. The conservation of this wildlife competes with other economic activities; to date, a benefit/cost analysis of this effort has not been done. Beyond tourism, this potential has not been exploited for the benefit of the local population. A comprehensive program for wildlife conservation, control, and use is needed, including:

- Wildlife cropping schemes;
- Revenue generation through hunting fees;
- Breeding of local exotic species for export sale; and
- Further development of tourism for wildlife viewing.

6.1.4 Industrial Development

Arusha Region is a main industrial center. In accordance with national policy, the region has placed priority on self-sufficiency in supplying basic producer goods, such as building materials, and on providing consumer goods and services necessary for meeting food, housing, transport, health, and education needs. Past investments have favored large-scale,

publicly owned enterprises. But the region is now concentrating on the development of small-scale industries that add value to its natural resources. Primarily financed by APVDP, these efforts have included production facilities for ox-drawn equipment and other appropriate agricultural implements; processing of agriculture, livestock, and natural resource products; and production of materials such as bricks and tiles for construction. The potential for the further development of these opportunities has just begun, as seen by the long list of projects proposed by Small Industries Development Organization. This development depends on:

- Technical assistance in project preparation;
- Linkages with financial institutions; and
- Improved management and administrative support, including small allotments of foreign exchange to buy critical materials.

The region also has the potential to develop its mining industry. A first step has been taken by Finnish Aid to develop the phosphate mines in Hanang District. Other possibilities (for which feasibility studies exist) include salt extraction, precious stones, and very rich soda ash deposits. Production expertise and financial resources are needed.

Tourism currently represents a much greater foreign exchange earner. It requires considerable foreign exchange, however, so its return is questionable and must be more fully assessed. Development of tourism in Arusha will depend upon the development of the region's transport and communication infrastructure.

6.2 ECONOMIC AND SOCIAL INFRASTRUCTURE

6.2.1 Roads

The region has 4,562 km of roads. Except where foreign donor-sponsored projects have rehabilitated roads, there has been widespread deterioration of main trunk, district, and feeder roads, adversely affecting the rural economy and ability of the government to deliver vital services. In large part, this situation has resulted from both inadequate funds for maintenance and regional Works' lack of capacity. Studies show that Works has the capacity to maintain 1,000-1,500 km, if recurrent budget allotments are sufficient.

With recognition of this capacity, the region and districts identified a primary road network that will meet its critical economic development and administrative requirements. This network is summarized below and illustrated by Figure 7.

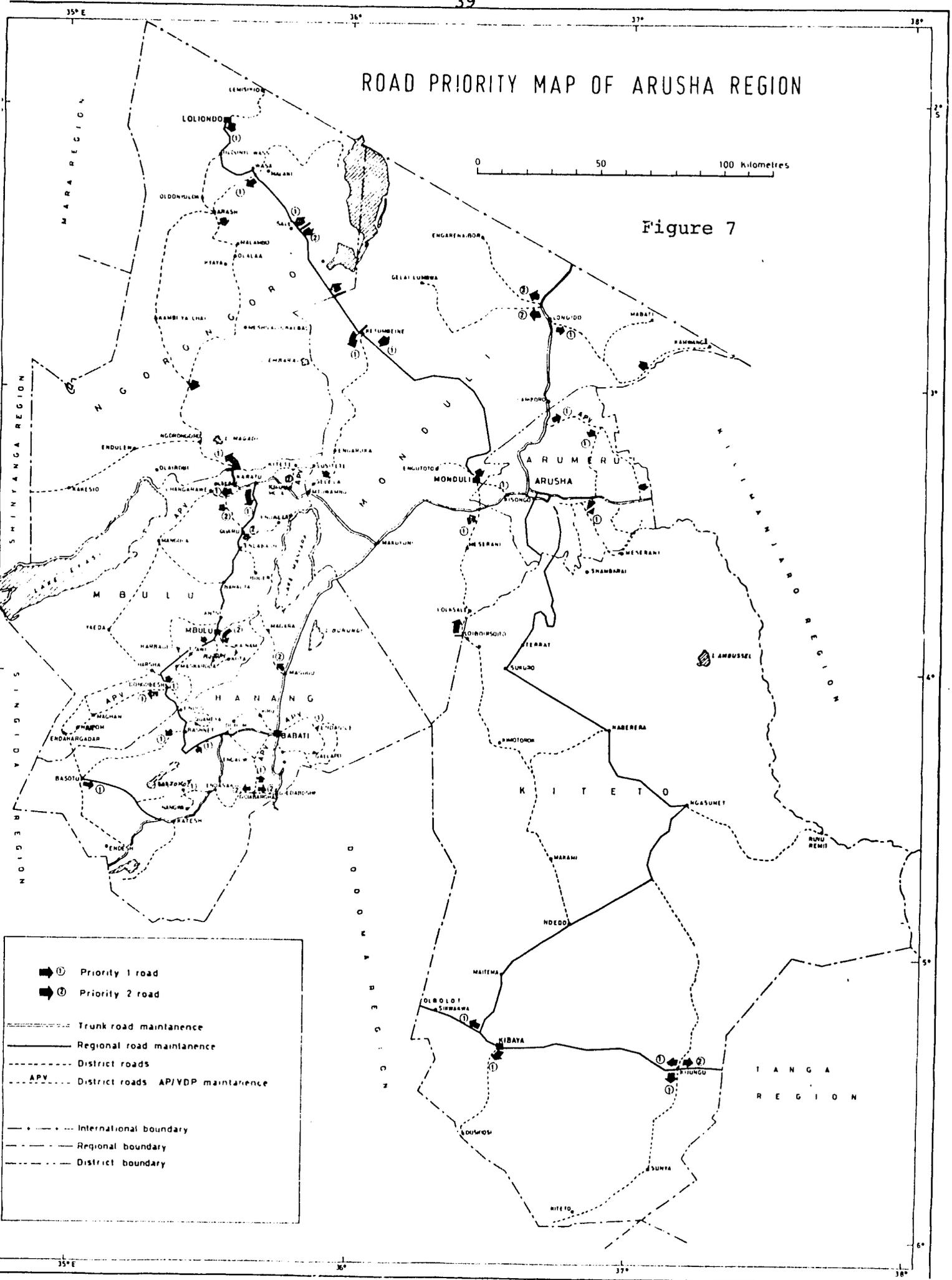
Table 4: Road Priority Network

<u>District</u>	<u>First Priority</u>	<u>Second Priority</u>	<u>Total</u>
	(kilometers)		
Mbulu	267	106	373
Arumeru	196	173	369
Hanang	277	64	341
Monduli	215	151	366
Ngorongoro	200	60	260
Kiteto	190	70	260
REGIONAL TOTALS:	1,345	624	1,969

ROAD PRIORITY MAP OF ARUSHA REGION



Figure 7



Through APVDP, the region has made progress rehabilitating the network of roads in the agricultural districts of Arumeru, Hanang, and Mbulu. Considerable work remains to be done, however, in the three Maasai districts. Over the long run, there is a need to further develop Work's capabilities, supported by an adequate recurrent budget. Of primary importance will be the development of regional and district maintenance shops' capabilities for equipment and regional and district vehicles, a large percentage of which are in disrepair.

Few trucks and buses serve the rural areas. To alleviate this problem, the region, through AID-provided drought relief funds, is testing a model that appears to be working. Villages purchase trucks on a credit basis; repayments are made into a village account for further reinvestment. Other ways to improve transport services should be tested.

6.2.2 Water

Access to clean water is critical not only to improve the well-being of people but also for economic development. The government has set a goal of providing everyone with a safe and adequate water supply by 1991. The following table shows the current availability of water:

Table 5: Water Sources Serving Arusha Region*

District	Water Pipes	Deep Wells	Shallow Wells	Dams	Traditional Sources*	No. of Sources within 5 km
	(number of people served)					
Arusha	10,585	--	--	--	26,594	--
Arumeru	151,141	2,585	2,109	--	67,484	12,404
Hanang	68,347	9,348	7,291	--	92,399	44,148
Kiteto	10,486	15,006	4,381	8,031	11,136	8,129
Mbulu	61,826	9,368	13,087	--	78,140	27,570
Monduli	35,772	5,805	--	8,477	--	16,604
Ngorongoro	17,742	1,493	--	1,608	18,694	7,494
TOTAL	355,899	43,605	26,868	18,116	294,447	116,349

* Public Expenditure Estimates for the year 1980/81 Vote 70: Arusha Region, Table A, p. 122.

The table indicates that more than 116,000 people, or almost 14 percent of the population, have difficulty obtaining enough water. An additional 294,440 people have access to water only from traditional sources such as rivers, spring water, dams, and shallow wells. Thus, only about 48 percent of the population is provided with safe water. A recent study by the region shows that even this percentage may be high. Of a sample of 50 percent of the regional water systems, 30-40 percent have significant maintenance problems, resulting in regular disruption in services and pollution.

The region has to provide 219 villages with a reliable, safe water supply as well as to maintain existing systems adequately. Under APVDP, some progress has been made in rehabilitating existing water systems and in introducing easily maintained technologies, such as establishing the shallow wells teams trained at Morogoro. The capabilities of the Water Department staff need to be upgraded, however, and funds need to be obtained both for new installations and for the maintenance of existing systems. Also, the region is examining how the design of water systems can more adequately serve production needs.

6.2.3 Health

As measured by several indicators, Arusha Region is one of the healthiest regions in the country. Its infant mortality rate is 130 deaths per 1,000 births, compared with the national average of 152, and life expectancy is 51 years compared with the national average of 47 years. Yet the health of the people is poor. They suffer from malnutrition, infectious disease, and poor hygienic practices. The region has a particularly high incidence of eye disease, dysentery, diarrhea, venereal disease, helminthiasis, and cholera. Measles, malaria, and malnutrition constantly threaten children.

Surveys of health facilities indicate that health care is geared toward curative services, with facilities and personnel concentrated in urban or semi-urban areas. Table 6 shows the population served by health services.

Table 6: Population Served by Health Services (1978)

<u>District</u>	<u>Population per Hospital Bed</u>	<u>Population per Health Center</u>	<u>Population per Dispensary</u>
Arusha Urban Area	370	86,845	3,102
Arumeru	2,975	119,010	8,501
Hanang	1,836	77,097	8,260
Kiteto	--	59,790	3,737
Mbulu	474	96,888	8,074
Monduli/ Ngorongoro	990	59,378	6,598

The regional Health Office's main objective is to improve preventive and curative health care at the village level to attempt to increase life expectancy from 51 years to 60 year by the year 2000. This will require expanding facilities in rural areas, with a major focus on preventive health care programs. The region wants to make the existing facilities operational, necessitating greater recurrent budget support.

6.2.4 Education

Arusha Region has made considerable progress toward the goal of universal literacy. About 91 percent of rural children are enrolled in school, although attendance is sometimes poor and erratic. The region has 2,643 certified primary teachers and

1,432 student teachers, and an average class size of 39 students. Of the region's 10 secondary schools, three are government schools; enrollment is about 3,000 students.

Two colleges and 15 technical schools are located in the region. Attendance at the technical schools is low, however, because they are not fully geared to local employment opportunities.

Formidable obstacles exist to the further development of the educational system. In 1980 there was a shortage of 1,400 teachers; in addition, school materials and equipment, classrooms and materials to build them, and housing for teachers are all in short supply. Most of these problems can be attributed to inadequate funds; other serious problems concern attitudes toward education, the role of technical schools, and opportunities for school leavers.

6.2.5 Cooperatives and Community Development

The Cooperatives and Community Development offices play varying roles in strengthening the villages' institutional capabilities for planning, managing, and administering their development. Through APVDP, the region has extensively used the Cooperatives and Community Development staffs to train village officials in project development and administration. Furthermore, many of the region's rural industry projects have been supervised by these offices. These efforts to build village organizational and decision-making capabilities as well as infrastructure will be essential in carrying out the region's medium- and long-term plans.

CHAPTER SEVEN
STRATEGIES AND PRIORITIES
FOR THE NEXT 20 YEARS

The assessment of the current development status of Arusha Region and its sector specific constraints constituted a strong foundation for future regional planning and development. Across sectors, the analyses show that two main constraints will influence regional development over the coming years. The first constraint is the current national economic situation -- the central government will not be able to provide the region with additional financial support, measured in real terms, in the foreseeable future. The second constraint is rapid population growth:

- By the year 2000, the population of all districts will double; and
- This doubling of population, when coupled with needed complementary growth in economic activity, will increase competition for available land and pressure on the environment.

The above constraints led the region to conclude that its development over the next two decades should be based on four main strategies.

- Strategy One: Integrated development activities that emphasize village-level land use planning and reduce population growth rates.

This regional development strategy calls for land use planning, concentration of government resources in specific geographic areas and gradual extension to other areas, development of village planning and implementation capabilities in the areas of geographic concentration, and introduction of family planning and migration control programs to alleviate land pressures and to help ensure the economic and social well-being of rural people.

- Strategy Two: Highest priority given to directly productive activities.

This strategy calls for the highest priority to be given to directly productive activities to build village financial and organizational capabilities so that they can finance quality of life improvements. Since agriculture and livestock provide the economic base for the region, these sectors and related industries, which add value, will be the major emphasis of regional planning and development. Emphasis will also be placed on natural resources, particularly forestry, because of the extensive use of wood as an energy source.

- Strategy Three: More efficient use of existing manpower, equipment, materials, and finances in support of regional development activities.

The starting point for the implementation of this strategy is to improve the planning, implementation, monitoring, and evaluation capabilities of the region and districts. With limited resources, significant progress can also be made by training regional manpower in management and technical skills. Financial resources can be used to fund the operation and maintenance of existing roads, water systems, and social service facilities. Much progress will be made by creating industries that produce needed materials, improving maintenance, and standardizing equipment.

- Strategy Four: New efforts to obtain additional resources for development.

The current macroeconomic situation suggests that for the foreseeable future few additional resources, in real terms, will be available from the central government to support regional development activities. The region, therefore, must increase its revenue through alternative mechanisms such as user contributions,

borrowings from financial institutions, and loans and grants from external sources. Moreover, the region requests that the central government consider:

- An increase in the share of government development expenditures in the region that are channeled through the government development budget (currently only 10 percent of all development expenditures are through the development budget, the remainder being through parastatals and line ministries); and
- The means by which additional operations and maintenance funds can be made available to the region.

Furthermore, the region sees the possible contribution of parastatal and line ministry resource investments to regional development goals, but only if the region actively participates in the decision-making process. Through the above means, this fourth strategy calls for the securing of additional resources for development, with the region taking the primary initiative in generating these revenues.

These strategies are supported by 30 major policy decisions, which are summarized in Annex B and elaborated in Volume Two: ARUSHA REGION: DEVELOPMENT STRATEGIES AND PRIORITIES FOR THE NEXT 20 YEARS. These strategies and policies have guided the preparation of the region's medium- and long-term plans.

CHAPTER EIGHT THE MEDIUM-TERM PLAN

Arusha Region prepared its medium-term plan based on the findings of its regional planning exercise, the testing of development activities through APVDP, and the establishment of its strategies and priorities. The plan has two components:

- The Fourth Five Year Plan 1981/82-1985/86 Arusha Region; and
- The Arusha Rural Productivity Project.

The details of the plan are elaborated in Volume Three, ARUSHA REGION: MEDIUM-TERM PLAN 1981/82-1985/86, and are summarized below.

8.1 THE FOURTH FIVE YEAR PLAN

The Fourth Five Year Plan was prepared by the Regional Development Directorate and approved by the Regional Development Committee and, subsequently, the prime minister's office. The plan reviews and evaluates progress under the Third Five Year Plan and details the projects to be carried out during the coming five years.

The total budget for the Fourth Five Year Plan is 331,610,900 Tsh. This ceiling was established by projecting the total resources likely to be available from the government and foreign donors, taking into account the serious restrictions on government funds and inflation. The 1980/81 development budget for the region was 51,190,000 Tsh; this figure was projected to increase by 10 percent annually over the five year period. The intent was to develop a plan that would make best use of available resources.

After the ceiling was established (which was slightly modified by the prime minister's office), sector allocations were made on the basis of the region's priorities and implementation experience. The percentage breakouts by sector were set as follows:

Table 7: Percentage Allocation by Sector for Five Year Plan

	Allocation (percent)
<u>Productive Sectors</u>	48.7
Agriculture	(21.1)
Livestock	(19.6)
Natural Resources	(6.5)
Small Industries	(1.4)
<u>Economic Infrastructure Sectors</u>	21.9
Works: Roads	(11.2)
Works: Buildings	(6.5)
Lands	(1.4)
Cooperative/Community Development	(2.7)
<u>Social Service Sectors</u>	29.5
Education	(11.3)
Water	(10.7)
Health	(6.3)
Youth and Culture	(1.2)

In accordance with regional and national policy, the budget places highest priority on the directly productive sectors, especially agriculture and livestock. The budget also emphasizes

improvements in existing infrastructure, in particular, the Works and Water sectors, and expands those activities that have proven successful in the past.

Within each sector, the budgets in the five year plan include projects to be funded by both local government and foreign donor funds. The next chapter, arusha region: investment proposals, outlines how the content and resources programmed under the medium-term plan contribute to the region's long-term investment objectives, with the projects requiring external funding highlighted.

8.2 THE ARUSHA RURAL PRODUCTIVITY PROJECT

The second component of the Fourth Five Year Plan is the detailed design of the Arusha Rural Productivity Project. The region prepared this project proposal as a follow-on to the APVDP, which is the region's RIDEP. This project is a four year development program designed to improve the productivity and well-being of villagers in the six rural districts of Arusha Region. It is a proposal for foreign donor funding and therefore an amendment to the Fourth Five Year Plan; the proposal incorporates a series of integrated subprojects from the plan that requires external funding for implementation. The project concentrates on better utilization and conservation of the region's land and water resources in a way that sustainable production systems can be developed for rural villages. The project's estimated external budget is 203,751,680 Tsh.

8.2.1 Project Objectives

The overall objective of the Arusha Regional Productivity Project is to improve the productivity and conservation of land and water resources for the direct benefit of the people of Arusha

Region. Achieving this above objective will be possible only if the following subobjectives, which address major development constraints in the region, are accomplished:

- Improve the capabilities of district officials and villagers to manage and protect the area's natural resources;
- Conduct adaptive research and field tests to determine the most appropriate, productive, and cost-effective technologies for the region's diverse agroecological zones;
- Develop the extension services' capabilities to introduce improved production technologies;
- Improve irrigation systems to increase irrigated crop production by small-holder farmers;
- Develop an integrated comprehensive program for livestock development;
- Improve the delivery of productive sector inputs and services; and
- Conserve land and water resources for sustained production increases.

Sustainable achievement of the above subobjectives will depend on involving villagers in decision making and on securing their commitment of resources and support to the proposed development initiatives; this is a major project goal.

8.2.2 Project Background

This project proposal builds upon the experience and knowledge by the region gained from APVDP, a four-year project supported by an AID grant of 137,155,400 Tsh and by the GOT and village contributions of 60,836,800 Tsh. APVDP was initiated in July 1979 and is now expected to end on June 30, 1983.

APVDP is an integrated rural development project with components that addressed village, district, and regional needs. A major task of APVDP has been to assist the regional government

to prepare an integrated rural development plan for the long-term growth of the region; these volumes and this project proposal are results of this effort. Concurrent with the planning exercise, APVDP has provided assistance for a number of development activities in Arumeru, Hanang, and Mbulu districts. Eighty-six projects in agriculture, livestock, natural resources, and rural industries have been identified and implemented thus far with APVDP assistance. In addition, the project has helped develop and rehabilitate water supply systems in about 40 villages and will complete rehabilitation of 445 km of the districts' road network. Throughout, the region's underlying approach through APVDP has been to improve the government-village dialogue and decision-making process.

By means of improved land-use planning and needs and resource assessments by villagers, the region through APVDP has helped identify income-generating projects that can be sustained primarily through the commitment of local resources. Village, ward, and district procedures for project proposal preparation, review, and approval as well as monitoring and evaluation have been established and tested; the basis for an effective system to identify, plan, and implement village activities now exists. Particular attention has been given to strengthening extension services through training and pilot extension programs for the directly productive sectors. More than 800 officials (including many from the Maasai districts) have been trained in planning and technical subjects, thus improving the quality of local project design and implementation.

With this foundation from planning and experience, the region has a clearer understanding of the constraints, and the possible approaches for alleviating these constraints, to realizing the development potential of its natural resources.

8.2.3 Project Components

This project proposal's approach is integrated development of specific agroecological zones based on available land and water resources. Furthermore, it is designed to strengthen research, extension, and local decision-making capabilities so that development initiatives take account of each zone's particular circumstances and can result in sustained production increases for small-holder farmers. The main project components are summarized below.

A. Developing District and Village Capabilities

This component will help develop local capabilities to plan, manage, use, and protect natural resources. Advisory assistance will be provided at the regional level by a land and water resources planning specialist and by rural development specialists assigned to each of the districts with expertise in agriculture or livestock, depending on location. These specialists will assist in planning, project preparation, and implementation. Villagers will be involved in the planning and management of their land and water resources, particularly in the design of productive activities financed by a 40 million Tsh district/village development fund. Equipment and vehicle support will be provided to the regional and district planning offices to supervise these activities.

B. Adaptive Research

This component will introduce an adaptive research and field-testing program to develop improved agricultural production methods and farming systems representative of the region's major agroecological zones. It provides for the establishment and equipping of four adaptive research and testing stations -- at Sakila, Karatu, Dongobesh, and Magugu. Advisory assistance will be provided by an adaptive research/extension agronomist. Emphasis will be on improving the existing mixed crop and livestock farming systems and on developing improved production technology for technicians' training and farmers' extension programs.

C. Extension and Information

This component is designed to implement a comprehensive agricultural extension program to increase the adoption of the improved production technology developed as a result of adaptive research. This activity builds upon the

APVDP-assisted Pilot Extension Program: a training and visitation model that includes regular supervision, training, communications media support, and operational assistance. Funds will be provided for short-term Extension Communications assistance; training; equipment and supplies, including Landrovers and motorcycles; and operational support.

D. Irrigation Development

This component will help improve and expand the great potential for small-holder irrigated crop production in the region. It builds on the training provided by APVDP in small-scale irrigation and on its pilot schemes. The component includes short-term advisory assistance by irrigation specialists, establishment of an irrigation soil and water quality testing laboratory, training, and development of small-holder irrigation schemes on approximately 1,730 ha.

E. Range Management and Livestock Development

This component will improve pasture, range, and livestock production as part of mixed farming systems and in areas suitable for livestock production. Better land- and water-use methods will be introduced, along with improved animal husbandry, breeding, and health practices, through the training and equipping of the livestock extension service and veterinary centers. Livestock-related adaptive testing and extension training at the region's Rural Training Center in Monduli will also be supported. For the three Maasai districts, multipurpose brigades will be established to develop improved water systems, clear tsetse-infested areas, and rehabilitate and construct livestock facilities.

F. Delivery of Inputs/Services

This component will upgrade the delivery of inputs and services by providing specific inputs as required, such as short-term technical assistance, training, and technology and organizational investment. Concentration will be on priority needs: medium-term credit; improved storage and marketing; improved seed production and distribution; and development, production, and maintenance of implements, tools, and processing equipment.

G. Soil and Water Conservation

This component continues the strong emphasis, initiated through APVDP, that the region has placed on soil and water conservation. The project will establish soil and water conservation units in all districts to provide leadership and guidance for control of soil erosion and to

institute basic soil and water conservation farming practices. The project will also provide funds for innovative soil and water conservation schemes and for training at the village level in all districts. Furthermore, it provides support for the natural resources sector activities of forestry, fisheries, and beekeeping.

Combined and managed as an integrated program, the above activities will emphasize the effective use of locally available manpower, facilities, and natural resources. They will be carried out through existing although strengthened institutions and organizational procedures. Coordinated planning and implementation of practical productive activities will result in sustainable economic and social development of the region's rural villages.

8.2.4 Project Funding

The estimated cost of the project is 203,751,680 Tsh. Originally it was anticipated that AID would fund fully the follow-on project to APVDP, but agency funding constraints do not allow this. Therefore, the government, together with AID, has been seeking an additional sponsor for this project.

CHAPTER NINE
ARUSHA REGION: INVESTMENT PROPOSALS

In its planning process, including the preparation of the Arusha Rural Productivity Project, the region has defined a set of major, long-term investment objectives.

- Objective One

Increase food crop supplies to feed adequately the growing population of Arusha Region and to continue to provide a surplus for national consumption in a self-sustaining way.

- Objective Two

Develop the livestock industry for local and national consumption and for export.

- Objective Three

Generate revenue, including foreign exchange, and employment through export crops, tourism, and industries that add value to the region's natural resources.

- Objective Four

Develop and maintain a communications network that contributes to economic development.

- Objective Five

Establish and maintain water supply systems to promote productivity and quality of life in rural villages.

- Objective Six

Increase the availability of energy supplies through the development of forestry, hydroelectric, and other resources.

- Objective Seven

Develop the capabilities of district councils and villages to make investments that improve self-reliance and the quality of life in villages.

- Objective Eight

Improve and protect the environment of the region for accomplishing the above objectives through the conservation and better use of its natural resources and the slowing of its population growth rates.

In this chapter, the region will state each objective and explain the anticipated contribution of projects from the Fourth Five Year Plan for accomplishing the objective. It will highlight those projects (including appropriate components of the Arusha Rural Productivity Project) that require external funding and present its long-term project proposals and ideas to be developed.

9.1 OBJECTIVE ONE: INCREASING FOOD CROP SUPPLIES

The region's first investment objective is to increase food crop supplies to feed the growing population adequately and to continue to provide a surplus for national consumption in a self-sustaining way. Although Arusha Region has been the predominant food-exporting region in Tanzania, it will, as a result of its growing population and production levels, become a food deficit area by 1990. To reverse this trend, a comprehensive agricultural development program is needed; it should be aimed at alleviating constraints and introducing practicable production technologies suitable for the region's diverse agroecological zones. Over the long run, major irrigation schemes are required to increase production sufficiently to meet the food demands of the growing population.

Agriculture contributes an estimated 40 percent of the gross regional product, although only about 5 percent of the region's 82,428 sq km is under production. Almost 95 percent of the region's population is engaged in agriculture, primarily of a subsistence nature; the average farm size is about 2.5 ha. The

major agricultural centers are in Arumeru, Hanang, and Mbulu districts. Production on more marginal lands occurs in the drier districts of Monduli, Kiteto, and Ngorongoro.

The two main food crops consumed on-farm are maize and mixed beans, the production of which accounted for about 375,000 out of an estimated 579,000 tons of agricultural production for the region in 1979-1980. Using a factor of 180 kg per person, the current rural population consumes about 180,000 tons of food-stuffs annually. The population projections for the region are 1.2 million people in 1985 and 1.4 million in 1990. Maintaining current food supply levels for this growing population will require an additional 36,000 tons of food grains by 1985 and an additional 72,000 tons by 1990. Meeting these needs will require increases in production of 10 and 20 percent respectively.

Through its agricultural program, including the efforts of APVDP, the region has taken steps to improve production, including testing crop packages, strengthening the extension service, providing improved (ox-drawn) implements, and attempting to control pest and disease. In addition, the region has placed priority on land and water resource management and conservation and is initiating small-scale irrigation training and development.

Production levels continue to decline, however. Natural constraints such as irregular rainfall and environmental deterioration play a role. These environmental constraints are compounded by macro-economic factors, the most important of which are producer prices, the availability of foreign exchange for agricultural inputs, an ineffective delivery and marketing system, and the lack of operational funds for the agriculture service. In the region, there is a need to develop research-based, improved farm production technology; to improve the performance of the extension service for transferring agricultural knowledge to small farmers; to increase the availability of other farmer inputs and

services; to develop water resources for crop production; to continue to encourage the production of drought-resistant crops such as cassava and white millet; and to adopt improved soil and water conservation measures for sustained production (which is discussed under Objective Eight).

Medium- and long-term production targets for the major crops are indicated in Tables 8, 9, and 10.

9.1.1 The Medium-Term (Five Year) Plan

Under the region's medium-term plan, the largest amount of resources is programmed for the agricultural sector. The plan combines a series of projects to lay the groundwork for long-term sustainable increases in production with those that take advantage of known constraints and solutions for improved production.

For the long term, a critical project is to develop an adaptive research or testing program to improve on-farm production methods, particularly given the region's diverse ecological zones and farming systems. Furthermore, the linkage between technology development and the transfer of this knowledge to farmers is essential. The present effort is to strengthen the extension services, using known technology, which will be further developed, with emphasis on maize production, under the five year plan.

Current regional investments and the medium-term plan highlight the importance of irrigated crop production as a means of achieving the necessary long-term gains in the supply of food crops. Under the plan, the emphasis is on training and on the initiation of small-scale schemes, with the intent of developing the technology and knowledge for large-scale schemes over the next 20 years. In addition to irrigated crop production, another initiative under the five-year plan is to introduce and test drought resistant crops for production in marginal areas.

Table 8: Medium-Term Crop Production Targets: Food Crops

Food Crop		1981/82	1982/83	1983/84	1984/85	1985/86
Maize	T	287,435	305,817	311,933	318,172	324,535
	H	129,500*	190,162	197,844	205,837	214,152
Beans	T	89,418	91,206	93,030	94,891	96,789
	H	29,405	33,115	37,293	41,998	47,297
Millet	T	63,900	70,000	73,500	76,000	79,500
	H	46,000	50,400	52,920	54,720	57,240
Wheat	T	77,955	79,514	81,104	82,726	84,381
	H	45,967	47,824	49,755	51,765	53,857
Rice	T	1,050	1,100	1,800	2,500	3,200
	H	1,050	1,100	1,800	2,500	3,200
Bananas	T	14,800	14,800	14,800	14,800	15,000
	H	70,000	70,000	70,000	70,000	72,000
Cassava	T	625	638	651	664	577
	H	1,500	1,562	1,626	1,692	1,760

Note: T = Target (acres) H = Harvest (tons)

* affected by drought

Table 9: Medium-Term Crop Production Targets: Cash Crops

Cash Crop		1981/82	1982/83	1983/84	1984/85	1985/86
Coffee	T	48,936	50,404	51,916	52,716	53,116
	H	12,245	12,600	12,909	13,109	13,209
Seed Beans	T	90,000	94,500	99,200	104,200	110,000
	H	63,000	66,150	69,440	72,940	77,000
Pyrethrum	T	3,260	3,580	3,940	4,200	4,500
	H	286	325	350	360	375
Cotton	T	1,820	1,910	2,000	2,200	2,500
	H	900	955	1,000	1,100	1,250
Sun-flower	T	2,480	2,730	3,000	3,300	3,500
	H	750	819	900	990	1,050
Ground-nuts	T	3,800	4,000	4,200	4,400	4,600
	H	1,710	1,800	1,890	1,980	2,070
Peas	T	21,800	19,600	17,350	15,000	15,000
	H	10,900	9,800	8,675	7,500	7,500
Castor Seeds	T	2,500	2,620	2,750	2,850	2,950
	H	910	943	990	1,026	1,062
Cow Peas	T	1,760	1,830	1,950	2,100	2,300
	H	475	500	527	567	810

Note: T = Target (acres) H = Harvest (tons)

Table 10: Long-Term Plan Production Targets for Selected Food Crops

Food Crop		1985/86	1990/91	1995/96	2000/2001
Maize	T	324,535	358,313	465,419	513,860
	H	214,152	261,050	374,374	456,359
Beans	T	96,789	106,863	117,985	130,265
	H	47,297	57,655	70,281	85,672
Wheat	T	84,381	93,163	102,860	113,566
	H	53,857	65,651	80,029	97,555
Millet	T	79,500	87,774	96,909	106,995
	H	57,240	69,775	85,055	103,681
Rice	T	3,200	6,700	10,200	13,700
	H	3,200	7,397	12,433	18,437
Bananas	T	15,000	16,561	18,285	20,188
	H	72,000	87,766	106,988	130,417
Cassava	T	677	747	825	911
	H	1,760	2,144	2,614	3,187

Note: T = Target (acres) H = Harvest (tons)

In the short term, the region's medium-term plan builds upon current initiatives and technological knowledge. Of chief importance is the continued development of maize production and marketing that was initiated under the World Bank program. The plan calls for the continued development of the use of ox-drawn equipment through a project to establish seven ox-plough training centers. Under APVDP, a central factory for producing these implements was established in Arusha, supported by three district centers for the assembly and maintenance of ox-drawn equipment. Also, the plan contains a project for continued control of pest damage to crops, an initiative supported by the Food and Agriculture Organization (FAO). The plan also includes projects for fruit and vegetable nurseries and expanded oil seed production, which are current initiatives of the region.

To improve the delivery of inputs, the region envisions under the five year plan a series of farm centers to service agricultural implements (where appropriate, both tractor and ox-drawn), to provide necessary agricultural supplies, to add to the region's storage capacity, and to provide a place for extension assistance. Provision is made for 17 such centers.

Outlined below are priority projects for external funding from the five year plan. These projects are essential for increasing food crop supplies in Arusha Region.

A. Adaptive Research

12.5 million Tsh

This project proposes to establish four adaptive research centers to develop, test, and teach improved agricultural production practices and systems for the region's diverse agroecological zones. Linked with national institutes, these centers will attempt to increase maize, mixed bean, and other crop yields, given the constraints and potentials of existing farming systems. They will train agriculture extension personnel on how to increase subsistence farmer production.

(See Vol. 3: Arusha Rural Productivity Project, Part V, Section 2.)

B. Extension and Information 10.5 million Tsh

The region has initiated pilot agricultural extension programs in the three agricultural districts of Arumeru, Hanang, and Mbulu. These programs are based on a modified version of the World Bank's training and visitation extension model. This project provides the resources necessary for expanding this effort through training, operational support for the extension services, and production of extension materials. A continuing focus of this effort and project will be on improved maize production.

(See Vol. 3: Arusha Rural Productivity Project, Part V, Section 3.)

C. Irrigation Development 38.8 million Tsh

The need and potential for irrigated crop production in Arusha Region are substantial if food crop supplies are to be maintained and increased. This project is designed to develop regional and district capabilities to design and implement irrigation projects, rehabilitate existing irrigation systems, develop schemes in areas where there are traditional irrigation schemes or where natural water flows allow low-cost construction, and prepare feasibility studies for large-scale schemes to be financed under the long-term plan. This project may be divided into several subprojects for specific locations in the agricultural and Maasai districts.

(See Vol. 3: Arusha Rural Productivity Project, Part V, Section 4.)

Pl.1 Agricultural Workshop and Farm Service Centers 17.7 million Tsh

This project is designed to establish a series of 17 farm centers or workshops in important agricultural areas. These centers will provide maintenance and spare parts for agricultural equipment (ox-drawn and tractor depending on areas), other agricultural inputs, warehouse and storage facilities, and locations for extension services. Priority for establishing these centers will begin with highly productive areas such as Karatu and gradually be expanded as the idea is tested and resources become available.

(See Vol. 3: Five Year Development Plan, Part II, Section 2.17 [5].)

9.1.2 Priority Long-Term Plan Projects

Over the long term, the region proposes major investments in irrigated agricultural production to achieve necessary production increases on a sustainable basis. Priority projects include:

Pl.2 Kiru Valley Irrigation and Agricultural Development 278.0 million Tsh

This project is designed to develop the Kiru Valley in Hanang District. The project, based on a pilot irrigation scheme, will extend and improve irrigated production in village areas, control flooding, rehabilitate estate and leasehold farms in the upper reaches of the valley, and reclaim swampland. It is anticipated that about 28,000 ha can be improved with a reliable water supply for irrigation. In addition, improved agricultural technology and soil conservation practices will be introduced.

(See Vol. 4: Major Areas for Long-Term Investments, I, Pl.2.)

Pl.3 Mang'ola Irrigation/Flood Control and Agricultural Development 240.0 million Tsh

This project is designed to develop the substantial irrigation potential of the Mang'ola and Yaeda Valley. It is designed to place about 20,000 ha under irrigated production, with the establishment of flood control and improved land management and soil conservation. In addition, the project will introduce improved agricultural and livestock production methods.

(See Vol. 4: Major Areas for Long-Term Investments, I, Pl.3.)

Pl.4 Mbuguni-Moshono Irrigation and Flood Control Project 35.0 million Tsh

This project is designed to bring 3,500 ha under irrigated production in the Mbuguni-Moshono area of Arumeru District. It will construct the necessary irrigation infrastructure to tap water from the Kikuletwa and Nduruma rivers. In addition, it will initiate several flood control measures, including the construction of earthen embankments and protection works along the rivers and installation of control gates and storage facilities. Furthermore, the project will introduce improved agricultural and soil conservation methods.

(See Vol. 4: Major Areas for Long-Term Investments, I, Pl.4.)

Pl.5 Lake Babati Irrigation and Flood Control Project

6.0 million Tsh

This project is designed to control the serious flooding of Lake Babati and develop 500 ha of irrigated production. This area is appropriate for paddy rice production and a main concentration of the project will be on introducing this technology as well as conservation measures. (See Vol. 4: Major Areas for Long-Term Investments, I, Pl.5.)

The above projects will extend irrigated agricultural production in the region by 52,000 ha. With improved agricultural and soil conservation measures, they offer the potential for a sustainable food supply to meet the needs of the region's growing population and to continue to provide a surplus for national consumption.

9.1.3 Project Ideas To Be Developed

In addition to the above irrigation projects, there are the potentials for expanded irrigation production in Dongobesh in Mbulu District, for the development of the catchment area of the Bubu River in Hanang District, and for the expansion of small-scale irrigation activities now being carried out in the three Maasai districts. Other project ideas for external development and funding include:

- The establishment of an arid lands testing center for the further introduction of drought resistant crops primarily in the three Maasai districts;
- The revitalization of the agricultural marketing system, with an aim to establish village cooperatives for input, delivery, marketing, and sale of consumer goods;
- A market analysis for spice exports and the development of projects, similar to those in Sudan, for spice production and marketing to private companies;
- The further exploitation of the potential for wheat production in Ngorongoro District (with anticipated funding from Canadian assistance through NAFCO); and

The development of integrated production and processing projects for fruits and vegetables.

9.2 OBJECTIVE TWO: DEVELOPING THE LIVESTOCK INDUSTRY

The region's investment objective is to develop the livestock industry for local and national consumption and for export. The current livestock industry is traditionally oriented, with most livestock held for family consumption and wealth. With the region's growing population and the resulting land pressures, livestock management practices will have to be improved for increased and sustained productivity. In addition, livestock services need to be strengthened, especially the provision of water supplies in the drier, Maasai districts. An as yet unexplored potential lies in small ruminant production, which would improve nutrition and incomes.

Livestock production (along with agriculture) is one of the two main enterprises in Arusha Region. Livestock are a main source of food, wealth, and employment in many rural areas. Recent land use surveys indicate that more than 6 million ha, or about 80 percent of the region's land, are available for livestock grazing. Much of this land cannot be used because of tsetse infestation, lack of water, and soil deterioration. As a result, only about 60 percent of the land area is used for grazing. The value of the grazing land varies greatly. In the agricultural districts of Arumeru, Hanang, and Mbulu, grazing is confined to steep slopes and less fertile and eroded areas unsuitable for crops. In the three Maasai districts of Monduli, Kiteto, and Ngorongoro, livestock grazing is extensive, with animals going wherever forage and water are available.

In Arusha Region, there are nearly 2.2 million cattle, 1.1 million sheep, and 1.5 million goats of indigenous breeds. These animals can meet human protein requirements. No reliable figures on offtake exist, however, nor on where that offtake is marketed.

The evolving dairy industry has the potential to meet the region's milk and dairy product demands, but only 25 percent of the supply necessary for the Tanzanian Dairy Corporation is being provided. The remaining 75 percent is available through imports. There is small ruminant production, but it is on a small scale, falling far below the region's requirements and potential.

Several trends influence current livestock production and call for modifications in traditional livestock management practices. With the growing population, competition for land is increasing. Because of agricultural expansion, the amount of available grazing land has been reduced. Moreover, there has been both extensive range deterioration (with the replacement of good quality forage with undersirable plant species) and significant soil erosion by wind and water. This deterioration has resulted from overgrazing, cattle tracking, and concentration of animals at watering places. As forage and water supplies diminish, livestock and wildlife also increasingly compete for resources. These trends suggest the need for better land and water resources management and conservation at the village level as well as the gradual modernization of the livestock industry.

The region, assisted by the National Livestock Development Policy of 1981, has taken steps to improve the stability and productivity of the livestock sector. A major focus has been to improve village land use planning and management through such projects as the Kisongo Water Catchment Program in Arumeru District. Further efforts have been made to improve extension services, livestock infrastructure, and availability of veterinary supplies. However, major constraints should be addressed in the region's long-term plans. In the traditional rangelands, the major concerns of the pastoralists are the security of land tenure to reduce further encroachment by agriculturists, provision and maintenance of adequate water supplies, and availability of veterinary medicines and services. In the more highly populated

areas, where mixed crop and livestock on improved production technologies systems are in use, the primary needs are for extension information on improved production and the availability of services and inputs to intensify livestock production.

9.2.1 The Medium-Term (Five Year) Plan

The region's medium-term plan allocates a major portion of resource investments to the livestock sector. Of particular importance during this five year period will be the continued development of the livestock sector infrastructure.

The plan proposes several projects for adaptive research, including the testing of forage crops and the further investigation of possible water supplies for the livestock industry. In the Maasai districts, approaches to better range management and to the establishment of village ranches and cooperative pastures will be tested. In the districts with mixed farming systems, approaches to intensive livestock production will continue to be tested.

Directly related to the research and testing will be the further development of livestock centers and the strengthening of extension operations through the provision of training, better facilities, equipment, and supplies. Training will concentrate on improved land and water resource use and management and on the introduction of more modern animal husbandry methods. With this intensification of training, one project proposes to expand the facilities and other capabilities of the Monduli Livestock Development Training Center.

A main constraint addressed by the medium-term plan is the further development of water supplies for livestock production. This development includes projects for dam rehabilitation and construction and for borehole rehabilitation and development. Closely linked to water resources development will be the

construction and rehabilitation of cattle dips to increase geographic coverage. Several projects have been proposed to provide the region with an ongoing capability to improve the livestock sector infrastructure, primarily related to water resources utilization. These projects involve equipping and upgrading the Maasai Range Workshop, establishing a range workshop in Ngorongoro District, and creating Maasai construction brigades to do contract work on infrastructure development.

Other projects under the medium-term plan continue to develop ongoing programs, including tsetse fly eradication, provision of curative and preventive veterinary medicine, establishment of breeding centers and slaughter facilities, and expansion of the region's dairy herd. Funds are also allocated to expand fisheries activities and to promote beekeeping through the introduction of modern hives.

Priority projects requiring external funding include:

A. Extension Training and Operations 16.4 million Tsh

This project consists of several activities (included under the medium-term plan to improve the overall performance of the Livestock Development Extension Service. Of particular importance is the ongoing training of veterinary field staff and livestock keepers, with the expansion of the Monduli Livestock Training Center as a focal point for this training. The project also provides for vehicles and equipment, field housing, and a small expansion of the regional Veterinary Office.

(See Vol. 3: Five Year Development Plan, Part II, Section 2.6.)

B. Veterinary Medicine 3.5 million Tsh

The purpose of this project is to provide preventive and curative veterinary medicines for livestock keepers. The medicine will be sold, creating a fund for continued purchase of needed supplies.

(See Vol. 3: Five Year Development Plan, Part II, Section 2.6 [10].)

C. Range Workshops 8.2 million Tsh

The aim of this project is to upgrade the capabilities of the Maasai Range Workshop and to establish a workshop in Ngorongoro District. Both of these workshops will service machinery for water resource and other livestock infrastructure development. For the Maasai Workshop, the project provides for the acquisition of four bulldozers and spares.

(See Vol. 3: Five Year Development Plan, Part II, Section 2.6 [18, 19].)

D. Maasai Construction Brigades 11.0 million Tsh

This project is designed to establish construction brigades in Kiteto, Monduli, and Ngorongoro districts to do contract work for Maasai villages to develop their livestock and other infrastructure. Regional research shows that Maasai villages are willing to finance (rather than contribute labor) village improvements; such investments may increase livestock sales to pay for these services.

(See Vol. 3: Arusha Rural Productivity Project, Part V, Sections 5.5.4.)

E. Water Resources Development 8.4 million Tsh

The project provides for the further development of water supplies for livestock, primarily in the Maasai districts. Project components include the construction and rehabilitation of 30 dams, digging of four boreholes, and purchase of pipe to connect cattle dips with available water.

(See Vol. 3: Five Year Development Plan, Part II, Section 2.6 [2, 3].)

F. Tsetse Fly Eradication 5.0 million Tsh

This project supports the region's ongoing efforts to clear tsetse fly-infested areas, thus opening up significant lands for grazing. The project provides for equipment and materials to be procured externally.

(See Vol. 3: Five Year Development Plan, Part II, Section 2.6 [9].)

9.2.2 Priority Long-Term Plan Projects

Project proposals for the Arusha Region's long-term plan call for major development of the beef and dairy industries, based on improved land use planning. The plan also calls for a major

investment in production and processing in the small ruminant industry, reflecting a potential not yet developed. Summaries of these proposals follow, with full descriptions in Volume Four of the Arusha Region Integrated Development Plan.

P2.1 Regional Range and Dairy Development Program

53.8 million Tsh

The project is in response to the national government's request for the development of a livestock development policy. The project concentrates on establishing land use priorities for the six districts, with an aim of introducing modern methods to improve beef and dairy production. Institutionally, it further develops concepts of village ranches, national and regional ranches, and individual farms. Although fully integrated, the project has several components, which can be broken out for specific financing:

● Surveying and Plans

1.1 million Tsh

The component provides for the necessary survey and planning work to establish 43 ranches, 47 dams, and 19 boreholes.

● Piped Water Systems for Group Ranches and Dips

4.1 million Tsh

This component provides for the development of piped water systems for livestock consumption and for the establishment of dips on the 43 ranches.

● Construction of Dams

15.5 million Tsh

This component provides for the construction of 47 dams to provide water resources for consumption and dips.

● Construction of Boreholes

9.0 million Tsh

This component provides for the digging and installation of boreholes in areas where surface water is not available. It includes 19 boreholes and headworks.

● Construction of Worker's Quarters

5.7 million Tsh

In support of the new ranching operations, the quarters that will be needed for 38 livestock development workers is provided by this project component.

- Construction of Dips 2.6 million Tsh
This component provides for the construction of 37 dips to serve the requirements of the new and improved ranch operations.
- Construction of Calf-Pens and Milking Sheds 2.4 million Tsh
For the projected 30 dairy farms, this project component provides for the construction of calf-pens and milking sheds.
- Vehicles and Equipment 3.0 million Tsh
This project component provides for the necessary vehicles and farm equipment for the Livestock Service to support overall project operations.
- Tsetse Clearing and Control 10.4 million Tsh
This project component opens up new land for the ranching operations, including 5,000 ha through clearing and 90,000 through spraying.

The above summary outlines the investments required for the regional program. Area-specific investments are also possible instead of general program support. (See Vol 4: Major Areas for Long-Term Investment, II, P2.1.)

P2.2 Arusha Agro-Industrial Project 371.2 million Tsh

This project was developed by the OCM SACCO Consortium of Italy in cooperation with SHUMA, the Arusha District Development Corporation. Based on successful models, such as one in Zaire, this project involves the development of the pig and poultry industry for both domestic consumption and export markets. The project develops a potential of the region that has not yet been realized and includes:

- Establishment of farms to produce cereal and protein for animal feed;
- Establishment of a feed production center that premixes feed and protein concentrates;
- Establishment of a hatchery that produces chicks for domestic and export sales and also poultry meat;

- Development of a swine-breeding center for sale of piglets and production of pork;
- Establishment of a slaughterhouse for pigs (61,000 head per year) and poultry (2.4 million head per year);
- Development of a waste treatment and fertilizer production plant for preparation of organic and inorganic substances; and
- Construction of the infrastructure in support of the above operations.

The project is a high technology, fully integrated effort using the region's resources. Its long-term success depends on the availability and access to export markets, which FAO is currently examining. Even for domestic purposes, however, aspects of the project have significant merit and potential benefits that can be examined on a reduced scale (and with a village orientation) if major funding is not available. (See Vol. 4: Major Areas for Long-Term Investment, II, P2.2.)

9.2.3 Project Ideas To Be Developed

In addition to the projects highlighted under the medium- and long-term plans, several projects to be developed over the next two decades will support current and future regional initiatives.

- Animal Drug and Vaccine Production Facility

One major constraint to the development of the beef and dairy production industries is the limited availability of curative and preventive veterinary medicines. Because of its importance as a livestock production center, Arusha would be an appropriate location for the construction and development of a production facility.

- Livestock Marketing

Currently, most livestock products are held for wealth or consumed locally, due in part to poor prices, inadequate livestock marketing infrastructure, and lack of desired consumer goods. The offtake from the cattle herds can be increased through a marketing project that combines the

provision for purchase of veterinary supplies and consumer goods with improvements in livestock marketing facilities. This project is of critical importance for national and export market supply and development.

- Abattoir

If market surveys are favorable to the development of an international market for the region's beef cattle, there will be a need for a project to construct and initially support initially the operations of an Arusha-based abattoir.

- Development of the Dairy Industry

Under the plans outlined above, the initial objective is to expand milk production through the establishment of dairy farms and improved individual farm production. This will increase supply and make more production available to the Tanzanian Dairy Corporation. When this increase occurs, there will be a need to establish a village network of cooling and storage facilities as well as processing facilities in key geographic areas where milk production is high.

- Water Supply and Livestock Development

The long-term plan outlines several projects for development of water resources and directly productive activities. Therefore, as these water supply projects are improved, there is a need for complementary projects to improve beef and dairy production. These projects should include livestock development plans for the following areas:

- Central Kiteto area;
- Dongobesh area;
- Mto wa Mbu-Mbuyuni area;
- Kiru Valley; and
- Mang'ola-Yaeda Valley

9.3 OBJECTIVE THREE: INCREASING EMPLOYMENT AND REVENUES

The region's third investment objective is to generate revenue, including foreign exchange earnings, and employment through the production of export crops, tourism, and industries

that add value to the region's natural resources. With the growing population, there will be a need for off-farm employment; in addition, there are many opportunities for industrial development, including mining, rural industries, tourism, and wildlife development. The region has a history of realizing these potentials, but the current economic situation and its effect on the import requirements of these development activities have led to a gradual decline. Over the short term, the region should concentrate on those activities that add value to agricultural, livestock, and natural resources production that require a minimum of imports. It should also emphasize those activities that attract external investment. As the economy grows stronger, other opportunities can be explored.

Arusha Region is one of the main industrial centers in Tanzania. In accordance with national policy, the region has placed priority on self-sufficiency in supplying basic producer goods such as building materials and chemicals and on providing consumer goods and services necessary for meeting the basic needs of food, housing, transport, health, and education. Investments have tended to favor large-scale, publicly owned enterprises, to the neglect of district- and village-based activities. As a major development policy, the region has adopted a medium-term strategy of concentration on small-scale industries that add value to the region's natural resources. These efforts have included production facilities for ox-drawn equipment and other appropriate agricultural implements; processing of agricultural, livestock, and natural resources products; and production of materials, such as bricks and tiles, for construction. There is a need to continue the development of these rural industries while laying the groundwork for larger scale investments.

Further development of revenue- and employment-generating activities also rests with improvements in export crop production and processing. A comparison of the 1966 and 1980 figures on export crop production shows that many of the economic woes of

Tanzania would not have occurred if production levels had been maintained. For Arusha Region, the primary export crop is coffee, which is a proven foreign exchange earner despite international price fluctuations. Currently, the European Community is investing in the revitalization of the coffee industry. Further project development and favorable national policies are required, however, if this industry is to reach its potential as reflected by the production figures in 1966.

A second export crop potential is pyrethrum, the production of which has improved since the government's increase in producer prices. However, the long-term viability of this industry depends on locating a reliable international market and on improvements in processing, which will allow Tanzania to offer a refined product comparable to its competition.

Another externally oriented industry is tourism, which is extremely import intensive. Therefore, there has been a rapid deterioration in the tourism infrastructure. Although the region's natural resources have great appeal, it is questionable whether the region should invest in tourism because of import requirements, except small-scale village activities such as agriculture and handicrafts, which support the tourist industry. The World Bank currently has a project to support the Tanzania Tourist Corporation (TTC) in the development of its facilities; in addition, over the long term, the infrastructure and operations of the private sector should be strengthened. Therefore, the region will place priority only on those activities that can be carried out by local entities but will encourage the long-term development of the private sector as a complement to the investments being made in TTC.

Another potential is the development of the mining industry in the region, taking advantage of its mineral and precious stone resources. A first step has been taken by Finnish Aid to develop

phosphate mines in Hanang District; such initiatives will be encouraged with a full analysis of their revenue and employment-generating potentials as well as costs.

Two related areas, fisheries and beekeeping, that are included in the medium-term plan have potential for long-term development. Fishing is a relatively new activity in Arusha Region, and many fishermen appear to be migrants from areas where fishing was traditionally practiced. Today small-scale fishing activities occur in most major rivers and lakes. Natural resources officials and district planners have recommended that fresh water fishing in the region's numerous lakes and streams be promoted and that villages be assisted in establishing a fishing industry. Sufficient bodies water and technical knowledge are available. More important, the development of fishing and fish culture would not compete with traditional agricultural and livestock management practices and would add a source of protein for the population.

Both traditional and commercial beekeeping are practiced in the region. Traditional harvesting of wild bee honey is most common in the highlands of Hanang and Mbulu districts. The Beekeeping Division of Arusha Region and several villages practice commercial production. The potential for production of honey and beeswax is underexploited, but programs have been established to promote a growth in the industry through introduction of transitional and modern hives.

9.3.1 The Medium-Term (Five Year) Plan

Under the medium-term plan, the region will continue to concentrate its efforts to develop the small-scale, rural industries sector with emphases on adding value to agriculture, livestock, and natural resources activities as well as on ways to become self-sufficient in basic materials production. The main project requiring external assistance, as a whole or for specific activities, is:

A. Rural Industries Development

20.6 million Tsh

This project is designed to further develop district- and village-based industries that add value to the region's natural resources. It will provide financing for the testing and expansion of small-scale industries such as those established under APVDP. Major areas of investment include:

- Development of assembly and maintenance facilities for agricultural implements in the three Maasai districts;
- Establishment of additional brick and tile production facilities;
- Identification and development of agriculture and handicraft industries in direct support of tourism;
- Continued development of village agroprocessing industries such as grain grinding mills and oil presses;
- Introduction of village soap production processes;
- Establishment of timber cutting and carpentry industries;
- Development of industries to process livestock industry by-products such as hides;
- Development of ghee and dairy processing industries;
- Improvement of village-level pyrethrum drying and processing facilities; and
- Development of cloth and clothing production industries.

This project offers opportunities for large-scale foreign donor funding and village-specific development efforts financed by private voluntary organizations. (See Vol. 3: Five Year Development Plan, Part II, Section 2.31.)

9.3.2 Priority Long-Term Plan Projects

Priority projects under the long-term plan propose major investments that will increase revenues and employment, taking advantage of the increased technical knowledge and management capabilities developed under the medium-term plan. Specific projects include:

P3.1 Vegetable and Fruit Canning and Processing Industry 10.0 million Tsh

This project is designed to develop a fruit and vegetable processing industry in Arumeru District. It involves the establishment of either an automated plant for canning or a fruit and vegetable dehydration plant. The project will take advantage of the potential for irrigated fruit and vegetable production in the area.
(See Vol. 4: Major Areas for Long-Term Investments, III, P3.1.)

P3.2 Lime Pozzolana Cement Production 30.0 million Tsh

This project is designed to establish a lime-pozzolana cement production facility that will provide low cost construction materials; the project is based on a pilot project established at Oldenyo Sambu that has tested the process. The proposed project will produce approximately 10,000 tons per year and consists of the following components: development of raw material mining units, establishment of the production facility, development of marketing and organizational arrangements, and provision for the basic transport infrastructure.
(See Vol. 4: Major Areas for Long-Term Investments, III, P3.2.)

P3.3 Salt Extraction and Processing -- Lake Balangida 10.0 million Tsh

This project is to develop a salt extraction and processing facility at Lake Balangida in Hanang District to provide salt for domestic consumption and for the production of a surplus for distribution to other regions in Tanzania. Project components include a salt extraction unit for mining, processing plant, packaging facility, organizational arrangements, and infrastructure development for transportation.
(See Vol. 4: Major Areas for Long-Term Investment, III, P3.3.)

P3.4 Soda Ash Production -- Lake Natron 3.0 billion Tsh

Supported by feasibility studies done by Japanese and American firms, this project is designed to develop a major industry for soda ash (sodium carbonate) at Lake Natron. With the increasing costs of synthetic production of sodium carbonate as an industrial raw material, natural deposits, though extraction and processing, have become the most important potential source for this material. Studies show that the reserves of soda ash in Lake Natron consist of 109.0 million tons in the crust and 27.0 million tons in associated brines. To develop these resources, the project will include the following components:

- Construction of a processing plant and township on the eastern shore of Lake Natron;
- Construction of a power- and steam-generating facility based on coal;
- Rehabilitation and construction of 175 km of road from Lake Natron to a point on the railway near Arusha;
- Railroad modification and extension, to include 5 km at Arusha and 16 km at Tanga port; and
- Development of railhead and port facilities.

Actual plant and directly related facilities at Lake Natron would cost about \$120 million, with the remaining amount for operations and infrastructure development. (See Vol. 4: Major Areas for Long-Term Investments, III, P3.4.)

P3.5 Private Sector Tourism Development 80.0 million Tsh

This project is to upgrade the private tourism sector to complement the World Bank's investment in the Tanzanian Tourist Corporation. The project will provide loan financing for improving the 15 private sector tourism facilities in the northern zone, for purchasing hotel equipment and supporting vehicles, and for internal and external marketing operations. The project will be carried out through a cooperative of the owners of these facilities.

(See Vol. 4: Major Areas for Long-Term Investments, III, P3.5.)

P3.6 Wildlife Utilization Project

30.0 million Tsh

This project will develop a comprehensive program to utilize fully the region's wildlife potential. The project includes components for wildlife cropping schemes, revenue generation through hunting fees, breeding of exotic species for export sale, and further development of tourism for wildlife viewing.
(See Vol. 4: Major Areas for Long-Term Investments, III, P3.6.)

9.3.3 Project Ideas To Be Developed

Over the long term, increased employment and the region's income-generating potential rest with the development of the industrial sector. The potentials of this sector are seen through this limited set of projects, which could well have major impact. In addition, the Small Industries Development Organization has identified several potential investments. Moreover, as outlined under the livestock objective, there is a potential for a major agroindustrial project, which would result in significant foreign exchange earnings. Other priority projects to be developed include:

- Production of soap and soap products, a main village need;
- Development of the spice production industry, as mentioned under the agriculture objective, for marketing to international processing companies;
- Extension of phosphate mining operations to Lake Eyasi in Mbulu District; and
- Mining of gold, copper, iron ore, and semiprecious stones in Kiteto District.
- Export Crop Production and Processing
 - Coffee -- Projects to be developed to improve the provision of inputs and credit, seedlings, insecticides, fertilizers, improved extension services, and drying and processing facilities. Improved marketing program to be developed to encourage small-holder expansion of coffee growing.

- Pyrethrum -- Projects to be developed for pyrethrum drying and processing facilities, and for improved extension services to encourage the expansion of pyrethrum growing.
- Programs for the expansion and development of additional export crops, including seed beans, pigeon peas, and spices.
- Development of the fisheries industry to provide a high-grade source of protein for human consumption. A program should be developed for the construction of fish-receiving centers on the major lakes and for extension activities to assist villages in establishing fishponds.

9.4 OBJECTIVE FOUR: DEVELOPING AND MAINTAINING A COMMUNICATIONS NETWORK

The region's fourth investment objective is to develop and maintain a communications network that contributes to economic development. In the Arusha Region, this depends on the establishment of a well-designed and maintained network of roads since air and rail transport make up only a small part of the communications network. The roads system is rapidly deteriorating with Works having the financial and organizational resources to maintain only a minimum network of about 1,500 km. In recognition of this fact, the region has defined a primary roads network, which is critical to its economic and administrative requirements. The first step is to ensure the capacity of Works to maintain this network, including the development of its workshops, and then to expand it gradually as more resources and capacity become available. In addition, ways to improve transport services need to be developed.

Except for foreign donor rehabilitation projects, there has been widespread deterioration of the majority of the region's main trunk, district, and feeder roads, adversely affecting the rural economy and the ability of the government to deliver vital

services. In part, this has been due to reduced development expenditures on roads maintenance; poor management and organization in Regional and District Works; inadequate maintenance facilities; and lack of trained engineers, managers, and mechanics.

In its regional planning exercise, the region and six districts identified a primary roads network that will meet economic development and administrative requirements (see Table 4.) Through APVDP, the region has made much progress on the rehabilitation of the road network in the agricultural districts of Arumeru, Hanang, and Mbulu. There remains considerable work to be done in the three Maasai districts.

In conjunction with the study of road priorities, the region conducted a detailed analysis of Regional Works, highlighting specific management, organizational, and equipment recommendations. The study showed that Works has the capability to maintain 1,000 to 1,500 km of roads if recurrent budget allotments are sufficient; however, the full development of regional capabilities will require external assistance. Of primary importance is the development of regional and district maintenance shop capabilities for road equipment and regional and district vehicles.

Another requirement for the development of the communications network is increasing transport services. The region has developed and is testing a model, which appears to be successful, that allows villages and wards to purchase trucks on a loan basis. The loan funds are repaid into a village account for investment in other village development activities. Finally, the costs of transport can be reduced through a better communications system (such as a radio network).

Although rail transport at present makes up only a small part of the regional communication network, further expansion of the rail network and development of the region's railhead facilities could substantially reduce freight costs, increasing the economic feasibility of several large-scale mining operations (such as soda ash production at Lake Natron). The potential extension of the railroad from Arusha to Lake Victoria would lead to a substantial reorientation of the communications network within the region and have a powerful impact across all economic sectors.

9.4.1 The Medium-Term (Five Year) Plan

The medium-term plan calls for the rehabilitation and maintenance of a primary roads network for the region, using as much as possible existing manpower and equipment. This emphasis recognizes the importance of the roads network and the better use of existing resources. The proposed projects are designed to rehabilitate and maintain 1,624 km of roads.

Additional investment through another project addresses the critical need for new bridges and rehabilitation of existing bridges. In addition, the plan provides for the construction and basic equipment of three Works maintenance facilities, in Arumeru, Ngorongoro, and Kiteto districts, as well as the strengthening of those in Mbulu, Hanang, and Monduli districts. These projects and the regional requirement for a radio network (to improve efficiency of government services at reduced costs) can be assisted by the following external investments:

A. Roads Rehabilitation 23.5 million Tsh

This project provides for the rehabilitation of 1,624 km of roads, selected on the basis of the regions' and districts' economic requirements. It concentrates on the more effective utilization of existing equipment and manpower.

(See Vol. 3: Five Year Development Plan, Part IV, Section 4.7 [1].)

B. Bridge Rehabilitation and Construction

13.6 million Tsh

Supplementing the above project, this project is designed to construct 38 new bridges and rehabilitate 41 existing bridges. This requirement has been identified by surveys conducted by the regional Works.

(See Vol. 3: Five Year Development Plan, Part IV, Section 4.7 [2].)

C. Works Maintenance Shops

2.0 million Tsh

This project provides for a basic, functioning maintenance workshop for each of the six districts. It involves constructing and equipping of new facilities in Arumeru, Kiteto, and Ngorongoro as well as strengthening the shops in Hanang, Mbulu, and Monduli districts.

(See Vol. 3: Five Year Development Plan, Part IV, Section 4.7 [3].)

D. Radio Communications Network

5.65 million Tsh

This project provides for a regional radio network to improve communication, and government efficiency in providing services, and to reduce transport costs. The systems (as proposed under the APVDP follow-on project) will extend to the 133 wards in the region.

9.4.2 Priority Long-Term Plan Projects

Projects under the long-term plan further develop the regional roads network, with an emphasis on modernizing operations and maintenance facilities. Also, a village transport project is proposed to overcome the constraint of the lack of transport. Projects include:

P4.1 Upgrading the Region's Roads Network

296.4 million Tsh

This project is a 10-year effort to provide the region with a sound primary roads network as well as to establish the institutional capabilities of Works to maintain this network. The project includes management and organizational assistance to the regional and district Works, training for senior Works engineers and managers,

purchase of equipment (and necessary spare parts) for replacement and standardization. It also includes operational funds for the rehabilitation and maintenance of the 1,969 km of first and second priority roads in the region's primary roads network.

(See Vol. 4: Major Areas for Long-Term Investments, IV, P4.1.)

P4.2 Modernizing Regional Maintenance Workshop Capabilities

50.0 million Tsh

This project is to modernize the region's and districts' maintenance workshop capabilities for roads equipment and other government vehicles. The project will upgrade the facilities of the regional Works to do the necessary heavy maintenance and to provide supporting assistance to the six district workshops. The project will also upgrade the facilities and equipment of the six district workshops to do the day-to-day maintenance of district equipment and vehicles. In addition, it will provide training to develop a group of skilled mechanics at regional and district levels.

(See Vol. 4: Major Areas for Long-Term Investment, IV, P4.2.)

P4.3 Village Transport Services

48.0 million Tsh

Building on the successful efforts to introduce trucks at the village and ward levels, this project will provide 120 trucks for sale on a loan basis to villages and wards as determined by district administrations. The funds generated from these sales will be placed in village and ward accounts to further finance village development activities. Also, training will be provided for village drivers and mechanics. This project will increase the availability of regional transport services, with the revenues plus loan payments being used for future development efforts.

(See Vol. 4: Major Areas for Long-Term Investments, IV, P4.3.)

9.4.3 Project Ideas To Be Developed

The above projects represent the critical ingredients for developing a sound communications network. In addition, there are three project ideas to be explored and developed.

- Regional and District Bus Network

To move goods and passengers (as well as possibly tourists), an improved regional and district bus network, which can be operated through private transport concerns or the District Development Corporations, is needed.

- Railhead Development

If improvements are made in railway services, the region will develop a project for improved facilities in Arusha. This would allow lower cost shipment of goods, including fuel; also if the livestock industry is developed sufficiently so that offtake is available for the export market, then this facility will increase profit margins. Extension of the railroad and improvement of railhead facilities would greatly enhance opportunities for investments in mining operations.

These project ideas represent direct investments by the region. In addition, better maintenance of the main trunk lines, which promote interregional commerce, is critically needed. Trunk Road Maintenance currently has the responsibility but has not fulfilled its obligations. Since these communication lines are important for regional and national development, there is a need for a project to provide this service, perhaps working through regional and district Works offices.

9.5 OBJECTIVE FIVE: PROVIDING ADEQUATE WATER SUPPLIES

The region's fifth investment objective is to establish and maintain water supply systems to promote productivity and the quality of life in villages. About 52 percent of the rural population does not have a safe water supply either due to poor maintenance or because improved water systems have not been installed. Meeting this need requires a combined strategy of rehabilitation and improved maintenance and of installing new systems with technologies that are easily maintained. Implementation of this strategy necessitates greater technical and financial

resources for Maji, particularly because the region is taking a long-term view of developing systems not only for human consumption but also for improving production.

Although progress has been made in meeting the national guideline that all villages should have a clean water supply within a distance of 5 km, 52 percent of the people of Arusha Region still do not have a reliable water supply system. Recent surveys also show that about 30 percent of the water supply systems installed have significant maintenance problems that cause regular disruption in service and pollution. The region has therefore placed high priority on the maintenance of existing systems, taking steps to survey the region's requirements, and with APVDP financing to rehabilitate systems for several villages. Also, regional policy requires a shift from difficult-to-maintain systems to more appropriate technology (not requiring importation of fuel and spare parts) wherever possible. This has led the region to establish shallow wells construction teams as well as to test the greater use of water catchments and windmills.

The region has broadened the focus of the water supply policy to emphasize the use of systems for directly productive activities.

Therefore, in project development, particularly for the long term, the economic development benefits are examined. This step requires increased integration and coordination in planning between Maji and agriculture, livestock, natural resources, and rural industries.

It is hoped that at the end of the implementation of the long-term plan, every village in the region will have access to safe water within 400 metres. This is in accordance with the national policy.

9.5.1 The Medium-Term (Five Year) Plan

The goal of the five year plan is to ensure that villages have a clean water source through the installation of new systems and the rehabilitation of existing systems. Under the plan, one project is to do the surveying and planning work necessary for the 63 villages that do not currently have a water supply system.

The plan calls for the installation of water supply systems for 69 villages, with natural water supplies for livestock consumption being developed for six villages. To achieve this target, one project is designed to develop piped water supply systems, taking advantage of natural water sources, for 20 villages. A second project is designed to provide 18 villages with water from deep wells, and a third is to provide 31 villages with water from shallow wells. The shallow wells program was initiated by the region through APVDP, which has drawn upon the Morogoro program for training and equipment. In line with regional priorities, a fourth project calls for the rehabilitation of water supply systems for 31 villages so that they receive a reliable and clean water supply.

The cost of the projects under the medium-term plan is 37 million Tsh, the bulk of which will require external funding not yet available. Priority projects include:

A. Strengthening Water Services 8.4 million Tsh

The project's objective is to strengthen water services in the region through training and provision of equipment and spare parts. The project involves the repair and rehabilitation of 59 existing water supply systems. Training is to be provided to village-level technicians as a continuation of the program started through APVDP. (See Vol. 3: Five Year Development Plan, Part III, Section 3.19 [1].)

B. Piped Water Supply Systems 15.0 million Tsh

This project is designed to provide 20 villages with piped water supply systems, taking advantage of natural water sources such as springs and rivers. These systems will be gravity fed, reducing maintenance requirements.

(See Vol. 3: Five Year Development Plan, Part III, Section 3.19 [3].)

C. Deep Well Water Supply 11.8 million Tsh

In certain locations, the only reliable source of clean water for villages is from deep wells or boreholes. This project provides the digging and installation of 18 deep wells.

(See Vol. 3: Five Year Development Plan, Part III, Section 3.19 [4].)

D. Shallow Well Water Supply 750,000 Tsh

Through APVDP, the region has developed the capacity to install shallow wells. This project calls for the installation of shallow wells to serve 31 villages.

(See Vol. 3: Five Year Development Plan, Part III, Section 3.19 [5].)

The above projects provide for the construction and rehabilitation of about 100 water supply systems. For purposes of securing funding, these projects can be broken into village specific projects.

9.5.2 Priority Long-Term Plan Projects

The medium-term plan provides for the construction and rehabilitation of village water supply systems to achieve the guidelines established by the national government. The long-term projects (outlined in Volume 4 of the Arusha Region Integrated Development Plan) have been developed by Maji and are major efforts proposed to serve the long-term economic and social interests of specific geographic areas. These projects include:

P5.1 Improvement of Existing Traditional Water Sources 83.0 million Tsh

At present, 178 villages with 312,563 people are being served by unimproved water sources. Of the 178 villages, 12 are among the villages to be served by the proposed large-scale projects. The remaining 166 villages with 294,531 people require improvement of the traditional water sources. This project involves provision of water treatment facilities such as slow sand filters at dam and river sources, and protection of springs and traditional water holes against pollution, including provision of water storage facilities and kiosks.

P5.2 Distribution Pipelines 70.0 million Tsh

Although the goal of the medium-term plan is to provide at least water sources for those villages that have no water sources within 5 km, in the long-term plan the goal in accordance with the national policy is to bring water supply within 400 metres. This project will involve the extension of distribution lines for five existing water systems and for 38 systems whose construction has been planned during the implementation of the medium-term plan. The project is intended to benefit 79,450 people.

P5.3 Central Kiteto Trunk Main 70.0 million Tsh

This project proposes to establish a pipeline from the Ruvu River to the subdistrict headquarters at Engasmet, serving nine villages with a total population of 6,500 people and 63,000 livestock units. A feasibility study has been completed by Maji, and the project will include 304 km of pipeline, three pumping stations, a treatment plant, and three storage facilities. This project will allow the development of the central part of Kiteto District.

(See Vol. 4: Major Areas for Long-Term Investments, V, P5.1.)

P5.4 Dongobesh Trunk Main 80.0 million Tsh

This project proposes to establish a pipeline from the Mongahay River to serve the semiarid southern part of Mbulu District. The pipeline will provide water to 16 villages with a total population of 36,770 and half the livestock units in the area, about 49,000. A feasibility study has been completed by Maji, and project will include 137 km of pipeline, a treatment plant, and a storage tank. (See Vol. 4: Major Areas for Long-Term Investments, V, P5.2.)

P5.5 Kansay-Endabash Pipeline 10.0 million Tsh

This project will supply water to five villages, with a population of 12,000, that are situated in the northern part of Mbulu District. The project includes 40 km of pipeline, a treatment plant, and a storage facility. The water from the River Endabash will be used for human consumption and for support of small-scale industries including brickmaking. The feasibility study has been completed by the regional Water Office.
(See Vol. 4: Major Areas for Long-Term Investments, V, P5.3.)

P5.6 Mto wa Mbu-Mbuyuni Trunk Main 40.0 million Tsh

This project will tap water from the Oripoi spring northwest of Mto wa Mbu, supplying water to seven villages, with a total population of 11,700 and 51,000 livestock units. The project includes 79 km of pipeline, two pumping stations, and eight storage tanks. It will cover the semiarid area east of Mto wa Mbu in Monduli District. The feasibility study was done by H.P. Gauff Consulting Engineers, and the final design has been completed.
(See Vol. 4: Major Areas for Long-Term Investments, V, P5.4.)

P5.7 Monduli Town Water Supply 5.0 million Tsh

This project is designed to provide adequate water supply for human consumption and small-scale industries in Monduli Town. The project includes the drilling of at least three boreholes and the installation of a pipeline to connect the existing water supply system with the new sources of water. Hydrological surveys have been carried out by the regional Water Office.
(See Vol. 4: Major Areas for Long-Term Investments, V, P5.5.)

P5.8 Ng'arwa Wasso Water Supply 2.0 million Tsh

This project is designed to provide adequate water supply for human consumption and small-scale industries for the district headquarters of Ngorongoro. The water supply system will tap a spring, and the project includes 13 km of pipeline, one pumping station, and one storage tank. The feasibility study for this project has been done by the regional Water Office.
(See Vol. 4: Major Areas of Long-Term Investments, V, P5.6.)

9.5.3. Project Ideas To Be Developed

Additional water supply system projects over the next 20 years will be developed in relation to further agricultural and livestock development programs. As outlined earlier, these include:

- The Kiru Valley Irrigation and Agricultural Development Project;
- The Mang'ola-Yaeda Valley Agricultural and Livestock Development Project, including flood control and irrigation; and
- The Lake Babati Irrigation and Flood Control Project.

9.6 OBJECTIVE SIX: INCREASING ENERGY SUPPLIES

The region's sixth investment objective is to increase the availability of energy supplies through the development of forestry, hydroelectric, and other resources within the region. Currently, about 90 percent of the energy supply for Tanzania and for Arusha Region in particular is from wood, which will continue to be the major source of short-term energy until alternative sources are developed. Although the region's forest reserves are extensive and immediate needs can be met, there is a need for the development of the wood resources to meet the ever increasing demands of a growing population as well as of industry. The most promising potential is at the village and ward levels, particularly if combined with improved soil conservation measures. Also, to meet energy requirements (and to conserve wood resources), hydroelectric power, an untapped potential, needs to be developed.

Fuel wood consumption in Arusha Region averages about 2m^3 per person per year. This suggests a consumption of 2 million m^3 per year, plus marginal amounts for the fiberboard factory and small-scale timber cutting and carpentry operations.

With proper cultivation and conservation, the region's abundant wood resources have the potential to meet this need. In the region, there are 24 Forest Division plantations that occupy 235,579 ha. Assuming an offtake of 10 m³ per ha, the region can produce 2.4 million m³ annually. Moreover, there are several village woodlots, primarily in Mbulu and Monduli districts, and tree planting by private farmers is widespread especially in Arumeru, Mbulu, and Hanang districts. The region's forestry projects, through APVDP, the International Labor Organization, and the national tree-planting campaign, have significantly increased forestry activities. Mbulu District alone, through district, ward, and village nurseries, has produced almost 3 million seedlings in the past year. These are to be planted by villages and farmers.

Despite increased awareness and forestry activity for conserving soil and producing fuelwood, problems such as losses at planting time and as a result of fire, grazing, and unauthorized cutting on public lands are still prevalent. Studies indicate that sustainable wood resources development could come from better control and management of Forest Division plantations; village communal or cooperative nurseries and woodlots; a broader approach to rural forestry, covering more varieties of trees and shrubs integrated more closely with agriculture and livestock production; greater organizational efforts to supply the fuel needs of Arusha and other large towns; and better long-term planning and management to match supplies and demands.

In addition to the long-term development of wood resources, there are several possibilities for hydroelectric projects in the region, particularly in light of its water resources. There is also the possibility of solar resources, as yet unexploited. The development of bio-gas plants for both lighting and heating at

institutions such as rural health centers and post-primary technical schools should be encouraged in those areas where cow manure is readily available.

9.6.1 The Medium-Term (Five Year) Plan

The medium-term plan concentrates on the goals of the national forestry campaign as well as on how rural forestry can be more effectively integrated with agriculture and livestock development activities. This thrust emphasizes the development of ward and village nurseries to produce seedlings and tree planting in villages and at institutions. During the medium-term plan, targets include planting 18 million seedlings on 10,749 ha of land. Main projects include:

A. Forest Tree Nurseries 10.7 million Tsh

This project proposes to establish forest tree nurseries, primarily at ward and village levels, to produce about 3.5 million seedlings each year. Based on the region's experience so far through APVDP, wards and villages are receptive to this approach, and the targets are achievable. (See Vol. 3: Five Year Development Plan, Part II, Section 2.25 [1].)

B. Tree Planting 5.3 million Tsh

This project is to support tree planting at the farm, village, and institutional levels. It provides for the extension and logistical support necessary to introduce forestry for purposes of fuel and soil conservation. (See Vol. 3: Five Year Development Plan, Part II, Section 2.25 [2].)

9.6.2. Priority Long-Term Plan Projects

The main emphasis in the long-term plan is the further development of wood resources, with an aim to sustain production of fuel as the population grows as well as to use trees for soil conservation purposes in coordination with the Agriculture,

Livestock, and Water offices. In addition, the plan proposes the implementation of the Hainu River Hydroelectric Power Project. Brief project descriptions are as follows:

P6.1 Forestry Development

85.0 million Tsh

This project is designed to develop sustainable production of fuelwood in the region as well as to improve soil conservation. The project provides assistance to the forestry extension service in operations, and long-term planning and management, and in the further development of village, Forest Division, and town plantations. The main project components include:

- Development of 400 village nurseries and woodlots based on the successful model developed by the region;
- Assistance to the forestry extension services, including the provision of training, equipment, and vehicles;
- Provision of technical assistance for purposes of resource surveys in the forestry reserves and for long-term planning so that the demand for fuel wood is met;
- Establishment and development of town forest plantations to provide a long-term fuel supply for heavily populated areas; and
- Improvement and expansion of Forest Division plantations to meet the requirements of fuelwood and industries such as fiberboard and carpentry. (See Vol. 4: Major Areas for Long-Term Investments, VI, P6.1.)

P6.2 Hainu River Hydroelectric Power Project

282.0 million Tsh

This project is designed to increase the availability of energy supplies to Mbulu and Hanang districts through the development of the hydroelectric power generation potential of the Hainu and Nambisi rivers in Mbulu District. A prefeasibility report outlines four potential development schemes, with the largest providing 29,293 gigawatt hours per year of power. Energy provided under this project would have a very significant impact on the development of small industries in the districts, with the development of

agroprocessing industries in turn leading to the development of the agricultural and livestock sectors. (See Vol. 4: Major Areas for Long-Term Investments, VI, P6.1.)

9.6.3 Project Ideas To Be Developed

Other project ideas to be developed, which include additional means for producing sustainable energy supplies, include:

- Introducing improved methods of charcoal production, including the establishment of rural industries;
- Conducting prefeasibility studies for other sources of hydroelectric power, with emphasis on small-scale projects;
- Testing of solar energy systems for rural industry and other institutions, such as hospitals, that need a low-cost energy supply.
- Development of bio-gas plants for both heating and lighting. The cost involved in construction of bio-gas plants ranges from 45,000 - 80,000 Tsh, depending on the number of families to be served. The plants could therefore be constructed at institutions such as rural health centers, dispensaries, post-primary technical schools, and secondary schools in areas where cow manure is readily available.

9.7 OBJECTIVE SEVEN: DEVELOPING DISTRICT COUNCIL AND VILLAGE CAPABILITIES

The region's seventh investment objective is to develop the capabilities of district councils and villages to make investments that improve self-reliance and the quality of life in villages. This objective involves building the planning, implementation, and management capabilities of villages and cooperatives; improving village infrastructure including housing; improving educational opportunities and health care with an emphasis on preventive health measures; and developing the government infrastructure in support of village development.

The region has concentrated on findings ways to improve village capabilities for project identification, preparation, and implementation. This has included the testing of ways to increase the involvement of villages in decision making and management as well as their resource commitments in development activities. In addition, considerable training has been done in project development and administration through the Community Development and Cooperative Development departments. With the changes in government structure, there is a need to strengthen village planning and management capabilities further and to assist in the development of local cooperatives engaged in directly productive activities.

Improved educational and health programs are ways in which the productivity and quality of life in villages can be increased. In analyzing current health and education programs, the region placed priority on making existing facilities operational, thus signaling the need for greater recurrent budget support. This support may be achieved through the new revenue-generating mechanisms at the district level and below.

The Ministry of Health's main objective is to improve preventive and curative health care at the village level, attempting to increase life expectancy from 51 years to 60 years by the year 2000. Of particular importance in accomplishing this objective as well as in alleviating the health constraint to improved productivity is the initiation and development of preventive health care projects.

Much progress has been made in the region to improve education in pursuit of the goal of universal literacy. However, the obstacles to achieving this goal are formidable. There is a significant shortage of teachers, school materials, equipment, classrooms, and housing for teachers. In addition, the facilities of the technical schools are underutilized because of problems of employment.

With the devolution of resources and authority to district councils, there will be increased local control over development efforts. For the district administration to function effectively, training, vehicles, and increased office and housing infrastructure are required.

9.7.1 The Medium-Term (Five Year) Plan

The main aim of the five year plan is to consolidate and further develop district and village facilities and operations to improve rural quality of life. An important emphasis is the registration of villages and cooperative societies; this effort is complemented by an intensive training program, primarily in administration and accounting, for village and cooperative society leaders. In addition, the plan proposes investments in village or cooperative shop establishment, improvements in rural housing, and development of district brigades and other rural enterprises, especially for women, to increase village revenues and organization.

The health program will improve and increase village health facilities, adding increased significance to preventive health care in accordance with ministry guidelines. The plan also provides for the expansion of the region's educational infrastructure for both primary and adult education. Furthermore, the problems of the 15 technical schools are addressed, looking for ways this type of training can be encouraged.

With the establishment of district councils, there is a need to improve training and supporting infrastructure. This includes operational requirements and improved district offices and housing as well as training. Although housing for government workers and improved office infrastructure could be considered nonessential to village development, their importance lies with the responsibility of government to provide this infrastructure and the resulting performance by government workers through the fulfillment of these obligations.

To support educational infrastructure development in the three Maasai districts, the World Bank has already begun a primary education project. Under this program, educational infrastructure including 198 classrooms, 33 school stores and offices, 99 teachers' quarters, and 66 school latrines will be constructed during the Fourth Five Year Plan at a cost of 19,693,400 Tsh.

Under the medium-term plan, the priority projects for external funding include:

A. Village and Cooperative Development 5.0 million Tsh

This project involves the registration of villages and cooperative societies, further development of village and cooperative shops, training of village and cooperative leaders, and continued development of programs for women. Part of the operations will be carried out through the regular recurrent budget of the region, and this project provides supplemental funding.

(See Vol. 3: Five Year Development Plan, Part IV, Section 4.15 [3].)

B. Government Housing

- General 7.3 million Tsh
- Education 11.7 million Tsh
- Health 2.4 million Tsh

This project addresses the critical housing needs of government workers to provide adequate incentives for attracting government workers, especially teachers and health personnel, to work at lower administrative levels. Testing of low cost models using soil cement will be done, with the major aim of establishing sufficient housing.

(See Vol. 3: Five Year Development Plan, Part III, Section 3.6, 3.12; Part IV, Section 4.7.)

C. Government Headquarters 9.0 million Tsh

This project provides for the construction of district headquarters in Ngorongoro and Kiteto as well as a small expansion of the regional office headquarters.

(See Vol. 3: Five Year Development Plan, Part IV, Section 4.7 [5].)

9.7.2 Priority Long-Term Plan Projects

A key to the achievement of this investment objective will be developing the financial and organizational capabilities of district councils and villages. Improving village and supporting infrastructure for improved quality of life will also be important. The main projects under this objective include:

P7.1 Rural Development Fund 65.0 million Tsh

This project is designed to finance directly productive village activities on a loan basis, to be repaid into a village account for making other economic and infrastructure investments. In support of this process, which has proved successful under APVDP, training in accounting and administration will be provided to villages and cooperative societies by the Community Development and Cooperative Development departments.

(See Vol. 4: Major Areas for Long-Term Investments, VII, P7.1.)

P7.2 Rural Housing Improvement 36.0 million Tsh

A critical need of the region is improved village housing. This project is designed to test appropriate, low cost methods of construction using local materials, the training of skilled construction workers through the Ministry of Education's technical training centers, and the provision of loan funding for housing construction through the Tanzanian Housing Authority.

(See Vol. 4: Major Areas for Long-Term Investments, VII, P7.2.)

P7.3 Arusha Rural Health Project 51.0 million Tsh

In accordance with national policy, this project has been designed to improve village health care, emphasizing preventive health measures. It will operate in 26 divisions, training health workers to help villages identify and solve health problems. In addition, it will provide funds for supporting village preventive health activities including improved nutrition, water supply, and sanitation. To carry out these activities, logistical and materials support will be provided to regional and district Health Services.

(See Vol. 4: Major Areas for Long-Term Investments, VII, P7.3.)

P7.4 Regional Hospital

200.0 million Tsh

The region has developed a project to construct and equip a regional hospital to serve as a center for health care operations as well as provide high quality curative health care. This investment will provide badly needed services, especially for difficult medical cases.

(See Vol. 3: Five Year Development Plan, Part IX, Section 2.)

9.7.3 Project Ideas To Be Developed

The long-term viability of development efforts will depend in large part on the financial and organizational capabilities of the district councils, villages, and cooperative societies. In line with this need, the region will continue to explore the possible revenue-generating powers and procedures for these local institutions, including those from service payments, fees, and taxes. In addition, there is a further need to develop the financial planning, management, and administrative capabilities of these institutions.

9.8 OBJECTIVE EIGHT: SUSTAINING PRODUCTION AND DEVELOPMENT

The eighth investment objective of the region is to improve and to protect its environment for accomplishing the above objectives through the better utilization of its natural resources and the slowing of its population growth rate. This objective is central; there is a need for better planning and management of soil and water resources if sustainable production increases are to be achieved. Moreover, the region wishes to continue and to expand its effort to conserve soil and water resources while alleviating the pressure on the land through family and population planning.

Over 95 percent of the region's population is dependent on land and water resources for its survival. With the high population growth rate, there is increased competition for land from the agriculture, livestock, and natural resources sectors, and from village, parastatal, and national groups. As a result of population pressures on the land and the practices of these competing interests, land quality and productivity have deteriorated. Without improved management and conservation of natural resources, this trend will continue.

In its planning and development, the region has adopted the better management and conservation of its land and water resources as a primary development priority and goal. Steps were taken to divide the region into planning units based on the definition of 245 distinct agro-ecological zones. In addition, the region has begun integrated planning for these units, developing a village-level approach to improved land use and population planning. Several village and ward pilot projects have been carried out in Gallapo, Olkokola, and Karatu. Village seminars have also been held throughout Kiteto District. With the support of International Labor Organization, other conservation and forestry projects have been undertaken.

The efforts to improve land use and conservation are still in their early states. For the program to have its full impact, the district's capabilities should be developed to carry it out in all directly productive activities. For areas of major erosion, there is a need for well-equipped soil conservation units as well as the continued development of forestry (see Objective Six). Only through these types of measures can sustainable production systems be developed.

Because of the concentration of wildlife, land competition and utilization questions are particularly important in the Ngorongoro Conservation Area. With assistance from the World

Wildlife Fund, an integrated plan for this area has been developed. The plan could be a prototype for other area development projects in the region.

In addition to its emphasis on better land management and conservation, the region has adopted a policy to slow its population growth rate, which is currently 3.8 percent. Through government and party discussions at the village level, local understanding and support for this initiative have been growing.

9.8.1 The Medium-Term (Five Year) Plan

The region's major objective under the medium-term plan is to develop the land and water resources planning and management capabilities at the regional and district level. This involves strengthening the capacities of the district councils and region to incorporate this objective into the preparation of directly productive projects. Also, the plan calls for the continued introduction and extension of soil conservation activities, including the establishment of soil and water conservation units in each of the six districts. With this foundation, it is anticipated that these priorities will be built into the projects over the next two decades. Priority projects for external funding include:

A. Land and Water Resources Planning and Management

114.4 million Tsh

The project involves building district and village capabilities to plan, implement, and manage projects that effectively use and conserve the region's land and water resources. It is the first component of the overall Arusha Rural Productivity Project and includes long-term technical assistance by a land and water resources planning adviser and by rural development specialists assigned to each of the six districts; intensive training in project preparation and land and water resources management; equipment and vehicles for the regional and district

Planning offices, operational funds, and annual allotments for each district from a village development fund for directly productive activities.

(See Vol. 3: Aursha Rural Productivity Project, Part V, Section 5.1.)

B. Soil and Water Conservation Units 10.5 million Tsh

This project is to establish district soil and water conservation programs, including the development of soil and water conservation units, based on the Karatu model. Resources under this project (which is also a component of the Arusha Regional Productivity Project) will be used to equip the units, train the units and all directly productive sector extension workers in conservation practices, and fund village soil and water conservation initiatives. (See Vol. 3: Aursha Rural Productivity Project, Part V, Section 5.7.)

C. Soil Conservation Operations 10.5 million Tsh

This project is to support the regional Agriculture Office's soil conservation operations. The project provides the equipment and operational funds necessary to improve conservation of agricultural land, with a target of over 300,000 acres.

(See Vol. 3: Five Year Development Plan, Part II, Section 2.17 [6].)

D. Surveying Village Plots 2.1 million Tsh

This project is designed to carry out surveys of plots in 180 villages. The project provides vehicle and operational support to the regional Lands Office to conduct this work.

(See Vol. 3: Five Year Development Plan, Part IV, Section 4.12 [1].)

9.8.2 Priority Long-Term Plan Projects

The medium-term plan emphasizes the development of regional and district capabilities to institute integrated planning based on improved use, management, and conservation of soil and water resources. The long-term plan highlights specific investments that build upon the groundwork laid. Projects include:

P8.1 Karatu Soil Conservation 18.0 million Tsh

This project is designed to rehabilitate 6,000 ha of land in the severely eroded areas of Karatu Division, Mbulu District; in the process, it is to provide the region and district with the capacity to curtail and solve major soil erosion problems. It includes technical assistance and training, equipment and vehicles, ongoing data collection and analysis, and operational funds.

(See Vol. 4: Major Areas for Long-Term Investments, VIII, P 8.3.)

P8.2 Arusha Integrated Population and Family Planning Program 10.0 million Tsh

With the concern about the implications of its rapid population growth, the region has designed this integrated project to carry out activities that will alleviate this problem. Specific project components include:

- Assessment and monitoring of population growth and the resulting land pressures;
- Educational activities on the implications of population growth for village, district, and regional planning;
- Assessments of the magnitude, directions, and determinants of inter- and intra-regional migration;
- Review of present policies and procedures relating to regional, district, and village regulation of migration;
- Support for the expansion of the UMATI (National Family Planning Program) in Arusha Region;
- Support for the expansion of family planning training and service delivery programs of the Ministry of Health facilities in the region; and
- Support for the expansion and development of family planning training and service delivery programs of private voluntary organizations in the region.

(See Vol. 4: Major Areas for Long-Term Investments, VIII, P 8.2.)

P8.3 Ngorongoro Conservation Area, Tanzania
World Heritage Site Investment Fund 10.0 million Tsh

This project is designed to provide funds, equipment, and expertise for conservation, preservation, and development of the Ngorongoro Conservation Area as a World Heritage Site. The project is based on a management plan that addresses the needs for preserving the area as well as for village planning and development in the area.

(See Vol. 4: Major Areas for Long-Term Investments, VIII, P 8.3.)

9.8.3 Project Ideas To Be Developed

The region plans to build the emphasis of this objective -- better land and water resources use, management, and conservation -- into all its directly productive activities. There are, however, special requirements that merit study and development, such as projects in the northern part of the Maasai districts to counter soil conservation problems. In addition, a priority project for development is the introduction of soil conservation measures along the region's primary road network.

Furthermore, there should be a conscious effort to minimize the problems faced by forestry in so far as it competes with agriculture and livestock raising. The University of Dar es Salaam's Department of Forestry at Olmotonyi should be involved in research on how to combine agriculture, forestry, and animal husbandry practices. Based on this research, the system of village afforestation could be greatly expanded.

Furthermore, there is a need for projects similar to the one for the Ngorongoro Conservation Area, where a specific geographic area is selected for the preparation of an integrated program of development. Depending on the resources available, such projects can focus on village clusters or larger natural areas of concentration. The important priority of these projects will be the development of sustainable production systems.

CHAPTER TEN CONCLUSIONS

Arusha Region's Integrated Development Plan highlights priority projects for external funding, including those in support of the five year plan and those prepared and to be developed over the next 20 years. The projects under the medium-term (five year) plan are critical for laying the groundwork for long-term investment in the region. These projects emphasize making better use of existing resources, both natural and government, while taking into account the national economic constraints that will limit the availability of funding. These projects require about 420.0 million Tsh.

Of particular importance and urgency to the region is finding adequate funding for medium-term plan, including the Arusha Rural Productivity Project. This project represents the future thrust of the region's planning and development. Although the project's specific components have been incorporated and costed under appropriate long-term investment objectives (204.0 million Tsh out of the proposed 422.3 million Tsh), the need now is for a comprehensive, integrated development program to achieve sustainable production increases for the direct benefit of rural people living in the region's diverse agroecological zones.

Projects for the next two decades have been prepared looking at the long-term potential and implementation capabilities of the region as evidenced by lessons learned and knowledge gained over the past three years. The investment package developed is 5,655,400,000 Tsh, with a heavy concentration of directly productive activities (agriculture, livestock, natural resources, and rural industries) and the supporting infrastructure for these projects. The long-term project total is high due to the inclusion of the 3.0 billion Tsh investment in soda ash production

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at Lake Natron, representing the exploitation of a unique regional asset. Under the plan, the costs for social service infrastructure is low, but the region thinks that these resources can be generated if the organizational and financial capabilities of district councils and villages are first developed. Underlying the projects for both the medium- and long-term plans is a major emphasis on the development of sustainable production systems. These will be the key to the region's long-term development.

Because of the scale of many of the projects included in the plan, the ministries and parastatal organizations will very likely be actively involved in completing feasibility studies and in securing external funding for these projects.

A breakout of investments by objective, by sector, and by project follows in Tables 11, 12, 13, and 14 respectively.

Table 11: Long-term Plan Investment Proposals: By Objective

(in millions of Tsh)

● Objective One

Increase food crop supplies to feed adequately the growing population of Arusha Region, and to continue to provide a surplus for national consumption in a self-sustaining way.

Medium-Term Plan	Long-Term Plan
79.5	559.0

● Objective Two

Develop the livestock industry for local and national consumption and for export.

Medium-Term Plan	Long-Term Plan
52.5	425.0

● Objective Three

Generate revenue, including foreign exchange, and employment through export crops, tourism, and industries that add value to the region's natural resources.

Medium-Term Plan	Long-Term Plan
20.6	3,160.0

● Objective Four

Develop and maintain a communications network that contributes to economic development.

Medium-Term Plan	Long-Term Plan
44.8	394.4

● Objective Five

Establish and maintain water supply systems to promote productivity and quality of life in rural villages.

Medium-Term Plan	Long-Term Plan
36.0	360.0

- Objective Six

Increase the availability of energy supplies through the development of forestry, hydroelectric, and other resources.

Medium-Term Plan	Long-Term Plan
16.0	367.0

- Objective Seven

Develop the capabilities of district councils and villages to make investments that improve self-reliance and the quality of life in villages.

Medium-Term Plan	Long-Term Plan
35.4	352.0

- Objective Eight

Improve and protect the environment of the region for accomplishing the above objectives through the better use and conservation of its natural resources and the slowing of population growth rates.

Medium-Term Plan	Long-Term Plan
137.5	38.0

TOTALS:	Medium-Term Plan	Long-Term Plan
	422.3	5,655.4

Table 12: Long-Term Plan Investment Proposals: By Sector

<u>Sector</u>	<u>Medium-Term Plan</u>	<u>Long-Term Plan</u>
	(in millions of Tsh)	
Agriculture	100.5	577.0
Livestock	52.5	425.0
Rural Industries	20.6	3,130.0
Natural Resources	16.0	115.0
Works	55.4	346.4
Water	36.0	360.0
Lands	2.1	--
Health	2.4	251.0
Education	11.7	--
Cooperatives	5.0	48.0
Community Development	--	36.0
Planning	120.1	75.0
Tanesco	--	282.0
Ngorongoro Conservation Area	--	10.0
	422.3	5,655.4
TOTALS:		

Table 13: Medium-Term Plan Annual Expenditures: By Sector and Project

Project (Objective)	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
(in millions of Tsh)						
<u>AGRICULTURE</u>						
<u>Medium-Term Plan</u>						
Adaptive Research (1)	-	4.7	3.6	2.1	2.1	12.5
Extension and Information (1)	-	5.1	1.8	1.8	1.8	10.5
Irrigation Development (1)	-	11.0	9.5	9.4	8.9	38.8
Agriculture Workshop and Farm Services Centers (1)	-	5.0	3.3	4.4	5.0	17.7
Soil and Water Conservation Units (8)	-	5.0	2.0	1.8	1.7	10.5
Soil Conservation Operations (8)	2.2	2.3	1.2	2.2	2.6	10.5
Total :	2.2	33.1	21.4	21.7	22.1	100.5
<u>LIVESTOCK</u>						
<u>Medium-Term Plan</u>						
Extension Training and Operations (2)	1.0	3.6	3.4	3.8	4.6	16.4
Veterinary Medicine (2)	-	1.7	-	1.8	-	3.5
Range Workshops (2)	-	2.9	1.6	2.8	0.9	8.2
Maasai Construction Brigades (2)	-	7.0	3.0	1.0	-	11.0
Water Resources Development (2)	0.5	2.1	1.8	2.1	1.9	8.4
Tsetse Fly Eradication (2)	0.6	1.0	1.0	1.2	1.2	5.0
Total :	2.1	18.3	10.8	12.7	8.6	52.5

Project (Objective)	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
<u>RURAL INDUSTRIES</u>						
<u>Medium-Term Plan</u>						
Rural Industries Development (3)	1.9	4.8	4.8	4.9	4.2	20.6
Total :	1.9	4.8	4.8	4.9	4.2	20.6
<u>NATURAL RESOURCES</u>						
<u>Medium-Term Plan</u>						
Forest Tree Nurseries (6)	1.0	2.6	1.9	2.7	2.5	10.7
Tree Planting (6)	0.4	1.6	1.5	0.9	0.9	5.3
Total :	1.4	4.2	3.4	3.6	3.4	16.0
<u>WORKS</u>						
<u>Medium-Term Plan</u>						
Roads Rehabilitation (4)	0.8	5.8	5.8	5.9	5.2	23.5
Bridge Rehabilitation and Construction (4)	0.3	4.2	3.1	3.0	3.0	13.6
Works Maintenance Shops (4)	0.4	0.6	0.5	0.3	0.2	2.0
Government Housing - General (7)	-	2.7	1.9	1.3	1.4	7.3
Government Headquarters (7)	0.6	3.0	2.4	1.0	2.0	9.0
Total :	2.1	16.3	13.7	11.5	11.8	55.4

Project (Objective)	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
<u>WATER</u>						
<u>Medium-Term Plan</u>						
Strengthening Water Services (5)	0.4	2.3	1.6	2.1	2.0	8.4
Piped Water Supply Systems (5)	1.8	1.9	4.4	4.1	2.8	15.0
Deep Well Water Supply (5)	2.4	2.7	2.9	2.1	1.7	11.8
Shallow Well Water Supply(s)	-	0.2	0.2	0.2	0.2	.8
Total :	4.6	7.1	9.1	8.5	6.7	36.0
<u>LANDS</u>						
<u>Medium-Term Plan</u>						
Surveying Village Plots (8)	0.2	0.5	0.6	0.5	0.3	2.1
Total :	0.2	0.5	0.6	0.5	0.3	2.1
<u>HEALTH</u>						
<u>Medium-Term Plan</u>						
Housing for Health Workers (7)	-	0.6	0.6	0.6	0.6	2.4
Total :	-	0.6	0.6	0.6	0.6	2.4

Project (Objective)	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
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EDUCATION

Medium-Term Plan

Housing for Education Workers (7)	2.5	3.4	3.0	1.5	1.3	11.7
Total:	2.5	3.4	3.0	1.5	1.3	11.7

COOPERATIVES

Medium-Term Plan

Village and Cooperative Development (7)	1.0	0.9	1.0	1.0	1.1	5.0
Total:	1.0	0.9	1.0	1.0	1.1	5.0

PLANNING

Medium-Term Plan

Land and Water Resources Planning and Management (8)	-	33.4	29.4	25.8	25.8	114.4
Radio Communications Network (4)	-	2.5	2.5	0.7	-	5.7
Total:	-	35.9	31.9	26.5	25.8	120.1

ARUSHA REGION TOTAL

<u>MEDIUM-TERM PLAN</u>	18.0	125.1	100.3	93.0	85.9	422.3
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Table 14: Long-Term Plan Investment Proposals: By Project

Project (objective)	(in millions of Tsh)
● AGRICULTURE	
<u>Medium-Term Plan</u>	
	Adaptive Research (1) 12.5
	Extension and Information (1) 10.5
	Irrigation Development (1) 38.8
Pl.1	Agriculture Workshops and Farm Service Center (1) 17.7
	Soil and Water Conservation Units (8) 10.5
	Soil Conservation Operations (8) 10.5
	TOTAL: <u>100.5</u>
<u>Long-Term Plan</u>	
Pl.2	Kiru Valley Irrigation and Agricultural Development (1) 278.0
Pl.3	Mang'ola Irrigation/Flood Control and Agricultural Development (1) 240.0
Pl.4	Mbuguni-Moshono Irrigation and Flood Control (1) 35.0
Pl.5	Lake Babati Irrigation and Flood Control (1) 6.0
P8.1	Karatu Soil Conservation (8) 18.0
	TOTAL: <u>577.0</u>
● LIVESTOCK	
<u>Medium-Term Plan</u>	
	Extension Training and Operations (2) 16.4
	Veterinary Medicine (2) 3.5
	Range Workshops (2) 8.2
	Maasai Construction Brigades (2) 11.0
	Water Resources Development (2) 8.4
	Tsetse Fly Eradication (2) 5.0
	TOTAL: <u>52.5</u>
<u>Long-Term Plan</u>	
P2.1	Regional Range and Dairy Development (2) 53.8
P2.2	Arusha Agro-Industrial Project (2) 371.2
	TOTAL: <u>425.0</u>

- RURAL INDUSTRIES

- Medium-Term Plan

Rural Industries Development (3)	20.6
TOTAL:	<u>20.6</u>

- Long-Term Plan

P3.1	Vegetable and Fruit Canning and Processing (3)	10.0
P3.2	Lime Pozzolana Cement Production (3)	30.0
P3.3	Salt Extraction and Processing -- Lake Balangida (3)	10.0
P3.4	Soda Ash Production -- Lake Natron (3)	3,000.0
P3.5	Private Sector Tourism Development (3)	80.0
TOTAL:		<u>3,130.0</u>

- NATURAL RESOURCES

- Medium-Term Plan

Forest Tree Nurseries (6)	10.7
Tree Planting (6)	5.3
TOTAL:	<u>16.0</u>

- Long-Term Plan

P6.1	Forestry Development (6)	85.0
P3.6	Wildlife Utilization Project (3)	30.0
TOTAL:		<u>115.0</u>

- WORKS

- Medium-Term Plan

Roads Rehabilitation (4)	23.5
Bridge Rehabilitation and Construction (4)	13.6
Works Maintenance Shops(4)	2.0
Government Housing -- General (7)	7.3
Government Headquarters (7)	9.0
TOTAL:	<u>55.4</u>

Long-Term Plan

P4.1	Upgrading the Region's Primary Roads Network (4)	296.4
P4.2	Modernizing the Regional Maintenance Workshop Capabilities (4)	50.0
	TOTAL:	<u>346.4</u>

● WATER

Medium-Term Plan

	Strengthening Water Services (5)	8.4
	Piped Water Supply Systems (5)	15.0
	Deep Well Water Supply (5)	11.8
	Shallow Well Water Supply (5)	.8
	TOTAL:	<u>36.0</u>

Long-Term Plan

P5.1	Improvement of Existing Traditional Water Sources	83.0
P5.2	Distribution Pipelines	70.0
P5.3	Central Kiteto Trunk Main (5)	70.0
P5.4	Dongobesh Trunk Main (5)	80.0
P5.5	Kansay-Endabash Pipeline (5)	10.0
P5.6	Mto wa Mbu-Mbuyuni Trunk Main (5)	40.0
P5.7	Monduli Town Water Supply (5)	5.0
P5.8	Ng'arwa Wasso Water Supply (5)	2.0
	TOTAL:	<u>360.0</u>

● LANDS

Medium-Term Plan

	Surveying Village Plots (8)	2.1
	TOTAL:	<u>2.1</u>

- HEALTH

- Medium-Term Plan

Housing for Health Workers (7)	2.4
TOTAL:	<u>2.4</u>

- Long-Term Plan

P7.3 Arusha Rural Health Project (7)	51.0
P7.4 Regional Hospital (7)	200.0
TOTAL:	<u>251.0</u>

- EDUCATION

- Medium-Term Plan

Housing for Education Workers (7)	11.7
TOTAL:	<u>11.7</u>

- COOPERATIVES

- Medium-Term Plan

Village and Cooperative Development (7)	5.0
TOTAL:	<u>5.0</u>

- Long-Term Plan

P4.3 Village Transport Services (4)	48.0
TOTAL:	<u>48.0</u>

- COMMUNITY DEVELOPMENT

- Long-Term Plan

P7.2	Rural Housing Improvement (7)	36.0
	TOTAL:	<u>36.0</u>

- PLANNING

- Medium-Term Plan

	Land and Water Resources Planning and Management (8)	114.4
	Radio Communications Network (4)	5.7
	TOTAL:	<u>120.1</u>

- Long-Term Plan

P7.1	Rural Development Fund (7)	65.0
P8.2	Arusha Integrated Population and Family Planning Program (8)	10.0
	TOTAL:	<u>75.0</u>

- TANESCO

- Long-Term Plan

P6.2	Hainu River Hydroelectric Power (6)	282.0
	TOTAL:	<u>282.0</u>

● NGORONGORO CONSERVATION AREA

Long-Term Plan

P8.3	Ngorongoro Conservation Area, Tanzania World Heritage Site Investment Fund (8)	10.0
	TOTAL:	<u>10.0</u>

ANNEX A
ARUSHA PLANNING AND VILLAGE DEVELOPMENT
PROJECT DOCUMENTATION
DECEMBER 1982

ANNEX A

ARUSHA PLANNING AND VILLAGE DEVELOPMENT
PROJECT DOCUMENTATION
DECEMBER 1982

GENERAL OUTLINE

1. APVDP Annual Plans
2. Arusha Region Integrated Development Plan
3. APVDP Progress Reports
4. Issue Papers
 - A) Agriculture
 - B) Financial Resources
 - C) Health
 - D) Land Use and Conservation
 - E) Livestock
 - F) Manpower
 - G) Natural Resources
 - H) Population
 - I) Small Industries
 - J) Transportation/Works
 - K) Water
 - L) Wildlife and Tourism
5. Issue Paper Summaries
6. Regional Sector Papers
7. General Policy Papers
8. Evaluation Papers
9. District Strategy and Priority Papers
10. Seminars, Planning Workshops, Planning Committee Meetings
11. Regional and District Project Profiles

1. APVDP ANNUAL PLANS
 - a) First Annual Plan, July 1979-June 1980.
 - b) Second Annual Plan, July 1980-June 1981.
 - c) Third Annual Plan Submission, July 1981-June 1982.
(Supplement to the Arusha Regional 1981/82 Annual Plan Submission.)
 - d) Fourth Annual Plan, 1982/83. (Also included in Regional Annual Development Plan 1982/83.)

2. ARUSHA REGIONAL INTEGRATED DEVELOPMENT PLAN
 - a) Summary Report: Arusha Region Integrated Development Plan
 - b) Volume One: Arusha Region Today: 1981.
 - c) Volume Two: Arusha Region: Development Strategies and Priorities for the Next 20 Years.
 - d) Volume Three: Arusha Region: Medium-Term Plan 1981/82-1985/86.
 - e) Volume Four: Major Areas for Long-Term Investments.
 - f) Volume Five: Information Strategy and Documentation.

3. APVDP PROGRESS REPORTS
 - a) First and Second Quarter Progress Report, July-December 1979.
 - b) Third Quarter Progress Report, January-March 1980.
 - c) Fourth Quarter Progress Report, April-June 1980.
 - d) Fifth Quarter Progress Report, July-September 1980.
 - e) Sixth Quarter Progress Report, October-December 1980.
 - f) Seventh Quarter Progress Report, July-September 1981.
 - g) Eighth Quarter Progress Report, April-June 1981.
 - h) Ninth Quarter Progress Report, July-September 1981.
 - i) Tenth Quarter Progress Report, October-December 1981.
 - j) Eleventh Quarter Progress Report, January-March 1982.
 - k) Twelfth Quarter Progress Report, April-June 1982.
 - l) Thirteenth Quarter Progress Report, July-September 1982.
 - m) Fourteenth Quarter Progress Report, October-December 1982.

4. ISSUE PAPERS
 - A. Agriculture
 - 1) Arusha Region Agricultural Review -- Donald Humpal, May 1980.

- 2) Agricultural and Livestock Production in Arusha Region: An Agricultural Economic Perspective - Merritt Sargent, October 1980.
- 3) Regional Agricultural and Livestock Activities in Relation to Arusha Region Development Objectives: Summary Papers - Ian Walton, September 1980.
- 4) Back to Basics, Some Thoughts Concerning the Agricultural Sector in Arusha Region - Robert Dodd, November 1981.
- 5) Extension Agent's Field Guide - Robert Dodd and Beth Jackson, February 1982.
- 6) Muongozo wa Kilimo cha Mazao Mbali Mbali (Guidelines for Various Agricultural Crops), 15 crops (Swahili) - P.N. Msabaha, Hanang Ag. Extension Program and Regional Resource Centre, June 1982.
- 7) Developing Irrigation in Arusha Region Tanzania - Bishay G. Bishay, May 1982.
- 8) Strengthening Arusha Region Extension Services in the Productive Sectors - Bruce Lundeen, August 1982.
- 9) A Four Week In-Service Training Program in Agricultural Irrigation and Drainage, Arusha, Tanzania - Bishay G. Bishay, August 1982.

B. Financial Resources

1. Financial Resources Available for the Development of the Arusha Region: A Look into the Future -- Elliott Morss, May 1980.
2. Kitabu cha Mikopo na Misaada Vijijini (Village Loan and Grant Guidebook) (Swahili) -- Arumeru District Development Office, July 1980.
3. An Assessment of the Revenue Generation Capabilities of Villages, Districts and Arusha Region: Some Policy Options -- Larry Schroeder, Local Revenue Administration Project, Syracuse University, June 1981.
4. The Financial Infrastructure in Tanzania, Perspectives, Problems and Policy Strategies with Policy and Program Implications for Arusha Region -- M. S. D. Bagachwa, Economic Research Bureau University of Dar es Salaam, June 1981.

C. Health

1. A Survey of the Health Service in Arusha Region-- Edith Alger, May 1980.
2. APVDP Health Component -- Stan Yoder, September 1980.
3. Health Sector Assessment -- Stan Yoder, October 1980.
4. Education and Training for Health Planning in the Arusha Region, Tanzania (with abstract) -- Paul Chikira, August 1981 (Cornell University thesis).

D. Land Use and Conservation

1. Four Discussion Papers -- Henry Fosbrooke
 - i. Land Tenure and Land Use
 - ii. Farming Systems
 - iii. Urban Development and the Growth of Communications
 - iv. Resource Conservation
2. Soil Degradation and Conservation in the Arusha Region -- Rorke Bryan, March 1980.
3. Information for Rural Land Planning in Arusha Region -- Dunford, Mouat, Slaymaker, June 1980.
4. Livestock, Wildlife and Land Use Survey: Arusha Region -- Tanzania. Final Report. Volume I: Text. Ecosystems Ltd., September 1980.
5. Livestock, Wildlife and Land Use Survey: Arusha Region, Tanzania. Final Report. Volume 2: Figures and Tables. Ecosystems Ltd., September 1980.
6. Land Resource Survey & Planning -- Arusha Region, Tanzania -- Christopher Dunford, Land Resource Surveys, 1980.
7. Land Information Materials Available to Arusha Planning and Village Development Project -- Christine Dodson, December 1980.
8. Proposed Land Planning Units for Arusha Region, Tanzania -- Christopher Dunford, December 1980.
9. Recommendations for Soil Conservation in Karatu Division, Mbulu District, Tanzania -- Rorke Bryan, February 1981. (English and Swahili.)

10. Change in Cultivated Areas and Erosion Gulleets in Northern Mbulu District, Tanzania 1958 to 1972 -- Christopher Dunford, May 1981.
11. Promotion of Land Use Planning in Arusha Region -- Francis G. Finda, June 1981.
12. AP/VDP Soil Conservation Workshop -- Summary and Conclusions -- Rorke Bryan and Tom Dunne, June 1981.

E. LIVESTOCK

1. The Livestock Sector in Arusha - Ian C. Walton, December 1980.
2. Masai Motivation and its Application - Henry Fosbrooke, March 1980.
3. Masai Motivation and its Application Annexure II The Masai Gift Scheme, 1940-1944 - Henry Fosbrooke, March 1980.
4. Tsetse Clearing in Mbulu District, 1936-1953 - Henry Fosbrooke, March 1980.
5. Assessment of the Arusha Livestock Situation and Recommendations for Use in the Arusha Region, 1980-1985 Livestock Plan - M. Jacob, Dr. J. Melewas, and G. Sumari, April 1980.
6. Range Management in Arusha Region: Discussion Paper - David Peterson and Thad Peterson, July 1980.
7. Livestock Leaflets, 20 subjects (Swahili) - Ofisi ya Maendeleo ya Mifugo (Livestock Development Office), June 1982.

F. Manpower

1. A Profile and Analysis of Government Manpower in Arusha Region -- Liz Wily, October 1980.
2. General Conclusions and Recommendations of A Profile and Analysis of Government Manpower in Arusha Region -- Liz Wily, October 1980.

G. Natural Resources

1. Agro-Forestry and Its Relevance to the Arusha Region -- Henry Fosbrooke, March 1980.
2. Fisheries in Arusha Region, Tanzania -- Phoenix Development Services Ltd., May 1980.

3. Forestry in Arusha Region -- T.J. Synott, July 1980.
4. Beekeeping in Arusha Region -- Christopher Dunford, July 1980.
5. Pre-feasibility Assessment of Geothermal Resources in Northern Tanzania -- Kathleen Crane, Lament-Doherty Geological Observatory, Palisades, New York.
6. Notes on Forestry in Hanang -- T. J. Synott, June 1981.
7. Proposals for Forestry Projects in Arusha Region -- T. J. Synott, July 1981.

H. Population

1. Population Profile of Arusha Region -- Alan Johnston, January 1980.
2. Monitoring Population Growth in Arusha Region -- Population Data Collection Systems and Suggestions for Improvement -- C. Lwechungura Kamuzola, Department of Statistics, University of Dar es Salaam, October 1981.
3. Assessment of Inter- and Intra-Regional Migration in Arusha Region -- Wilfred Mlay, Department of Geography, University of Dar es Salaam, October 1981.
4. Population Pressure in Arumeru District: Development of Strategies and Policies for Dealing with Population Pressure in Arumeru District -- W. F. I. Mlay, Department of Geography, University of Dar es Salaam, June 1982. (English and Swahili.)

I. Small Industries (Ujamaa and Cooperatives Development)

1. APVDP Discussion Paper: A Possible APVDP Strategy for Small Industries/Appropriate Technology Activity in Arusha Region -- Hugh Allen, October 1979.
2. The Urban Informal Enterprise Sector in Arusha Region -- M. S. D. Bagachwa and S. S. A. Ngware, University of Dar es Salaam, January 1981.
3. Formal Private Industry in the Arusha Region: A Survey -- Peter Schaefer, March 1980.
4. The Availability and Distribution of Selected Building Materials in Arusha Region -- W. E. Maro, Economics Research Bureau, University of Dar es Salaam, August 1981.

5. Formal Industries in Arusha Town (Inventory.)
6. Formal and Informal in Rural Arusha Region (Inventory.)
7. Agricultural Implements Factory at Njiro Hill Arusha, Project Report for APVDP - SIDO Arusha, September 1981.
8. The Spider Tractor in Tanzania - John Kilgour, C.R. Crossley, National College of Agricultural Engineering, Crangfield Institute of Technology, Silsoe, England, October 1982.
9. Prefeasibility Study on Brick and Tile Making for Village Development Project - Ajit Pal Singh, November 1980.

J. Transportation/Works

1. Planning Roads for the Arusha Region -- Edward Holland, January 1980.
2. Transportation in Arusha Region -- Edward Holland, January 1980.
3. Problems of Agricultural Transportation in Rural Areas (A Case Study of Seven Villages in Mbulu District) -- W. E. Maro, Economic Research Bureau, University of Dar es Salaam, June 1980.
4. Arusha Regional Transport Planning Project (Road Transport Infrastructure) Study -- Dr. Benno J. Ndulu, Department of Economics, University of Dar es Salaam, June 1980.
5. Regional Works Issues for Discussion -- John Morrison, October 1980.
6. Assessment of Arusha Region Works Organization and Management -- John Morrison, October 1980.
7. Road Priority Determination: Arusha Region -- Dr. Benno J. Ndulu, Department of Economics, University of Dar es Salaam, June 1981.
8. Rural Road Planning: A Training Program for District Engineers in Arusha Region, Tanzania -- Castor Tingirawanyuma, May 1982 (Cornell University thesis.)

K. Water

1. Hainu River Study Pre-feasibility Report (TANESCO) -- M. Katyesa and J. Gadek, December 1980.
2. Hydrogeological Investigation Report for Olkokola Borehole -- K. Roy, Regional Hydrogeologist, November 1980.
3. Hydrogeological Investigation Report for Kikatiti Borehole -- K. Roy, Regional Hydrogeologist, March 1981.
4. Preliminary Investigation Report for Dongobesh Gravity Water Supply -- J. Gadek, March 1981.
5. Planning for Operation and Maintenance of Rural Water Supply Systems in Tanzania: Arusha Region Case Study (Cornell University thesis) - Gwabe M. Khawange, August 1982.

L. Wildlife and Tourism

1. Sector Assessment of Tourism in the Arusha Region of Tanzania -- Victoria Morss, May 1980.
2. The Status and Utilization of Wildlife in Arusha Region, Tanzania, Final Report. Ecosystems Ltd., September 1980.

5. ISSUE PAPER SUMMARIES (ENGLISH AND SWAHILI)

- A. Agriculture
- B. Beekeeping
- C. Financial Resources
- D. Fisheries
- E. Forestry
- F. Health
- G. Implementation of Development Initiatives
- H. Land Use and Conservation
- I. Livestock
- J. Manpower
- K. Population
- L. Small Industries
- M. Transportation
- N. Water
- O. Wildlife and Tourism

6. REGIONAL SECTOR PAPERS: SUMMARY OF THE CURRENT STATUS, CONSTRAINTS, AND PRIORITIES FOR FUTURE DEVELOPMENT - Regional and Functional Offices, December 1980.

- A. Agriculture
- B. Education
- C. Land Development
- D. Livestock
- E. Natural Resources
- F. Small Industries
- G. Stores
- H. Ujamaa and Cooperatives
- I. Water
- J. Works

7. GENERAL POLICY PAPERS

- a) APVDP Policy Paper
- b) Village Development Activities, Arusha Planning and Village Development Project, March 1981.
- c) Information Activities of the APVDP: Present and Future Potentials -- Elliott Morss, March 1980.
- d) A Case for Regionally Integrated Planning -- Elliott Morss, March 1980.
- e) Integrating Regional Development Objectives into the Regional Planning Process -- Elliott Morss.
- f) Regional Development Planning: A Critical Assessment of the Tanzania Experience and its Implications for the Arusha Planning Process -- Elliott Morss, August 1979.
- g) Center and Periphery in Arusha Region: Institutional Capacities and Development Initiatives in the Context of Existing Governmental Structures and Village Organization -- Garry Thomas, November 1980.
- h) The Village Profile Exercise: APVDP Background Information, Impressions and Perceptions -- David Peterson and Thad Peterson, June 1980.
- i) The Village Profile Exercises: Codes for Information Held in Computer Files -- T. M. B. Chikoti, February 1982.
- j) English translation of the Guidelines for Preparing the Union Five-Year Plan 1981/82-1985/86.

- k) English translation of Guidelines for the Preparation of the Regional Estimates for the 1981/82 Financial Year.
- l) Cross-Cutting Issues Emerging from the Arusha Regional Planning Exercise -- Elliott Morss, November 1980.
- m) Summary Strategy Paper.
- n) Arusha Regional Planning Exercise: Decisions for the Future, January 1981.
- o) Women and Development: A Case Study of Ten Tanzanian Villages -- Liz Wily, March 1981. (Summary in English and Swahili.)
- p) Encouraging Village Self-Reliance in Arumeru District, Tanzania -- Joyce Stanley, June 1981.
- q) APVDP Briefing Paper -- July 1981.
- r) Fuel Availability and Distribution in Arusha Region -- W. E. Maro, Economic Research Bureau, University of Dar es Salaam, August 1981.
- s) Integrated Rural Development Planning through the Decentralized System: Shortcomings and Prospects. The Tanzanian Experience with the Arusha Region as a Case Study -- Mbwiga Mwalende, May 1982 (Cornell University thesis.)
- t) Proposed Implementation Plan for APVDP Projects 1982/83 -- APVDP, May 1982.
- u) Regional Planning Model for Arusha, Tanzania -- R. Scott Moreland, International Population and Development Planning Project, Research Triangle Institute, North Carolina, August 1982.

8. EVALUATION PAPERS

- a) Evaluation of the Third Five Plan (1976-1981) Arusha Region -- Institute of Development Studies, University of Dar es Salaam, April 1980.
- b) English translation of Dutch Evaluation Visit to Arusha Planning Village Development Project, March 1981.
- c) Report on the Evaluation Visit to the APVDP Graduate Training Program in Regional Planning at Cornell University, February 1981.

- d) Kikwe Building Brigade Evaluation, December 1980.
- e) Joint USAID/Government of Tanzania Evaluation of AP/VDP, June 1981.
- f) A Preliminary Investigation into the Potential for Agricultural Production from the Kiru Valley Area of Hanang -- I. Walton, J. Gadek, & D. R. R. Mabugo, June 1981.
- g) Evaluation of the APVDP Shallow Wells Program in Hanang District, October 1981.
- h) Evaluation of the Gallapo Dairy Multiplication Unit in Hanang District, November 1981.
- i) Land Use Planning Activities in Arusha Region, Report and Recommendations -- The Regional Development Directorate, Arusha, April 1982.
- j) Evaluation of the Computer Operations of the Regional Planning Office, Arusha Region: Report and Recommendations - Regional Planning Office, Arusha, August 1982.

9. DISTRICT STRATEGY AND PRIORITY PAPERS

- a) Arumeru District Strategy for Planning 1981/82 Future 5 and 20 Years, December 1980.
- b) Hanang District Long Term Development Strategy, December 1980.
- c) Kiteto District Development Planning Framework for 1981/82 and the Future 5 and 20 years. Issues, Strategy and Supporting Action - Area Commissioner's Office, January 1981.
- d) Mbulu District's Development Issues and Strategies - District Planning Committee, January 1981.
- e) Monduli District Development Issues, Strategies and Actions for the next 5 to 20 Years - Area Commissioner's Office, January 1981.
- f) Ngorongoro District Long Term Development Strategies and Supporting Issues.

10. SEMINARS, PLANNING WORKSHOPS, PLANNING COMMITTEE MEETINGS

- a) Seminar on Data Analysis and Development Planning Report - Lewis, Brandford, Jones, August 1980.
- b) Workshop on RIDEP/Arusha, September 1979.
- c) Manyara Workshop Papers, October 1979.

- d) Ngorongoro District Planning Workshop Report - Neal Cohen, January 1980.
- e) Maoni na Maelekeo yaliocokana na kukusanya Takwimu na Maarifa Kutoka Vijiji vya Wilaya ya Kiteto (Kiteto District Planning Workshop Report) - D. Peterson and T. Peterson, February 1980. (In Swahili).
- f) Minutes of Regional Planning Committee Meeting, 9-11 February 1981. (English and Swahili).
- g) Report of a Study Tour Undertaken by Arusha Regional Team in Botswana, February 25-March 14, 1981.

11. Regional and District Project Profiles

A. Regional Projects

<u>Project Number</u>	<u>District</u>	<u>Project Name</u>
1	Region	Regional Planning Activities
2	Region	Facilitator Training Model Seminar
3	Region	Workshop on Data Analysis and Planning
4	Region	Graduate Training program /Regional Planning
5	Region	Themis Farm Implement Company
6	Region	Improvement of Regional Veterinary Services
7	Region	Procurement of 35 Landrovers
8	Region	Procurement of 10 Isuzu Lorries
9	Region	Procurement of 120 Motorcycles
10	Region	Regional Well Drilling Equipment Spare Parts
11	Region	Construction of Regional Warehouse/Garage

12	Region	AATP Technical Development Project
13	Region	Spider Tractor Testing Program
14	Region	Agricultural Implements Research/Development
15	Region	Regional Pest Control Program Support
16	Region	Resource Center in Regional Planning Office
17	Region	Computer Center in Regional Planning Office
18	Region	Training of Shallow Wells Survey/Construction Unit
19	Region	Tanga Region Study Tour For Planners
20	Region	Study Tour to Botswana
21	Region	Regional Soil Conservation Workshop
22	Region	Regional Irrigation Seminar
23	Region	Regional Community Development Seminar
24	Region	Regional Cooperative Development Seminar
25	Region	Study Tour to Agricultural Research Stations
26	Region	Kiteto Land Use Planning Seminars
27	Region	Regional Organic Agriculture Seminar
28	Region	Reading University Livestock Course
29	Region	Cornell University Communications Seminar

30	Region	Procurement of Regional Radio System
31	Region	Fruit Tree Up-Grading, Horti-Tengeru

B. Arumeru District Projects

<u>Project Number</u>	<u>District</u>	<u>Project Name</u>
1	Arumeru	Ngarenanyuki Irrigation Rehabilitation
2	Arumeru	Maroroni Irrigation System
3	Arumeru	Pilot Agricultural Extension Program
4	Arumeru	Agriculture Field Staff Training
5	Arumeru	Irrigation Pump Procurement
6	Arumeru	Agriculture Field Staff House
7	Arumeru	Maize Production Seminars
8	Arumeru	Kisongo Dip Rehabilitation
9	Arumeru	Repairs to Livestock Dips
10	Arumeru	Livestock Field Staff Training
11	Arumeru	Spray Race Attendants House
12	Arumeru	Pilot Livestock Extension program
13	Arumeru	Grass Seed Multiplication plots
14	Arumeru	Olkokola Tree Nursery
15	Arumeru	Lekitatu Fishpond
16	Arumeru	Forestry Field Staff Training

17	Arumeru	Fisheries and Beekeeping Field Staff Training
18	Arumeru	Pilot Beekeeping Project - Nduruma
19	Arumeru	Village Tree Nurseries
20	Arumeru	Soil Conservation Seminars
21	Arumeru	Soil Conservation - Musa and Mwandet
22	Arumeru	Olkokola Land Use Planning Program
23	Arumeru	Ngarenanyuki Ox-Cart Production Unit
24	Arumeru	Uwiro Maize Mill
25	Arumeru	Ngabobo Maize Mill
26	Arumeru	Kisimiri Maize Mill
27	Arumeru	Samaria Maize Mill
28	Arumeru	Sakila Maize Mill
29	Arumeru	Kikwe Ward Building Brigades
30	Arumeru	Kiranyi Brick and Tile Production
31	Arumeru	Makumira Bakery
32	Arumeru	Lands Department Equipment Procurement
33	Arumeru	Kisongo Roads Base Camp
34	Arumeru	District Housing Construc- tion and Repair
35	Arumeru	Field Staff Bicycle Purchase Scheme
36	Arumeru	Sakila Pump Attendants House
37	Arumeru	Community Development Assistants Training

38	Arumeru	Village Godowns
39	Arumeru	Ox-cart Purchase Scheme
40	Arumeru	Olkokola Borehole Water Supply
41	Arumeru	Olkokola Gravity Water Supply Rehabilitation
42	Arumeru	Kikatiti Borehole Water Supply
43	Arumeru	Shallow Wells Survey and Construction
44	Arumeru	Village Water Supply Technician Training
45	Arumeru	Karangai Pipeline Rehabilitation
46	Arumeru	Sakila Gravity Water Supply Rehabilitation
47	Arumeru	Sambasha Gravity Water Supply Project
48	Arumeru	Oldonyosapuk Hydraulic Ram water Supply

C. Hanang District Projects

<u>Project Number</u>	<u>District</u>	<u>Project Name</u>
1	Hanang	Pilot Agricultural Extension Project
2	Hanang	Qameyu Women Farmers Group
3	Hanang	Barley Production
4	Hanang	Training of Agricultural Extension Staff
5	Hanang	Oil Seed Production
6	Hanang	Magugu Irrigation Survey
7	Hanang	Magugu Irrigation Project
8	Hanang	Mapea Coconut Nursery

9	Hanang	Groundnut Purchase Scheme
10	Hanang	Ox-Plough Purchase Scheme
11	Hanang	Livestock Extension Program
12	Hanang	Qash Cattle Dip Attendant's Quarters
13	Hanang	Pasture Grass Seed Production
14	Hanang	Livestock Extension Staff Training
15	Hanang	Tsamasi Cattle Dip Improvement
16	Hanang	Nangwa-Dirma Livestock Watering Project
17	Hanang	Forestry Extension Program
18	Hanang	Hanang Forestry Project
19	Hanang	Village Tree and Fruit Nurseries
20	Hanang	Fruit Tree Nurseries
21	Hanang	Gallapo Fishpond
22	Hanang	Bassotu Fish Receiving Center
23	Hanang	Training Course for Forestry Extension Staff
24	Hanang	Fisheries Training Seminar
25	Hanang	Training in Project Planning for Women
26	Hanang	Bookkeeping Training for Village Women
27	Hanang	Training Seminar for Village Accountants
28	Hanang	Gedemar Oil Seed Press
29	Hanang	Madunga Kati Maize Mill

30	Hanang	Madunga Kati Wood-Working Project
31	Hanang	Mapea Mat-Marketing Project
32	Hanang	Qameyu Wood-Cutting Group
33	Hanang	Magugu Maize Mill and Rice Huller
34	Hanang	Village Maize Mill
35	Hanang	Ayamango Maize Mill
36	Hanang	Kizakiba Ox-Cart Factory
37	Hanang	Ox-Cart Purchase Scheme
38	Hanang	Hanang Extension Transportation Project
39	Hanang	Shallow Wells Survey and Construction
40	Hanang	Ring Wells Survey and Construction
41	Hanang	Katesh Gravity Water Supply Rehabilitation
42	Hanang	Gallapo Gravity Water Supply Rehabilitation
43	Hanang	Village Water Supply Technician Training

D. Mbulu District Projects

<u>Project Number</u>	<u>District</u>	<u>Project Name</u>
1	Mbulu	Labay Crop Storage Facility
2	Mbulu	Maghang Crop Storage Facility
3	Mbulu	Agriculture Training and Extension Support
4	Mbulu	Soil Conservation/Land Use Planning Karatu

5	Mbulu	Pilot Agricultural Extension Program
6	Mbulu	Dongobesh Oil Seed Production Project
7	Mbulu	Dongobesh Ox Plough Training
8	Mbulu	Murray Women's Vegetable Production Project
9	Mbulu	Mbulu Fruit Tree Orchard and Demonstration Facility
10	Mbulu	Dongobesh Pig Multiplication Unit Support
11	Mbulu	Training for Veterinary Center Attendants
12	Mbulu	Training Course for Dip Attendants
13	Mbulu	Moringa Village Slaughter Facility
14	Mbulu	Village Grass Seed Multiplication Plots
15	Mbulu	Cattle Dip Construction, Moringa Village
16	Mbulu	Training for Livestock Field Staff
17	Mbulu	Pilot Livestock Extension project
18	Mbulu	Karatu Slaughter Facility
19	Mbulu	Dongobesh Slaughter Facility
20	Mbulu	Livestock Disease Prevention Program
21	Mbulu	District Tree Planting
22	Mbulu	Dongobesh Fruit and Forest Tree Nursery

23	Mbulu	Murray-Kainam Fruit and Forest Tree Nursery
24	Mbulu	Daudi Ward Beekeepers Training Project
25	Mbulu	Daudi Ward Fruit and Forest Tree Nursery
26	Mbulu	Hayloto Village Fishpond
27	Mbulu	Forest Tree Seed Purchase and Distribution
28	Mbulu	Natural Resources Training and Extension Support
29	Mbulu	Soil Conservation Along District Roads
30	Mbulu	Bicycle Purchase Scheme for Extension Staff
31	Mbulu	Dongobesh Ox-Cart Production Unit
32	Mbulu	Tlawi Tile Production Project
33	Mbulu	Dongobesh Oil Seed Pressing Project
34	Mbulu	Kuta Village Maize Mill
35	Mbulu	UCDA Training Course
36	Mbulu	Training for CDA's and Village Leaders
37	Mbulu	Shallow Wells Survey and Construction
38	Mbulu	Ring Wells Construction
39	Mbulu	Yaeda Chini Gravity System Rehabilitation
40	Mbulu	Harsha Gravity Water System Rehabilitation
41	Mbulu	Upper Kitete Gravity System Rehabilitation

42	Mbulu	Kilima Tembo Gravity System Rehabilitation
43	Mbulu	Training of Village Water Technicians
44	Mbulu	Murray-Kuta Community Center
45	Mbulu	Maretadu Bridge Construction Project
46	Mbulu	Construction of Grade 'B' House, Mbulu Town

E. Roads Projects

<u>Project Number</u>	<u>District</u>	<u>Project Name</u>
1	Hanang	Dareda-Mbulu Border Road (27 Miles)
2	Hanang	Single-Gallapo-Mamire-Babati Road (29 miles)
3	Hanang	Babati-Nakwa-Riroda Road (10 Miles)
4	Hanang	Bashnet-Madunga Kati Road (11 Miles)
5	Hanang	Gitting-Endasak Road (8 Miles)
6	Hanang	Bashnet-Ufana Road (10 Miles)
7	Mbulu	Karatu-Mbulu-Dongobesh-Hanang Border Road (81 Miles)
8	Mbulu	Dongobesh-Haydom Road (30 Miles)
9	Mbulu	Oldeani-Mang'ola Road (30 Miles)
10	Mbulu	Njiapanda-Oldeani Road (6 Miles)
11	Mbulu	Mbulu-Kainam-Hayloto-Murray Road (15 Miles)

- | | | |
|----|---------|---|
| 12 | Arumeru | Tengeru-Mbguni Road (22 Miles) |
| 13 | Arumeru | Usa River-Ngarenanyuki-Oldonyosambu Road (10 Miles) |

ANNEX B

SUMMARY OF POLICY DECISIONS: ARUSHA REGION

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Policy 1: Regional policy, planning, and investment decisions will be guided by the five development goals of village self-reliance, equity, economic growth, integration, and protection of natural resources.

STRATEGY ONE: INTEGRATED DEVELOPMENT ACTIVITIES THAT EMPHASIZE VILLAGE-LEVEL LAND USE PLANNING AND REDUCE POPULATION GROWTH RATES.

Policy 2: Land use planning and conservation will serve as the basic component for regional planning and development.

Policy 3: The region will adopt the concept of geographic area concentration, with the districts defining the basis of selection.

Policy 4: The basic unit for development will be the village.

Policy 5: The region and districts will help increase the capacity of villages for project development and implementation through organizational, technical, financial, and management assistance.

Policy 6: The region will institutionalize the evolutionary dialogue approach to village development activities, including the establishment of support mechanisms such as revolving credit funds and blocked budgetary requests.

Policy 7: Future planning and project development will have a geographic-specific focus (whether a village or larger area focus) with integrated planning for development.

Policy 8: The region requests that the central government arrange sittings with parastatals and line ministries early in each budget cycle to review and coordinate upcoming development initiatives. In preparation for these meetings, the region and districts will conduct

their own assessments of the strengths and weaknesses of ongoing projects in relation to their impact on regional and district development.

Policy 9: The region and districts will develop programs to encourage slow population growth rates and to control migration.

STRATEGY TWO: HIGHEST PRIORITY GIVEN TO DIRECTLY PRODUCTIVE ACTIVITIES.

Policy 10: Directly productive activities will receive priority in funding, with a least 40 percent of the development budget being allocated for these activities.

Policy 11: The livestock and agriculture sectors will receive regional policy, program development, and funding priority.

Policy 12: The region urges the central government to increase producer prices.

Policy 13: The region will develop a program for the promotion and support of small, rural industries, including the development of district institutional support capabilities.

Policy 14: The region and districts, primarily through the Youth and Culture Office working in cooperation with other functional offices, will create an employment generation program for all youth in directly productive (rural) sectors, with future investments in training facilities and programs delayed until skill requirements are better defined.

STRATEGY THREE: MORE EFFICIENT USE OF EXISTING MANPOWER, EQUIPMENT, AND FINANCES IN SUPPORT OF REGIONAL DEVELOPMENT ACTIVITIES.

Policy 15: The region commits itself to a policy of improving the effectiveness and efficiency of its work force.

- Manpower development will be re-evaluated to be consistent with the agreed-upon regional policy guidelines, and requests for additional trained staff from national alloca-

tions will relate specifically to identified needs of sector programs and the capabilities within the sectors to support those staffs.

- All sectors will reassess job descriptions of all cadre in relation to the modifications necessary to meet requirements of changes in the pattern of deployment.
- Informal training programs, largely within the region, will be established in all sectors to:
 - Improve on-the-job training of lower cadre;
 - Provide seminars and refresher courses for lower/middle-level cadres in technical skills required for their jobs; and
 - Provide courses in communication of information and ideas, both communications with other technicians and with nontechnicians.
- Sector technical staff will be involved in deploying a cadre of paraprofessionals at village level to promote village self-reliance.
- Village-level training will be promoted through management training of village management staff.
- Since functional heads are central to the efficient use of manpower and resources, they will receive management training. This opportunity will also be extended to development directors and planning officers.
- The Department of Manpower Management will urgently adopt a plan for action to improve radically their services to staff. The Regional Manpower Management Officer will activate a manpower committee, comprising District Manpower Management Officers to determine and implement this plan of action.

- Policy 16: The region and districts will determine road priorities on the basis of economic growth, specifying a minimum network to be maintained by Works. Works will present a plan for the better use of existing resources for maintaining this network, with particular reference to building district maintenance capabilities.
- Policy 17: Maji will concentrate its efforts on the maintenance of existing systems (and the development of an ongoing maintenance capacity), even at the cost of the installation of new water supply systems in the short term. Future investments in new projects will be related to the potentials identified in water resource investigations.
- Policy 18: Development expenditures on social services will be reduced until such time as the operational requirements of existing facilities are met; the region petitions the central government for the gradual expansion of social services in keeping with the growing population and for adequate funding to support village-initiated projects such as village first aid boxes.
- Policy 19: The region observes with delight the recent government move to restructure some of the parastatals but appeals to the government to examine marketing and distribution functions for all parastatals, in particular, the Tanzanian Livestock Marketing Corporation.
- Policy 20: The region will establish a cost-accounting procedure in order to make recommendations to the central government on how to rationalize consumer prices.
- Policy 21: The region and districts will improve the availability of materials through the following activities:
- Promotion of rural industries to produce necessary equipment and supplies with locally available resources;
 - Exploration and testing of appropriate technologies through in-country and external study tours;
 - Delivery of equipment and supplies from government trading companies to government-supported programs; and

- Consolidation and integration of requests in districts for materials in support of village development activities.

Policy 22: Priority will be placed on upgrading and equipping district vehicle maintenance facilities and staff, including the construction of facilities in Arumeru and Ngorongoro districts.

Policy 23: The region and districts will conduct an ongoing review of equipment to determine appropriateness and standardization, and to improve deployment and maintenance practices.

STRATEGY FOUR: NEW EFFORTS TO OBTAIN ADDITIONAL RESOURCES FOR DEVELOPMENT.

Policy 24: The region requests that a larger proportion, than the current 10 percent, of the central government's development expenditures in the region be channeled into the region's development budget.

Policy 25: The region appeals to the central government for increased funds to finance operation and maintenance needs.

Policy 26: The region and districts will establish mechanisms that increase their ability to mobilize financial resources, including user contributions and new borrowing mechanisms.

Policy 27: The region requests detailed information on the future development plans of parastatals, line ministries, and foreign donors. It insists upon the right to accept, reject, or modify these initiatives depending on their congruence with the region's development plans.

Policy 28: The region will place as its first priority for future project development the preparation of a plan for the expansion of APVDP to the three Maasai districts.

Policy 29: The region will place priority in its future project development, particularly for foreign donors, on roads improvement activity.

Policy 30: The region will select certain products (such as spice production) for soliciting private sector investment.