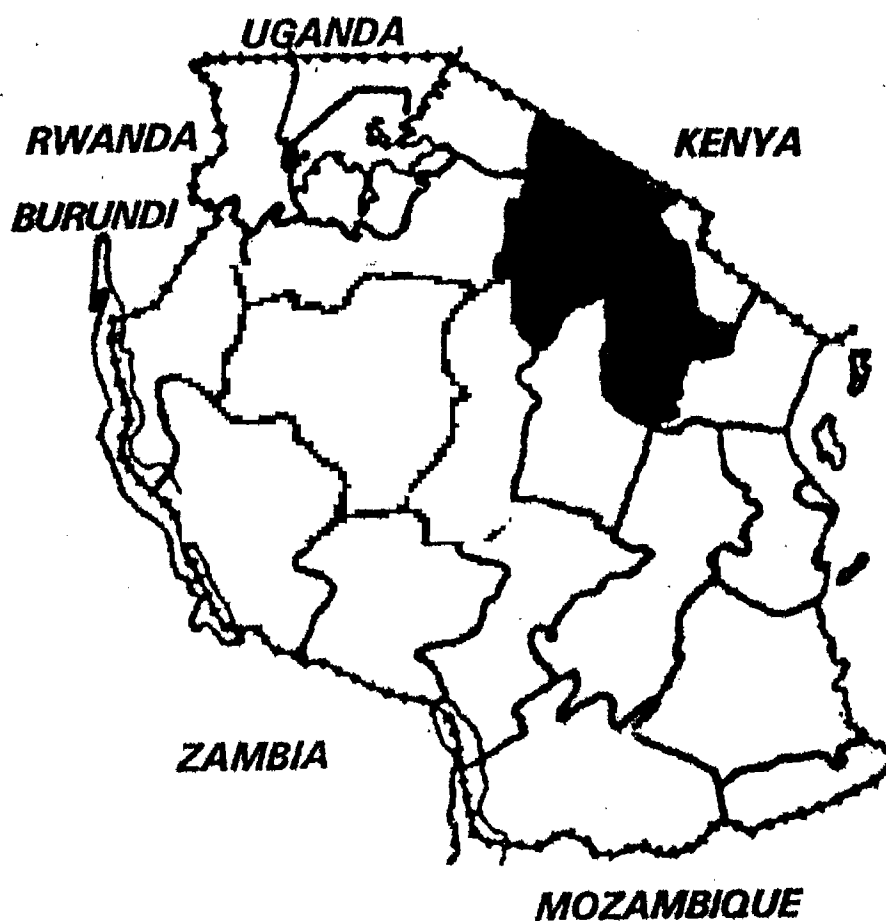




THE UNITED REPUBLIC OF TANZANIA

ARUSHA REGION SOCIO-ECONOMIC PROFILE



Joint Publication by:
THE PLANNING COMMISSION
DAR ES SALAAM
and
REGIONAL COMMISSIONER'S OFFICE
ARUSHA

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FOREWORD

1. *As we approach the 21st Century the problems facing rural areas in developing countries like Tanzania are numerous and formidable. Social and Economic services are deteriorating and proving to be unsustainable; school enrollment rates are declining; food situation is precarious; infant and maternal mortality rates continue to be high; unemployment is on the rise triggering off mass migration of youth from the rural areas into already overcrowded urban centres; in Arusha Region, for example, land pressure is escalating and deforestation is going on at an alarming rate.*
2. *This situation has arisen because of many factors including ill - prepared rural development programmes and weak monitoring and supervision of the implementation of development programmes and sectoral strategies. The observed shortcomings in the policy formulation, project identification, design, and implementation in the developing countries is in turn attributed to lack of reliable and adequate data and information on the rural development process.*
3. *The publication of Regional Socio-economic Profiles series by the Planning Commission in collaboration with Regional Commissioner's offices should be viewed as a fruitful attempt towards finding solutions to the existing problem of data and information gap.*
4. *The Regional Profile series cover a wide range of data and information on geography, population, social economic parameters, social services, economic infrastructure and productive sectors. The publications so far have proved to be*

of high demand and a vital source of information to many policy makers, planners, researchers, donors and functional managers.

The Planning Commission has found it a worthwhile effort to extend the exercise to cover even more regions. Readers are invited to make suggestions and constructive criticisms which can assist in improving the quality and effectiveness of future Profiles.

- 5. I would like to take this opportunity to acknowledge with thanks once again the financial support of the Royal Norwegian Embassy which facilitated the preparation of the Arusha Region Socio-Economic Profile. I would also like to thank both the Planning Commission and Arusha Regional Planning Staff who put a lot of effort into ensuring the successful completion of this task.*



Nassoro W. Malocho (MP)

MINISTER OF STATE

PLANNING AND PARASTATAL SECTOR REFORM

April, 1998

SECTION I

LAND, PEOPLE AND CLIMATE

1.0 REGIONAL OVERVIEW

1.1 GEOGRAPHICAL LOCATION

Arusha region is located in the north-eastern corner of Tanzania. It lies below the equator between latitudes 2° and 6°. Longitudinally the region is situated between 35° and 38° east of Greenwich. The region has a common border with Kenya in the north, to the east it borders with Kilimanjaro and Tanga regions. To the south it shares a border with Dodoma region and to the west with Singida, Shinyanga and Mara regions.

1.2 LAND AREA AND ADMINISTRATIVE UNITS

According to records from the Regional Commissioner's Office Arusha the total area of Arusha region is 82,428.5 sq.km., out of this a total area of 3,571 sq.km. or 4.3 percent is covered by water bodies of Lakes Eyasi, Manyara, Babati and Natron. The remaining 78,857.5 sq.km. is land area. Arusha region is the largest region in the country (Tanzania Mainland) occupying 9.2 percent of Tanzania mainland total area of 942,784 sq. km.

Fig. 1: Classification of Land in Sq. Km, Arusha Region



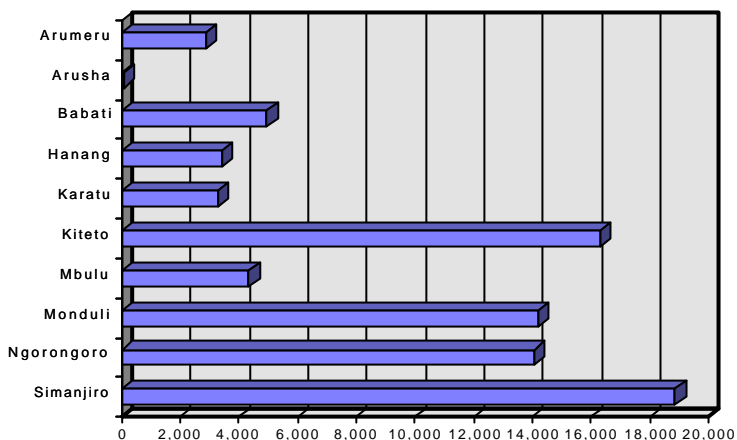
Arusha region is divided into ten administrative districts namely: Arumeru, Arusha, Babati, Hanang and Karatu. Others are Kiteto, Mbulu, Monduli, Ngorongoro and Simanjiro. The districts are further divided into divisions, wards and villages. The areas of each district, number of divisions, wards and villages are shown in table I-1.

TABLE I-1: LAND AREA AND ADMINISTRATIVE UNITS OF ARUSHA REGION:

District	Area Sq.Km.	Administrative Units		
		Divisions	Wards	Villages
Arumeru	2,896	6	37	133
Arusha	82.5	3	15	10
Babati	4,969	4	21	81
Hanang	3,436	5	21	53
Karatu	3,300	4	13	42
Kiteto	16,305	7	14	44
Mbulu	4,352	3	16	56
Monduli	14,201	3	14	49
Ngorongoro	14,036	3	14	31
Simanjiro	18,851	6	12	43
Total	82,428.5	44	177	542

Source: Arusha Regional Commissioner's Office, 1997.

Fig. 2: Distribution of land area in sq. km. by District, Arusha Region



1.3 Ethnic Groups:

The main ethnic groups are Iraqw, Arusha, Maasai, Meru and Barbaig. Others in small numbers are Sonjo, Gorowa, Rangi, Chagga, Pare and Nguu. The Iraqw are found in majority in Mbulu, Babati, Karatu and Hanang districts, while the Masai are the main tribe in Kiteto, Simanjiro, Monduli and Ngorongoro districts. The Meru and Arusha predominate in Arumeru District and Arusha Municipality while the Barbaig are found mainly in Hanang District. The Sonjo along with the Hadzabe (Tindiga) and Ndorobo form a minority of special interest in that until very recently depended on hunting for livelihood.

1.4 Population Size, Growth and Density:

According to the 1988 population census, Arusha Region had a population of 1,348,170. This represents 5.8% of the total

population of Tanzania mainland which was 23,174,443. The average growth rate for the region is very high. It stands at 3.8% against the national rate of 2.8%. The population density is as low as 16.2 compared to the Tanzania mainland average density of 26.2 (See Table I.4). Table I-2 and I-5 highlight 1967, 1978 and 1988 Arusha region's population size by district. It is observed from the three past census data that the population among the districts in the region has been unevenly distributed. Arumeru district from 1967 to 1988 has reflected the highest population number. The least populated districts in 1988 were Kiteto, Monduli and Ngorongoro in that descending order. Between 1967 and 1988 the region's population increased from 610,474 to 1,348,170 an increase of 737,751 people or 120.8 percent.

TABLE 1.2: POPULATION DISTRIBUTION BY DISTRICTS AND PROJECTIONS ARUSHA REGION 1967 - 2000:

District	Population Census Results, and Growth Rates						Projections			
	1967	Growth Rate % 1967/78	1978	Growth Rate % 1978/88	1988	Growth Rate % 1988/2000 Est.	1995	1996	1998	2000
Arusha	46,362	5.87	85,553	4.5	132,861	4.1	179,127	186,785	202,747	220,073
Arumeru	167,854	3.23	238,020	3.06	321,604	3	396,936	409,212	434,517	461,386
Babati	-	-	-	-	207,352	3.3	261,097	270,007	288,429	308,109
Hanang	125,838*	5.6	229,063	3.43	113,270	3.3	142,645	147,513	157,577	168,328
Kiteto	35,038	4.98	61,024	7.63	127,355	7.2	210,246	226,558	261,648	302,174
Mbulu	163,528	1.55	193,767	3.28	267,663	3.1	332,375	343,008	364,948	388,291
Monduli	71,854	4.68	118,796	4.13	108,964	3.6	140,154	145,388	156,241	167,906
Ngorongoro	-	-	-	-	69,101	3.4	87,625	90,709	97,092	103,924
Total	610,474	3.86	926,223	3.82	1,348,170	3.88	1,750,205	1,819,180	1,963,200	2,120,189

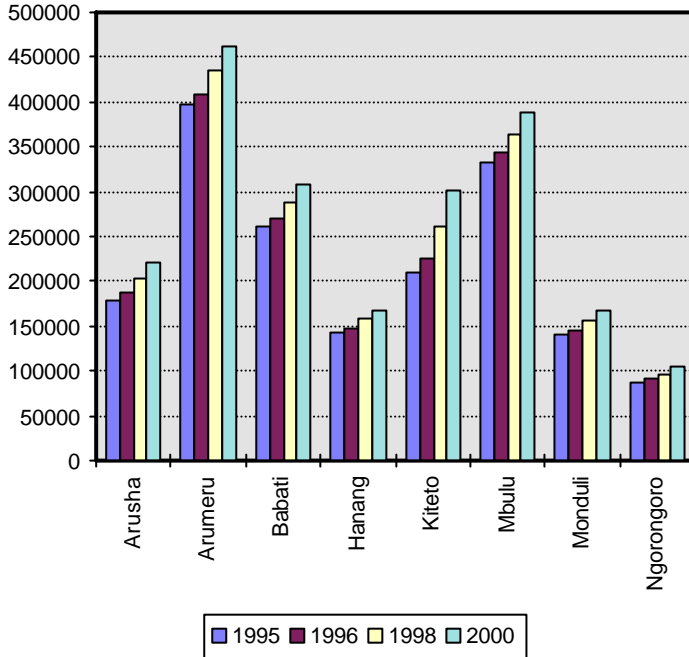
Source: Regional Commissioner's Office Arusha, 1997.

: 1988 Population Census.

: Health Statistics Abstract, 1997

* These figures are for Hanang and Babati.

Fig. 3: Population Projections, Arusha Region, 1995 - 2000:



It is projected that Arusha region by the year 2000 will have a total population of about 2,120,189. The region taken by its total size does not reflect any sort of land pressure with its average or total population density of 16.2 people per sq.km. by 1988 (Table I-3). The national average population density in 1988 was 26.2 people per sq.km., table I-4 highlights this fact. The same table compares the mainland regions population densities and Arusha region on the average is low. When the districts are considered separately the entire outlook of population density changes and vividly reveals the serious situation experienced by Arumeru district with a density population of 111.1 people per sq.km. Arumeru district takes the lead in the region in both population number and density.

These population numbers and densities are a cause of social crisis in the district. Worse still population projections for 1998 and 2000 will aggravate the already serious land pressure in the district.

TABLE I-3: POPULATION DENSITY AND DISTRIBUTION BY DISTRICT, ARUSHA REGION, 1988 - 2000:

District	Land Area Sq.km.	Census 1988 Pop.	Pop. Density 1988	Pop. Projection 1995	Projected Pop. Density 1995	Pop. Projection 1998	Projected Pop. Density 1998	Pop. Projection 2000	Projected Pop. Density 2000
Arusha	82.5	132,861	1,632.80	179,127	2,184.50	202,747	2,472.50	220,073	2,683.80
Arumeru	2,896	321,604	111.1	396,936	137.1	434,517	150	461,386	159.3
Babati	4,969	207,352	41.9	261,097	52.5	288,429	58.1	308,109	62
Hanang	4,436	113,270	25.5	142,645	32.2	157,577	35.5	168,328	37.9
Kiteto	35,156	127,355	3.6	210,246	6	261,648	7.4	302,174	8.6
Mbulu	7,652	267,663	35	332,375	43.4	364,948	47.7	388,291	50.7
Monduli	14,201	108,464	7.7	140,154	9.9	156,241	11	167,906	11.8
Ngorongoro	14,036	69,101	4.9	87,625	6.2	97,092	6.9	103,924	7.4
Total	83,428.50	1,348,170	16.2	1,750,205	21	1,963,200	23.5	2,120,189	25.4

Source: Compiled from 1988 Population Census

TABLE I-4: TANZANIA MAINLAND POPULATION AND POPULATION DENSITY AND PERCENT INCREASE (1978 - 1988) BY REGIONS:

Region	1988 Census	Densities Per Sq. Km.		Percent Increase 1978-1988
		1978 Census	1988 Census	
Arusha	1,348,675	12.4	16.2	29
Mwanza	1,878,271	71.8	93.5	31
Dodoma	1,237,819	23.5	30.0	28
Kilimanjaro	1,108,699	68.1	83.7	22
Tanga	1,283,636	38.9	48.1	23
Morogoro	1,222,737	13.3	17.3	30

Coast	638,015	15.9	19.6	24
Dar-es-Salaam	1,360,850	553.2	976.9	77
Lindi	646,550	6.2	9.8	53
Shinyanga	1,763,960	26.1	34.9	34
Mtwara	889,494	46.2	53.2	15
Ruvuma	783,327	8.9	12.3	38
Iringa	1,208,914	16.2	21.3	31
Mbeya	1,476,199	12.9	24.5	37
Singida	791,814	11.3	16.0	45
Tabora	1,036,293	10.7	13.6	27
Rukwa	694,974	8.0	10.1	23
Kigoma	853,263	17.5	23.1	32
Kagera	1,326,183	35.5	46.6	32
Mara	970,942	33.2	43.7	49
Total	23,170,993	19.8	26.2	32

Source: Planning Commission Compiled Data: based on 1988 Population Census, National Profile, Analytical Report.

From Table I-4 Arusha region population density is not only low it has also grown at a mere 29% between 1978 and 1988 which is lower than the national average of 32%. This is unlike the fast growing regions of Dar es salaam, Lindi, Mara and Singida where population density has built up very fast.

Table 1-5 shows that the urban district of Arusha, Hanang, Babati, Kiteto and Ngorongoro are increasing their share of the regional population at the expense of Arumeru, Mbulu and Monduli. In 1967 Arumeru and Mbulu/Karatu accounted for 54% the region's

populations, but by 1988 their combined share was down to 44%.

TABLE I-5: PROPORTION OF ARUSHA REGION POPULATION OF EACH DISTRICT AS A PERCENTAGE OF THE REGIONAL TOTAL, 1967, 1978 AND 1988:

District	1967		1978		1988	
	Population	Percentage	Population	Percentage	Population	Percentage
Arusha	46,362	7.6	85,553	8.8	132,861	10.0
Arumeru	167,854	27.5	238,020	24.5	321,604	23.8
Babati	-	-	-	-	207,352	15.4
Hanang	125,838	20.6	229,063	23.5	113,270	8.4
Kiteto	35,038	5.7	61,024	6.3	127,355	9.4
Mbulu	163,528	26.8	193,767	19.9	267,663	19.8
Monduli	71,854	11.8	118,796	12.2	108,964	8.1
Ngorongoro	-	-	47,031	4.8	69,101	5.1
Total	610,474	100.0	973,254	100.0	1,348,170	100.0

Source: Planning Commission - Compiled Data Based on 1967, 1978 and 1988 Population Censuses.

Fig. 4: Total Population Distribution 1967, 1978 and 1988, Arusha Region

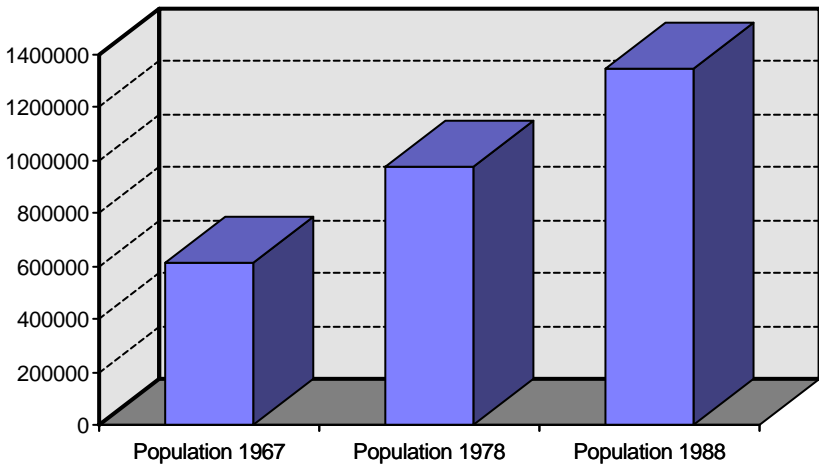
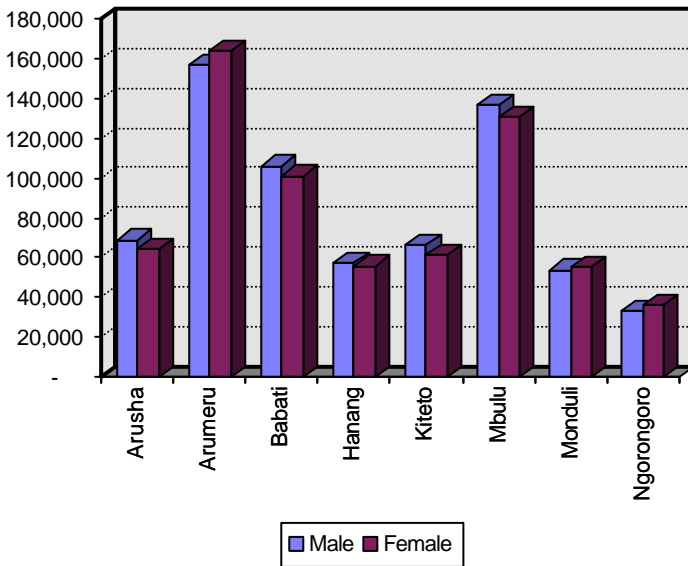


TABLE I-6: POPULATION BY SEX, NUMBER OF HOUSEHOLDS, AVERAGE HOUSEHOLD SIZE AND DISTRICT, ARUSHA REGION 1988:

District	SEX			Household Number	Average Household Size
	Male	Female	Total		
Arusha	68,836	64,025	132,861	31,496	4.2
Arumeru	157,252	164,352	321,604	60,106	5.3
Babati	106,120	101,232	207,352	38,764	5.3
Hanang	57,443	55,827	113,270	19,152	5.9
Kiteto	66,327	61,028	127,355	22,608	5.6
Mbulu	136,534	131,129	267,663	43,022	6.2
Monduli	53,578	55,386	108,964	20,397	5.3
Ngorongoro	33,089	36,012	69,101	13,891	4.9
Total	679,179	668,991	1,348,170	249,436	5.4

Source: 1988 Population Census, Arusha Regional Profile.

Fig. 5: Population Size by District and Sex, Arusha Region 1988



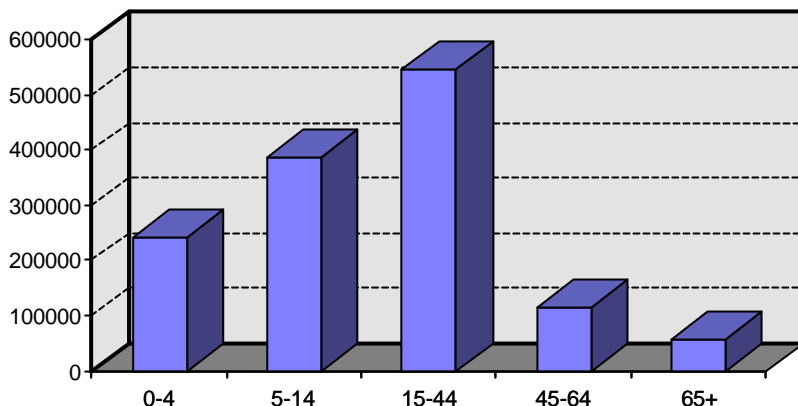
The population structure of Arusha region according to 1988 population census reveals that there were more or less equal numbers of males and females. However, there is slightly higher numbers of males than females in the ratio of 1:0.98.or 102 males for every 100 females. Districtwise there were more males than females in Arusha, Babati, Hanang, Kiteto and Mbulu, while in the other districts of Arumeru, Monduli and Ngorongoro there were more females than men. The region had 249, 436 households with Arumeru district accounting for 24.1 percent of these. The regional household size average of 5.4 people tallies with the national average household size.

TABLE I-7: POPULATION BY DISTRICT AND AGE GROUPS ARUSHA REGION, 1988:

District	AGE GROUPS					Total
	0-4	5-14	15-44	45-64	65+	
Arumeru	57735	97920	124430	27976	13543	321604
Arusha	18930	29945	72835	8373	2778	132861
Babati	35536	61461	80222	19959	10174	207352
Hanang	21573	33817	42536	9772	4572	113270
Mbulu/Karatu	48117	81966	101012	23276	13292	267663
Kiteto/Simanjiro	22784	33732	54096	11623	5120	127355
Monduli	23045	29183	44757	8533	3446	108964
Ngorongoro	13511	20357	26798	6201	2234	69101
Arusha Region	241231	388381	547686	115713	55159	1348170
%	17.9	288	40.6	8.6	4.1	100.0

Source: Regional Commissioner's Office, Arusha.

Fig. 6: Total Population by Age Groups, Arusha Region, 1988



It is observed from table I7 that children between years 0-14 constitute 46.7 percent of the total regional population, those between 15-64 years age group (the working age group) constitute 49.2 percent and the old age group (65 + years) constitute 4.1 percent. In this case the dependent age group (0-14 and 65 + years) constitute on the average 50.8 percent of the total regional population.

However, when districts are considered singly Arusha and Kiteto diverge more from the regional average. Their average dependency percentages are low, Arusha district with 38.9 and Kiteto with 48.4 percent. It might be difficult to come up with explanations for these diversions. Probably migration is a possible factor accounting for these two abnormal situations. More adults move to Arusha town in search of work while for Kiteto there is a movement of adults into the district in search of farming areas and farm labour.

1.5 MIGRATION:

Table I-8 gives information on lifetime migration pattern for the Tanzania Mainland regions. Arusha region shows a very high net inward movement of people of 141,724 second to that of Dar-es-Salaam region of 500,621 net migration. Such direction of movement indicate movement of people in search of new farming areas or employed jobs. Arusha town due to its large number of manufacturing establishments has tended to attract many people. Similarly the emerging farming activities in Kiteto have attracted many people who have now established their farms and others have moved in search of farm labour.

TABLE I-8: MIGRATION BY REGION, TANZANIA MAINLAND 1988-CENSUS

Region	Immigration	Emigration	Net Migration	Gross Migration
Arusha	218,427	76,703	141,724	295,130
Dodoma	89,900	190,985	-101,085	280,885
Kilimanjaro	93,040	217,423	-124,383	310,463
Tanga	98,747	150,915	-52,168	249,662
Morogoro	172,393	141,959	30,437	314,349
Coast	103,804	207,716	-103,912	311,520
DSM	651,246	150,625	500,621	801,871
Lindi	95,200	145,031	-49,831	240,231
Mtwara	46,299	144,988	-98,689	191,287
Ruvuma	66,442	81,661	-15,210	148,103
Iringa	49,282	169,480	-120,198	218,762
Mbeya	160,377	113,378	46,999	278,755
Singida	86,651	130,531	-63,880	237,182
Tabora	241,729	175,359	66,370	417,088

Rukwa	87,599	49,294	38,305	136,893
Kigoma	26,795	129,718	-102,923	156,513
Shinyanga	288,210	281,447	6,763	569,657
Kagera	103,713	109,693	-5,980	213,406
Mwanza	270,142	303,646	-33,504	573,788
Mara	75,987	115,414	-80,431	191,852
Total	3,025,983	3,106,414	-80,431	6,132,397

Source: 1988 Population Census National profile, Analytical Report.

The pace of urbanization of the region's population is in line with the rest of the country. The region is getting urbanized. Less and less people, proportionately, are living in rural areas as the years go by. In 1957 the region's urban population was a mere 10,000.

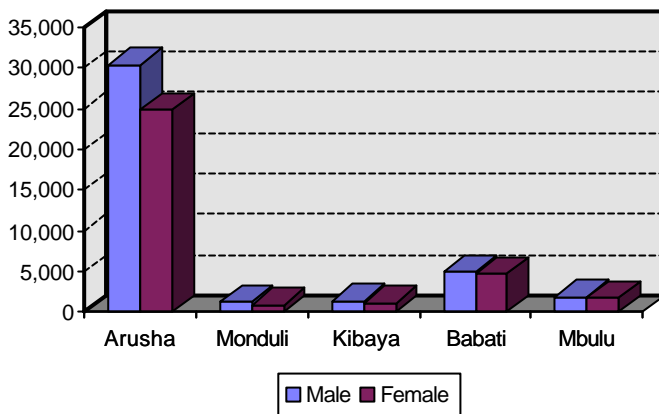
By 1967 it had increase three times to 32,500. In 1978 the region's urban population was distributed among five settlements as follows:

TABLE I-9: DISTRIBUTION OF URBAN POPULATION ARUSHA REGION 1978:

Urban Settlement	Population		
	Male	Female	Total
Arusha	30,350	24,873	55,223
Monduli	1,303	945	2,248
Kibaya	1,410	1,211	2,621
Babati	4,982	4,777	9,759
Mbulu	1,912	1,872	3,784
Total	39,957	33,678	73,635

Source: 1978 Population Census.

Fig. 7: Distribution of Urban Population Arusha Region 1978



Thus 73,635 residents of the region lived in urban settlements. This is 8% of the total population of 926,223. In 1996 the number of urban settlements had increased from five to 10 with an estimated population of 284,000 or 15.6% of the regional total-urbanization is expected to reach 20% by AD 2000.

The 1996 Urban settlements are:-

Urban Settlement	Estimated Population (1996)
Arusha	150,000
Babati	29,000
Mbulu	20,000
Monduli	18,000
Usa River	25,000
Karatu	13,000
Kiteto	10,000
Loliondo	8,000
Katesh	7,000
Orkesement (Simanjiro)	4,000

Total	284,000
-------	---------

1.6 Climate and Soils:

Arusha Region has moderate, salubrious temperatures. The average annual temperature is 21⁰C in the highlands and 24⁰C in the lowlands. Arusha region has two types of rainfall patterns: Monomodal and bimodal.

The southern districts normally enjoy monomodal rainfall which usually starts in November and end in April. The district as are Babati, Hanang, Kiteto, Mbulu and Karatu. The rainfall in these districts is usually reliable, ranging from 800-1000 mm. These districts are the major producers of crops especially cereals, (about 60% of cereals production in the region).

The other districts Arumeru, Arusha, Monduli, Ngorongoro and Simanjiro usually get both short and long rains. The short rains normally start in October and end up in December, while the long rains start in February and end up in June. These short rains usually contribute about 25% of total seasonal production. Long rains is the main season for cereal crops in those districts. However the areas with reliable rainfall (1000-1200 mm) which are in Arumeru and Arusha districts are highly populated. The lower areas of Arumeru, Monduli, Ngorongoro and Simanjiro districts are mainly Semi-arid, occupied by pastoralists with large herds of cattle. Crop production in those areas is insignificant.

Soils have been classified by colour i.e. grey, grey, brown, brown and red brown. The extensive areas of grey soils which have originated from recent volcanic ash are found to the north-

western parts of the region, west of the rift and in the Ngorongoro massif.

Brown soils cover large areas in the central part of the region and west of Arusha municipality. The south-eastern areas are characterized by grey/brown and red/brown soils.

Soil erosion is particularly severe in the heavily settled central part of the region and in the areas heavily utilized by stock. Generally soil erosion is widespread throughout the region. An environmental disaster's in the making.

There are four natural vegetation zones-woodland bushlands, wooded grasslands, bushed grasslands and open grasslands, all of which cover 80% of the region. The districts differ in their dominant vegetation as follows:-

District	Dominant Vegetation
Mbulu, Hanang, Karatu and Babati	Bushed and wooded grasslands
Ngorongoro, Monduli	Open grassland, bushed and wooded grassland
Kiteto, Simanjiro	Wooded bushlands and bush
Arumeru	More than half is cultivated. The rest is bushed and open grasslands.

1.7 Agro-economic zones:

Arusha Region can be divided into three agro-economic zones based on varied relief features, soil types and climatic conditions. The summary of the agro-economic zones is as follows:-

AGRO-ECONOMIC ZONES IN ARUSHA REGION

Zones	Rainfall mm/annum	Area/District	Populati on Density	Farming System
Banana, Coffee Zone	Over 1000mm	Slopes of mt. Meru in Arumeru and Arusha District	Very High	Coffee, Banana, flowers dairy farming
Rift valley Highlands	800-1000mm	Mbulu, Karatu, Babati, Hanang, Ngorongoro	Moderate	Maize, Wheat, coffee barley legumes, dairy and traditional livestock
Masai steppes	below 800mm	Monduli, Simanjiro, Kiteto, Ngorongoro	Very low	Maize, legumes traditional livestock

1.8 Physiography and Drainage:

Arusha region is roughly divided into two parts: the highlands which include mountains such as Mt. Meru, Hanang and Oldeani.

The mountains all covered with forests are a source of rivers and streams. Then there are lowlands which are characterized by plains and scattered hills covered with bush and grasslands. From East to West the topography changes immensely. East of the rift valley wall the landscape gently undulates with occasional extinct volcanoes. Most of the rift wall are hills. Here are located the massif of the Ngorongoro crater highlands, the Gol mountains and Loliondo hills. There are five districts on the west of the rift valley i.e. Ngorongoro, Karatu, Mbulu, Hanang and Babati which have areas of extensive in selberges and predominant scarps as well as low, flat lands around soda lakes. In contrast the five estern districts-Monduli, Arumeru, Arusha Simanjiro and Kiteto are characterized by gently rolling hills.

The region has abundant natural water sources which are distributed over 70 percent of the area. The hilly areas have numerous rivers and the low lying lands of the rift valley have soda lakes. Compared to other districts Ngorongoro, Kiteto and Simanjiro are dry.

Arusha Region has three major drainage systems. The eastern-central parts and the southern part of the region drain into Indian Ocean. The north-western bit drains to the mediterranean sea through lake Victoria and the Nile River. The remaining northern, west-central and mid southern areas make up a vast internal drainage system. The rivers in this area drain into Lakes Eyasi, Manyara and Natron.

The major water bodies and rivers are located in the northern and western part of the region. These areas contain the major surface water resources of the region. The north eastern and southern parts of the region have very few or no surface water resources. Ground water is also available and the depth of water table in the region varies between 20 and 300 metres.

SECTION II

2.0 REGIONAL ECONOMY

2.1 Introduction:

The main economic activity of Arusha region is agriculture. Both commercial and peasantry farming are carried out in the region. Commercial farming is for seedbeans in Simanjiro and Monduli districts, Wheat in Hanang and Karatu districts, coffee growing and flori culture in Arumeru/Arusha districts. maize and food beans though produced by smallholders are grown widely in the region and substantially contribute to the region's economy. Generally, Arusha region has in most years been able to produce surplus food. It is only during some years of severe droughts that the region had failed to feed itself. However, due to poorly developed communication network in some parts of the region particularly Ngorongoro and Monduli districts these districts have regularly been faced with food shortages.

Tourism is another important economic area contributing adequately to the region's economy. It is estimated that this sector alone contributes roughly 20 percent to the region's GDP. Similarly the large livestock population is an important contributed to the economy of the region. It is estimated that this too makes an annual contribution of about 20 percent to the region's GDP. Industries and mining sectors are minor economic contributors to the region, roughly at 5 and 2 percent respectively. Other remaining economic activities contribute the remaining 13 percent.

Mining in the region has for many years been dominated by small scale miners. It is only recently that the government policy on this sector has changed to encourage commercial mining.

2.2 GDP and Per Capita GDP:

Arusha region economically is very important to the nation. Its contribution to the nation's economy is enormous. It ranks second to Dar es Salaam in this respect. Its GDP is almost as big as the combined GDPs of Singida, Kigoma, Lindi and Coast regions. It made 9 percent contribution to the Nation's GDP while Dar es Salaam contributed 19 percent in 1994.

What makes Arusha's regional economy contribution particularly impressive is that its share of the national economy is increasing. The region's share was 7% in the early eighties. It was 8% in the late eighties and 9% in the early nineties. This is rapid growth. The region's outstanding achievement is due to several advantages the region has over other parts of the country. Arusha has the most dynamic tourism in Tanzania. It is the centre pin of the northern circuit. It has minerals some of them quite unique as for example meerschaum and tanzanite. Along with Rukwa, Mbeya and Ruvuma it is the bread basket of Tanzania, providing the bulk of wheat production and sizeable maize stocks. It also has a rapidly expanding industrial base second only to Dar es Salaam. A large indigenous cattle herd and a comparatively well developed diary industry contribute toward the generation of further incomes. An established permanent cash crop complemented by an equally well run cooperative movement and farm credit facilities, have conspired towards making the region a front runner in agricultural production. Lastly a rapidly developing and very active private sector has supplied the energy to run this power house. It is also true that comparatively Arusha has a well developed economic infrastructure. Its roads are fairly passable the year through. External connections by road, and rail services are of an adequate

quality. The national grid connects Arusha to major electricity supply centres of Pangani, Kidatu and Mtera.

TABLE II-1: THE GDP AND PER CAPITA GDP OF ARUSHA REGION AT CURRENT PRICES AND PERCENTAGE CHANGE 1980 - 1994:

Year	GDP at Current Prices in (T.shs. mill)	% Change	Per Capita GDP at Current Prices (T.Shs and in USA Dollars)			% Change	Average % Contribution to National GDP
			T.Shs.	Exchange Rate T.Shs/Dollars	USA Dollars		
1980	2,704	-	2,709	8.22	330	-	7
1981	3,332	23.2	3,216	8.35	385	16.7	7
1982	4,107	23.3	3,820	9.52	401	4.2	7
1983	4,449	8.3	3,986	12.44	320	-20.2	7
1984	5,210	17.1	4,497	18.16	248	-22.5	7
1985	6,897	32.4	5,736	16.50	348	40.3	7
1986	9,068	31.5	7,265	51.70	141	-59.5	7
1987	13,192	45.5	10,182	83.70	122	-13.5	8
1988	23,593	78.8	17,497	125.00	140	14.8	7
1989	37,515	59.0	27,053	192.00	141	0.7	8
1990	58,657	56.4	41,131	197.00	209	48.2	9
1991	74,792	27.5	50,997	234.00	218	4.3	9
1992	90,385	20.8	59,928	335.00	179	17.9	9
1993	111,691	23.6	72,009	480.00	150	-16.2	9
1994	145,192	30.0	91,024	553.00	165	10.0	9
Average	39,385.6		26,736.7		233.1		7.8

Source: Planning Commission: Based on National Accounts of Tanzania 1976 - 1994, 11th Edition August, 1995.

Fig. 8 (a): The GDP at Current Prices (T.Shs., mill.), Arusha Region 1980 - 1994

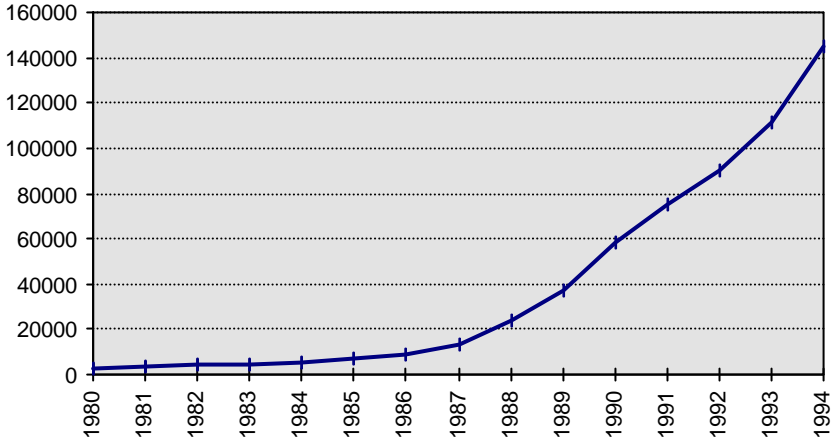
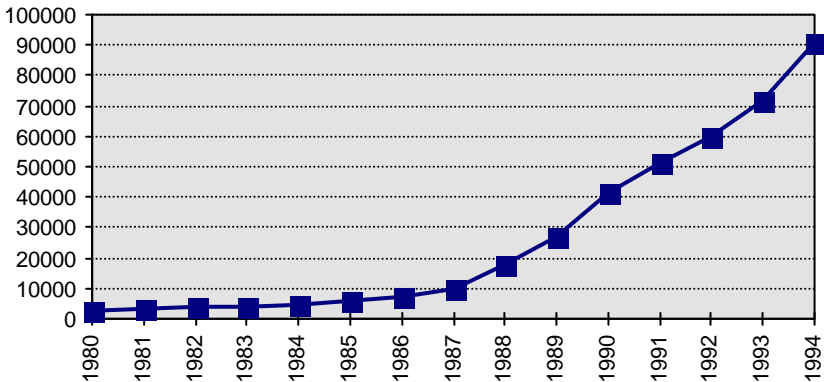


Fig. 8 (b): Per Capita GDP at Current Prices (T.Shs., mill.), Arusha Region 1980 - 1994



Observations from table II-1 shows that Arusha regional GDP at current prices reveals a progressively increasing trend from T.shs. 2,704 Million in 1980 to T. shs. 145,192 Million in 1994. Dramatic step up overall growth in the economy is noticed from 1990 to 1994. Arusha region economically has been important to the National economy, it's economic contribution to the National

GDP has averaged 7.8 percent annually over the period of 15 years. Refer table II-2.

Per Capita income more or less shows a similar growth pattern ranging from T.shs. 2,709 per annum in 1980 to T.shs. 91,204 regional per Capita GDP at current prices in 1994. From the year 1990 the region registered a sudden increase in per capita annual income, an increase of about 52 percent over that of the previous year. However, it is disappointing that these apparent impressive economic gains over the period were negated by the declining value of the T.shilling resulting in escalated devaluation against the dollar. The table above demonstrates this point quite clearly.

For this reason the people's purchasing power in the region got lower and lower as years passed by. People in the region had higher purchasing power in the early years of the 1980s than they were ten to fifteen years later. They were twice or so better off economically in real terms than they were in 1994.

TABLE II-2: AVERAGE ANNUAL REGIONAL GDP CONTRIBUTIONS TO THE NATIONAL GDP (1980 - 1994) TANZANIA MAINLAND:

Region	Average Annual GDP Contribution (%)	GDP Contribution Ranking
Arusha	7.8	2
Dar-es-Salaam	20.33	1
Mwanza	7.67	3
Mbeya	6.00	4
Shinyanga	5.80	5
Iringa	5.53	6
Tanga	5.52	7
Morogoro	4.67	8
Kagera	4.60	9
Kilimanjaro	3.67	10
Mara	3.47	11
Tabora	3.40	12

Ruvuma	3.33	13
Mtwara	3.27	14
Rukwa	3.13	15
Dodoma	3.07	16
Singida	2.87	17
Kigoma	2.53	18
Lindi	2.00	19
Coast	1.00	20
Total	100.00	-

Source: Planning Commission: Based on National Accounts of Tanzania 1976 - 1994 11th Edition, August, 1995.

2.3 PRODUCTIVE SECTORS

2.3.1. AGRICULTURE

2.3.1.1. Introduction

Agriculture is the mainstay of the regional economy. It contributes more than 40% of regional GDP, and also accounts for more than 75% of export earnings. Moreover both agriculture and livestock sectors employ more than 85% of the rural population. There is still vast agricultural potential unexploited. About 24,728.6 sq km, which is about 29.6 of entire land area is arable land.

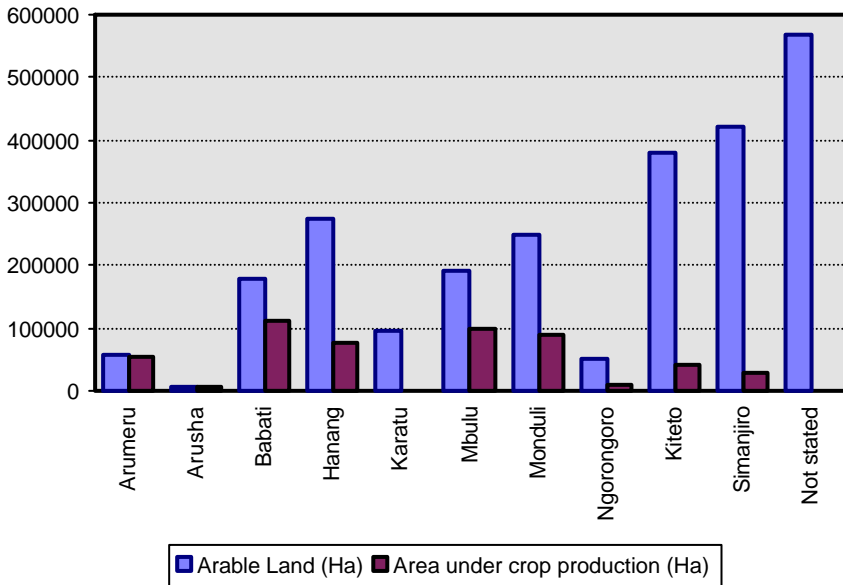
The land currently under cultivation is only 5201.385 sq km or 520,100H which is only about 21% of the arable land. This vast untapped rainfed potential coupled with the unexploited region's potential for irrigation, shows that awesome as it is current production can easily be tribled. Table II-3 Shows the areas suitable for agricultural activities by district.

TABLE II-3: DISTRIBUTION OF ARABLE LAND AND LAND UNDER CROP PRODUCTION BY DISTRICT, ARUSHA REGION 1996

District	Land Area (Sq km)	Arable Land (Ha)	Area under crop production (Ha)	% Arable under crop production
Arumeru	2,896.0	56,080	55,400	98.8
Arusha	82.5	6,620	6,310	95.3
Babati	4,969.0	180,000	111,840	62.1
Hanang	3,436.0	274,880	78,000	28.4
Karatu	3,300.0	96,000	N.A	-
Mbulu	4,352.0	192,800	97,650	50.6
Monduli	14,201.0	247,680	90,680	36.6
Ngorongoro	14,036.0	50,000	10,250	20.5
Kiteto	16,305.0	380,000	40,000	10.5
Simanjiro	18,851.0	420,000	30,000	7.1
Not stated	-	568,880	-	-
Total Region	82,428.5	2,472,940	520,130	21.0

Source: Regional Agricultural Office, Arusha 1997

Fig 9: Distribution of Arable Land and Area Under Crop Production By District, Arusha Region 1996



Other characteristics of agricultural production in Arusha region is that unlike other regions quite a sizable amount of production is carried out on estate or large scale farms. Production on large scale farms is characterized by higher yields per hectare and greater access to agricultural credit. The Tanganyika Farmers Association (T.F.A) has played a key role in the provision of credit facilities to these farms especially inputs.

Such estate farms are concentrated in the following areas.

- Large scale wheat farming in Hanang and Karatu district
- Large scale seed bean farming in Loksale Monduli and Simanjiro
- Commercial farming of sisal, coffee and more recently flowers in Arusha and Arumeru districts.

But on the whole yields per hectare in the region are low because of droughts, use of inferior agricultural implements, poor husbandry and low access to credit.

2.3.1.2 Food crops

2.3.1.2.1 Maize

Arusha region is a major producer of maize in the country. In 1995/96 production reached a decade's high of 389,704 tons. Generally, there has been an increase in production since 1990 due partly to increased area under the crop and an improvement of yields per hectare, The major maize producing districts are Mbulu/Karatu and Babati. These two district

account for more than half the regional production. Hanang, Arumeru and Kiteto/Simanjiro are also good producers. Monduli and Arumeru are the two districts which have demonstrated a clear trend of increased productivity. Monduli's yields per hectare averaged 0.60 tons in 1990/91 was 1.50 tons in 1993/94 and 2.50 tons in 1996/97. Likewise Arumeru's yields per hectare averaged 1.29 tons in 1990/91 was 1.90 tons in 1993/94 and 3.0 tons in 1996/97. Over the seven year period the region averaged 1.58 tons per hectare. The best average yields per hectare over the period were 2.14 tons in Arumeru, 1.90 tons in Arusha 1.78 tons in Monduli and 1.77 tons in Babati. The worst average yields were in Kiteto/Simanjiro at 1.02 tons. Despite displaying the best yields the four districts of Arumeru, Arusha, Monduli and Babati account for only 41% of the regions total production of maize. Unless, competition from other crops does not allow, there should be greater emphasis on maize production in these districts than in the rest of the region.

**TABLE II-4: ESTIMATED PRODUCTION (TONS) OF MAIZE BY DISTRICT
ARUSHA REGION 1990/91-1996/97**

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% of Total
Arumeru	21,500	30,260	5,301	23,750	51,615	42,000	42,000	216,426	30,918	12
Arusha	4,050	5,250	290	3,150	3,500	4,410	3,726	24,376	3,482	1
Babati	44,284	38,400	38,301	46,607	115,245	96,935	72,982	452,754	64,679	25
Hanang	14,735	35,280	31,795	44,716	40,376	59,367	53,933	280,202	40,029	16
Mbulu/Karatu	73,892	64,785	62,497	66,640	80,028	130,000	54,708	532,550	76,079	29
Kiteto/Simanjiro	20,520	37,800	37,000	24,000	26,000	38,000	25,000	208,320	29,760	12
Monduli	1,988	7,375	3,250	7,058	9,000	12,000	12,500	53,171	7,596	3
Ngorongoro	3,981	4,152	1,122	6,669	11,781	6,992	7,450	42,147	6,021	2
Total	184,950	223,302	179,556	222,590	337,545	389,704	272,299	1,809,946	258,564	100

Source: Regional Agricultural Office, Arusha 1997.

Fig. 10 (a): Regional Total Estimated Production (tons) of maize, Arusha Region 1990/91-1996/97

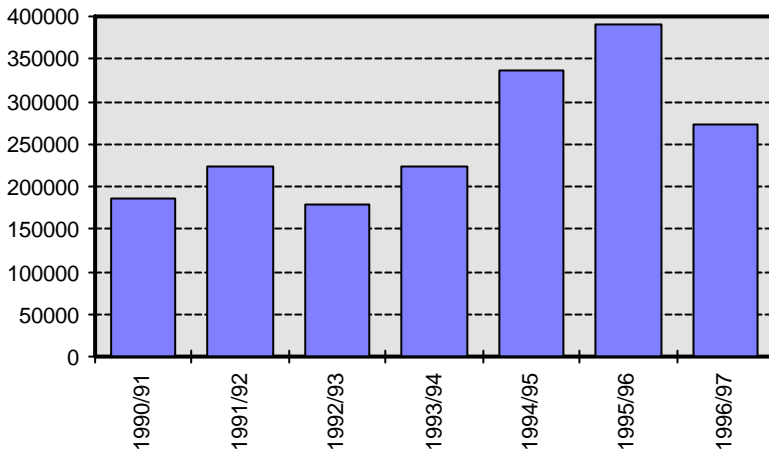


Fig. 10 (b): Yearly average of maize production (tons) by district, Arusha Region 1990/91-1996/97

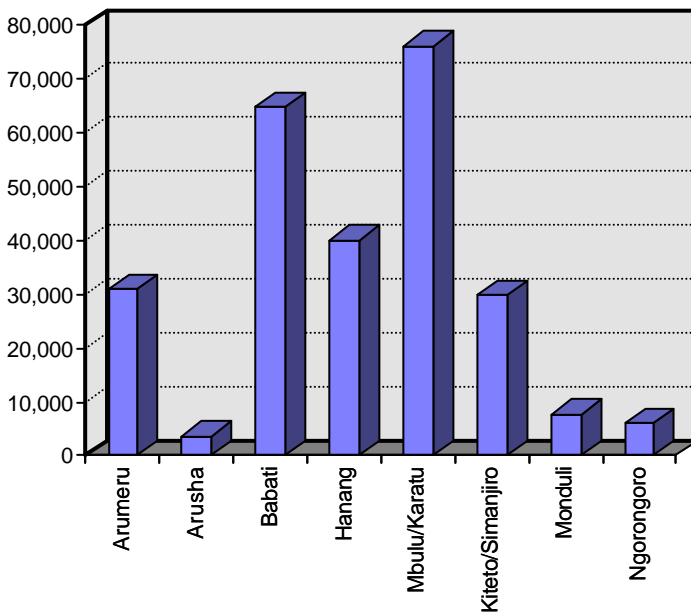


TABLE II-5 ESTIMATED AREA UNDER MAIZE PRODUCTION (HA) AND PRODUCTIVITY (TONS/YIELD HA) BY DISTRICT, ARUSHA REGION 1990/91-1996/97

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yield Average
Arumeru									
Ha	16,655	15,130	11,780	12,500	17,205	14,000,000	14,000	101,270	14,467
Per Ha	1.29	2.00	0.45	1.90	3.00	3.00	3.00	-	2.14
Arusha									
Ha	1,800	2,100	1,600	1,575	1,600	2,070	2,070	12,815	1,831
Per Ha	2.25	2.50	0.18	2.00	2.19	2.13	1.80	-	1.90
Babati									
Ha	35,649	29,764	31,523	38,839	38,414	38,774	42,899	255,862	36,552
Per Ha	1.24	1.29	1.22	1.20	2.56	2.50	1.70	-	1.77
Hanang									
Ha	13,400	19,990	24,458	22,358	26,917	29,684	31,726	168,533	24,076
Per Ha	1.10	1.76	1.30	2.00	1.50	2.00	1.70	-	1.66
Mbulu/Karatu									
Ha	52,780	43,190	47,880	49,400	49,400	51,870	49,100	343,620	49,089
Per Ha	1.40	1.50	1.31	1.35	1.62	2.51	1.11	-	1.55
Kiteto/Simanjiro									
Ha	28,520	25,200	30,000	30,000	30,000	30,000	30,000	203,720	29,103
Per Ha	0.72	1.50	1.23	0.80	0.87	1.27	0.83	-	1.02
Monduli									
Ha	3,313	4,917	3,600	4,705	3,600	4,800	5,000	29,935	4,278
Per Ha	0.60	1.50	0.90	1.50	2.50	2.50	2.50	-	1.78
Ngorongoro									
Ha	2,654	2,966	2,252	3,705	5,355	5,827	4,500	27,259	3,894
Per ha	1.50	1.40	0.50	1.80	2.20	1.20	1.66	-	1.55
Total Ha	154,77	143,25	153,09	163,08	172,49	177,025	179,295	1,143,014	163,288
	1	7	3	2	1				
Total Per Ha	1.19	1.56	1.17	1.36	1.96	2.20	1.52	1.58	1.58

Source: Regional Agricultural Office, Arusha 1997

TABLE II-6: ESTIMATED PRODUCTION (TONS) FOOD BEANS BY DISTRICT ARUSHA REGION 1990/91 TO 1997:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% Regional Total	Ranking
Arumeru	6,275	6,305	1,326	8,250	3,000	5,000	5,000	35,156	5,022	11	5
Arusha	2,335	2,600	270	825	750	441	1,073	8,294	1,185	3	7
Babati	12,504	16,443	1217	14,640	12,061	11,319	13,762	81,946	11,707	26	1
Hanang	2,000	12,289	11,690	11,192	13,628	9,500	6,338	66,637	9,520	21	2
Mbulu/Karatu	5,768	11,764	8,212	9,180	8,262	10,053	7,345	60,584	8,655	19	3
Kiteto/Simanjiro	150	492	2,700	1,875	2,000	3,000	7,800	8,017	2,574	6	6
Monduli	1,375	10,500	2,660	5,668	5,563	6,500	6,875	39,141	5,592	12	4
Ngorongoro	383	750	107	850	1,166	1,335	2,800	7,391	1,056	2	8

Total	30,790	61,143	28,182	52,480	46,430	47,148	50,993	317,166	45,311	100	-
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Source: Regional Agricultural office, Arusha 1997

TABLE II-7: ESTIMATED AREA UNDER FOOD BEANS PRODUCTION (HA) AND PRODUCTIVITY (TONS PER ha) BY DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97:

District	1990 /91	1991 /92	1992 /93	1993 /94	1994 /95	1995 /96	1996 /97	Total	Yearly Average
Arumeru									
Ha	7680	7,880	7,580	11,000	7,000	6,000	6,000	53,140	7,591
per Ha	0.82	0.80	0.17	0.75	0.43	0.83	0.83	0.66	0.66
Arusha									
Ha	2,270	2,200	1,800	1,100	1,200	1,073	1,073	10,716	1,531
Per Ha	1.03	1.18	0.16	0.75	0.63	0.41	1.00	0.77	0.77
Babati									
Ha	13,900	10,740	12,174	14,640	12,061	11,322	16,794	91,631	13,090
Per ha	0.90	1.53	1.53	1.00	1.00	1.00	1.00	0.89	0.89
Hanang									
Ha	2,500	8,192	7,793	9,327	12,389	13,599	7,922	61,722	8,817
Per ha	0.80	1.50	1.50	1.20	1.10	0.70	0.80	1.08	1.08
Mbulu/Karatu									
Ha	9,614	10,893	10,200	10,200	10,200	8,560	11,709	71,376	10,197
Per ha	0.60	1.08	0.81	0.90	0.81	1.74	0.63	0.85	0.85
Kiteto/Simanjiro									
Ha	700	820	800	1,500	1,700	7,500	11,500	24,520	3,503
per ha	0.21	0.60	3.38	1.25	1.18	0.40	0.68	0.73	0.73
Monduli									

Ha	4,583	10,500	4,450	7,135	4,450	5,200	5,500	41,818	5,974
Per Ha	0.30	1.00	0.60	0.79	1.25	1.25	1.25	0.94	0.94
Ngorongoro									
ha	510	1,500	1,332	1,410	1,860	1,600	2,500	10,712	1,530
per ha	0.75	0.50	0.08	0.60	0.63	0.83	1.12	0.69	0.69
Total									
Ha	41,757	52,725	46,129	56,312	50,860	54,854	62,998	365,635	52,229
Per Ha	0.74	1.16	0.61	0.93	0.91	0.86	0.81	0.87	0.87

Source: Regional Agricultural Office, Arusha 1997.

2.3.1.2.2 Food Beans:

Food beans and other pulses are the most common source of protein in the region if pastoralist are excluded. They are widely cultivated. Both area and production shown increases.

TABLE II-8: ESTIMATED PRODUCTION (TONS) OF BANANAS BY DISTRICT ARUSHA REGION 1990/91 TO 1996/97:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Year Average	% Regional Total	Ranking
Arumeru	72,000	72,000	87,490	72,000	70,000	11,700	-	385,190	64,198	93	1
Arusha	8,000	5,000	2,400	2,400	2,600	8,728	-	29,128	4,855	7	2
Total	80,000	77,000	89,890	74,400	72,600	20,428	-	414,318	69,053	100	-

Source: Regional Agricultural Office, Arusha.

TABLE II-9: ESTIMATED AREA UNDER BANANAS (HA) AND PRODUCTIVITY (TONS PER HA) BY DISTRICT ARUSHA REGION 1990/91-1996/97

District	1990 /91	1991 /92	1992 /93	1993 /94	1994/ 95	1995 /96	1996 /97	Total	Yearly Average
Arumeru									
Ha	7,200	7,200	6,730	7,200	9,000	9,000	-	46,330	7,722
Per ha	10.00	10.00	13.00	10.00	7.78	1.30	-	8.31	8.31
Arusha									
Ha	1,000	1,000	800	1,000	1,100	1,091	-	5,991	999
Per Ha	8.00	5.00	3.00	2.40	2.36	8.00	-	4.86	4.86
Total									
Ha	8,200	8,200	7,530	8,200	10,100	10,091	-	52,321	8,721
Per ha	9.76	9.39	11.94	9.07	7.19	2.02	-	7.92	7.92

Clearer trends are with respect to the newly opened areas of Simanjiro\Kiteto and Ngorongoro. These two districts show increased production and increased area under food beans. The districts with the best productivity per hectare are Hanang at an average 1.08 tons, Monduli at 0.94 tons and Babati at 0.98 tons.

The worst average yields are held by Arumeru at 0.66 tons, Ngorongoro at 0.69 tones and Kiteto/Simanjiro at 0.73 tons. The average for the region 0.87 tons. The highest productivity district of Hanang, Monduli and Babati account for 59% of the region's total production of food beans. Monduli district has the added attraction of showing a clearly increasing productivity over the seven years.

23.1.23 **Bananas:**

Bananas are the staple food for Arumeru and parts of Arusha district. These two districts have virtual monopoly in the production of this food crop. The two districts produce an average of 69,000 tons per year. Although there has been an increase in the area under the crop, production has not kept pace with this increase. It has remained stagnant or even dropped slightly. Consequently, yields per hectare have declined over the last seven years. The average production per hectare is 7.92 tons for the region, 8.31 tons for Arumeru and .86 tons for Arusha.

2.3.12.4 **Millet:**

Millets are a minor but important staple food. However, the area under this crop has declined reaching about 25,000 ha in 1996 /97 from about 50,000 ha in 1990/91. The best yields per hectare is 1.33 tons for Hanang. Hanang also shows the trend

that production areas under millets are on the increase although elsewhere the crop had declined. Other areas with the best productivity to land are Mbulu/Karatu at 1.21 tons per hectare and Babati at 1.11 tons. The three best productivity districts account for 78% of the region's average production. This is as it should be. Hanang with its comparative advantage should be able to boost its share of the region's production from 18% to at least 50% in the next few years.

Average production for the region is 46,899 tons at an average yield of 1.10 tons per hectare.

TABLE II-10: ESTIMATED PRODUCTION (TONS) OF MILLETS BY DISTRICT ARUSHA REGION 1990/91 TO 1996/97:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% of Regional Total	Ranking
Babati	12,866	28,979	15,035	16,923	18,211	11,541	566	104,121	14,874	32	1
Hanang	2,461	4,262	12,306	10,815	10,341	14,973	3,706	58,864	8,409	18	4
Mbulu/Karatu	18,857	11,760	12,348	8,352	22,575	13,964	4,820	92,676	13,239	28	2
Kiteto/Simanjir o	10,494	13,872	6,200	11,570	11,600	5,700	2,000	61,436	8,777	19	3
Monduli	223	300	800	1,200	860	710	300	4,393	628	1	6
Ngorongoro	720	808	157	730	1,602	984	1,800	6,801	972	2	5
Total	45,621	59,981	46,846	49,590	65,189	47,872	13,192	328,291	46,899	100	-

Source: Regional Agricultural Office, Arusha 1997.

TABLE II-11: ESTIMATED AREA UNDER MILLETS (HA) AND PRODUCTIVITY (TONS PER HA) BY DISTRICT, ARUSHA REGION 1990/91-1996/97

District	1990/91	91/92	92/93	93/94	94/95	95/96	96/97	Total	Yearly Average
Babati									
Ha	12,004	24,517	13,695	13,108	13,008	9,785	7,899	94,016	13,431

Per ha	1.07	1.18	1.10	1.29	1.40	1.18	0.07	1.11	1.11
Hanang									
Ha	3,210	2,465	8,305	7,229	8,236	11,800	3,089	44,334	6,333
Per ha	0.77	1.73	1.48	1.50	1.26	1.27	1.20	1.33	1.33
Mbulu/Karatu									
Ha	19,428	10,760	13,860	7,254	10,450	7,396	7,139	76,285	10,898
Per Ha	0.97	1.09	0.89	1.15	2.16	1.89	0.68	1.21	1.21
Kiteto/Simanjoro									
Ha	13,200	12,010	9,700	11,700	12,200	8,100	4,400	71,310	10,187
Per Ha	0.80	1.16	0.64	0.99	0.95	0.70	0.45	0.86	0.86
Monduli									
Ha	735	300	850	550	850	550	500	4,335	619
Per Ha	0.30	1.00	0.94	2.18	1.01	1.29	0.60	1.01	1.01
Ngorongoro									
Ha	1,017	1,123	1,120	1,075	1,510	1,960	1,600	9,405	1,344
Per Ha	0.71	0.72	0.14	0.68	1.06	0.50	1.12	0.72	0.72
Total									
Ha	49,594	51,175	47,530	40,916	46,254	39,591	24,625	299,685	42,812
Per Ha	0.92	1.17	0.99	1.21	1.41	1.21	0.54	1.10	1.10

Source: Regional Agriculture Office, Arusha 1992

2.3.1.2.5 Paddy:

Paddy is produced in the region as both a food staple and a cash crop. Babati and Monduli are the only two districts where paddy, production is significant. Babati accounts for 80% of the production. Production is showing a trend towards increase, so does the area under cultivation. The hectareage increased from 2,789 in 1990/91 to 12,096 in 1993/94. Since then a series of bad years have checked this upward increase. Productivity wise

Monduli averages 3.09 tons per hectere as compared to 1.78 tons for Babati.

The region's average production is 12,752 tons per year at an average yield of 1.94 tons per hectare.

TABLE II-12: ESTIMATED PRODUCTION (TONS) OF PADDY BY DISTRICT ARUSHA REGION 1990/91-1996/97

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% Regional total
Babati	4566	4570	8330	22392	6030	15323	-	61211	10202	80
Monduli	504	3018	2450	2300	2450	4576	-	15298	2550	20
Total	5,070	7588	10780	24692	8480	19899	-	76509	12752	100

Source: Regional Agricultural office, Arusha 1997.

TABLE II-13 ESTIMATED AREA UNDER PADDY (HA) AND PRODUCTIVITY (TONS PER HA) BY DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97

District	1990 /91	1991 /92	1992 /93	1993/ 94	1994 /95	1995 /96	1996 /97	Total	Yearly Average
Babati									
Ha	2283	2285	4,165	11196	8015	6441	-	34385	5731
Per Ha	2.00	2.00	2.00	2.00	0.75	2.38	-	1.78	1.78
Monduli									
Ha	504	850	700	900	700	1300	-	4954	826
Per Ha	1.00	3.55	3.50	2.56	3.50	3.52	-	3.09	3.09
Total									
Ha	2787	3135	4865	12096	8715	7741	-	39339	6557
Per ha	1.82	2.42	2.22	2.04	0.97	2.57	-	1.94	1.94

Source: Regional Agricultural Office Arusha, 1997.

2.3.1.2.6 Potatoes

Round potatoes or Irish potatoes are grown both as a food and cash crop in the region. All but two districts grow the crop. Increase in production is manifested by Ngorongoro district otherwise the crop seems to stagnate. A look at the area under the crop reflects the same picture. The best yields per hectare over the seven years are for Hanang at an average of 4.38 tons and Mbulu/Karatu at 3.14 tons. Kiteto/Simanjiro has the worst land productivity at 1.26 tons. Hanang and Mbulu/Karatu account for 62% of the region's production.

Again Hanang at 28% share of regional production can improve this to at least 50% with little effort. The district has a huge comparative advantage over other districts.

The region produces on the average 10,256 tons of potatoes a year at an average yield of 2.21 tons per hectare.

TABLE II-14 ESTIMATED PRODUCTION OF POTATOES (TONS) BY DISTRICT, ARUSHA REGION, 1990/91-196/97

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% Regional Total	Ranking
Arusha	720	1200	600	450	500	1871	-	5341	890	9	5
Hanang	2120	6395	1797	1503	3035	2222	-	17072	2845	28	2
Mbulu/Karatu	2,878	1800	312	350	865	1486	-	7691	1282	12	4
Kiteto/Simanjiro	2100	5000	5000	3500	3500	2000	-	21100	3517	34	1
Mgorongoro	384	1062	1461	1230	2390	3804	-	10331	1722	17	3
Total	8202	15,457	9170	7033	10290	11383	-	61535	10256	100	

Source: Regional Agricultural office, Arusha 1997.

TABLE II- 15 ESTIMATED AREA UNDER POTATOES (HA) AND PRODUCTIVITY (TONS PER HA) BY DISTRICT, ARUSHA REGION 1990/91 TO 1996/97

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average
Arusha									
Ha	120	200	100	120	120	150	-	810	135
Per Ha	6.00	6.00	6.00	3.75	4.17	3.33	-	2.31	2.31
Hanang									
Ha	514	1492	321	362	708	501	-	3898	650
Per Ha	4.12	4.29	5.60	4.15	4.29	4.44	-	4.38	4.38
Nbulu/Karatu									
ha	421	525	339	250	440	478	-	2453	409
Per ha	6.84	3.43	0.92	1.40	1.97	3.11	-	3.14	3.14
Kiteto/Simanjiro									
Ha	700	2500	5000	3500	3500	1600	-	16800	2800
per Ha	3.00	2.00	1.00	1.00	1.00	1.25	-	1.26	1.26
Ngorongoro									
ha	200	425	487	540	1000	1268	-	3920	653
per ha	1.92	2.50	3.00	2.28	2.39	3.00	-	2.64	2.64
Total									
Ha	1955	5142	6247	4772	5768	3997	-	27881	4647
Per ha	4.20	3.01	1.47	1.47	1.78	2.85	-	2.21	2.21

Source: Regional Agricultural Office, Arusha 1997.

2.3.1.3 Food Adequacy

a) Arumeru District

A look at table II-16 reveals that normally the district of Arumeru can meet its requirements for carbohydrates from its own production. Unusual years like 1995/96 which are marked with drought eliminate the district's self-

sufficiency in this area. However, with respect to protein, the district has an chronic deficiency.

TABLE II-16 FOOD PRODUCTION (TONS) AND FOOD REQUIREMENT (TONS) ARUMERU DISTRICT, ARUSHA REGION 1990/91 TO 1996/97

	Food Category	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
1	Food Production							
	Maize	21500	30260	5301	23750	51615	42000	42000
	Bananas	72000	72000	87490	72000	70000	11700	N.A
	Total	93500	102260	92791	95750	121615	53700	N.A
	Food Beans	6275	6305	1326	8250	3000	5000	5000
2	Food Requirements							
	Carbohydrates	61660	63633	65669	67771	69939	72177	74487
	Protein	12332	12727	13134	13554	13988	14435	14897
3	Surplus +/Deficit -							
	Carbohydrates	+31840	+38627	+27122	+27979	+51676	-18477	N.A
	Protein	-6057	-6422	-11808	-5304	-10988	-9435	-9897

Source: Compiled from data supplied by the Regional Agricultural Office, Arusha 1997.

b) Arusha District

Consistence with its predominantly urban character, Arusha district is seriously and chronically dependent on food supplies from outside its borders in any one year. This dependency is for both carbohydrate and protein source foods. As expected the gap between supply and demand gets bigger and bigger as the years go by. So, year after year the urban district's dependency on outside supplies grows. See Table II. 17.

TABLE II-17: FOOD PRODUCTION (TONS) AND FOOD REQUIREMENTS (TONS) IN ARUSHA DISTRICT , ARUSHA REGION 1990/91 TO 1996/97

	Food Category	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
1	Food Production							
	Maize	4,050	5,250	290	3,150	3,500	4,410	3,726
	Bananas	8,000	5,000	2,400	2,400	2,600	8,728	N.A
	Potatoes	720	1,200	600	450	500	1871	N.A
	Total	12,770	11,450	3,290	6,000	6,600	15,009	N.A
	Food Beans	2,335	2,600	270	825	750	441	1,073
2	Food Requirements							
	Carbohydrates	26,116	27,291	28,519	29,802	31,144	32,545	34010
	Protein	5,223	5,458	5,703	5,960	6,229	6,509	6,802
3	Surplus +/- Deficit -							
	Carbohydrates	-13,346	-15,841	-25,229	-23,802	-24,544	-17,536	N.A
	Protein	-2,888	-2,858	-5,433	-5,135	-5,479	-6,068	-5,729

Source: Compiled from data supplied by the Regional Agricultural Office, Arusha 1997.

c) Babati District

This is one of the region's and nation's bread basket districts. From table II-18 Babati produces almost twice its requirements for food beans and almost three times its needs for energy floods.

This is in addition to its supply of some 1,500 tons of wheat and 15,000 tons of pigeon peas a year which food crops are grown for cash. Other crops about half of which are food crops account for an additional 20,000 tons of food a year. Of the six years under consideration only one year showed food shortage, not of carbohydrates but of protein. This was in 1992/93. This district probably because of geographical location and a variety of cash crops does not suffer from the annual Mbulu/Karatu Famine Syndrome.

**TABLE II- 18 FOOD PRODUCTION (TONS) AND FOOD REQUIREMENTS (TONS)
IN BABATI DISTRICT ARUSHA REGION 1990/91 TO 1996/97**

Food Category		190/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
1	Food Production							
	Maize	44284	38400	38301	46607	115245	96935	72982
	Millet	12866	28979	15035	16923	18211	11541	566
	Paddy	4566	4570	8330	22392	6030	15323	N.A
	Total	61716	71949	61666	85922	139486	123799	N.A
	Food Beans	12504	16443	1217	14640	12061	11319	13762
2	Food Requirements							
	Carbohydrates	39750	41022	42335	43690	45088	46530	48020
	Protein	7950	8204	8467	8738	9018	9306	9604
3	+Surplus/-Deficit							
	Carbohydrates	+21966	+30927	+19331	+42232	+94398	+77269	N.A
	Protein	+4554	+8239	-7250	+5902	+3043	+2013	+4158

Source: Compiled from data supplied by the regional Agricultural office, Arusha 1997.

d) **Hanang District**

The year 1990/91 was the only season in six years that saw Hanang district with a food deficit. In the rest of the years the district produced twice its requirements for carbohydrates and protein food sources. This is apart from the production of 39,000 tons of wheat and 2,000 tons of pigeon peas a year. Like Babati, Hanang is another bread basket district for Tanzania and the region. Hanang also is free from the Mbulu/Karatu Famine Syndrome.

TABLE II-19: FOOD PRODUCTION (TONS) AND FOOD REQUIREMENTS (TONS) IN HANANG DISTRICT, ARUSHA REGION 1990/91 TO 1996/97

Food Category		1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
1	Food Production							
	Maize	14735	35280	31795	44716	40376	59367	53933
	Millet	2461	4262	12306	10815	10341	14973	3706
	Potatoes	2120	6395	1797	1503	3035	2222	N.A
	Total	19316	45937	45898	57034	53752	76562	N.A
	Food Beans	2000	12289	11690	11692	13628	9500	6338
2	Food Requirements							
	Carbohydrates	21672	22344	23037	23751	24487	25246	26029
	Protein	4334	4469	4607	4750	4897	5049	5206
3	Surplus/Deficit							
	+ -							
	Carbohydrates	-2356	+23593	+22861	+33283	+29265	+51316	N.A
	Protein	-2334	+7820	+7083	+6942	+8731	+4451	+1132

Source: Compiled from data supplied by the Regional Agricultural Office, Arusha 1997.

Mbulu/Karatu District

With regard to carbohydrates the Mbulu/Karatu district produces without fail nearly twice its requirements, thus contributing to food supplies to deficit areas of the region and the country. In addition to this, the district also produces an average 11,000 tons of wheat and 4,000 tons of barley each year. The district is a bread basket for the region and the country with respect to grain. However because of this district's proximity to Ngorongoro district where famine is chronic farmers in Mbulu/Karatu nearly every year sell their surplus food stocks to Ngorongoro, thus creating an artificial famine situation in Mbulu/Karatu which is also serious when it lasts. This is the Mbulu/Karatu Famine Syndrome. The situation is also not satisfactory with respect to protein food sources. The district has to import about 1/3 of its annual requirements of food beans. The presence of a large livestock herd of course mitigates against protein malnutrition. See Table II - 20.

TABLE II-20: FOOD PRODUCTION (TONS) AND FOOD REQUIREMENTS (TONS) IN MBULU/KARATU DISTRICT, ARUSHA REGION 1990/91 TO 1996/97:

Food Category		1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
1	Food Production							
	Maize	73892	64785	62497	66640	80028	130000	54708
	Millet	18857	11760	12348	8352	22575	13964	4820
	Potatoes	2878	1800	312	350	865	1486	N.A
	Total	95627	78345	75157	75342	103468	145450	N.A
	Food Beans	5768	11764	8212	9180	8262	10053	7345
2	Food Requirements							
	Carbohydrates	51463	53188	54972	56816	58722	62693	64731
	Protein	10292	10638	10940	11364	11744	12139	12546
3	Surplus/Deficit							
	+ -							
	Carbohydrates	+44164	+25157	+20185	+18526	+44746	+82757	N.A
	Protein	-4474	+1126	-2728	-2184	-3482	-2086	-5201

Source: Compiled from data supplied by the Regional Agricultural Office, Arusha 1997.

f) Kiteto/Simanjiro District

This is another bread basket district and is on its way to consolidate its position. A look at table II-21 shows that in the last six years Kiteto/Simanjiro produced carbohydrates in excess of its requirements. Its surplus is modest but it is there. With respect to the production of protein rich foods, the district has progressively reduced its deficit to the extent that now it is self sufficient in this regard also. Its production of food beans has caught up with the district's requirements. Additionally, the district produces some 3,000 tons of seed beans annually as well as having a considerable herd of livestock. The Protein Energy Malnutrition that is wide spread in the district is due mainly to

ignorance and food distribution difficulties among the pastoralist people of the district.

TABLE II-21: FOOD PRODUCTION (TONS) AND FOOD REQUIREMENTS (TONS) IN KITETO/SIMANJIRO DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97:

Food Category	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
1 Food Production							
Maize	20,520	37,800	37,000	24,000	26,000	38,000	25,000
Millet	10,494	13,872	6,200	11,570	11,600	5,700	2,000
Potatoes	2,100	5,000	5,000	3,500	3,500	2,000	N.A
Total	33,114	56,672	48,200	39,070	41,100	45,700	N.A
Food Beans	150	492	2,700	1,875	2,000	3,000	7,800
2 Food Requirements							
Carbohydrates	26,491	28,480	30,618	32,918	35,391	38,052	40,914
Protein	3,069	3,284	3,514	3,759	4,023	4,304	4,606
3 Surplus/Deficit							
Carbohydrates	+6,623	+28,192	+17582	+6,152	+5,709	+7,648	N.A
Protein	-2,919	-2,792	-814	-1,884	-2,023	-1,304	+3,194

Source: Compiled from data supplied by the Regional Agricultural Office, Arusha 1997.

g) Monduli district

Monduli district is in the curious position of being self sufficient in protein foods but deficient in carbohydrate foods. On the last seven years, only in 1990/91 and 1992/93 did it not meet its requirements of food beans. With respect to energy foods, the district has progressively and impressively reduced the gap between requirements and supply. Optimistically, Monduli will be a surplus district in this regard also by the turn of the century; that is very soon. Additionally, the district produces some 2,000 tons of wheat and 2,000 tons of barley annually. It has also got a very sizeable livestock herd.

TABLE II-22: FOOD PRODUCTION (TONS) AND FOOD REQUIREMENTS (TONS) IN MONDULI DISTRICT, ARUSHA REGION 1990/91 TO 1996/97:

Food Category		1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
1	Food Production							
	Maize	1988	7375	3250	7058	9000	12000	12500
	Millet	223	300	800	200	860	710	300
	Paddy	504	3018	2450	2300	2450	4576	N.A
	Total	2715	10693	6500	10558	12310	17286	N.A
	Food Beans	1375	10500	2660	5668	5563	6500	6875
2	Food Requirements							
	Carbohydrates	21336	22254	23211	24209	25250	26336	27468
	Protein	4267	4451	4642	4842	5000	5267	5494
3	Surplus +/-Deficit -							
	Carbohydrates	-18621	-11561	-16711	-13651	-12940	-9050	N.A
	Protein	-2892	+6049	-1982	+826	+563	+1233	+1381

Source: Compiled from data supplied by the Regional Agricultural office, Arusha 1996.

h) Ngorongoro District

Ngorongoro is a food deficit area with regard to both protein and carbohydrate foods. But it has the distinction of progressively narrowing this gap between supply and demand. Given the current trend the district will be self sufficient in both types of food by the year 2,000. Ngorongoro used to produce barley in modest amounts and has a large livestock herd which could offset protein malnutrition. The district imports grain to cover its deficit from the neighboring district of Karatu, thus effectively transferring its famine to the Karatu district.

TABLE II-23: FOOD PRODUCTION (TONS) AND FOOD REQUIREMENTS (TONS) IN NGORONGORO DISTRICT ARUSHA REGION, 1990/91 TO 1996/97.

	Food Category	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	
1	Food Production								
	Maize	3981	4152	1122	6669	11781	6992	7450	
	Millet	720	808	157	730	1602	984	1800	
	Potatoes	384	1062	1461	1230	2390	3804	N.A	
	Total	5085	6022	2740	8629	15773	11780	N.A	
	Food Beans	383	750	107	850	1166	1335	2800	
2	Food Requirements								
	Carbohydrates	13427	13951	14495	15060	15648	16149	16892	
	Protein	2685	2790	2899	3012	3130	3230	3378	
3	Surplus +/-Deficit -								
	Carbohydrates	-8342	-7929	-11755	-6431	+125	-4369	N.A	
	Protein	-2382	-2040	-2792	-2162	-1964	-1895	-578	

Source: Compiled from data supplied by the regional Agricultural office, Arusha 1997.

i) **Regional Food Sufficiency**

It is believed by many that Arusha is a food surplus region. In fact it is a member of the club of four giant producers of maize along with Mbeya, Ruvuma and Rukwa. A look at table II.24 confirms this with respect to energy foods. In every one of the last six years under consideration the region managed to produce a surplus. The trend is for more surplus production. In fact by mid 90's the region was producing a surplus of 50% over its requirements. In addition to this surplus of energy foods the region also produces an average of 55,000 tons of wheat each year.

On the other hand, contrary to popular belief, Arusha is a deficit region with regards to food beans. But its deficit can be met to a

great extent by the use of pigeon peas which is crop produced for cash. Over the last seven years the average deficit for food beans is 9,187 tons. But the region at the same time produces an average of 17,174 tons of pigeon peas and 18,258 tons of seed beans as cash crops. In addition the region has a very large livestock herd. The question is “Is the food bean deficit a real nutritional deficit or not?”.

TABLE II-24: FOOD PRODUCTION (TONS) AND FOOD REQUIREMENTS (TONS) IN ARUSHA REGION, 1990/91 TO 1996/97:

Food Category	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
1. Food Production							
Meize	184950	223302	179556	222590	337545	389704	272299
Millet	45621	59981	46846	9590	65189	47872	13192
Paddy	5070	7588	10780	24692	8480	19899	N.A
Bananas	80000	77000	89890	74400	72600	20428	N.A
Potatoes	8202	15457	9170	7033	10290	11383	N.A
TOTAL	323843	383328	336242	378305	494104	489286	N.A
Food Beans	30790	61143	28182	52480	46430	47148	50993
2. Food Requirements							
Carbohydrates	261915	272163	282856	294017	305669	319728	332551
Protein	50152	52021	53906	56137	58029	60239	62533
3. Surplus/Deficit							
Carbohydrates	+61928	+111165	+53386	+84288	+188435	+169558	N.A
Protein	-19362	+9122	-25724	-3657	-11599	-13091	-11540

2.3.1.4 Cash Crops:

2.3.1.4.1 Wheat:

Arusha region is the major producer of wheat in Tanzania. The crop is also a significant cash earner for the region. Hanang and Mbulu/Karatu are the major producer districts accounting for 91% of regional production with Hanang contributing 71% of the regional total. Production is stagnant but could be declining very slowly. The slight decline could be due to a slow decline in yields per hectare over the last seven year. This is because the trend has been of slight increases in the area put under wheat. The best yields per acre are in Mbulu/Karatu and Hanang as it should be. The districts show an average yield per hectare of 1.67 tons and 1.54 tons respectively.

The average yield per hectare is 1.54 tons and the region produces an average of 54,875 tons in a year. See Table II-25 and II-26.

**TABLE II-25: ESTIMATED PRODUCTION (TONS) OF WHEAT BY DISTRICT
ARUSHA REGION 1990/91 - 1996/97:**

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% of Regional Total	Ranking
Arumeru	640	1,080	N.A.	800	1,040	2,000	1,000	6,560	937	2	5
Babati	421	1,895	1,000	2,000	1,640	1,850	1,890	10,696	1,528	3	4
Hanang	47,460	49,300	1,198	50,719	41,708	48,300	36,200	274,885	39,269	71	1
Mbulu/Karatu	11,120	13,536	10,710	3,160	15,250	8,550	14,500	76,826	10,975	20	2
Monduli	550	700	560	8,750	1,000	1,800	1,800	15,160	2,166	4	3
Total	60,191	66,511	13,468	65,429	60,638	62,500	55,390	384,127	54,875	100	

Source: Regional Agricultural Office, Arusha, 1997.

TABLE II-26: ESTIMATED AREA UNDER WHEAT PRODUCTION (HA) AND PRODUCTIVITY OF LAND (TONS YIELD PER HA.) BY DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97.

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average
Arumeru									
Ha.	800	800	600	800	800	1,000	780	5,580	797
Per Ha.	0.80	1.35	-	1.00	1.30	2.00	1.28	1.18	1.18
Babati									
Ha.	263	1,184	2,000	1,200	1,025	1,050	1,700	8,422	1,203
Per Ha.	1.60	1.60	0.50	1.67	1.60	1.76	1.11	1.27	1.27
Hanang									
Ha.	26,960	29,000	2,396	29,479	30,662	32,200	27,560	178,257	25,465
Per Ha.	1.76	1.70	0.50	1.72	1.36	1.50	1.31	1.54	1.54
Mbulu/Karatu									
Ha.	5,560	8,460	5,950	3,000	6,100	7,200	9,611	45,881	6,554
Per Ha.	2.00	1.60	1.80	1.05	2.50	1.19	1.51	1.67	1.67
Monduli									
Ha.	270	500	430	5,200	1,200	2,000	2,000	11,570	1,653
Per Ha.	2.00	1.40	1.40	1.68	0.83	0.90	0.9	1.31	1.31
Total									
Ha.	33,853	39,944	11,346	39,679	39,787	43,450	41,651	249,710	35,673
Per Ha.	1.78	1.67	1.19	1.65	1.52	1.44	1.33	1.54	1.54

Source: Regional Agricultural Office, Arusha, 1997.

2.3.1.4.2 Coffee:

Coffee is a long established cash crop of the region. Over the last seven years production has tended to increase to some slight extent. Production in Arumeru is stagnant and Arusha is showing some decline. Mbulu/Karatu and Hanang also show stagnating production while both Babati and Monduli show some improvement. Arumeru accounts for 68% of the region's production while Arusha's share is 15%.

The other four districts are minor producers. The best yields

per hectare are in Arusha followed by Monduli and Babati in that order. The figures for the three districts are 1.68 tons, 1.00 tons and 0.70 tons respectively. The area under the crop increased from 20,875 ha in 1990/91 to 25,559 ha in 1995/96. This is a 22% increase. This increase has not as yet been reflected in yields partly because of the gestation period between planting and bearing. It could also be because of declining yields per hectare especially in Arusha district.

The region produces an average of 13,000 tons of coffee a year and the average yield is around 0.58 tons per hectare. See Tables II. 27 and II.28.

TABLE II-27: ESTIMATED PRODUCTION OF COFFEE (TONS) BY DISTRICT ARUSHA REGION 1990/91 - 1996/97:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% of Regional Total	Ranking
Arumeru	7,500	8,500	7,000	10,500	10,000	9,985	8,500	61,985	8,855	68	1
Arusha	1,999	3,000	1,180	2,250	2,450	1,386	870	13,135	1,876	15	2
Babati	105	413	540	240	125	190	779	2,392	342	3	5
Hanang	2	16	11	8	6	7	2	52	7	negligible	6
Mbulu/Karatu	1,645	157	29	102	1,700	1,600	356	5,589	798	6	4
Monduli	100	1,200	1,200	1,300	1,200	1,200	1,300	7,500	1,071	8	3
Total	11,351	13,286	9,960	14,400	15,481	14,368	11,807	90,653	12,949	100	-

Source: Regional Agricultural Office, Arusha, 1997.

TABLE II-28: ESTIMATED AREA UNDER COFFEE (HA) AND PRODUCTIVITY (TONS PER HA) BY DISTRICT, ARUSHA REGION 1990/91 TO 1996/97:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average
Arumeru									
Ha.	16,335	16,335	16,200	19,000	19,900	19,980	19,980	127,730	18,247
Per Ha.	0.46	0.52	0.43	0.55	0.50	0.50	0.43	0.49	0.49
Arusha									
Ha.	1,136	1,000	910	1,200	1,300	1,386	870	7,802	1,115
Per Ha.	1.76	3.00	1.30	1.88	1.88	1.00	1.00	1.68	1.68
Babati									
Ha.	836	402	560	599	312	358	358	3,425	489
Per Ha.	0.13	1.03	0.96	0.40	0.40	0.53	2.18	0.70	0.70
Hanang									
Ha.	3	22	22	15	13	15	10	100	14
Per Ha.	0.67	0.73	0.50	0.53	0.46	0.47	0.20	0.52	0.52
Mbulu/Karatu									
Ha.	2,350	315	363	255	2,500	2,620	435	8,838	1,263
Per Ha.	0.70	0.50	0.08	0.40	0.68	1.61	0.82	0.63	0.63
Monduli									
Ha.	215	1,200	1,200	1,300	1,200	1,200	1,200	7,515	1,074
Per Ha.	0.46	1.00	1.00	1.00	1.00	1.00	1.08	1.00	1.00
Total									
Ha.	20,875	19,274	19,255	22,369	25,225	25,559	22,853	155,410	22,202
Per Ha.	0.54	0.69	0.52	0.64	0.61	0.56	0.52	0.58	0.58

Source: Regional Agricultural Office, Arusha, 1997.

2.3.1.4.3 Seed Beans :

Seed beans are grown under contract with selected farmers in the region to produce seeds to be used elsewhere in the world for commercial bean production. The demand for these seeds fluctuate greatly and this is reflected in the uneven hectares under the crop over the years. The highest recorded number of hectares under the crop were in 1990/91 and 1991/92. In those years

34,620 hectares and 41,560 hectares were under the crop respectively. This unevenness is also reflected in the fluctuating yearly production. The highest production was 39,430 tons in 1991/92 and the lowest 5,193 tons in 1990/91.

Monduli followed by Mbulu/Karatu are the major producing districts accounting for 46% and 24% respectively of the regional total. However, the best average yields are in Arumeru, Kiteto/Simanjiro and Babati. The figures for these districts are 1.20 tons, 1.05 tons and 0.99 tons respectively. But the three districts account for only 30% of the region's production. Monduli the major producer has the worst productivity at 0.56 tons per hectare. Perhaps, there should be a rethinking in the distribution of these seed contracts between respective districts.

The region produces an average of 18,258 tons in a year at an average yield of 0.74 tons per hectare. See Tables II-29 and II-30.

TABLE II-29: ESTIMATED PRODUCTION (TONS) OF SEED BEANS BY DISTRICT ARUSHA REGION 1990/91 TO 1996/97:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% of Regional Total	Ranking
Arumeru	-	-	-	4,500	3,700	3,200	-	11,400	1,900	10	4
Babati	-	1,000	1	2,000	-	150	-	3,151	525	3	5
Mbulu/Karatu	-	14,430	-	6,800	2,800	2,500	-	26,530	4,422	24	2
Kiteto/Simanjiro	-	-	-	5,520	2,900	10,000	-	18,420	3,070	17	3
Monduli	5,193	24,000	3,000	2,100	7,500	8,250	-	50,043	8,341	46	1
Total	5,193	39,430	3,001	20,920	16,900	24,100	-	109,544	18,258	100	-

Source: Regional Agricultural Office, Arusha, 1997.

TABLE II-30: ESTIMATED AREA UNDER SEED BEANS (HA.) AND PRODUCTIVITY (TONS PER HA.) BY DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97:

District	1990/ 91	1991/ 92	1992 /93	1993/ 94	1994/ 95	1995/ 96	1996/ 97	Total	Yearly Average
Arumeru									
Ha.	-	-	-	3,000	3,200	3,300	-	9,500	1,583
Per Ha.	-	-	-	1.50	1.16	0.97	-	1.20	1.20
Babati									
Ha.	-	460	10	2,500	-	200	-	3,170	528
Per Ha.	-	2.17	1.10	0.80	-	0.75	-	0.99	0.99
Mbulu/Ka ratu									
Ha.	-	11,10	-	10,20	3,500	3,600	-	28,400	4,733
Per Ha.	-	0	-	0	0.80	0.69	-	0.93	0.93
Kiteto/Si manjiro									
Ha.	-	-	-	4,600	3,000	10,00	-	17,600	2,933
Per Ha.	-	-	-	1.20	0.97	0	-	1.05	1.05
Monduli									
Ha.	34,62	30,00	6,00	6,500	6,000	6,600	-	89,720	14,953
Per Ha.	0	0	0	0.38	1.25	1.25	-	0.56	0.56
	0.15	0.80	0.50						
Total									
Ha.	34,62	41,56	6,01	26,80	15,70	23,70	-	148,39	24,730
Per Ha.	0	0	0	0	0	0	-	0	0.74
	0.15	0.95	0.50	0.78	1,08	1,02		0.74	

Source: Regional Agricultural Office, Arusha, 1997.

2.3.1.4.4 Pigeon Peas:

Pigeon peas are produced mainly for export to the Indian Sub-continent. Babati produces 89% and Hanang the remaining 11%. There has been some slight increases in production reflected from slight increases in area under the crop. Yields per acre do not differ much between the

districts at 0.95 tons per hectare for Babati and 0.84 tons for Hanang district.

The region produces an average of 17,174 tons per year at 0.93 tons per hectare.

TABLE II-31: ESTIMATED PRODUCTION OF PIGEON PEAS (TONS) BY DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% of Regional Total	Ranking
Babati	12,907	20,086	9,903	15,216	17,005	16,649	-	91,766	15,294	89	1
Hanang	321	1,776	1,646	1,813	2,308	3,415	-	11,279	1,880	11	2
Total	13,228	21,862	11,549	17,029	19,313	20,064	-	103,045	17,174	100	-

Source: Regional Agricultural Office, Arusha, 1997.

TABLE II-32: ESTIMATED AREA UNDER PIGEON PEAS (HA) AND PRODUCTIVITY (TONS PER HA) BY DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average
Babati Ha. Per Ha.	14,341 0.90	16,979 1.18	11,019 0.89	16,907 0.90	18,900 0.90	18,499 0.90	- -	96,645 0.95	16,108 0.95
Hanang Ha. Per Ha.	803 0.40	1,776 1.00	3,292 0.50	1,813 1.00	2,308 1.00	3,415 1.00	- -	13,407 0.84	2,235 0.84
Total Ha. Per Ha.	15,144 0.87	18,755 1.17	14,311 0.81	18,720 0.91	21,208 0.91	21,914 0.92	- -	110,052 0.93	18,342 0.93

Source: Regional Agricultural Office, Arusha, 1997.

2.3.4.1.5 Barley:

This is another contract crop. It is grown for sale to local beer breweries as a raw material. It is also grown by the breweries

themselves. Four districts participate in this production with Mbulu/Karatu and Monduli as the major producers. The two district account respectively for 54% and 28% of the regional total i.e. 82%. For some reason production appears to be on the decline. Mbulu/Karatu and Monduli also have the best productivity landwise. The two district average 1.50 tons per hectare and 1.19 tons respectively. This is as it should be. Ngorongoro has the lowest yields per hectare at 0.66 tons average.

The region produces an average of 8,096 tons a year at an average of 1.27 tons per hectare.

TABLE II-33: ESTIMATED PRODUCTION OF BARLEY (TONS) BY DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% of Regional Total	Ranking
Arumeru	890	1,560	700	700	1,000	1,002	-	5,852	975	13	3
Mbulu/Karatu	6,000	5,952	5,472	1,500	1,700	4,600	-	25,224	4,204	54	1
Monduli	2,650.00	3,750	2,300	930	2,300	850	-	12,780	2,130	28	2
Ngorongoro	1,312	981	67	-	-	-	-	2,360	787	5	4
Total	10,852	12,243	8,539	3,130	5,000	6,452	-	46,216	8,096	100	-

Source: Regional Agricultural Office, Arusha, 1997.

TABLE II-34: ESTIMATED AREA UNDER BARLEY PRODUCTION (HA.) AND PRODUCTIVITY (TONS PER HA.) BY DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average
Arumeru									
Ha.	900	1,050	800	800	1,000	800	-	5,350	892
Per Ha.	0.99	1.49	0.88	0.88	1.00	1.25	-	1.09	1.09

Mbulu/Karatu	3,000	3,720	3,040	2,500	2,600	2,000	-	16,86	2,810
Ha.	2.00	1.60	1.80	0.60	0.65	2.30	-	0	1.50
Per Ha.								1.50	
Monduli	1,248	3,125	2,600	750	2,600	400	-	10,72	1,787
Ha.	2.12	1.20	0.88	1.24	0.88	2.13	-	3	1.19
Per Ha.								1.19	
Ngorongoro	1,312	1,402	887	-	-	-	-	3,601	1,200
Ha.	1.00	0.70	0.08	-	-	-	-	0.66	0.66
Per Ha.									
Total	6,460	9,297	7,327	4,050	6,200	3,200	-	36,53	6,689
Ha.	1.68	1.32	1.17	0.77	0.81	2.02	-	4	1.27
Per Ha.								1.27	

Source: Regional Agricultural Office, Arusha, 1997.

2.3.1.4.6 Sunflower:

This crop is grown mainly in the three districts of Babati, Hanang and Monduli. The districts' share of the regional total is 52%, 26% and 22% respectively. The general trend is for increased production. A look at the yields per hectare over the years show Babati as having an even yield irrespective of the year. The other two districts, however, show highly fluctuating yields. This could account for the dominance of Babati in this crop. The best average yields per hectare are, however, in Hanang at 1.04 tons. The six years under review show a steady increase in production and area sown to the crop. It was 2,583 ha. in 1990/91 and was 6,810 ha. in 1995/96. This is an increase of 164%. Production increased from 1,658 tons in 1990/91 to 6,765 tons in 1995/96.

The region produces on the average 3,847 tons per year and an average yield of 0.93 tons per hectare.

TABLE II-35: ESTIMATED PRODUCTION OF SUNFLOWER (TONS) BY DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97:

District	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average	% of Regional Total	Ranking
Babati	1,234	1,525	1,234	3,016	1,980	3,165	-	12,154	2,026	52	1
Hanang	189	350	203	1,110	1,644	2,400	-	5,896	983	26	2
Monduli	235	1,200	-	1,150	1,243	1,200	-	5,028	838	22	3
Total	1,658	3,075	1,437	5,276	4,867	6,765	-	23,078	3,847	100	-

Source: Regional Agricultural Office, Arusha, 1997.

TABLE II-36: ESTIMATED AREA UNDER SUNFLOWER (HA.) AND PRODUCTIVITY (TONS PER HA.) BY DISTRICT, ARUSHA REGION, 1990/91 TO 1996/97:

District	1990/ 91	1991/ 92	1992/ 93	1993/ 94	1994 /95	1995/ 96	1996/ 97	Total	Yearly Averag e
Babati									
Ha.	1,376	1,694	1,260	3,351	2,200	3,517	-	13,398	2,233
Per Ha.	0.90	0.90	0.98	0.90	0.90	0.87	-	0.91	0.91
Hanang									
Ha.	473	350	338	1,110	1,370	2,033		5,674	946
Per Ha.	0.40	1.00	0.60	1.00	1.20	1.18		1.04	1.04
Monduli									
Ha.	734	1,200	-	1,230	1,260	1,260	-	5,684	947
Per Ha.	0.32	1.00	-	0.93	0.99	0.95	-	0.88	0.88
Total									
Ha.	2,583	3,244	1,598	5,691	4,830	6,810	-	24,756	4,126
Per Ha.	0.64	0.95	0.90	0.93	1.01	0.99	-	0.93	0.93

Source: Regional Agricultural Office, Arusha, 1997.

2.3.1.4.7 Sisal, Cotton and Flowers:

Both Sisal and Cotton are traditional cash crops. The former being an estate crop the other a smallholder crop. Both have been grown in the region for many years and both crops are on the decline.

Sisal grown in Arumeru now averages 16,594 tons a year at 4.85 tons per hectare. Cotton, in Babati averages 1,804 tons a year at 0.65 tons per hectare.

Flowers for export to Europe are a new non-traditional cash crop. It could be a major cash earner given that Arusha enjoys the right infrastructure for the development of this crop in addition to having the right climate and soils for floriculture.

TABLE II-37 ESTIMATED PRODUCTION (TONS) OF SISAL COTTON AND FLOWERS BY DISTRICT, ARUSHA REGION 1990/91 TO 1996/97

District / Crop	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average
Arumeru/Sisal	15,470	18,500	17,000	17,000	15,000	-	-	82,970	16,594
Arusha Flowers	-	-	-	-	-	2,500	-	2,500	2,500
Babati/Cotton	2,826	2,940	1,233	2,300	707	820	-	10,826	1,804

Source: Regional Agricultural office, Arusha 1997.

TABLE II-38 ESTIMATED AREA (HA) UNDER SISAL, COTTON AND FLOWERS AND PRODUCTIVITY (TONS PER HA) BY DISTRICT ARUSHA REGION, 1990/91 TO 1996/97

District/Crop	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	Total	Yearly Average
Arumeru/Sisal									
Ha	3,600	3,700	3,400	3,400	3,000	-	-	17,100	3,420
Per Ha	4.30	5.00	5.00	5.00	5.00	-	-	4.85	4.85
Arusha/Flowers									
Ha	-	-	-	-	-	150	-	150	150
Per Ha	-	-	-	-	-	16.67	-	16.67	16.67
Babati/Cotton									
Ha	4,523	3,439	2,466	1,308	2,338	2,500	-	16,574	2,368
Per ha	0.62	0.85	0.50	1.76	0.30	0.33	-	0.65	0.65

Source: regional Agricultural office, Earache, 1997

2.3.1.5 Other Crops

In addition to the above food and cash crops the region also produces a variety of fruits and vegetables and other crops in small quantities. Food crops under section 2.3.1.2 amount to 443,093 tons yearly average. Cash crops under section 2.3.1.4 reach a total average of 136,097 per year.

Other crops amount to a yearly average of 118,921 . Thus they are important in that they constitute 17% of all crops produced by the region. Babati accounts for 37% of all "other crops". The district's average production yearly is for 101,707 tons food crops, tons 21,519 cash crops and 44,428 tons other crops. Thus other crops constitute 17% of Babati's total crop production. Another district with significant contribution to "other crops" is Arumeru. This district contributes 23,701 tons "other crops" annually on the average which is 20% of the region's volume of "other crops" Arumeru's average annual production of cash crops is 29,261 tons and food crops amount to 100,138 tons. Thus other crops constitute 15% of the district's average annual production of all crops. Apart from Babati and Arumeru other districts also contributed to lesser degrees to the region's volume of "other crops".

"Other Crops" are made up of a great variety of individual crops which are grown either for food or cash purposes or both. They include such crops as:- fruits, vegetables, pulses, cassava, sugar cane for jaggery, bananas etc. See Table II-38. The great variety is a reflection of the varied climate and agro-ecological set up of the region.

TABLE II-38 PRODUCTION OF OTHER CROPS (TONS) BY DISTRICT, ARUSHA REGION 1990/91 TO 1996/97

District	1990/ 91	1991/ 92	1992/ 93	1993/ 94	1994/ 95	1995/ 96	1996/ 97	Total	Yearly Average

Arumeru	4,827	4,865	3,625	7,235	14,635	16,493	114,227	165,907	23,701
Arusha	2,868	4,662	2,290	2,695	2,855	5,610	10,912	31,892	4,556
Babati	18,685	47,881	15,635	32,229	33,522	33,685	129,361	310,998	44,428
Hanang	618	870	835	847	679	1141	13,706	18,696	2,671
Mbulu/Karatu	6,092	8,029	10,599	3,611	7,088	17,571	43,975	96,965	13,852
Kiteto/Simanjoro	2,314	5,423	3,476	3,145	3,415	4,570	75,488	97,831	13,976
Monduli	5,981	20,193	16,140	4,325	16,700	2,600	25,091	91,030	13,004
Ngorongoro	250	775	705	790	1819	2524	4329	11192	2733
Total	41,635	92,698	53,305	54,877	80,713	84,194	417,089	824,511	118,921

Source: Compiled from information supplied by the Regional Agricultural Office, Arusha 1997.

2.3.1.6 Crop Summary

Arusha region produces the following cash crops, food crops and other crops at the following average annual production:

a) Cash Crops Average annual production

Wheat	54,875 tons
Coffee	12,949 tons
Seed Beans	18,258 tons
P. peas	17,174 tons
Sisal	16,594 tons
Barley	8,090 tons
Sunflower	3,847 tons
Flowers	2,500 tons
Cotton	<u>1,804 tons</u>
Total	136,097 Tons

b) Food Crops Average annual production

Maize	258,564 tons
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	Bananas	69,053 tons
	Millets	46,899 tons
	Potatoes	10,256 tons
	Paddy	12,752 tons
	Sub Total Energy foods	397,782 tons
	Food Beans	45,311 tons
	Total	443,093 tons
c)	Other Crops	118,921 tons
	Grand Total	698,111 Tons

2.3.1.7 Irrigation Agriculture

About 60,000 hectares of land area in the region are suitable for traditional irrigation. However, the area under irrigation at present is about 38,000 ha. only. Small holders occupy a large part of this area, using traditional irrigation methods. Although the traditional irrigation schemes are unsophisticated, they have worked for quite a long time. Known areas suitable for irrigation in the region are listed in Table II-39 below:-

TABLE II-39: KNOWN AREAS SUITABLE FOR IRRIGATION (HECTARES) BY DISTRICT, ARUSHA REGION 1997

District	Name of the Area/Ward	Currently under irrigation	Total Irrigation Potential	Crops Grown
MONDULI	Mto wa Mbu	1850	3300	Banana,paddy, maize, vegetable
	Engaruka	40	320	Maize, beans and Finger Millet
	Ngereyani	20	300	Maize, beans, vegetables
	Sub-Total	1910	3920	
BABATI	Babati	270	270	Maize,beans,banana and vegetables
	Magugu	1200	2700	Paddy, maize, sugar cane, sunflower, banana
	Mwada	200	300	Paddy, maize and sugar cane
	Bashnet	591	591	Sugar cane,maize, beans, banana, peagon peas
	Gallapo	61	61	Vegetable, peageon peas, maize,beans
	Bonga	240	240	Coffee, maize, beans, vegetables and peageon peas
			2562	4162
SIMANJIRO	Ruvu Remati	220	1200	Paddy, maize,vegetable and Sugar cane

	Terrati	200	1350	Paddy, maize, vegetables and banana
	Shambarai	725	1400	maize, beans
		1145	3950	
NGORONGOR O	Pinyinyi	200	800	Maize, cassava, sweet potatoes and finger millet
	Digodigo	260	320	
	Sale	300	330	Sweet potatoes, cassava, maize and finger millet
	Samunge	30	40	Maize, sweet potatoes and cassava
Sub-Total		790	1490	
MBULU/KARATU	Oldean	380	400	maize, beans,vegetable
	Bashay	61	200	paddy, maize,beans, vegetable
	Man'gola	800	6300	paddy, maize,beans, vegetable
	Dongobesh	130	160	maize, beans, sugar cane,onions
	Mbulumbu	60	120	maize, beans,sugar cane
	Rhotia	56	65	Beans,potatoes, vegetable
	Tumati	60	70	Potatoes and maize
	Gehand	97	120	maize,beans,vegetable
Sub- Total		1644	7435	
ARUMERU	Mbuyuni	4040	9450	Peageon peas,vegetable, maize,beans,banana and sugar cane
	Nduyuma	1350	3900	Coffee,vegetable, maize,beans and fruits
	Ngarenanyuki	570	620	Maize,vegetable,beans and millet
	Majengo	200	250	maize, beans
	Kikwe	400	600	maize,beans,vegetable
	Akheri	100	100	Maize,beans

	Usa River	300	600	Paddy, maize, vegetable
Sub-Total		6960	15520	
	Other Areas	22989	22989	
GRAND TOTAL		38000	59466	

Source: Regional Agricultural Office, Arusha 1997.

2.3.1.8 Farm Inputs

Farm Inputs include improved seeds, fertilizers and pesticides/fungicides. Poor accessibility to these inputs, high prices and untimely delivery of these inputs have hampered the development of agriculture in the region. These constraints have also restricted the universal use of these inputs by farmers of all categories.

a) Improved Seeds:

Arusha is leading in the use of improved seeds in comparison with other regions. Total consumption per season stands at about 2000 tons of improved seeds, the biggest amount being maize seeds. However, this quantity is still low when compared with the area under cultivation.

This implies that the majority of farmers are still using their own home grown seeds, especially seeds other than maize. Moreover, production realised per unit area is still very low. This is an indication that despite of using improved seeds, farmers are not applying fertilizers and other complementary inputs.

b) Application of Mineral Fertilizers

Generally, the use of mineral fertilizers is very low in the region. It is only about 6500 tons per year. This can be

attributed to high prices of the commodity, low producer prices paid to farmers and poor accessibility by farmers to the commodity and of course, untimely delivery.

c) **Demand and supply of inputs**

A look at Table II-40 should show that demand in any one year has yet to be met. On the average about two thirds of the demand for mineral fertilizers is supplied for with respect to improved seeds many more farmers have access to them and every year over 90% of requirements are met inspite of problems of high seed prices and uneven distribution.

TABLE II-40 DEMAND AND SUPPLY OF FARM INPUTS (TONS) BY TYPE, ARUSHA REGION 1990/91 - 1996/97

Type of Input	1990/91		1991/92		1992/93		1993/94		1994/95		1995/96		1996/97	
	Demand	Supplied	Demand	Supplied	Demand	Supplied	Demand	Supplied	Demand	Supplied	Demand	Supplied	Demand	Supplied
Fertilizer (Tons)														
SA	960	N.A	1,200	N.A.	1,000	N.A.	1005	N.A.	1,120					
UREA	3,905	N.A.	3,610	N.A.	6,000	N.A.	6140	N.A.	5,680					
CAN	N.A	N.A	350	N.A.	500	N.A.	505	N.A.	360					
TSP	1218	N.A	1170	N.A.	1000	N.A.	1015	N.A.	690					
NPK (20:10::10::)	1600	N.A	1520	N.A.	1500	N.A.	1500	N.A.	1850					
NPK (6:20:18::)	532	N.A	550	N.A.	800	N.A.	800	N.A.	555					
Total	8215	N.A	8400	5,618	10800	7,114	10,965	6,597	10,255	5885	9900	7819	N.A.	N.A.
Improved Seeds (Tons)														
H622 Maize	85	N.A.	197	N.A.	225	N.A.	225	N.A.	257					
H632 Maize	78	N.A	107	N.A.	165	N.A.	167	N.A.	136					
CG4141 & 4142 Maize	N.A	N.A	176	N.A	205	N.A.	350	N.A.	275					
Katumani maize	30	N.A	11	N.A	13	N.A	25	N.A.	56					
Kilima maize	100	N.A	193	N.A.	195	N.A.	201	N.A.	290					
Sorghum	70	N.A	51	N.A.	71	N.A.	45	N.A.	27					
Beans	115	N.A	490	N.A.	525	N.A.	527	N.A.	596					

UCA Maize	190	N.A	82	N.A.	67	N.A.	67	N.A.	65					
Others seeds	371	N.A	718	N.A.	858	N.A.	786	N.A.	890					
Total	2039	N.A	2025	2306	2324	2111	2393	1598	2592	2474	2395	2908	n.a.	n.a.

Source: Compiled from data supplied by the Regional Agricultural office, Arusha 1997.

TABLE II-41: DEMAND AND SUPPLY OF FARM INPUTS BY DISTRICT ARUSHA REGION 1990/91-1996/97:

District & Type of Input	1990/91		1991/92		1992/93		1993/94		1994/95		1995/96		1996/97	
	Demand	Supplied	Demand	Supply	Demand	Supply	Demand	Supply	Demand	Supply	Demand	Supply	Demand	Supply
All types of Fertilizers (tons)														
Arumeru	3065		3,350		2,650		2750		3,040					
Arusha	610		590		450		470		465					
Babati	1,090		1,240		1,520		1525		1,220					
Hanang	750		780		1170		1185		635					
Kiteto/Simanjiro	160		165		750		760		350					
Mbulu/Karatu	2005		520		3180		3190		3075					
Monduli	515		1750		995		1000		1230					
Ngorongoro	20		5		85		85		90					
Simanjiro	-		-		-		-		150					
Total Fertilizers	8215	N.A.	8400	5618	10,800	7114	10965	6597	10255	5885				
All Types of Improved Seeds (Tons)														
Arumeru	358		892				328		375					
Arusha	58		52				55		77					
Babati	420		364				442		362					
Hanang	236		277				303		347					
Kiteto	103		103				117		123					
Mbulu/Kiteto	491		518				652		623					
Monduli	348		383				455		430					
Ngorongoro	25		36				41		62					
Simanjiro	-		-				-		88					
Total (Seeds)	2039	N.A.	2025	2306	2324	2111	2393	1598	2587	2474	-	-	-	-

Source: Compiled from data supplied by the Regional Agricultural Office, Earache, 1997.

Table II-42 reveals that between 1981 and 1991 Arusha region's share of fertilizers distributed in the country was very small inspite of the region's reputation of being a go ahead region as far as agricultural technology is concerned . The situation is unlikely to have changed much after 1991 inspite of a steadily increasing consumption of these inputs.

However, the region is the number one consumer of improved seeds as shown in table II-43. Arusha accounted for more than one quarter of improved wheat, paddy, sorghum and maize seeds distributed in the country between 1981 and 1990.

TABLE II-42 DISTRIBUTION OF MINERAL FERTILIZERS, ARUSHA REGION AS A PART OF TOTAL NATIONAL DISTRIBUTION 1981 TO 1990

Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Arusha region (Tons)	5707	991	2984	2924	2553	2239	3528	3468	4157	4673
Mainland Total (Tons)	94955	81229	88480	99186	117969	123360	139278	114432	123930	136510
Share of Arusha Region (%)	6	1	3	3	2	2	3	3	3	3

Source: Basic Data, Agriculture and Livestock Sector 1981/82 - 1985/86 and 1986/87 - 1991/92.

TABLE II-43 DISTRIBUTION OF IMPROVED MAIZE, SORGHUM WHEAT AND PADDY SEEDS IN ARUSHA REGION COMPARED TO THE MAINLAND DISTRIBUTION 1981/82 TO 1989/90

Year	1981/82	1983/84	1985/86	1987/88	1989/90
Arusha Region (Tons)	1595	1230	1765	1043	582
Mainland Total (Tons)	5579	5068	5898	3745	2565
Share of Arusha Region (%)	29	24	30	28	23

Source: Basic Data, Agriculture and Livestock Sector 1981/82 - 1985/86 and 1986/87-1991/92.

2.3.2 LIVESTOCK

2.3.2.1 Introduction:

The Arusha region landscape is dominated by grasslands which are home to both livestock and wildlife. Some 60% of the region's land area is grazing land which is widely distributed throughout the region. No wonder livestock play a very large role in the lives of all indigenous people of the region with the exception of the Tindiga Hadzabe, Ndorobo and Sonjo. These grazing lands are particularly extensive in what used to be referred to as Masailand. Here, pastoralism is the life, whole families used to move annually, following well defined nomadic routes. But the coming of cultivators into the picture and an unsympathetic location of watering points has tended to disrupt this way of life to the detriment of the environment. The region has one of the largest herds in the country.

Large livestock and wildlife herds roam the countryside. The ownership of a large herd is everyone's ambition. A person's prestige and wealth is not measured on how well he manages to live on his livestock, but rather on how much cattle he owns. Cattle, particularly, are insurance against poverty and are necessary to meet one's cultural and community obligations. Destocking is a taboo subject among cattle keepers and politicians alike. Livestock owners tend to keep the marketing of their livestock to a minimum. So much so that the contribution of this sector to regional GDP is disappointingly low. Furthermore, the normal inclination of a pastoral peasant is to drive cattle he wants to sell to the nearest border with a neighboring country and earn himself a bigger packet of T Shs. This denies the country even of that little foreign exchange livestock brings.

In the search for economic development the cultivation of land has been given momentum. Tracts of land which were normally for the grazing of livestock have been put to the plough. This has given rise to conflict with livestock interests. Yearly conflicts are the norm in Simanjiro between cattlekeepers and seed bean commercial farmers. Similar conflicts occur every year between maize farmers and livestock keepers in Kiteto. In Lokisale of Monduli seed bean/food bean farmers have to fend off livestock from their farms as a matter of course every growing season. The annexation of huge tracts of land in lower Monduli is a constant source of friction between herds and other government interests.

The pastoral people of Hanang district have not given up their intention for the lands now under the production of estate wheat in the district. The constant search for grazing especially during the dry season and during years of drought bring such conflicts to a head.

Other areas of contention with pastoral peoples is the alleged preference given to wildlife grazing especially in the Ngorongoro Conservation Area.

2.3.2.2. Livestock Population

According to the 1978 livestock census the region had 2,026,292 indigenous cattle, 1,495,967 goats, 1,057,386 sheep and 40,914 exotic cattle. (see Table II-44) By the time of the 1984 livestock census the numbers were 1,855,888 cattle (including non-indigenous), 1,231,014 goats and 758,407 sheep. Further on in the 1994/95 Nation Sample Census, the population was 1,477,589 cattle 1,648,473 goats and 722,168 sheep. Improved

cattle in 1984 and 1993/94 were slotted at 43,532 and 49,617 respectively. (See table Ii.44, II.45, II-46, II-47 and II.48) From and table II-49 the following conclusions can be made.

The cattle numbers decreased by 10% between 1978 and 1984 and decreased further by 20% between 1984 and 1994/95. The overall decrease between 1978 and 1994/95 was 29%.

Goat populations have increased overall by 10% between 1978 and 1994/95 despite a temporary decrease of 18% between 1978 and 1984. The sheep population shows a clear declining trend. The overall decrease in population between 1978 and 1994/95 was 32%.

The decline of Arusha's cattle herd could be either due to disease or migration or both. The likely explanation is both. The onset of a particularly virulent cattle lung disease in recent years has killed thousands with consequent rise in the number of cattle hides sold in 1994/95 and onwards. But this is only a small part. Migration of cattle to other neighboring regions is the more likely answer.

Between 1984 and 1994/95 the neighboring regions of Singida, Tanga and Dodoma seem to have increased their cattle populations beyond normal expectations from natural increase.

The Singida herd increased by 107% thus boosting its share of the national herd from 7.5% to 12.43%. Tanga's herd increased by 38% and boosting its share of the national herd from 3.8% to 4.18%. Dodoma's herd increased by 59% and its share of the national herd increased from 8% to 10%.

These three neighbors would appear to have benefited from Arusha's losses. Another likely migration direction is toward the border with a neighboring country where cattle prices are much more attractive to cattle keepers. The cattle density of the three regions is comparable to Arusha's but their grazing lands have greater carrying capacity because of better rains and/ or better soils.

Table II-51 shows changes in the population of improved cattle in the region, leading to the following conclusions:-

- a) There has been a gradual increase in the number of improved stock. This increase was 21% between 1978 and 1994/95. The greater increase was in dairy cattle of 30% between 1984 and 1994/95. The trend is for increasing dairy cattle numbers.
- b) There has been a decline in beef cattle population of 21% between 1984 and 1994/95.

TABLE II-44: DISTRIBUTION OF LIVESTOCK BY DISTRICT AND TYPE ARUSHA REGION 1978 LIVESTOCK CENSUS

District	Cattle		Sheep		Goats	
	Indigenous	Exotic	Indigenous	Exotic	Indigenous	Exotic
Arumeru	190,748	23,353	218,720	687	214,252	374
Arusha	58,704	726	5,839	-	6,418	-
Hanang	489,287	235	208,700	-	303,714	-
Kiteto	408,321	-	65,807	-	125,108	-
Mbulu	310,182	1,225	167,691	-	343,989	-
Monduli	334,981	15,102	187,905	-	272,376	-

Ngorongoro	234,069	273	202,037	-	229,736	-
Total	2,026,292	40,914	1,056,699	687	1,495,593	374

Source: Arusha Region, Water Master Plan Vol. I Main Report, 1994.

TABLE II-45: DISTRIBUTION OF LIVESTOCK BY DISTRICT AND TYPE, ARUSHA REGION 1984 LIVESTOCK CENSUS:

District	Cattle	Goats	Sheep	Donkeys	Pigs
Arusha	18,982	8,234	5,291	111	NA
Arumeru	180,920	156,804	145,699	9,366	NA
Babati	209,655	133,783	62,389	8,883	NA
Hanang	194,211	95,291	42,360	16,370	NA
Kiteto/Simanjir o	352,585	119,980	74,701	13,471	NA
Mbulu/Karatu	328,257	264,773	106,982	22,136	NA
Monduli	300,639	233,421	164,893	21,074	NA
Ngorongoro	270,631	218,728	156,152	16,357	NA
Total	1855880	1231014	758467	107768	55223

Source: Regional Commissioner's Office, Arusha 1997.

Fig. 12: Distribution Of Livestock By District And Type, Arusha Region 1984 Livestock Census:

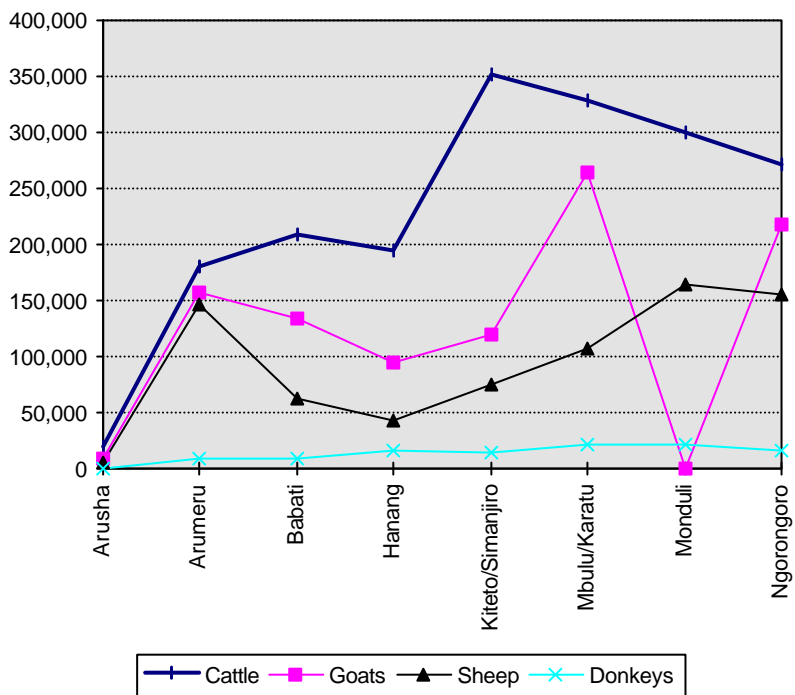


TABLE II-46: DISTRIBUTION OF CATTLE BY TYPE AND BY DISTRICT, ARUSHA REGION 1984 LIVESTOCK CENSUS:

District	Indigenous Cattle	Improved dairy cattle		Improved Beef Cattle	Total Cattle
		Number	%		
Arusha	17643	1309	4.9	30	18982
Arumeru	151404	24204	90.2	5312	180920
Babati	209491	16	0.1	146	209653
Hanang	194099	107	0.4	5	194211
Kiteto/Simanjiriro	352565	22	0.1	0	352587
Mbulu/Karatu	328026	59	0.2	172	328257

Monduli	299839	788	2.9	12	300639
Ngorongoro	259281	315	1.2	11035	270631
Total	1812348	26820	100	16712	1,855,880
%	97.65	1.45		0.90	100.00

Source: Regional Commissioners Office, Arusha 1997.

TABLE II-47 TANZANIA MAINLAND CATTLE HERD POPULATION BY REGION 1993/94

Region	Indigenous Cattle	Improved Dairy Cattle	Ranking Dairy	Improved Beef Cattle	Ranking Beef	Total Cattle
Arusha	1349572	36421	2	13196	3	1399189
Dodoma	1580433	13907	3	5935	5	1600275
Kilimanjaro	340604	102098	1	42838	1	485540
Tanga	1068129	12486	4	6844	4	1087459
Morogoro	326274	358	12	-	-	326632
Coast/DSM	48094	1462	9	1756	9	51312
Lindi	1245	-	-	-	-	1245
Mtwara	55934	-	-	2146	8	58080
Ruvuma	48882	3459	7	-	-	52341
Iringa	442918	3422	8	3409	7	449749
Mbeya	896928	10077	5	4064	6	911069
Singida	1382055	-	-	278	11	1382333
Tabora	547286	-	-	-	-	547286
Rukwa	547420	691	11	-	-	548111
Kigoma	32097	-	-	-	-	32097
Shinyanga	1866029	-	-	-	-	1866027
Kagera	384031	7325	6	28374	2	419730
Mwanza	1651456	-	-	697	10	1652153
Mara	746247	719	10	-	-	746966
Total mainland	13315632	192426	-	109537	-	13617595

Source: National Sample Census of Agriculture 93/94 Tanzania Mainland Report Vol. VII.

TABLE II-48: TANZANIA MAINLAND LIVESTOCK POPULATION ESTIMATES AND REGIONAL PERCENTAGES BY TYPE AND REGION, 1994/95

Region	Cattle		Donkeys	Buffaloes	Pigs	Goats	Sheep	Total/Sheep and Goats L.S.U	Total Livestock Units		Ranking	
	Number	%							Number	Number	Number	Number
Arusha	1477589	9.44	102472	1304	15974	1648473	722168	474128	2071467	10.7	4	5
Dodoma	1587093	10.14	95391	1442	31464	788145	242314	206092	1921482	9.9	5	4
Kilimanjaro	464126	2.97	13302	1722	17550	862627	327788	238083	734783	3.8	10	10
Tanga	653550	4.18	41082	-	1072	736727	246263	196,598	892,302	4.6	9	9
Morogoro	237857	1.52	6052	-	15682	292162	97871	74007	333598	1.7	14	14
Coast/DSM	40490	0.26	820	-	-	18153	860	3803	45113	0.2	18	17
Lindi	2853	0.02	-	-	3701	35185	17376	10512	17066	0.1	19	19
Mtwara	15119	0.1	-	-	3524	290444	16518	61392	80035	0.4	17	18
Ruvuma	75027	0.48	-	-	89600	348509	41890	78080	242707	1.3	15	15
Iringa	364693	2.33	13031	-	78418	246541	56876	60683	516825	2.7	12	12
Mbeya	924725	5.91	7774	-	133273	272604	75679	69537	1135309	5.9	8	8
Singida	1944271	12.43	50658	-	6555	978772	511852	298125	2299609	11.9	3	3
Tabora	1009571	6.45	10860	1149	4071	464327	151034	123072	1148723	5.9	7	7
Rukwa	426329	2.73	6468	-	11,794	183040	6923	37993	482584	2.5	13	11
Kigoma	62609	0.4	-	1425	2040	284053	25717	61954	128028	0.7	16	16
Shinyanga	2,262,809	14.46	22639	868	2934	1187706	488267	335195	2624445	13.6	2	2
Kagera	354,119	2.26	-	-	11847	679925	85299	153045	519011	2.7	11	13
Mwanza	2450396	15.66	21473	-	-	764260	199317	192715	2664584	13.8	1	
Mara	1291576	8.26	9860	-	5139	620748	179019	159953	1466528	7.6	6	6
Total	15644802	100	401882	7,910	434,638	10682401	3493031	2834967	19324199	100	-	-

Source: Compiled from data provided by National Sample Census of Agriculture 1994/95 Tanzania Mainland Report Vol. II.`

TABLE II-49: CATTLE POPULATION AND DENSITY BY REGION, TANZANIA MAINLAND 1984 AND 1994/95:

Region	Land Area Sq Kms	1984 Population	Density Population per sq km	1994/95 Population	Density Population per sq km
Arusha	83,429	1,855,880	22	1,477,589	18
Shinyanga	50,781	1,882,081	37	2,262,809	45
Mwanza	20,095	1,357,535	68	2,450,396	122
Morogoro	72,939	332,683	5	237,857	3
Singida	49,341	939,821	19	1,944,271	39
Coast/DSM	33,539	93,700	3	40,490	1
Iringa	58,936	480,410	8	364,693	6
Rukwa	68,961	392,234	6	426,329	6
Tanga	27,348	472,909	17	653,550	24
Lindi	67,000	6,217	0.1	2,853	0.04
Kagera	28,388	364,795	13	354,119	12
Mtwara	16,720	15,046	1	15,119	1
Dodoma	41,311	1,000,184	24	1,587,093	38
Mbeya	63,617	901,077	14	924,725	15
Kilimanjaro	13,309	408,457	31	464,126	35
Ruvuma	66,477	39,010	0.6	75,027	1.1
Tabora	76,151	925,904	12	1,009,571	13
Kigoma	37,040	62,319	2	62,609	2
Mara	21,760	969,766	45	1,291,576	59
Total	897,142	12,500,028	14	15,644,802	17

Source: Compiled from data supplied by 1984 Livestock Census and the National Sample Census of Agriculture 1994/95.

TABLE II-50: CHANGES IN LIVESTOCK POPULATION BY TYPE, 1978, 1984 AND 1994/95, ARUSHA REGION.

Type	1978 Population	1984 Population	1978/84 Percent Change	1994/95 Population	1984 to 1994/95 % Change	1978 to 1994/95 % Change
Cattle	2,067,206	1,855,880	-10	1,477,589	-20	-29
Goats	1,495,967	1,231,014	-18	1,648,473	+34	+10
Sheep	1,057,386	758,467	-28	722,168	-5	-32

Source: Compiled from data provided by 1978 and 1984 Livestock Censuses and the 1994/95 National Sample Census of Agriculture, 1994/95.

TABLE II-51: CHANGES IN IMPROVED CATTLE POPULATION BY TYPE, 1978, 1984 AND 1993/94, ARUSHA REGION:

Type	1978 Population	1984 Population	1978/84 Percent Change	1993/94 Population	1984 to 1993/94 % Change	1978 to 1993/94 % Change
Dairy	-	26,820	-	36,421	+36	-
Beef	-	16,712	-	13,196	-21	-
Total	40,914	43,532	+6	49,617	+14	+21

Source: Compiled from data provided by 1978 and 1984 censuses and the 1993/94 National Sample Census of Agriculture, 1994/95.

A comparison between regions as shown in Tables II-47 and II-52 is a comparison between improved cattle population of 1984 and 1993/94 giving rise to the following conclusions.

- (a) Arusha's ranking as number 2 after Kilimanjaro remains unchanged.
- (b) The gap between Arusha and Kilimanjaro is widening. Kilimanjaro's population of improved cattle is rising faster than that of Arusha.

**TABLE II-52: DISTRIBUTION OF LIVESTOCK BY TYPE AND BY REGION
TANZANIA MAINLAND, 1984 LIVESTOCK CENSUS:**

Region	Cattle		Goats	Sheep	Ranking Dairy	% All Cattle	Ranking (Cattle Only)
	Improved Dairy	All Types of Cattle					
Arusha	26,820	1,855,880	1,231,014	758,476	2	14.8	2
Coast	2,221	87,542	18,682	4,938	11	0.7	15
Dar-es-Salaam	1,763	6,158	9,524	1,449	13	0.1	20
Dodoma	2,178	1,000,184	539,648	169,779	12	8.0	4
Iringa	8,313	480,410	197,110	91,635	4	3.8	9
Kagera	3,998	364,795	344,262	53,784	7	2.9	13
Kigoma	389	62,319	167,348	36,428	20	0.5	16
Kilimanjaro	62,720	408,457	431,757	221,059	1	3.3	11
Lindi	713	6,217	13,205	8,582	18	0.1	19
Mara	3,173	969,766	394,444	215,558	8	7.8	5
Mbeya	4,466	901,077	171,486	101,365	6	7.2	8
Morogoro	4,992	332,683	139,948	53,274	5	2.7	14
Mtwara	1,622	15,046	84,864	14,519	14	0.1	18
Mwanza	2,866	1,357,535	570,142	249,943	9	10.9	3
Rukwa	1,169	392,234	75,319	21,115	16	3.1	12
Ruvuma	1,380	39,010	138,435	19,716	15	0.3	17
Shinyanga	2,682	1,882,081	871,826	486,798	10	15.0	1
Singida	586	939,821	476,532	280,349	19	7.5	6
Tabora	906	925,904	309,836	174,540	17	7.4	7
Tanga	9,077	472,909	258,284	116,840	3	3.8	10
Total	142,034	12,500,028	6,443,666	3,080,147		100.00	-

Source: Regional Commissioner's Office, Arusha, 1997.
1984 Livestock Census

2.3.2.3. Livestock Marketing:

Table II-53 shows that the region markets livestock on the hoof, livestock meat, hides and skins, milk and lastly poultry products. The number of cattle sold has increased slightly. The big increase in this regard has been the average price per head. The price per head was about T.shs. 20,000 in 1989/90 and had risen to about T.shs. 70,000 in 1996/97.

The number of cattle slaughtered over this period also seems to have tribled but the value per ton of meat seems to have slumped to less than 1/4 of its value in 1989/90 after a steady increase of about 25% by 1993/94. The toll given by a specially virulent cattle lung disease in 1994/95 and ownwards seems the reason for the slump.

Cattle hides marketing has been characterised by a steady increase in prices. Between 1989/90 and 1996/97 prices had risen by 60%. The volume of hides had increased three fold mainly because of mortality from the lung disease.

There has been a steady increase in the amount of milk marketed. The price per litre also increased by 25% by 1993/94.

With respect to poultry products, a slight increase in the production of eggs was registered but the production of broiler meat was stagnant inspite of a 42% increase in meat prices. Production costs could be responsible for keeping production down. The price of eggs doubled between 1989/90 and 1993/94 giving momentum to a slight increase in production.

TABLE II-53 (a): PRODUCTION AND MARKETING OF LIVESTOCK AND LIVESTOCK PRODUCTS ARUSHA REGION, 1990 - 1996:

	1989/90		1990/91		1991/92		1992/93	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Livestock Sold:								
• Number of Cattle	45,213	890.5	36,001	900.0	38,840	748.7	36,045	1,054.8
• Number of Goats/Sheep	19,847	67.8	28,433	99.5	21,695	100.9	19,965	111.8
Livestock Slaughtered:								
• Cattle (Tons of meat)	7,161	2,864.4	7,914	3,561.3	6,990	3,146	7,359	3,679.5
• Goats " "	40	18	41	21	42.2	21.1	43.4	26
• Sheep " "	136.2	61.3	135	67.5	168	84	212.5	127.5
Hides & Skins Marketed:								
• Cattle - PCs of Skins	55,712	11.0	55,730	17.0	52,424	16.0	52,932	18.5
• Goats - PCs of skins	51,978	10.4	51,897	16.0	54,118	16.0	56,204	20.0
• Sheep - PCs of skins	32,098	6.4	33,117	10.0	50,236	15.0	35,322	12.3
Milk Production (In Litres):	112,137	9.0	117,295	9.4	131,450	11.8	155,019	14.0
Poultry:								
a) Broilers (kg)	41,362	29.0	31,451	28.3	43,103	39.0	41,803	42.0
b) Eggs (000)	5,484	109.0	5,539	168.0	5,613	168.4	5,840	234.0
Total	-	4,076.8	-	4,898.0	-	14,366.9	-	5,340.4

(Cont'd.)

TABLE II-53 (b): PRODUCTION AND MARKETING OF LIVESTOCK AND LIVESTOCK PRODUCTS ARUSHA REGION, 1990 - 1996:

	1992/93		1993/94		1994/95		1995/96		1996/97	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Livestock Sold:										
• Number of Cattle	36,045	1,054.8	38,770	1,392.1	52,448	2,756.6	44,600	2,778.8	60,865	4,298.8
• Number of Goats/Sheep	19,965	111.8	25,013	155.8	32,556	239.5	23,580	264.0	NA	NA
Livestock Slaughtered:										
• Cattle (Tons of meat)	7,359	3,679.5	7,151	3,575.5	14,541	567.7	21,225	1,133.4	17,317	1,223.1
• Goats " "	43.4	26	44.5	27	4,414	22.5	9,830	63.1	7,467	61.3
• Sheep " "	212.5	127.5	185	111	866	4.4	2,065	13.3	1,796	14.7
Hides & Skins Marketed:										
• Cattle - PCs of Skins	52,932	18.5	51,567	18.0	156,108	49.2	148,175	46.7	134,790	42.5
• Goats - PCs of skins	56,204	20.0	66,389	23.2	51,100	35.8	98,500	68.9	261,285	18.3
• Sheep - PCs of skins	35,322	12.3	36,368	13.0	9,600	58	37,370	22.4	137,220	96.1
Milk Production (In Litres):	155,019	14.0	138,961	13.9	NA	NA	NA	NA	NA	NA
Poultry:										
a) Broilers (kg)	41,803	42.0	43,711	44.0	NA	NA	NA	NA	NA	NA
b) Eggs (000)	5,840	234.0	6,100	244.0	NA	NA	NA	NA	NA	NA
Total	-	5,340.4	-	5,617.5	NA	NA	NA	NA	NA	NA

NB = Value in Million T.Shs.

NA = Data not Available.

- Source: 1. Taarifa ya Mafanikio ya Serikali ya Awamu ya Pili (Figure 1989 - 1993/94).
 2. The Regional Agricultural and Livestock Development Office, (Figures: 1994 - 1996) Earache, 1997.

Compared to other selected regions as in Table II-54 Arusha's livestock do not appear in bad light, but this is only because those other regions also have miserable off take percentages. Of course the biggest element of "off-take" in Arusha region is the transfer of excess herds to neighboring regions as discussed earlier.

TABLE II-54: THE MARKETING OF CATTLE IN FOUR SELECTED HIGH DENSITY REGIONS, TANZANIA, 1990/91 TO 1994/95:

Region	1994/95 Cattle Population	Number of Cattle Sold						Percent of 1994/95 Cattle* Population
		1990/91	1991/92	1992/93	1993/94	1994/95	Yearly Average	
Arusha	1,477,589	36,001	38,840	36,045	38,770	52,448	40,421	2.7
Shinyanga	2,262,809	60,427	85,370	78,441	81,240	85,359	78,167	3.4
Singida	1,944,271	17,609	14,529	16,292	12,791	22,416	16,727	1.0
Mwanza	2,450,396	27,454	31,083	37,693	29,948	19,817	29,195	1.2

Source: 1. Socio-Economic Profiles for Shinyanga, Singida and Mwanza regions.
 2. The Regional Agriculture and Livestock Development Office, Earache, 1997.

* This is worked out from the yearly average column.

2.3.2.4 Livestock Infrastructure:

The existing livestock infrastructure in the region include 262 dips, 74 health centres; 192 crushes; 146 skin/hide sheds, 104 dams/charcos; 60 livestock markets, 9 abattoirs, 1 artificial insemination centre; and 148 slaughter slabs.

However most of these facilities are not working because of various reasons. For example only 8 dips (3%) are in working condition out of 262, while it is only 3 livestock markets which have the necessary facilities.

TABLE II-55: LIVESTOCK INFRASTRUCTURE BY DISTRICT AND BY TYPE, ARUSHA REGION, 1997:

District	Dips		Dams & Charcos	Health Centres	Livestock Markets		Abattoir	Hidesheds		Crus hes	Slaughter Slabs
	W	NW			Pr.	Sec.		Govt.	Prv.		
Arumeru	-	41	4	14	6	11	-	-	69	4	71
Arusha	1	2	-	1	1	-	1	1	32	1	32
Babati*	1	36	-	15	11	-	1	1	24	54	24
Hanang	-	19	4			-					
Mbulu/Karatu	5	57	5	17	10	-	4	5	-	47	9
Monduli	1	33	70	7	8	11	2	5	3	25	4
Ngorongoro	-	30	4	7	9	11	-	-		47	3
Kiteto		-	13		6	-					
Simanjiro**		36	4	13	6	-	1	-	5	14	5
Total	8	254	104	74	57	33	9	12	133	192	148

Source: Regional Agriculture and Livestock Development Office, Arusha, 1997.

- Note: 1. PR = Primary markets
2. Sec = Secondary markets
3. PRV = Private owned
4. W = Working
5. NW = Not working

* Except for dips number of facilities include for Babati include Hanang

** Except for dips, dams and markets are other facilities for Simanjiro include Kiteto.

What is interesting about these facilities is that the private sector has started taking part. Given the large number of public dips not in working order, a deliberate policy of privatisation could be the saving of many livestock facilities in the region.

2.3.3 FORESTRY:

Some 57% (47,314.5 km²) of the region's land area, excluding water bodies which account for 4.3%, is forest and range land. But outside of national parks forests cover 2,555 km² out of which 133,444.5 ha. is in forest reserves established for productive and protective purposes. There are 23 gazetted forest reserves, 14 of which are owned by the Central Government, the other nine by various local governments. See Table II-56. Central Government owned forest reserves amount to 120,198.2 ha.

The forestry sector is of importance to residents of Arusha region primarily because it supplies their needs for domestic fuel. It is estimated that 95% of residents depend on fuel wood for their domestic energy needs. In addition, the sector provides the central Government with revenues from the sale of wood products amounting to T Shs 26 million in 1996 alone.

TABLE II-56: DISTRIBUTION OF FOREST RESERVES, BY DISTRICT, BY OWNERSHIP AND PURPOSE, ARUSHA REGION 1997:

District	Forest Reserves	Area (Ha)	Purpose	Ownership
Arumeru	Lake Duluti	20.9	Protective	Central Government
	Mount Meru	26444	Protective/productive	"
	Kibwezi	126.0	Protective	"
	Sambasha	5.3	"	Local Government
	Sakila	30.0	"	"
	Kiutu	30.0	"	"
	Ngirusambu	5.6	"	"
	Maasi	51.4	"	"
Monduli	Monduli	7539	Protective/productive	Central Government
	Essimngor	6439	Protective	"
	Burko	579	"	"
	Kitumbaine	6330	"	Local Government
	Longido	2015	"	"
	Gelai	2448	"	"
Ngorongoro	Loliondo	2331.0	Protective/productive	"
Mbulu	Nou	30334	"	Central Government
	Marang	24901	"	"
	Massama Hill	5101	"	"
Hanang	Hanang	5898.0	"	"
Babati	Ufiome	5635.0	Protective	"

	Bereku	6111.0	"	"
	Haraa	605.0	"	"
Kiteto	Njoge	466.0	"	"

Source: Natural Resource Department, Arusha Region 1997

The forest resources of the region are not enough to meet the fuel needs of the human population. In an attempt to bridge this gap, afforestation is being carried out to supplement the natural resources. Between 1989/90 and 1993/94 some 27.6 million seedlings were raised and planted by various institutions in the region. See Table II. 57. District Councils also raised and distributed about 5 million seedlings each year during this period. See table II-58.

TABLE II-57: NUMBER OF TREE SEEDLINGS RAISED AND PLANTED BY VARIOUS INSTITUTIONS IN ARUSHA REGION 1989/90-1995/96:

Institution	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
Govt Departments	3100000	3547593	2615181	1592674	1500000	NA	NA
Villages	1351700	912469	1282875	999150	800000	"	"
Primary Schools	146400	148952	680706	773842	851000	"	"
Other Institutions	411400	462328	673710	862476	1230000	"	"
Individuals	310900	275200	408867	807711	1830000	"	"
Total	5320400	5346542	5661339	5035853	6211000	"	"

Source: Natural Resource Department, Arusha Region, 1997.

TABLE II - 58: NUMBER OF TREE SEEDLINGS RAISED AND PLANTED BY DISTRICTS ARUSHA REGION, 1989/90 - 1995/96

District	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
Arumeru	327,966	N.A	855,890	1,068,819	N.A	N.A	N.A
Arusha	138,500	"	45,000	55,000	"	"	"
Babati	828,526	"	576,726	844,267	"	"	"
Hanang	437,108	"	431,000	277,800	"	"	"
Mbulu/Karatu	2,546,474	"	2,303,362	1,725,969	"	"	"
Kiteto	-	"	38,000	34,000	"	"	"
Monduli	100,000	"	-	-	"	"	"

Ngorongoro	-	“	6,000	14,000	“	“	“
Simanjiro	-	“	-	-	“	“	“
Total	5,291,669	“	5,611,339	5,035,858	“	“	“

Source: Natural Resource Department Arusha Region, 1997

2.3.4 BEEKEEPING:

Beekeeping in Arusha region is carried out mainly traditionally. Some tribesmen like Tindiga, Hadzabe, Ndorobo and Sonjo live on honey, hunting and tree roots. To them honey is a staple food.

There is a big potential for increased production of honey and bees wax by both traditional and modern beekeeping techniques. So far, the little production of honey has been for local use, while there is room for producing more for export.

It is estimated that there are 30,000 beekeepers in the region owning more than 284,500 traditional hives and 3,200 modern hives. About 1,600 tonnes, of honey and 300 tonnes of beeswax are produced annually in the region. Beekeeping is carried out in all districts.

2.3.5 FISHERY:

This is one of the important economic activities in the region though its contribution to regional GDP is not very significant. The main sources of fishery activities in the region include: Nyumba ya Mungu Dam, Lakes Babati, Bassotu, Tlawi, Duluti and Manyara and Pangani River. However, due to consecutive drought spells from early 1990s to 1997 some of these sources dried up. Table II-59 shows performance of the sector for the period 1985 - 1996.

TABLE II-59: FISHERY RESOURCES, FACILITIES AND PRODUCTION, ARUSHA REGION, 1985 TO 1996:

Year	Number of Dams	No. of Fishermen	No. of Fishing Vessels	Fish Production		Fishing Gear	
				Weight (Tons)	Value (Tshs.Mill.)	Hooks	Gillnets
1985	4	4,894	857	1,076	626.9	4,835	4,707
1986	5	521	135	490.8	5.4	-	-
1987	5	680	408	1,616.5	20.03	8,317	1,676
1988	5	1,925	414	899.8	12.08	8,465	1,503
1989	5	1,207	318	2,839	72.2	5,708	1,716
1990	5	602	208	2,343	120.82	21,520	2,167
1991	5	992	404	3,733.5	133.7	23,598	3,032
1992	5	1,308	258	2,537.4	115.11	31,231	3,880
1993	3	1,117	653	3,201.7	76.8	1,579	837
1994	2	1,053	-	3,110.3	144.3	-	-
1995	2	6,206	16,226	602.02	15.2	12,450	61,306
1996	2	6,141	5,461	73.04	14.02	25,603	70,684

Source: Natural Resource Department, Arusha Region, 1997.

From Table II-59 it is clear that the number of fishermen has been increasing. So has the number of fishing vessels and gillnets. Production has not, however, kept pace with these increases

mainly because drying up of some of the dams in 1995 and 1996 set back the fishery industry.

2.3.6 WILDLIFE:

Wildlife represents a most valuable resource in Tanzania from the point of view of being the country's major tourist attractor hence a major source of foreign exchange earnings.

Arusha region is endowed with many and fairly large wildlife conservation areas that support a diversity of wildlife species. Consequently, a fairly high proportions of tourism, hunting, camping, photography, research and animal capturing activities are taking place in the region. However, poaching and improper management are major problems.

Some of the best wildlife parks, not only in the country but also in the world are found in Arusha region. Such parks include Ngorongoro, part of Serengeti and Manyara. Others are Tarangire and Arusha (Momela) National Parks. These areas are not only sources of income but also are a heritage valuable to future generations. Table II-60 lists national parks, game controlled area and hunting blocks in each district.

TABLE II-60: DISTRIBUTION OF NATIONAL PARKS, GAME CONTROLLED AREAS AND HUNTING BLOCKS BY DISTRICT, ARUSHA REGION, 1997:

District	National Parks	Game Controlled Areas	Hunting Blocks
Hanang	Tarangire	-	-

Monduli	Manyara	<ul style="list-style-type: none"> • Ngaserai • Lake Natron • Longido • Mto wa Mbu 	<ul style="list-style-type: none"> • Ngaserai • Lake Natron • Longido • Mto wa Mbu • Monduli Juu • Burko
Ngorongoro	<ul style="list-style-type: none"> • Ngorongoro Conservatiton Area (NCA) • Part of Serengeti 	Loliondo	Loliondo
Arumeru	ARusha National Park	Mt. Meru Game Reserve	Mt. Meru Game Reserve
Simanjiro	-	<ul style="list-style-type: none"> • Simanjiro • Ruvu Masai • Kitwai • Loksale 	<ul style="list-style-type: none"> • Simanjiro (West & East) • Simanjiro (Naberera & Kitiangare) • Ruvu Masai (North & South) • Masai O-A (Lobosiret) • Loksale • Kitwai (North)
Kiteto	-	Talamai	<ul style="list-style-type: none"> • Talamai • Kitwai (South)
Babati	-	Burunge	Burunge
Mbulu	-	Yaeda Chini	Yaeda Chini

Source: Natural Resources Department, Arusha Region, 1997.

For the past seven years, Tshs. 199,923,922.70 have been collected as government revenue in the region from local hunting (Tshs. 99,996,716.05) and other activities (Tshs. 99,957,206.60). This exclude tourist hunting fees collected separately.

The following table shows the breakdown of revenue collected for each year.

TABLE II-61: REVENUE COLLECTED FROM LOCAL HUNTING AND OTHER ACTIVITIES 1990 - 1996/97 ARUSHA REGION:

Year	Local Hunting (Tshs)	Other Activities (Tshs)	Total (Tshs)
1990	-	1,545,039.00	1,545,039.00
1991	12,368,770.00	4,419,231.80	16,788,001.80
1992	13,607,540.00	4,861,150.00	18,468,690.00
1993	14,968,294.00	5,347,269.00	20,315,563.00
1994	15,914,953.00	11,020,300.00	26,935,253.00
1995	20,527,219.05	34,649,627.80	55,176,846.85
1996/97	22,579,940.00	38,114,589.00	60,694,529.00
Total	99,966,716.05	99,957,206.60	199,923,922.65

Source: Natural Resource Department, Arusha Region, 1997.

2.3.7 INDUSTRY:

Arusha region is endowed by a large agricultural sector and a dynamic tourism sector based on natural resources. But given its economic infrastructure, location and availability of raw materials it can and is already building a significant industrial sector which could be a very important engine of development for the region and the country in the future.

Under Regional Economy it has been shown that Arusha is only second to Dar-es-Salaam in the size of its contribution to the national economy. This is further confirmed by Table II-62 which shows that in terms of the total number of establishments by industrial activity Arusha is only second to Dar-es-Salaam. According to the register an "establishment" is a firm, company,

farm or office where workers who are paid report for work. Arusha leads in Agricultural establishments reflecting its leadership in commercial agriculture. It is second to Dar-es-Salaam in construction, mining, trade, finance and transport. It is third in manufacturing establishments after Dar-es-Salaam and Mbeya.

TABLE II-62: DISTRIBUTION OF THE NUMBER OF ESTABLISHMENTS BY REGION AND INDUSTRIAL ACTIVITY, TANZANIA MAINLAND, 1995:

Region	Agriculture	Mining	Manufacturing	Electricity & Water	Construction	Trade	Transport	Finance	Public Administration	Total
Arusha	310	18	212	10	80	724	256	130	482	2,222
Dodoma	39	8	41	14	67	181	47	29	225	651
Kilimanjaro	121	10	149	13	60	469	57	84	425	1,388
Tanga	149	18	178	17	48	391	94	37	287	1,219
Morogoro	89	3	128	15	34	200	38	24	244	775
Coast	39	6	16	13	15	51	14	11	120	285
Dar-es-Salaam	46	37	793	17	455	1,638	391	382	638	4,397
Lindi	38	10	25	10	26	121	22	16	202	470
Mtwara	30	12	42	8	20	222	39	13	196	582
Ruvuma	40	-	46	9	39	155	20	26	236	571
Iringa	157	-	63	12	39	309	48	38	370	1,036
Mbeya	96	13	282	14	31	305	27	27	247	1,042
Singida	29	-	182	6	21	104	16	10	156	524
Tabora	26	2	28	6	10	97	21	16	156	362
Rukwa	33	-	75	6	17	212	39	8	149	539
Kigoma	36	4	43	7	30	162	36	17	218	553
Shinyanga	42	3	43	9	51	155	33	14	221	571
Kagera	53	2	30	9	37	278	18	25	261	713
Mwanza	37	5	87	7	43	474	36	44	220	953
Mara	30	2	39	7	12	125	22	14	246	497

Total	1,440	153	2,50 2	209	1,13 5	6,37 3	1,27 4	965	5,29 9	19,3 50
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Source: Central Register of Establishments, Technical and Statistical Report, Nov., 1995.

An inventory of major large scale and small scale industries as given in Table II-63 reveal that Arusha has 15 major large scale industrial establishments, at medium sized industries and 247 small scale industrial establishments. The majority are in manufacturing and fabrication.

TABLE II-63: INVENTORY OF MANUFACTURING INDUSTRIES, ARUSHA REGION 1997

A. Large Scale Industry

i) General

- General Tyre (E.A.) Ltd

ii) Beverages

- Kilirua Bottlers
- Tanzania Breweries

iii) Textiles

- Sunflag
- A-Z Textiles
- MB Textiles

iv) Soap

- EMCO Industry

v) Milling

- National Milling
- Supa Food
- Jumbo Industry
- Sunkist Industry

vi) Engineering

- TEMCO
- SIDO Common Facility Workshop
- Manlik Engineering
- Dharam Singh

B. Small Scale Industry

Food, Beverage, Jaggery	14
Grain Mills	20
Oil Press Mills	12
Aggregate and Brick Making	11
Carpentry, Timber, Furniture	44
Metal Fabrication	29
Agricultural machinery	1
Households Supplies-Cutlery, Liquid Soap	2
Textiles and leather products-tailoring, weaving , shoes	61
Other SIDO type Industries	53
Total	247

Source: Regional Trade Office, Arusha 1997.

To provide an idea of the scale of output produced by Arusha industrial establishments Table II-64 reveals that in 1988 the output value was dominated by rubber and plastics (46%) textiles and leather (16%) and Food and beverages (15%). Next in importance were machinery, electrical apparatus and transport equipment (6%) chemicals (5%) and paper products and printing (5%).

TABLE II-64: GROSS OUTPUT IN INDUSTRY IN ARUSHA REGION, 1988

Industry	Value Tshs
Mining and Quarrying	49,195,000
Food and beverages	659,020,000
Textile and Leather	664,122,000
Wood and Wood Productions	124,779,000
Paper Products and printing	224,212,000
Chemicals	226,927,000
Rubber and Plastic products (Non metallic Production)	1,967,704,000
Machinery, electrical apparatus and Trasport equipment (Machinery)	265.083,000
Metal Fabricated products	94,721,000
Other manufactured products	4,643,000
Total	4,280,406,000

Source: Survey of Industrial Production 1988, Bureau of Statistics, Dar es Salaam.

2.3.8 MINING:

Arusha region is endowed with a diversity of mineral resources. It is estimated that the region has more than 50 types of minerals, including the famous tanzanite. The minerals in the region can be categorized into 3 groups:

- Gemstones, such as tanzanite, ruby, garnets, emerald, modelite, aquamarine, almadate, amethyst etc.

- Industrial Minerals - phosphate, graphite, sodium carbonate etc.
- Other Minerals - Sodium chloride, meerschaum, bentonite, carbonate, magnesite etc.

Nevertheless, only few minerals such as tanzanite, ruby, garnets and a few other gemstone are being mined even then at very low level. In fact mining as an economic activity in the region is still at its infant stage currently undertaken mainly by small scale miners, using very poor tools and technology.

Table II-65 below shows areas with mineral deposits by district and current level of exploitation.

TABLE II-65: DISTRIBUTION OF EXISTING MINERAL DEPOSIT SITES, BY TYPE AND DISTRICT, ARUSHA REGION, 1997:

District	Type of Mineral Deposits & Reach Areas		Remarks
	Deposits	Reach Areas	
Simanjiro	<u>Gemstones:</u>		Mining of gemstone is done by very crude equipment and poor technology mostly by small scale miners. The most famous gem is Tanzanite. The actual deposits are not yet quantified.
	Tanzanite	- Mererani	
	Ruby	- Mererani and Lendanai	
	Garnet	- Mererani, Komolo & Lendanai	
	Tourmaline	- Mererani & Lendanai	
	Rhodelite	- Mererani, Lendanai & Naberera	
	Almadite		
	Sapphire	Mererani & Lendanai	

	<u>Industrial Minerals:</u> Graphite	Mererani	The area at Mererani of Tanzanite also contain graphite in amount up to 20%. The graphite is coarse grained, mostly more than 1 mm flake size. The graphite rich section is 10-20 metres.
Monduli	<u>Gemstones:</u> Ruby, Sapphire	Longido	Mining is mostly done by small scale miners with poor tools & equipments. Actual deposite not yet quantified.
	Amethyst		
	<u>Other Minerals:</u> Meerschaum	Amboseli	- Low potential, no production
	Bentonite	Gelai & Lake Natron	- Medium potentia/ there is production at a low level.
	Magnetite	Gelai	- Medium potential, there is minor exploration.
Mbulu	<u>Gemstones:</u> Emerald	- Manyara	Actual deposits are not yet quantified
	Amethyst		
	<u>Other Minerals:</u> Sodium Chloride	- Lake Eyasi	Brine pools in Lake Eyasi contain about 80% sodium chloride. But the salt crusts contain 0.4% of sodium floride.

Babati	Gemstones:		
	Apatite	-	No exploitation the actual deposits is not yet quantified.
	Aquamarine	-	
	Industrial Minerals: Phosphate	Minjingu	The phosphate deposit has about 10 m. tonnes. The average phosphate (PsO ₅) content is 22%.
			- Mining was carried out from 1981-1991 and the sole consumer was Tanga Fertilizer Plant.
			- The mine and other facilities are currently lying idle.
	Other Minerals: Carbonatite	Gallapo	- The potential is more than 40 metric tons. No exploitation.
Ngorongoro	Gemstones: Aquamarine	Loliondo	- No exploitation - Deposits are not yet quantified.
	Industrial Minerals: Sodium Carbonate (Soda Ash)	Lake Natron	- High potential for sodium carbonate (NaCO ₃) of 20.1%; Sodium Chloride (NaCl) 11.2%; Potassium (K) 0.25%, etc. - It is estimated that the lake contains more than 168 tonnes of total salts.
Kiteto	Gemstones: Almadate	-	- No exploitation

			- Deposits are not yet quantified.
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Source: Regional Commissioner's Office, Arusha, 1997.

SECTION III

SOCIAL SERVICES SECTORS:

3.1 EDUCATION SERVICES

3.1.1 Pre-School Education:

Nursery schools are playing an increasingly important role in pre-school education of children aged 3-6 years. The long term target is cover all such children with nursery education before they join the more formal primary to secondary school education system.

In the ten years between 1985/86 and 1994/95 the total enrolment in the region increased dramatically from 1,306 to 7,170 pupils. This is a more than a five fold increase. The number of teachers also increased from 30 to 156. Table III-1.

TABLE III-1: THE NUMBER OF TEACHERS AND PUPILS IN NURSERY SCHOOLS, ARUSHA REGION, 1985/86 TO 1994/95:

Year	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95
Teachers	30	37	43	57	60	144	144	152	156	156
Pupils	1,306	1,407	1,573	1,845	2,204	2,421	2,716	3,775	5,666	7,170

Source: Regional Education Office, Arusha, 1997.

However dramatic the increase may be, the total actual enrolment is still a very small proportion of the population of children legible for nursery school education. An enrolment of 7,000 children out of some 250,000 possibles is a very small proportion. It is only 2.8%. A lot remains to be done.

3.1.2 Primary School Education:

3.1.2.1 Introduction:

Primary school education is a basic right of every Tanzanian child of school going age (7-13 years). To render this possible the Government of Tanzania embarked on a Universal Primary Education (UPE) scheme in 1974 making such education compulsory and setting out to make it available to every child. To achieve this goal communities have been mobilised for self help to provide practical and relevant education in partnership with Central and Local governments.

3.1.2.2 Schools:

Judged by 1993 to 1996 results, there has been a lot of progress towards achieving the goals of UPE. The number of primary schools in the region was 579, 579, 596 and 608 for 1993, 1994, 1995 and 1996 respectively. These schools were distributed as shown in Table III-2.

TABLE III-2: DISTRIBUTION OF PRIMARY SCHOOLS BY DISTRICT, ARUSHA REGION, 1996.

District	Population 1996 Est	Number of Schools	Population per School
Arumeru	409,212	148	2,765
Arusha	186,785	23	8,121
Babati	270,007	105	2,571
Hanang	147,513	52	2,837
Monduli	145,388	51	2,851
Kiteto*	226,558	61	3,714
Mbulu	343,008	136	2,522
Ngorongoro	90,709	32	2,835
Total	1,819,180	608	2,992

* Including Simanjiro

Source: Compiled from data supplied by Regional Education Office, Arusha 1997.

The average population per school for the region is about 3,000. The best concentration of schools is in Mbulu and Babati districts where about one school caters for 2,500 population. The worst are Arusha and Kiteto/Simanjiro. In the case of Arusha the urban nature of most of the district's population evens out this disadvantage. This leaves Kiteto/Simanjiro as the worst area in the region bearing the largest risk for a child not to attend school. Some 3,700 people are on the average served by each school in the area.

3.1.2.3 Enrolment:

Actual enrolment of pupils into primary school as against the number of children eligible for enrolment is shown as 65% for the region in 1995. This is the Gross Enrolment Rate (GER) for 1995. The rate is low even when compared to some selected regions. The GER for Mwanza, Mbeya, Shinyanga, Dodoma and Singida for the same period was 80%, 72%, 62% and 45% respectively. Table III. 3 shows how the region's GER is distributed among the region's districts.

Judging from calculated GER the highest four enrollments are in Arusha, Arumeru, Mbulu and Hanang in that order. But from enrolments per 1000 population the highest are in Hanang, Arumeru, Arusha and Babati in that order. The lowest enrolments are Ngorongoro, Hanang and Monduli according to GER. But lowest enrolment are in Kiteto, Simanjiro, Ngorongoro and Monduli according to enrolment per 1000 population criteria.

TABLE III-3: GROSS ENROLMENT RATE AND PUPILS PER 1000 POPULATION FOR PRIMARY SCHOOLS BY DISTRICT, ARUSHA REGION 1995: (Based on total expected and total actual).

District	Population 1995 Estimate	Total Expected Enrolment	Total Actual Enrolment	G.E.R. %	Pupils enrolled per 1000 population
Arumeru	396,936	99,378	67,001	67	169
Arusha	179,127	36,876	28,373	77	158
Babati	261,097	59,172	38,963	66	149
Hanang	142,645	44,812	25,000	56	175
Mbulu	332,375	69,396	46,488	67	140
Kiteto	210,246*	12,759	7,886	62	71*
Simanjiro	-	11,991	7,123	59	
Monduli	140,154	27,110	15,148	56	108
Ngorongoro	87,625	16,576	8,600	52	98
Total	1,750,205	378,070	244,582	65	139

Source: Compiled data supplied by Regional Education Office, Arusha 1997

* Includes Simanjiro.

TABLE III-4: ENROLMENT BY SEX BY GRADE AND BY DISTRICT ARUSHA REGION 1996:

Districts	I		II		III		IV		V		VI		VII		Total
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	
Arumeru	6,086	6,121	5,212	5,460	4,717	4,713	4,669	4,856	4,945	7,297	3,149	2,996	4,580	6,031	70832
Arusha	2630	2569	2450	2554	2148	2208	2040	2129	1855	2069	1825	1858	1580	1637	29553
Babati	3647	3559	3341	3219	2863	2960	3018	2993	2593	2498	2616	2596	2222	2343	40468
Hanang	2200	1754	2012	1896	2124	1826	1792	1576	2464	2404	1618	1434	1599	1511	26210
Kiteto	753	590	758	605	633	460	627	526	281	253	549	433	573	424	7465
Mbulu	4779	4704	3965	3912	3240	3390	3626	3662	3170	3224	2963	3056	2631	2749	49071
Monduli	1681	1323	1481	1103	1415	1009	1601	1354	1019	950	833	1066	886	678	16399
Ngorongoro	870	533	798	485	722	491	727	581	680	495	813	473	529	410	8607
Simanjiro	960	645	619	625	619	470	713	447	325	256	567	410	440	354	7450

Boys/Girls	23,606	20,748	20,636	19,859	18,481	17,527	18,813	18,224	17,332	19,446	14,933	14,322	15,040	16,137	128,841
Total	45404		40495		36008		36937		36778		29255		31177		256,054

Source: Regional Education Office, Arusha, 1997.

Fig. 13: Total emolument in primary schools by District, Arusha Region 1996

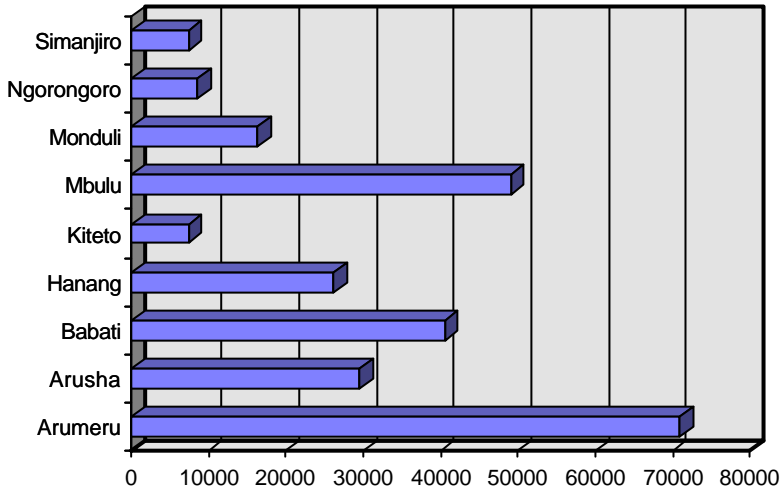


Table III-4 shows that Arumeru, Mbulu/Karatu and Babati districts account for 28%, 19% and 16% respectively of all enrollments while Kiteto, Ngorongoro and Simanjiro account for only 3% each. Total enrolment for the region is 256,054 for 1996.

Looking at the proportion of female children attending school relative to boys it is clear from Table III-5 that more males attend school than their fair share. There are 102 males for every 100 females in the population but 108 males attend school for every 100 females. The Table II.4 ratio however, is 101 males total enrolment for every 100 females. The districts where female

children have the advantage are in the districts of Arumeru, Babati and Mbulu according to table II.5. In these districts more girls attend school than there are females in the population. Female children are at the most disadvantage in the districts of Ngorongoro and Simanjiro.

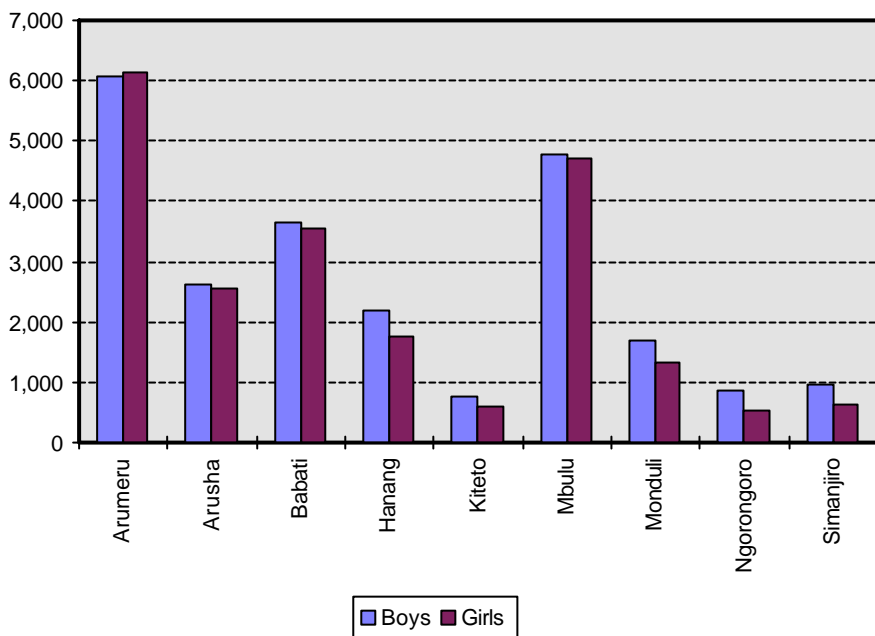
TABLE III-5: PRIMARY SCHOOL ENROLMENT INTO STD I BY SEX AND DISTRICT, ARUSHA REGION 1996:

District	Actual Enrolment		Population Sex Ratio (Males per 100 Females) 1988 Census	Enrolment Sex Ratio (Males per 100 Females)
	Boys	Girls		
Arumeru	6,068	6,121	96	99
Arusha	2,630	2,569	108	102
Babati	3,647	3,559	105	102
Hanang	2,200	1,754	103	125
Kiteto	753	590	109	128
Mbulu	4,779	4,704	104	101
Monduli	1,681	1,323	97	127
Ngorongoro	870	533	92	163
Simanjiro	960	645	109	149
Total	23,588	21,798	102	108

Source: Compiled from information supplied by Regional Education Office, Arusha, 1997.

NB: Kiteto and Simanjiro were one district in 1988. They share the same sex ratio.

Fig. 14: Primary School Enrolment into SDT I by District, and Sex Arusha Region 1996:



3.1.2.4 Absenteeism:

Absence from school is quite common especially in rural areas. Hanang and Ngorongoro districts lead in absenteeism. The normal excuse for poor attendance at schools is livestock herding. Young children as well as older ones are responsible for a significant share of goat, sheep and cattle herding especially after school hours. The average school attendance by primary school pupils is 83.4%. See Table III-6.

TABLE III-6: AVERAGE ATTENDANCE OF PRIMARY SCHOOL PUPILS BY DISTRICT, ARUSHA REGION, 1996:

District	Grade							%
	I	I-II	I-III	I-IV	I-V	I-VI	I-VII	
Arumeru	12,207	10,672	9,430	9,525	12,242	6,145	10,611	98

Arusha	4,948	4,951	4,413	4,146	3,894	3,841	3,151	97.4
Babati	6,845	5,904	5,072	5,109	4,127	4,063	3,652	85.9
Hanang	2,630	2,968	2,382	2,161	2,241	2,228	1,567	61.8
Kiteto	1,100	1,172	941	1,023	449	831	846	85
Mbulu	9,243	7,594	6,304	6,488	5,556	5,229	4,678	92
Monduli	2,626	1,979	1,805	1,785	1,417	1,405	1,184	79
Ngorongoro	1,103	967	810	890	761	726	621	68.4
Simanjiro	1,375	1,037	871	971	471	824	812	83
Total	42,077	37,244	32,028	32,098	31,158	25,292	27,122	83.4

Source: Regional Education Office, Arusha, 1997.

3.1.2.5 Primary School Dropouts:

From Table III-7 it can be learnt that 7,421 pupils dropped out in 1996 alone out of an emolument of 256,054 pupils. This is 2.9% in one year only. The main cause is truancy followed by other causes. Truancy mainly involves boys who opt out to go for a life of petty business in urban settlements or are withdrawn by their parents to tend livestock. Pregnancy is a problem restricted to girls who opt for or are forced into early marriages. In 1996 alone 184 girls dropped out for this reason. Deaths is another cause. At 41.8% of all dropouts "Other causes" could yield some interesting results if analysed further.

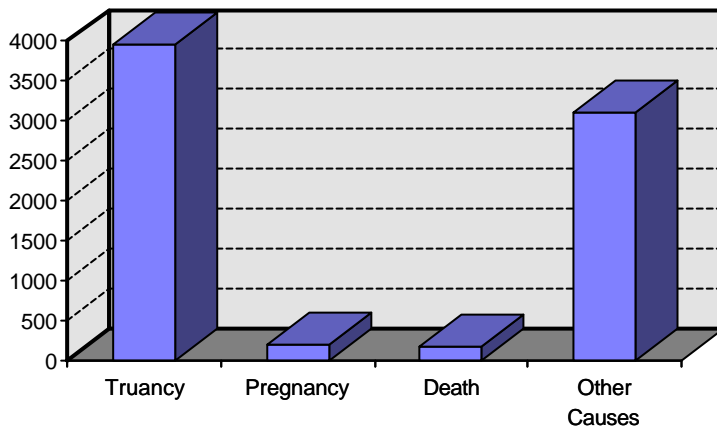
TABLE III-7: PRIMARY SCHOOL DROPOUTS BY REASON AND BY SEX, ARUSHA REGION, 1996:

Year 1996	STD I		STD II		STD III		STD IV		STD V		STD VI		STD VII		TOTAL	%
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls		
Truancy	115	104	174	161	241	159	417	260	359	262	449	297	592	377	3967	1.55
Pregnancy	-	-	-	2	-	3	-	19	-	26	-	58	-	76	184	0.07

Death	22	9	9	6	15	14	19	11	12	8	13	9	10	6	163	0.06
Other Causes	292	155	310	108	287	145	330	139	266	114	318	134	107	402	3107	1.21
TOTAL	429	268	493	277	543	321	766	429	637	410	780	498	709	861	7421	2.89

Source: Regional Education Office, Arusha, 1997.

Fig. 15: Primary School Dropouts by Reason , Arusha Region, 1996



3.1.2.6 Primary School Facilities:

Tables III-8 shows a serious shortage of classrooms in the region with Babati, Hanang and Simanjiro being the worst offenders. Mbulu district has the best record at 15% shortfall. The overall regional shortage is 40.9%.

TABLE III-8: SITUATION WITH RESPECT TO CLASSROOMS IN PRIMARY SCHOOLS BY DISTRICT ARUSHA REGION, 1996:

District	Class Rooms			
	Required	Actual	Shortage	Percentage Shortage
Arumeru	1,567	889	678	43.3
Arusha	494	382	112	22.7
Babati	911	313	598	65.6
Hanang	429	214	215	50.1
Kiteto	206	133	73	35.4
Mbulu	940	799	141	15.0
Monduli	405	218	187	46.2
Ngorongoro	221	132	89	40.3
Simanjiro	228	113	115	50.4
Total	5,401	3,193	2,208	40.9

Source: Regional Education Office, Arusha, 1997.

With respect to toilet facilities the regional wide shortage is 71.5%. All districts are in a bad state with Babati holding the record at a very high level of 94.5% shortage. See Table III-9.

TABLE III-9: SHORTAGE AND AVAILABILITY OF TOILET FACILITIES FOR PUPILS IN PRIMARY SCHOOLS ARUSHA REGION BY DISTRICT, 1996:

District	Toilets			
	Required	Actual	Shortage	Percentage
Arumeru	2,203	811	1,392	63.2
Arusha	874	237	637	72.9
Babati	1,620	92	1,528	94.3
Hanang	809	359	450	55.6
Kiteto	288	56	232	80.6
Mbulu	1,745	587	1,158	66.4
Monduli	625	171	454	72.6
Ngorongoro	345	119	226	65.5
Simanjiro	236	59	177	75.0
Total	8,745	2,491	6,254	71.5

Source: Regional Education Office, Arusha, 1997.

The construction of teachers' houses is also far behind demand.

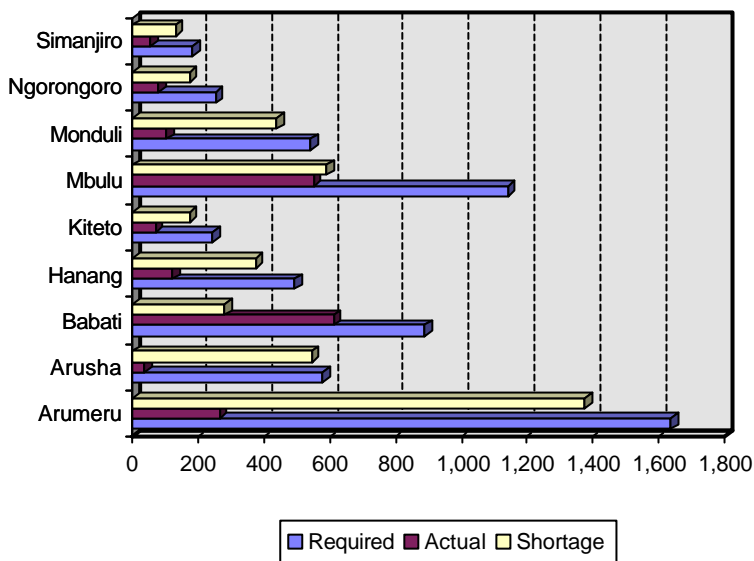
Mbulu at 51.7% shortage has the best record. Arusha, Arumeru and Monduli districts have very high shortages of 94.1%, 84.0% and 81.0% respectively. Region wise only one third of the teachers are housed at their place of work. See Table III-10.

TABLE III-10: AVAILABILITY OF TEACHERS' HOUSES IN PRIMARY SCHOOLS ARUSHA REGION BY DISTRICT, 1996:

District	Teachers' Houses			
	Required	Actual	Shortage	Percentage Shortage
Arumeru	1,637	262	1,375	84.0
Arusha	577	34	543	94.1
Babati	888	610	278	31.3
Hanang	493	119	374	75.9
Kiteto	241	68	173	71.8
Mbulu	1,140	550	590	51.8
Monduli	541	103	438	81.0
Ngorongoro	251	78	173	68.9
Simanjiro	182	52	130	71.4
Total	5,950	1,876	4,074	68.5

Source: Regional Education Office, Arusha, 1997.

Fig. 16: Availability of Teachers' Houses in Primary Schools, Arusha Region by District, 1996:



School desks are similarly in short supply. Kiteto has the highest shortage of 79.6% followed by Hanang at 66.5% and Arumeru at 53.8%. The best performance is by Mbulu district at 20.0% shortage and Ngorongoro at 30.0%. Region wise primary schools requirements for desks are only met half way. See Table III-11.

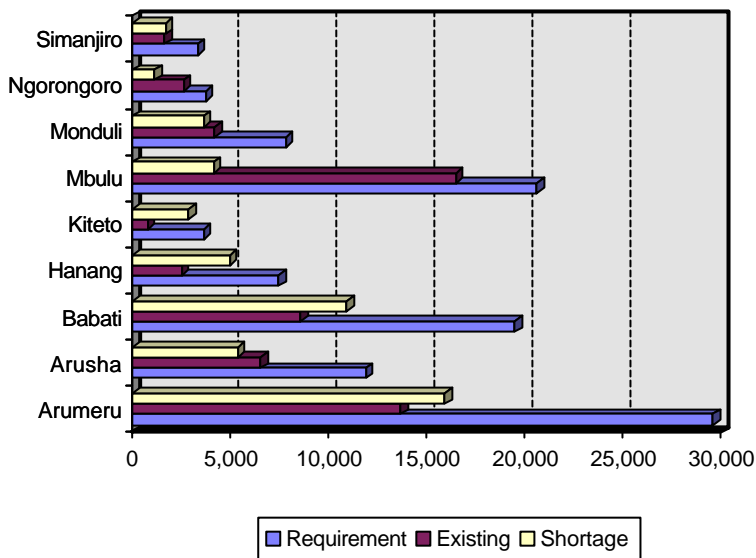
TABLE III-11: SUPPLY AND DEMAND FOR DESKS IN PRIMARY SCHOOLS ARUSHA REGION BY DISTRICT, 1996:

District	Requirement	Existing	Shortage	% Shortage
Arumeru	29,620	13,683	15,937	53.8
Arusha	11,891	6,534	5,357	45.1
Babati	19,476	8,563	10,913	56.0
Hanang	7,422	2,487	4,935	66.5
Kiteto	3,592	732	2,860	79.6
Mbulu	20,597	16,478	4,119	20.0

Monduli	7,810	4,185	3,625	46.4
Ngorongoro	3,724	2,605	1,119	30.0
Simanjiro	3,303	1,624	1,679	50.8
Total	107,435	56,891	50,544	47.0

Source: Regional Education Office, Arusha, 1997.

Fig. 17: Supply and Demand for Desks in Primary Schools, Arusha Region by District, 1996:



When compared to eight other selected regions the status of classroom, toilet and teacher houses availability ranks Arusha as number 5 on classrooms, number 4 on toilets and number 4 on teacher houses. In other words its position is about average. See Table III-12.

TABLE III-12: STATUS OF PHYSICAL FACILITIES IN PRIMARY SCHOOLS IN SELECTED REGIONS 1995/1996:

Region	Classroom Shortage %	Toilet Shortage %	Teacher Houses Shortage %
Arusha	41	72	69
Lindi	49	81	85
Mwanza	46	80	73
Dodoma	36	96	77
Tanga	37	73	90
Iringa	23	54	54
Shinyanga	76	93	90
Mbeya	37	72	68
Singida	45	65	65

Source: Socio-Economic Profiles for Lindi, Mwanza, Dodoma, Tanga, Iringa, Mbeya, Shinyanga and Singida regions.

3.1.2.7 Teachers:

The requirement for teachers of all grades in the region is 7,331 but only 6,299 are available, thus leaving an unfilled gap of 1032 teachers. The shortage of Grade IIIA teachers is 15% and that of Grade III B/C teachers is 13%. The average is 14%. Simanjiro, Babati and Hanang have in that order, the most deficit. Monduli district has an overall surplus of nearly 1% while Mbulu district has a marginal deficit of 6%. These last two are the most favoured districts in terms of primary teacher allocations.

TABLE III-13: AVAILABILITY OF TEACHERS BY GRADE AND DISTRICT, ARUSHA REGION, 1996:

District	Required			Actual Strength			+ Surplus/Deficit -			Total difference %
	IIIA	IIIB/C	Total	IIIA	IIIB/C	Total	IIIA	IIIB/C	Total	
Arumeru	959	1089	2048	833	904	1737	-126	-185	-311	-15
Arusha	446	487	933	439	366	805	-7	-121	-128	-14
Babati	564	609	1173	419	492	911	-145	-117	-262	-22
Hanang	258	211	469	199	187	386	-59	-24	-83	-18
Kiteto	134	133	267	115	123	238	-19	-10	-29	-11
Mbulu	615	673	1288	523	693	1216	-92	+20	-72	-6
Monduli	246	289	535	289	248	537	+43	-41	+2	+1
Ngorongoro	139	150	289	124	136	260	-15	-14	-29	-10
Simanjiro	220	109	329	110	99	209	-110	-10	-120	-36
Total	3581	3750	7331	3051	3248	6299	-530	-502	-1032	-14

Source: Regional Education officer-Arusha 1997

3.1.2.9 Primary Education Development Indicators:

The progress of primary education between 1993 and 1996 is one of positive growth as can be seen from table III.14. This table reveals that over the four years the number of pupils per 1000 population has stagnated. So also with pupils per stream criteria. On the positive side the following indicators have shown positive development:

- The number of schools has increased by 5%
- The number of streams has gone up by 11%
- Pupil enrolment has gone up by 13%

TABLE III-14: PROGRESS OF PRIMARY EDUCATION DEVELOPMENT, ARUSHA REGION 1993-1996:

Indicator	1993	1994	1995	1996
Number of schools	579	579	596	608
Total enrolment boys	118,396	120,218	126,053	128,341
Total enrolment girls	110,852	114,347	118,523	127,213
Total enrolment	229,248	234,565	244,576	256,054
Population	1,617,024	1,682,297	1,750,205	1,819,180
Population per school	2,793	2,906	2,937	2,992
Pupils per school	396	405	410	427
Pupils per 1000 population	142	139	140	143
Streams	5853	6031	6311	6520
Pupils per stream	39	39	39	40
Sex ratio in population	102	102	102	102
Enrolment sex ratio (Std I)	107	105	106	108

Source: Compiled from data supplied by Regional Education Officer, Arusha 1997.

On the debit side the following criteria have deteriorated:

- The population per school has gone up showing that not enough schools are being built to keep up with population increases.
- The number of pupils per school has gone up reflecting the same concern.

The enrolment sex ratio has not improved or deeriorated.

Comparing the region of Arusha with selected regions in terms of development of this sector as reflected by various indicators leads to Table III-15. To the credit of the region, recruitment for primary school is quite good among the population as given by the pupils per 1000 population indicator. The enrolment sex ratio (number of male pupils for every 100 female pupils) is very good. Girls are at a greater advantage than boys. This ratio is particularly good when compared to the 1988 population sex ratio of 102 for the region. On the other hand the pupils per school and population per school indicators reflect the fact that there are not enough schools in the region to cater for the population. Arusha has the worst values for these two indicators compared to the eight other regions.

TABLE III-15: DEVELOPMENT OF PRIMARY EDUCATION IN ARUSHA REGION AND SOME SELECTED REGIONS 1995/1996:

Region	Pupils per School	Population per School	Pupils per Classroom	Enrolment Sex Ratio	Pupils per Teacher	Pupils per 1000 Population
Arusha	427	2,992	81	98	41	143
Mwanza	385	2,740	85	103	45	139
Lindi	238	2,189	71	104	22	109
Singida	382	2,741	77	96	38	139
Mbeya	343	2,131	64	100	32	161
Shinyanga	344	2,401	196	110	56	143
Iringa	327	2,024	49	96	37	162
Tanga	325	2,327	67	103	36	140

Dodoma	375	2,839	77	105	40	132
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Source: Socio-Economic Profiles of Mwanza, Lindi, Singida, Mbeya, Shinyanga, Iringa, Tanga and Dodoma regions.

Fig. 18 (a): Enrolment Sex Ratio in Primary Education in Arusha Region and Some Selected Regions, 1995/1996

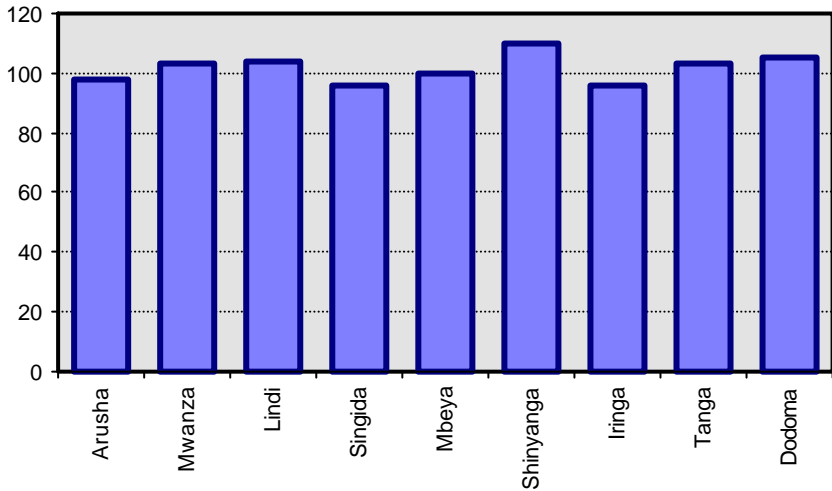
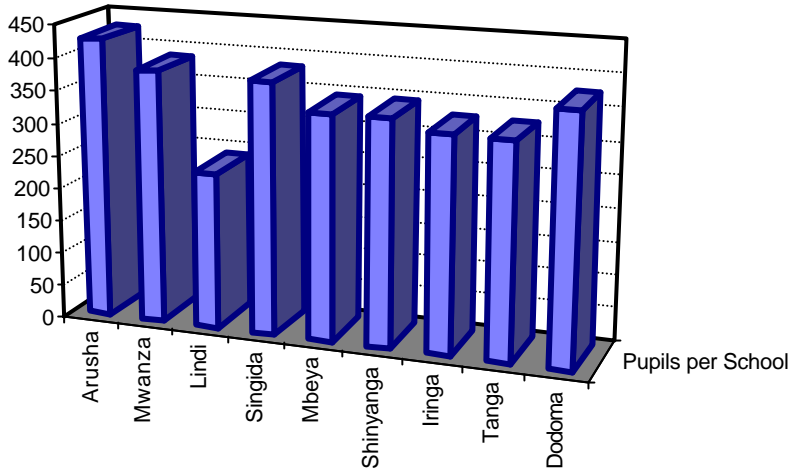


Fig. 18 (b): Pupils per School in Primary Education in Arusha Region and Some Selected Regions, 1995/1996



3.1.3 SECONDARY EDUCATION:

3.1.3.1 Selection for Form I:

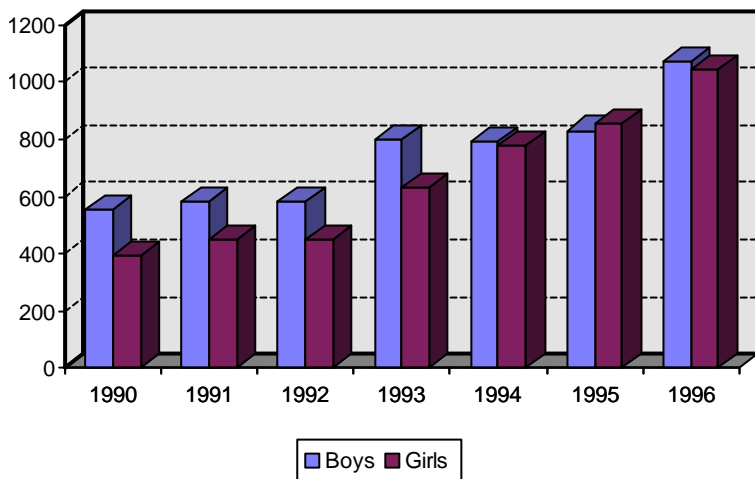
Table III-16 below shows how the region has progressively increased the number of entrants into Form I between 1990 and 1996. In fact the number increased by 123% i.e. more than doubled from 948 pupils. The share of girl pupils increased from 40% to 50%. This selection affects only entrants into public schools. Other pupils outside this number joined Form I in various private secondary schools in the region.

TABLE III-16: PRIMARY SCHOOL LEAVERS SELECTED FOR FORM I IN PUBLIC SECONDARY SCHOOLS, ARUSHA REGION 1990-1996

Year	Boys	Girls	Total
1990	557	391	948
1991	581	450	1031
1992	581	450	1031
1993	802	634	1436
1994	794	776	1570
1995	830	857	1687
1996	1070	1042	2112

Source: Regional Education office, Arusha 1997

Fig. 19: Primary School Leavers Selected For Form I in Public Secondary Schools by Sex, Arusha Region 1990-1996



The privatisation of the Secondary school sector has shown good progress. Various organisations, individuals and communities have come forward to invest in the equipping, establishment and even the running of secondary schools. By 1996 the region has 50 secondary schools 29 of which were private.

TABLE III-17: DISTRIBUTION OF SECONDARY SCHOOLS BY DISTRICT AND OWNERSHIP, ARUSHA REGION 1996

District	Public	Private	Total
Arumeru	9	13	22
Arusha	2	6	8
Babati	1	3	4
Mbulu	4	4	8
Monduli	2	2	4
Kiteto	1	-	1
Hanang	2	1	3
Total	21	29	50

Source: Regional Education Office, Arusha 1997.

According to data supplied by the headquarters of the Ministry of Education and Culture for 1995 (Basic Statistics in Education, 1995), Arusha region had then 15 public schools and 26 private schools at secondary education level. Given the 1988 Population Census the region had 6% of mainland's population. The region in 1995 had 6% of all public secondary schools and 8% of all private secondary schools. That year there were 259 public and 336 private secondary schools in the country. The Mainland's total enrolment in these schools was 92,066 (Form I-IV) and 8,444 (Form V-VI) for public schools and 104,309 (Form I-IV) and 4,272 (Form V-VI) in private schools. Arusha region at 9,117 (Form I-IV) accounted for 9% of Mainland's enrolment in private secondary schools and at 220 (Form V-VI) had 5% of enrollments in the same sector. With respect to student/teacher ratio in private schools, the region having 673 teacher projected a ratio of 14 students to a teacher. The national average was then 1 to 20 for private schools. All in all the private sector is doing very well for the region in the field of secondary education, although further efforts are needed to improve the intake into "A" level. Testing the region's secondary education development against other indicators for 1996 also shows the region to advantage. There are on the average 36,384 people to each secondary school. The enrolment of secondary school pupils per 10,000 population is 50 for "O" level and 1.2 for "A" level.

A comparison with other regions shows up the following picture. Arusha performance is good but not the best. See Table IV.18.

TABLE III-18: SECONDARY SCHOOL EDUCATION DEVELOPMENT INDICATORS IN ARUSHA REGION AND SOME SELECTED REGIONS:

Region	Arusha	Mtwara	Coast	Morogoro	Mwanza
Population per Secondary School	36,384	77,339	28,499	39,573	67,871
Pupils per 10,000 population					
"0" level	50	42	61	-	-
"A" level	1.2	1.6	4.6	-	-

Source: Compiled from information supplied by:-

1. Regional Education office, Arusha 1997
2. Regional Socio-Economic Profiles of Mtwara, Coast, Morogoro and Mwanza.

3.1.4 Adult Literacy.

Since Independence the country has placed emphasis on adult literacy, so much so that deliberate efforts were taken throughout the country to get adult illiterates into classes. The ability to read and write Kiswahili and some numeracy defines adult literacy in its narrowest sense. Table III.19 shows that in this field of adult literacy Arusha region is among undeveloped regions in the country. It has never caught up with the majority of regions as the evidence of the past three censuses show.

TABLE III-19: PERCENTAGE OF LITERACY FOR POPULATION AGED 10 YEARS AND ABOVE IN SOME SELECTED REGIONS 1967 TO 1988:

Region	1967 Census	1978 Census	1988 Census
Arusha	26	41.9	58.1
Kilimanjaro	56	74.1	80.8
Dar es Salaam	60	73.3	80.7
Ruvuma	41	66.3	70.5
Tanga	40	60.6	66.0
Morogoro	37	58.6	62.8
Mara	35	56.4	63.9
Iringa	31	54.0	68.3
Kagera	40	52.9	59.5
Mtwara	28	51.4	57.1
Dodoma	24	49.5	55.5
Mbeya	29	49.2	61.9
Rukwa	-	48.5	58.6
Lindi	-	48.4	53.8

Source: 1988 Population Census.

Fig. 20: Percentage of Literacy for population aged 10 years and above in some selected regions 1967 to 1988:

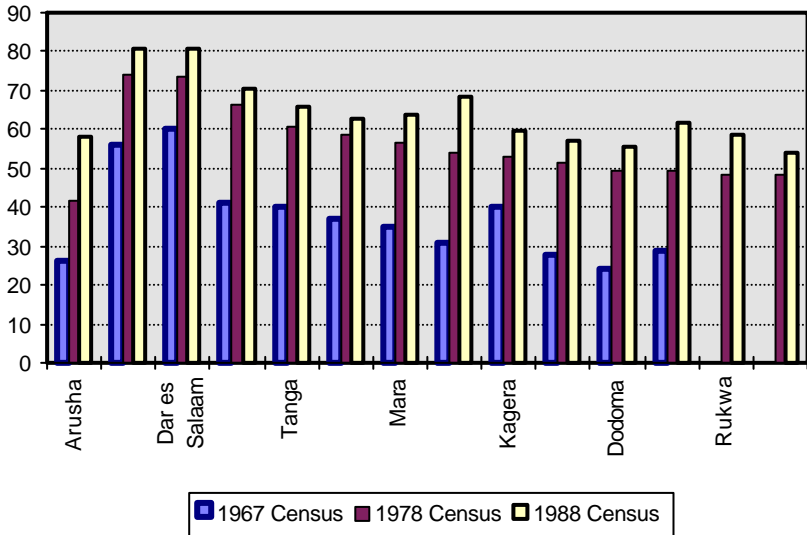


TABLE III-20: PERCENTAGE LITERACY RATES FOR RURAL AND URBAN AREAS AND BY SEX FOR POPULATION AGED 10 YEARS AND ABOVE 1988:

Regions	Male			Female		
	Rural	Urban	Total	Rural	Urban	Total
Arusha	61.5	91.8	65.6	46.4	82.8	50.9
Kilimanjaro	84.5	90.3	85.5	75.7	83.6	76.9
Tanga	72.8	88.6	75.9	53.2	75.6	57.3
Morogoro	68.8	86.4	72.9	49.5	72.0	54.6
Coast	60.1	72.2	64.0	40.1	51.8	44.9
Dar es Salaam	68.4	90.0	87.9	48.0	77.7	74.6
Lindi	62.4	75.9	64.6	42.0	60.2	44.8
Mtwara	65.5	77.9	67.3	46.3	61.6	48.5
Ruvuma	77.7	87.6	78.7	61.4	75.7	63.3
Mbeva	69.9	87.5	73.3	48.4	70.0	52.4

Source: 1988 Population Census.

Table III-20 shows that although the region's literacy in urban areas for both males and females is very high even by Tanzania Mainland standards, the literacy rate in rural areas especially among females is very low. That is where future efforts should be directed if the region is to catch up with the rest of the country. Current efforts at setting up sustainable adult literacy classes have however, proved impossible. So in the short run the easier and more sustainable priority of keeping literates literate could be the only feasible alternative line of action.

3.2 HEALTH SERVICES:

3.2.1 Introduction:

The national health policies have focused on equal access to basic health services. In the early 1970's the aim was to establish one primary health unit (dispensary) in each village. However, towards the end of 1970 it was realised that the achievement of

this goal was not feasible, consequently it was proposed that dispensaries should be distributed strategically to ensure that the majority of the population have access to dispensaries within a reasonable distance of at least 5 kilometres from homesteads. The new arrangement was to be complemented by a network of village health workers that would provide health care with emphasis on preventive measures. The major health sector objectives in the rural areas are:

- To deliver effective curative and preventive health services evenly throughout the country
- To reduce infant and child mortality rates to 50 and 70 respectively, per 1,000 live births by the year 2000
- To reduce maternal mortality by half by the year 2000
- To reduce severe malnutrition in children under 5 years to 2% by the year 2000.

3.2.2 Morbidity and Mortality Causes:

The health situation in Arusha region is characterized by high rates of water caused diseases and severe malnutrition in some parts of the region. Poor hygienic conditions especially poor housing in the rural areas also account for much of the spread of tuberculosis, eye diseases and infectious skin diseases. Malaria is still the number one sickness and killer in the region. Malaria transmission has increased drastically over the last decade in the country due to environmental and population changes. AIDS should be accepted as one of the top ten killers. In 1995 only malaria at 487 deaths, topped the 311 deaths from AIDS.

According to 1995 In-Patient records the top three most reported illnesses are due to malaria, pneumonia and diarrhoeal diseases. These three account for 85% of the ten topmost causes of morbidity. In terms of mortality malaria, tuberculosis, pneumonia and diarrhoeal diseases in that order accounted for 77.7% of the deaths due to the ten most common causes. See Table III-21. Out-Patient records support this.

TABLE III-21: THE TEN MOST COMMONLY REPORTED CAUSES OF MORBIDITY AND DEATHS (IN PATIENTS ONLY) ARUSHA REGION 1995:

Disease	Morbidity		Mortality	
	Reported	%	Deaths	%
Malaria	25,584	53.9	487	31.7
Pneumonia	8,157	17.2	214	13.9
Diarrhoeal Diseases	5,353	11.3	206	13.4
All other anaemia	1,972	4.1	157	10.2
Tuberculosis	1,863	4.0	281	18.3
URTI	1,497	3.1	8	0.5
Other Non- Infectious Gastro- Intestinal Diseases	880	1.9	111	7.2
Obstructive Pulmonary Diseases	858	1.8	34	2.2
Fracture	787	1.7	13	0.8
Other Bacterial Diseases	487	1.0	27	1.8

Total	47,438	100.0	1,538	100.0
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Source: Regional Medical Office, Arusha 1997.

TABLE III-22: OCCURRENCES OF FIVE MOST COMMON DISEASES (OUT-PATIENTS ONLY) ARUSHA REGION 1995:

Diseases	District									
	Arumeru	Arusha	Babati	Hanang	Kiteto	Mbulu/Karatu	Monduli	Ngorongoro	Simanjiro	Total
Malaria	69,925	52,613	59,467	25,331	14,834	76,199	28,935	26,388	13,384	367,076
Pneumonia	42,775	18,366	11,331	7,283	7,240	21,922	12,690	6,561	6,386	134,554
URTI	50,151	37,421	14,975	13,476	5,337	29,128	19,578	12,385	7,784	190,235
Diarrhoea	21,019	16,413	9,005	8,264	1,659	19,578	6,789	5,957	4,281	92,965
Eye infection	10,746	5,368	3,550	4,439	883	3,623	5,606	5,230	2,294	41,739
Total	194,616	130,181	98,328	58,793	29,953	150,450	73,598	56,521	34,129	826,569

Source: Regional Medical Office, Arusha, 1997.

3.2.3 Health Facilities:

Health facilities have been designed and distributed according to the most effective plan to combat morbidity and mortality causes shown in Tables III.21 and III.22. Facilities at the periphery are designed, equipped, staffed and supplied in order to handle 90% of all cases of illness. On the referral ladder more and more sophisticated equipment, supplies and staff are used to handle the more rare or serious causes of sickness.

The frontline facility in this hierarchy is the dispensary aided and normally paired with an MCH clinic.

TABLE III-23: DISTRIBUTION OF DISPENSARIES AND MCH CLINICS BY DISTRICT AND OWNERSHIP, ARUSHA REGION 1995:

District	Population 1995 Est.	Dispensaries			MCH Clinic	Population per Dispensary
		Public	private	Total		
Arusha	179,127	3	69	72	32	2,488
Arumeru	396,936	27	24	51	44	7,783
Babati	261,097	15	25	40	22	6,527
Hanang	142,645	10	16	26	19	5,486
*Kiteto	210,246	17	31	48	22	4,380
*Mbulu	332,375	22	19	41	34	8,107
Monduli	140,154	23	15	38	28	3,688
Ngorongoro	87,625	11	6	17	15	5,154
Total	1,750,205	128	205	333	216	5,256

Source: Regional Medical office, Arusha 1997.

* Kiteto includes Simanjiro, Mbulu includes Karatu.

In terms of population per dispensary the districts of Mbulu, Arumeru and Babati would appear to be disadvantaged. But when viewed in terms of land area per dispensary then it is quite obvious that it is the districts of Ngorongoro, Kiteto/Simanjiro and Monduli which are under privileged. Arusha district by all accounts is the best served. See Tables III-23 and III-24. In the extreme case of Ngorongoro there is one dispensary for every 825 sq. kms., while Arusha district has one for every one sq. km.

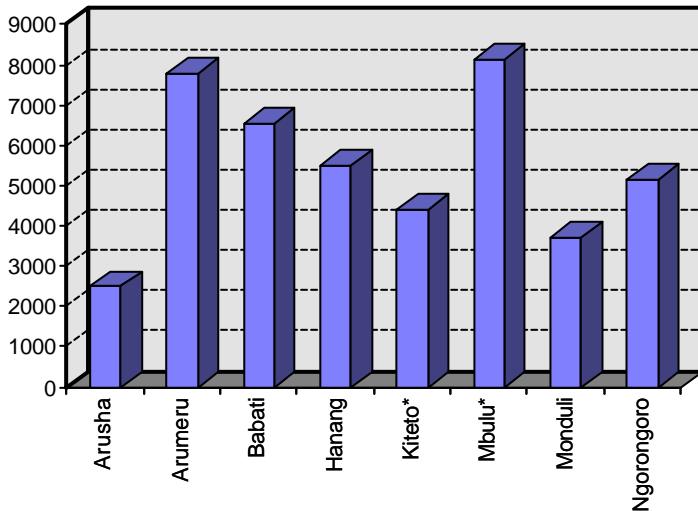
**TABLE III-24: DISTRIBUTION OF DISPENSARIES BY DISTRICT
POPULATION AND AREA, ARUSHA REGION 1995:**

District	Sq. kms Land Area	Number of Dispensaries	Population per Dispensary	Land Area per Dispensary (Sq. kms)
Arusha	82.5	72	2488	1.1
Arumeru	2896.0	51	7783	56.8
Babati	4969.0	40	6527	124.2
Hanang	4436.0	26	5486	170.6
Kiteto*	35156.0	48	4380	732.4
Mbulu*	7652.0	41	8107	186.6
Monduli	14201.0	38	3688	373.7
Ngorongoro	14036.0	17	5154	825.6
Total	83,428.5	333	5256	250.5

Source: Compiled from data provided by the Regional Commissioners Office and Regional Medical Office, Arusha 1997.

* Kiteto includes Simanjiro Mbulu includes Karatu.

Fig. 21: Population per Dispensary by District, Arusha Region, 1995



The regional coverage per dispensary averages 5256 people. This is an improvement compared to 1978 when one dispensary covered 6539 people. Then the region had 142 dispensaries (1978 Inventory of Health Facilities) and a population of 928,478.

Health centres are the next tier above dispensaries. Health centres are expected to be better equipped better, staffed and better supplied than dispensaries to enable them tackle cases referred to them by dispensaries. Above all, health centres have beds for in patients. All health centres in Arusha region are public owned and they are distributed as per table III-25. Arusha and Monduli districts enjoy the best coverage by health centres in the region.

TABLE III-25: DISTRIBUTION OF HEALTH CENTRES BY DISTRICT, ARUSHA REGION 1995:

District	Population 1995 Est.	Number of Centres	Number of Beds	People per Health Centre
Arusha	179,127	4	80	44,781
Arumeru	396,936	2	40	198,468
Babati	261,097	1	45	261,097
Hanang	142,645	1	20	142,645
Mbulu*	332,375	2	40	166,188
Kiteto*	210,246	1	20	210,246
Monduli	140,154	2	40	70,077
Ngorongoro	87,625	0	0	-
Total	1,750,205	13	285	134,631

Source: Regional Medical office, Arusha 1997.

* Mbulu includes Karatu. Kiteto includes Simanjiro.

Hospitals are the apex of the regional referral system. These are manned by registered doctors and sometimes by specialists, providing both in and out patient services. The distribution of these hospitals and hospital beds are given under Table III.26.

Fig. 22: Population and People per Health Centre by District, Arusha Region, 1995

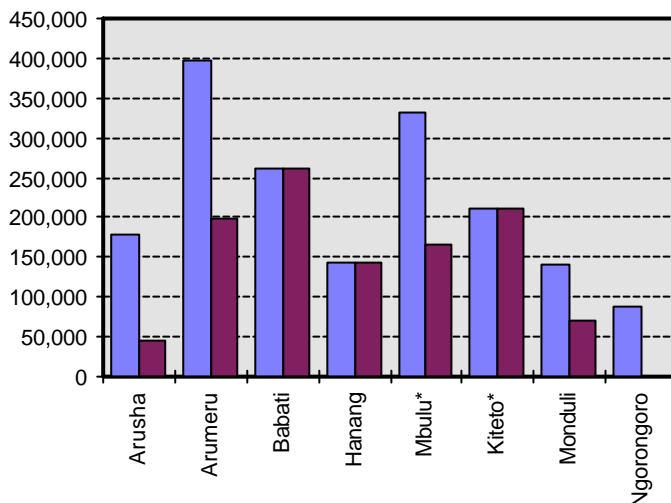


TABLE III-26: DISTRIBUTION OF HOSPITALS AND HOSPITAL BEDS BY DISTRICT AND OWNERSHIP, ARUSHA REGION, 1995:

District	Public	Parastatal	Private	Total	Number of beds**
Arusha	1	1	1	3	312
Arumeru	1	0	2	3	80
Babati	1	0	1	2	184
Hanang	0	0	0	0	0
Mbulu*	2	0	2	4	488
Monduli	1	0	0	1	70
Kiteto*	1	0	0	1	96
Ngorongoro	0	0	1	1	75
Total	7	1	7	15	1305

Source: Regional Medical Office, Arusha 1997.
* Mbulu includes Karatu, Kiteto includes Simanjiro.
** Health Statistics Abstract. 1997.

TABLE III-27: DISTRIBUTION OF HOSPITAL AND HEALTH CENTRE BEDS BY DISTRICT, ARUSHA REGION 1995:

District	Population 1995 Est.	Hospital Beds**	H. Centre Beds	Total Beds	Population per Bed
Arusha	179,127	312	80	392	457
Arumeru	396,936	80	40	120	3308
Babati	261,097	184	45	229	1140
Hanang	142,645	0	20	20	7132
Mbulu*	332,375	488	40	528	629
Kiteto*	210,246	96	20	116	1812
Monduli	140,154	70	40	110	1274
Ngorongoro	87,625	75	0	75	1168
Total	1,750,205	1305	285	1590	1101

Source: Compiled from Data Supplied by
Regional Medical Office, Arusha 1997

** Health Statistics Abstract, 1997

* Includes Karatu, Kiteto includes Simanjiro.

From Table III-27 it is clear that the best population to hospital bed ratio is for Arusha and Mbulu districts. The worst covered districts are Hanang and Arumeru. Other districts are about average. (1978 Inventory of Health Facilities) and given a population of 928,478 there was on the average 957 people to an hospital bed in 1978. The situation is now worse with 1101 people per bed.

TABLE III-28: NUMBER OF POPULATION PER BED BY REGION, TANZANIA MAINLAND 1995:

Region	Population 1995 Est.	Number of Beds	Population per Bed	Ranking
Arusha	1,776,799	1,535	1,158	16
Coast	737,178	795	927	13
Dar-es-Salaam	1,856,661	2,141	867	10
Dodoma	1,487,139	1,711	869	11
Iringa	1,460,498	2,005	728	5
Kagera	1,641,104	2,074	791	8
Kigoma	1,030,691	832	1,239	18
Kilimanjaro	1,556,928	2,289	680	2
Lindi	741,479	980	757	7
Mara	1,232,112	1,072	1,149	15
Mbeya	1,759,814	1,854	949	14
Morogoro	1,475,604	2,088	707	4
Mtwara	991,801	1,457	681	3
Mwanza	2,351,233	2,867	820	9
Rukwa	996,903	861	1,158	17
Ruvuma	987,223	1,635	604	1
Shinyanga	2,225,069	1,537	1,448	20
Singida	961,038	696	1,381	19
Tabora	1,214,073	1,322	918	12
Tanga	1,457,756	1,935	753	6
Total	27,941,103	31,686	882	-

Source: Health Statistics Abstract, 1997.

A comparison of coverage by hospital beds among mainland regions show that Arusha is far behind the majority of regions in this regard. It is ranked number 16, i.e. fifth from the bottom.

TABLE III-29: DISTRIBUTION OF HEALTH FACILITIES AMONG THE POPULATION BY DISTRICT, ARUSHA REGION, 1995:

District	Population 1995 Est.	Number of Dispensaries	Number of H. Centres	Number of Hospitals	Total Facilities	Population per Facility	Facilities per 10,000 Population
Arumeru	396,936	51	2	3	56	7,088	1.4
Arusha	179,127	72	4	3	79	2,267	4.4
Babati	261,097	40	1	2	43	6,072	1.6
Hanang	142,645	26	1	0	27	5,283	1.9
Mbulu*	332,375	41	2	4	47	7,072	1.4
Kiteto*	210,246	48	1	1	50	4,205	2.4
Monduli	140,154	38	2	1	41	3,418	2.9
Ngorongoro	87,625	17	0	1	18	4,868	2.1
Total	1,750,205	333	13	15	361	4,848	2.1

* Mbulu includes Karatu. Kiteto includes Simanjiro.

Source: Compiled from data supplied by:

- Regional Medical Office, Arusha, 1997.
- Health Statistics Abstract, 1997.

A look at how far the population of the various districts is covered by health facilities reveals that Arumeru, Mbulu and Babied are the worst covered with Arusha as the most privileged population. This, of course, is without regard to how much area each facility has to cover. When this factor is taken into account then the apparent advantage which Kiteto, Monduli and Ngorongoro have disappears.

TABLE III-30: DISTRIBUTION OF HEALTH FACILITIES BY DISTRICT AND LAND AREA, ARUSHA REGION, 1995:

District	Land Area Sq. Kms.	Total Number of Health Facilities	Health Facilities per 10,000 Population	Land Area per Health Facility Sq. Kms.
Arusha	83	79	4.4	1
Arumeru	2,896	56	1.4	52
Babati	4,969	43	1.6	116
Hanang	4,436	27	1.9	164
Mbulu*	7,652	47	1.4	163
Kiteto*	35,156	50	2.4	703
Monduli	14,201	41	2.9	346
Ngorongoro	14,036	18	2.1	780
Total	83,429	361	2.1	231

* Mbulu includes Karatu. Kiteto includes Simanjiro.

Source: Compiled from data supplied by:

- Regional Commissioner's Office, Arusha, 1997.
- Regional Medical Office, Arusha, 1997.

The three districts have respectively 703 sq. kms, 346 sq. kms and 780 sq. kms. per health facility compared to 1 sq. km. and 52 sq. kms per health facility for Arusha and Arumeru respectively. See Tables III-29 and III-30.

A look at the availability of health facilities relative to other regions shows that Arusha region is ranked 14th out of 20 regions of the Mainland. This means arusha's coverage of the population by health facilities is less than average for the country. See Table III-31. This information is according to the 1997 Health Statistics Health report.

TABLE III-31: POPULATION PER HEALTH FACILITY AND NUMBER OF HEALTH FACILITIES PER 10,000 POPULATION BY REGION, 1995:

Region	Population 1995 Est.	Number of Health Facilities	Population per Facility	Number of Facilities per 10,000 Population	Ranking
Arusha	1,776,799	285	6,234	1.6	14
Mtwara	991,801	139	7,135	1.4	16
Coast	737,178	192	3,839	2.6	1
Dar-es-Salaam	1,856,661	430	4,318	2.3	3
Dodoma	1,487,139	244	6,095	1.6	13
Iringa	1,460,798	285	5,125	2.0	5
Kagera	1,641,104	220	7,460	1.3	18
Kigoma	1,030,691	181	5,694	1.8	10
Kilimanjaro	1,556,928	395	3,942	2.5	2
Lindi	741,479	139	5,334	1.9	8
Mara	1,232,112	233	5,288	1.9	7
Mbeya	1,759,814	292	6,027	1.7	12
Morogoro	1,475,604	280	5,270	1.9	6
Mwanza	2,351,233	317	7,417	1.3	17
Rukwa	996,903	147	6,782	1.5	15
Ruvuma	987,223	195	5,063	2.0	4
Shinyanga	2,225,069	275	8,091	1.2	20
Singida	961,038	163	5,896	1.7	11
Tabora	1,214,073	161	7,541	1.3	19
Tanga	1,457,756	271	5,379	1.9	9
Total	27,941,103	4,844	5,768	1.7	

Source: Compiled from 1988 Population Census and Health Statistics Abstract (1997) data.

In addition to the above facilities the Health Sector in the region is favoured in having 82 mobile clinics and 137 out-reach service posts scattered all over the region. See Table III-32.

TABLE III-32: OUT-REACH AND MOBILE CLINIC SERVICES BY DISTRICT, ARUSHA REGION, 1995:

District	Mobile Clinics	Out-Reach
Arusha	0	8
Arumeru	0	15
Babati	6	32
Hanang	11	0
Kiteto	34	4
Karatu & Mbulu	20	20
Monduli	7	12
Ngorongoro	3	10
Simanjiro	1	36
Total	82	137

Source: Regional Medical Office - Arusha , 1997.

3.2.4 Immunization of Children and Prospective Mothers:

This service is based upon the assumption that provided children are inoculated with the appropriate vaccine early in childhood they become immunized for the better part or even for the rest of their lives. The six diseases which also tend to attack children at an early age and for which vaccines are available are tuberculosis, tetanus, pertussis, diphtheria, measles and polio. One inoculation of BCG and Measles vaccine is enough to immunize a child against tuberculosis and Measles respectively. Three doses of DPT and Polio are need to impart children with immunity against diphtheria, pertussis, tetanus and polio respectively. With respect to prospective mothers the assumption is that two or better still

more inoculations of Tetanus Toxoid Vaccine imparts immunity for a long period of child bearing against tetanus. The immunization target is to reach 100% coverage by 1999.

At 94%, 88%, 86% and 79% coverage for BCG, DPT3, Polio 3 and Measles vaccinations respectively, the region is doing well and the 1999 target is attainable. Inoculation with Tetanus Toxoid (T.T.) is disappointingly low at 22%. See Table III-33 and III-34.

TABLE III-33: IMMUNIZATION COVERAGE OF CHILDREN, ARUSHA REGION, 1995:

Vaccination	BCG 0-2 Years	Measles		DPT 3		Polio 3	
		Under 1 Year	Over 1 Year	Under 1 Year	Over 1 Year	Under 1 Year	Over 1 Year
Absolute Numbers	65,912	55,195	3,190	61,703	1,182	60,357	1,158
Percent Cover	94	79	-	88	-	86	-

Source: Regional Medical Office, Arusha, 1997.

TABLE III-34: IMMUNIZATION COVERAGE OF WOMEN IN CHILD BEARING AGE GROUP, ARUSHA REGION, 1995:

Vaccination	T.T.1	T.T.2	T.T.3	T.T.4	T.T.5
Absolute Numbers	48,818	40,314	22,550	10,835	4,220
Percent Cover at T.T.2 and Over.		22			

Source: Regional Medical Office, Arusha, 1997.

3.2.5 Child and Mother Nutrition:

Nutrition is an important factor in the maintenance of the health of a region's population. It also affects its overall development. Cases of severe malnutrition are associated with high infant and child mortality rates. The high rates of infant and child malnutrition are mainly caused by inadequate feeding practices of young children and/or expectant/lactating mothers. The presence of malnutrition manifests itself into Kwashiorkor and Marasmus in young children. Women's nutrition status also determines the rate of maternal mortality. Low food intake and heavy workload during pregnancy usually result in low maternal weight gain and babies born with low birth weights. Interestingly, goiter due to iodine deficiency is a problem especially in highland areas. Malnutrition in the region is surprisingly high as the following data indicate.

Severe malnutrition was at the high level of 28.5% in 1995 compared with the 6% national average. Principal causes of malnutrition in the region and indeed in all districts in the region is food inadequacy and insecurity. The small holder farmers particularly women have neither access to credit nor improved technologies. Some parts of the region are prone to drought. At the same time marketing and transportation constraints hinder the smooth transfer of food from surplus areas in the region to households with food shortage.

The nutrition status for new born children who attended MCH in the region in 1995 for each district is as Table III-35 indicates. That year Simanjiro was an extreme case where 88.3% of all children weighed were underweight at second attendance though only 6.5% were underweight, at the first attendance.

TABLE III-35: WEIGHTS OF NEW BORN BY LOCATION ARUSHA REGION, 1995:

District	First Attendance					Second Attendance				
	No. of Children Attended	Weight Below 60% Normal		Weights 60%-80% Normal		No. of Children Attended	Weight Below 60% Normal		Weight 60%-80% Normal	
		No.	%	No.	%		No.	%	No.	%
Arumeru	14,817	38	0	192	1	110,066	213	0	2,742	3
Arusha	7,974	70	1	250	3	92,576	424	1	2,236	2
Babati	9,007	174	2	513	6	120,437	1,739	1	5,035	4
Hanang	4,558	56	1	612	13.4	52,865	548	1	4,613	9
Kiteto	3,585	27	1	144	4	22,649	388	2	1,180	5
Mbulu & Karatu	13,451	79	0.6	329	2.4	205,654	2,177	1.1	15,886	7.7
Monduli	4,749	60	1.3	193	4.1	45,142	507	1.1	3,147	7
Ngorongoro	3,868	108	2.8	291	7.5	9,865	302	3.1	830	8.4
Simanjiro	6,409	97	1.5	321	5	22,035	3,468	15.7	16,003	72.6
Regional Hospital	2,632	61	2.3	171	6.5	10,848	193	1.8	198	1.8
Total	71,050	770	1.1	3,016	4.2	692,137	9,959	1.4	51,870	7.5

Source: Regional Medical Office, Arusha, 1997.

This was clearly the effects of severe food shortages in the district that year. The regional averages were 1.1% severe underweight and 4.2% moderate underweight at the first attendance. The second attendance averages were 1.4% severe underweight and 7.5% moderate underweight which marked an increase of 27% and 79% respectively between the two visits.

3.2.6 Infant and Underfive Mortality:

Arusha region by Tanzania Mainland standards has low adult literacy and high child malnutrition rates, and worse than average coverage of hospital beds and health facilities. In spite of all these disadvantages it has a better than average IMR and U5MR. In 1995 it had the lowest IMR and U5MR in the country. See Table III-36.

Like elsewhere in the country children in rural areas bear an additional risk from death compared to their counterparts in urban centres. The IMR and U5MR for rural areas was 76 and 120 respectively. That for urban centres was 72 and 114 respectively. This is according to the 1988 Population Census.

TABLE III-36: INFANT AND UNDERFIVE MORTALITY RATES BY REGION 1975-1995:

Region	IMR			U5MR		
	1975	1985	1995	1975	1985	1995
Arusha	108	75	52	179	119	78
Coast	121	113	105	204	189	174
Dar es Salaam	108	105	102	179	173	168
Dodoma	133	132	130	225	222	220
Iringa	152	130	111	257	220	187
Kagera	133	130	127	225	219	212
Kigoma	163	115	81	269	192	137
Kilimanjaro	76	67	59	119	104	90
Lindi	151	140	129	255	236	218
Mara	140	125	112	236	211	189
Mbeya	161	124	96	267	209	163
Morogoro	140	125	112	236	211	189
Mtwara	161	138	119	267	233	202
Mwanza	139	115	95	233	192	157

Rukwa	170	131	101	283	221	172
Ruvuma	145	113	88	245	188	143
Shinyanga	150	110	81	252	183	131
Singida	137	96	67	231	157	106
Tabora	140	101	73	236	166	116
Tanga	112	106	100	187	176	166

Source: Health Statistics Abstract, 1997.

Fig. 23 (a): Infant Mortality Rates (IMR) by Region, Arusha Region, 1975-1995

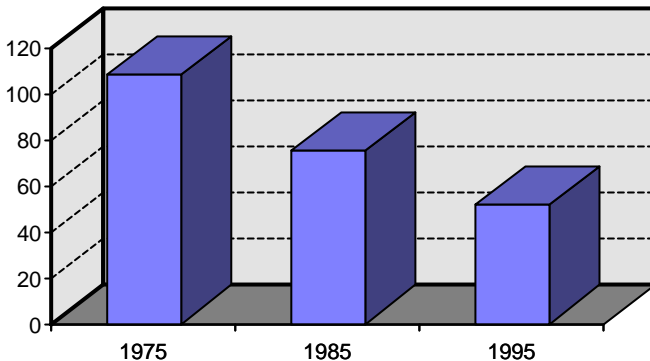
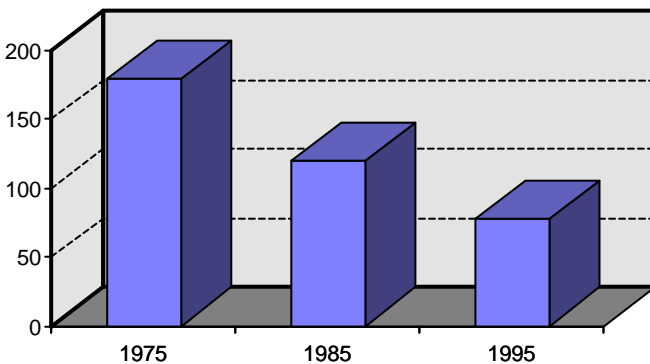


Fig. 23 (b): Under Five Mortality Rates (U5MR) by Region, Arusha Region, 1975-1995



3.2.7 Maternal Mortality:

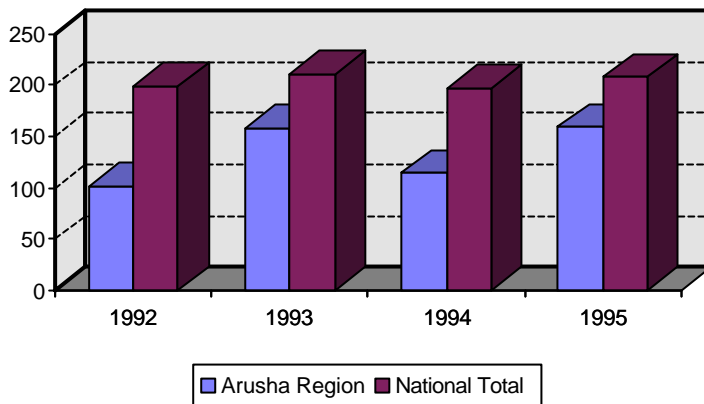
Like with IMR and U5MR Arusha region also holds a good record for MMR. It is ranked 5th among regions of Tanzania Mainland. See Table III-37.

TABLE III-37: MATERNAL MORTALITY RATE BY REGION FOR 1992-1995:

Region	MMR				
	1992	1993	1994	1995	Ranking
Arusha	102	158	114	159	5
Coast	209	111	70	187	3
Dar-es-Salaam	220	398	237	328	19
Dodoma	197	214	208	266	13
Iringa	311	321	276	281	20
Kagera	304	343	190	242	17
Kigoma	144	155	105	87	4
Kilimanjaro	126	46	107	63	1
Mara	67	59	106	124	2
Mbeya	67	361	436	264	18
Morogoro	289	172	190	153	9
Mtwara	264	212	161	252	14
Mwanza	221	186	266	207	12
Rukwa	172	294	243	267	15
Lindi	262	289	193	264	16
Ruvuma	225	189	186	177	8
Singida	242	171	238	207	11
Shinyanga	143	188	199	184	7
Tabora	151	185	130	216	6
Tanga	255	172	220	195	10
Total	199	211	197	208	-

Source: Health Statistics Abstract, 1997.

Fig. 24: Maternal Mortality Rate (MMR) for Arusha Region compared with the National Total, 1992-1995



3.2.8 Life Expectancy:

Life expectancy at birth in the ultimate test for health services and the environment to prolong human life. Between 1978 and 1988 the average life expectancy for residents of Arusha jumped from 50 years to 57 years. In both years it was number 2 to Kilimanjaro in having the longest life expectancy among regions of Tanzania. Consistent with the general pattern in Tanzania, Arusha females tended to live longer in 1988 than males. See Table III-38.

TABLE III-38: LIFE EXPECTANCY AT BIRTH BY REGION AND SEX, 1978 AND 1988:

Region	1978	1988		
	Average	Male	Female	Average
Arusha	50	57	58	57
Coast	47	46	51	48
Dar es Salaam	50	50	50	50
Dodoma	45	45	47	46
Iringa	41	44	47	45
Kagera	45	44	45	45
Kigoma	40	47	49	48

Kilimanjaro	58	57	62	59
Lindi	42	46	48	47
Mara	44	46	48	47
Mbeya	41	45	48	47
Morogoro	44	45	48	46
Mtwara	40	44	48	46
Mwanza	44	46	50	48
Rukwa	40	44	47	45
Ruvuma	43	48	50	49
Shinyanga	42	48	51	50
Singida	44	54	55	55
Tabora	44	53	54	53
Tanga	49	48	51	49
Total	44	49	51	50

Source: 1978 and 1988 Population Census.

3.2.9 AIDS:

The extent of the progress of HIV infection and AIDS development in the region is difficult to gauge for too many victims do not report to the health service for assistance. But given reported cases, the total by 1996 had reached 2,982 AIDS cases which had caused a total of 1,438 deaths. The first case and death was in 1986. See Table III.39. This is according to the Regional Medical Office at Arusha. The same source also revealed that there is a connection between TB and HIV/AIDS infections. Some 188 cases or 14% of all AIDS cases between 1986 and 1992 had T.B. before contacting AIDS. It is revealed further that women tend to be victims of AIDS more than males.

TABLE III-39: NUMBER OF NEW AIDS CASES AND DEATHS REPORTED - ARUSHA REGION 1986-1996:

Year	Aids Cases	
	Reported	Deaths
1986	1	1
1987	37	18
1988	110	67
1989	104	53
1990	199	86
1991	580	269
1992	237	123
1993	236	135
1994	301	158
1995	625	311
1996	492	217
Total	2,922	1,438

Source: Regional Medical Office, Arusha 1997.

Fig. 25: Number of New AIDS Cases and Deaths Reported - Arusha Region 1986-1996

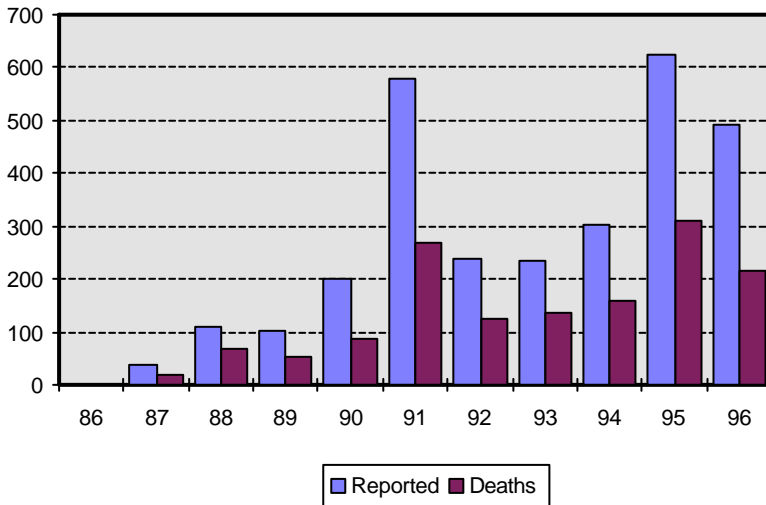
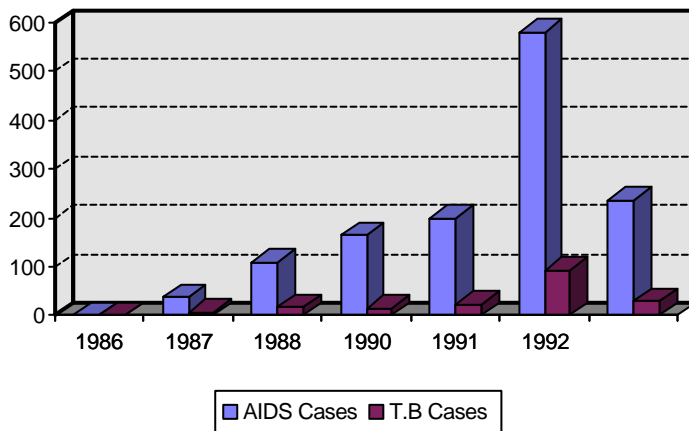


TABLE III-40: NUMBER OF AIDS CASES COMPARED WITH T.B.CASES 1986-1992:

Year	AIDS Cases		Total	With T.B
	Males	Females		
1986	0	1	1	1
1987	16	21	37	6
1988	61	49	110	18
1990	72	92	164	16
1991	94	105	199	24
1992	290	290	580	93
Total	100	137	237	30
	633	695	1,328	188

Source: Regional Medical Office, Arusha Region-Annual Report 1992.

Fig. 26: Number of AIDS Cases Compared to AIDS With T.B. Cases 1986-1992



AIDS is a country wide scourge. It is more serious in some areas and less so in others. A look at the rate of AIDS per 100,000 population based on the cumulative cases shows that Arusha region ranks at number 17 out of 20 years in severity of the scourge. It has not changed ranking significantly since 1992. This

rate of 153 AIDS cases per 100,000 population is relatively low by Tanzania standards. This figure does not reflect the rate of HIV infection among the population. See Table III-40 and Table III-41. Between 1992 and 1996 the four districts of Arusha, Arumeru, Mbulu and Babati (in that order) accounted for 88% of all AIDS cases in the region.

**TABLE III-41: AIDS CASES DIAGNOSED BY DISTRICT FROM 1992-1996
ARUSHA REGION:**

Year	Sex and Totals	Aru sha	Aru mer u	Ba bati	Han ang	Kar atu	Kit eto	Mb ulu	Mon duli	Ngoro ngoro	Sima njiro	Total
1992	M	37	25	14	3	3	2	9	6	2	0	101
	F	45	31	15	5	7	2	16	10	3	2	136
	T	82	56	29	8	10	4	25	16	5	2	237
1993	M	30	30	13	5	4	3	9	9	1	1	105
	F	41	31	14	6	7	4	13	11	3	1	131
	T	71	61	27	11	11	7	22	20	4	2	236
1994	M	33	29	24	3	6	0	22	11	2	0	130
	F	45	36	25	4	9	2	29	15	4	2	171
	T	78	65	49	7	15	2	51	26	6	2	301
1995	M	158	77	13	1	5	0	27	5	2	1	289
	F	167	93	17	2	9	1	38	6	3	0	336
	T	325	170	30	3	14	1	65	11	5	1	625
1996	M	121	59	15	1	7	1	29	3	0	1	237
	F	125	65	16	2	8	1	32	5	1	0	255
	T	246	124	31	3	15	2	61	8	1	1	492
TOTAL	M	379	220	79	13	25	6	96	34	7	3	862
	F	423	256	87	19	40	10	128	47	14	5	1029
	T	802	476	166	32	65	16	224	81	21	8	1891

Source: Regional Medical Office, Arusha 1997.

TABLE III-42: RATE OF AIDS PER 100,000 POPULATION BASED ON THE CUMULATIVE CASES BY REGION:

Region	1992	1993	1996	Ranking
Arusha	61	70	153	17
Coast	189	206	446	4
Dar es Salaam	538	531	678	1
Dodoma	31	37	73	20
Iringa	144	161	325	8
Kagera	280	289	444	5
Kigoma	86	98	215	15
Kilimanjaro	147	185	452	3
Lindi	95	112	328	7
Mara	55	59	122	18
Mbeya	337	353	638	2
Morogoro	160	164	305	9
Mtwara	106	110	242	13
Mwanza	118	129	274	11
Rukwa	31	37	87	19
Shinyanga	55	64	169	16
Singida	78	85	218	14
Ruvuma	111	128	328	6
Tabora	106	121	299	10
Tanga	99	113	267	12

Source: Health Statistics Abstract, 1997.

3.2.10 Other Health Issues:

3.2.10.1 Tuberculosis and Leprosy:

These two ancient diseases have always been a problem in the region. Whereas leprosy appears to be on the decline, tuberculosis, appears to be on the increase especially in the presence of AIDS or vice versa. See Tables III-43 and III-44. The tables show how important tuberculosis is in Arusha and neighbouring regions.

TABLE III-43: SMALL POSITIVE PULMONARY TB AND LEPROSY CASE DEFECTION PER 100,000 POPULATION AMONG NEIGHBORING REGIONS:

Region	TB Rates		Leprosy Rates	
	1992	1993	1992	1993
Arusha	50	52	8.7	0.2
Mara	33	39	6.0	5.0
Shinyanga	32	37	10.0	9.0
Singida	40	52	5.0	4.6
Dodoma	35	34	8.0	4.4
Morogoro	47	58	27.0	15.4
Tanga	55	61	14.0	13.5
Kilimanjaro	27	39	1.9	1.6
Total Mainland	48	57	13.0	11.0

Source: Health Statistics Abstract, 1997.

From the tables it is clear that at least for the three years shown, Arusha had the highest number of tuberculosis cases of any neighbouring region. The share by the zone of Tanzania Mainland's cases fluctuated but did not depart much from the average. The share was 31%, 55% and 27% for 1992, 1993 and 1994 respectively.

TABLE III-44: NEW CASES FOR RELAPSES OF TUBERCULOSIS AND RATE OF SMEAR POSITIVE BY SEX, YEAR AND REGION (ARUSHA AND ITS NEIGHBORS), 1993 AND 1994:

Region	1993			1994		
	Male	Female	Total	Male	Female	Total
Arusha	564	284	848	1975	1459	3434
Mara	256	179	435	403	312	715
Shinyanga	513	239	752	830	443	1273
Singida	305	161	466	554	350	904
Dodoma	336	142	478	875	505	1380
Morogoro	524	278	802	1331	931	2262
Tanga	569	295	864	1290	861	2151
Kilimanjaro	315	164	479	823	450	1273
Total Mainland	9868	5560	15428	20925	13453	34378

Source: Health Statistics Abstract, 1997.

Cases of relapses increased dramatically in 1994 for the regions of Arusha, Dodoma, Morogoro, Tanga and Kilimanjaro. Arusha region accounted for 10% of all new cases for relapses in the country in 1994.

3.2.10.2 Communicable Diseases:

Epidemics are quite common in the region and they are important in influencing morbidity and mortality rates. Table III-45 shows the level of morbidity from five communicable disease in Arusha and its seven neighbors. Taking these eight regions as a zone with

Arusha as its centre the following conclusions can be made for 1994 and 1995.

TABLE III-45: DISTRIBUTION OF COMMUNICABLE DISEASE CASES IN ARUSHA AND NEIGHBOURING REGIONS, 1994 AND 1995:

Region	Cholera		Plague		Meningitis		Dysentery		Rabies	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
Arusha	402	93	0	0	1	17	2178	4138	268	349
Mara	128	0	0	0	69	144	190	81	0	64
Shinyanga	1376	127	0	0	58	0	969	0	0	0
Singida	374	264	0	0	66	58	50	0	5	103
Dodoma	785	59	0	0	10	13	212	56	0	0
Morogoro	0	0	0	0	99	177	586	77	267	134
Tanga	336	1400	541	830	17	21	2822	1944	2	143
Kilimanjaro	1038	0	0	0	31	207	2391	711	331	379
Zone-Total	4439	1943	541	830	351	637	9398	7007	873	1172
Total Mainland	5013	2220	547	833	2228	2794	28896	10758	1981	1932

Source: Health Statistics Abstract, 1997

Firstly, within the zone Arusha is remarkably free from plague and meningitis. It has only got an average number of cholera cases. But the region has high incidence of dysentery and rabies. Secondary, taking the zone as a whole, the zone with 43% of Mainland's population has 88% and 99% of cholera and plague incidences. These are high rates. On the other hand the zone carries only its average share of the cases of rabies and dysentery.

Its share is 44% and 42% of cases of rabies and dysentery respectively. But with respect to meningitis the zone is remarkably free. It bears only 20% of Mainland cases.

TABLE III-46: REPORTED CASES OF MEASLES IN ARUSHA AND NEIGHBORING REGIONS 1992-1994:

Region	1992	1993	1994
Arusha	1,369	3,019	90
Mara	331	24	78
Shinyanga	166	37	31
Singida	670	481	58
Dodoma	330	148	3
Morogoro	672	660	154
Tanga	356	2,180	518
Kilimanjaro	188	2,128	46
Total Zone	4,082	8,677	978
Total Mainland	13,015	15,635	3,558

Source: Health Statistics Abstract, 1997

Measles, an epidemic among young children, is quite prevalent in the country and Table III-46 shows just how much. For 1992, 1993 and 1994 respectively the region had 11%, 19% and 3% of the mainland's cases. Measles is important in the region.

3.2.10.3 Contributing Towards Health Care Costs:

Public health care costs have spiraled to new heights since independence. At one time the public budget met this cost. But progressively a realization has come about that the government could no longer bear the burden on its own so, in the spirit of self reliance the public were asked to start contributing toward the costs of their own individual health care. In Arusha region the

public started contributing in 1994/95 but the total amount dropped in 1995/96 from Tshs 17 million to 12 million. people are getting used to the system but its success depends to a large extent on the ability of regional authorities to recycle the contributions into better health services for the public.

3.3 WATER SUPPLY SERVICES:

3.3.1 Introduction:

It is natural and essential of human life to require safe and adequate water supplies in order to thrive. The search, hoarding and use of water is one of man's priority goals in life. To the vast numbers of human, livestock and wildlife populations of Arusha region what supplies available are competed for. Industries are another competitor for these same resources. Like man, industries also need to be supplied adequately for. Increased urbanization and the population explosion means additional pressures are brought to bear on existing water resources in the region.

Arusha more than any other part of Tanzania, regularly experiences the effects of inadequate water supplies. Non existence of water in large areas is not an academic experience, it is a reality that determine the life or death of thousands of livestock, wildlife and even threatens human life. Human and livestock migrations in search of water and grazing are common place occurrences.

They have become natural annual events. It is common knowledge that Masai and their cattle have spilt over into Singida, Morogoro and Coast regions because of the water factor. It can, therefore, be said with justification that water is a priority

commodity in Arusha region. It is more critical than even food supplies.

Normally, human water requirements take priority over needs by livestock, wildlife, industry or even irrigation. Three factors determine the consumption level of water by a human population. They are availability, distance and time. In the Arusha region currently the recommended minimum requirement is 20 - 30 litres per person per day. But because of the said three factors actual consumption varies from an average of 18 litres in the dry season to 22 litres during the wet season. Individual household cases are as low as 4 litres per person per day and as high as 30 litres per person per day. Distance in areas of plentiful water tend to be the same whether in the dry season or the rainy season. However, in dry areas like Monduli and Simanjiro districts the distance to a water source varies between 0.2 km. and 4 kms. during the wet season and 1.5 kms. to 10 kms. in the dry season.

3.3.2 Water Policy:

The National Water Policy aims at providing every person or household access to safe, clean and adequate water supplies within 400 metres by 2002 A.D. Given Arusha region's scattered population especially in dry areas this goal is utopian. It is unattainable. There has been a need to find an Arusha solution to the Arusha problem. The Arusha Water Master Plan was born in 1987 to study the Arusha region's water problem and find suitable solution consistent with Arusha realities. The plan among others recommended:

- The establishment of a hydrological network to monitor surface water run off to guide future surface water schemes.

- The development of groundwater resources.
- The payment of user fees to cover all villages as well as the formation of Village Water Committees and Village Water Funds.
- Simple technology water schemes be established in preference to more complicated mechanical operations. Hence gravity fed and shallow wells schemes be preferred.
- Villagers be involved including in the construction of their own water facilities.

But most interesting of all, the Master Plan envisages a lifetime of up to 2012 AD and that even then the "400 metres from a household" policy would not cover every one. This is reality. The highest district water provision coverage rate envisaged was 70% or slightly above that by 2012 AD.

3.3.3 Overview of the Current Status of Water Supply Facilities

Table III-47 shows the current development of water supply facilities in the region. The districts of Arumeru, Karatu, Babati, Mbulu and parts of Hanang have abundant surface water resources. Hence these districts have shown to be best supplied by shallow wells, lakes, natural dams and springs. The drier districts of Ngorongoro, Monduli, Kiteto, Simanjiro and parts of Hanang are better with manmade dams, charcos and borehole technologies. However, small parts of Ngorongoro, Simanjiro and Monduli receive adequate rains and have adequate surface

water. Similarly the lower parts of Arumeru district consist of drier grassland plains. These are exceptions which do not alter the overall picture.

**TABLE III-47: STATUS OF WATER SUPPLY AND TECHNOLOGIES USED
ARUSHA REGION - 1995:**

District	No. of Villages	No. of Dams	No. of Charcos	Lakes	No. of Point Source with Hand Pumps		No. of Boreholes for Piped Scheme	Number of Surface Water Sources for Piped Schemes		Number of Village with Piped Schemes	Rain Water Harvesting
					Boreholes	S/Wells		Springs	Rivers		
Mbulu/Karatu	93	4	1	3	7	56	6	6	10	43	10
Hanang'	53	6	-	3	-	16	3	3	3	14	-
Babati	79	2	2	2	2	38	1	9	5	36	-
Monduli	49	33	10	1	3	1	11	7	18	31	1
Simanjiro	41	9	-	-	-	12	10	5	1	21	4
Kiteto	44	15	-	-	-	2	17	5	-	23	-
Arumeru	137	4	-	1	1	1	6	37	5	98	6
Ngorongoro	32	4	-	-	5	5	6	11	-	12	-
Arusha	10	-	-	-	-	-	-	-	-	10	-
Total	538	77	13	10	18	131	60	83	42	288	21

Source: Regional Water Engineer, Arusha, 1997.

Out of the 455 water supply schemes in Table III-47, 209 involves groundwater resources. All the other 246 schemes or 54% of all schemes involved surface water. On the other hand the Arusha Water Master Plan revealed that 54% of the region's population depended on groundwater and that of this population only 8% had access to an improved supply. The rest (92%) had to walk long distances to collect their daily requirements of safe water. It is therefore, envisaged that there will be in the long run a shift from concentration on surface water facilities to groundwater facilities. In spite of Arumeru, Babati, Mbulu and parts of Hanang having adequate rains, the bulk of the region receives less than 800 mm. of rain yearly. Arusha region can, therefore, be classified as arid. No wonder, the bulk of the region has to depend on groundwater supplies to meet the water needs of the human and livestock populations. About 40% of the region's land

area has good potential for groundwater and another 40% has fair potential. See Map. I.

Map I: Groundwater Potential Map of Arusha Region

3.3.4 Rural Water Supplies:

The rural areas of Arusha region require water both for human consumption for livestock, wildlife and possibly irrigation. The majority of the rural population still rely on unprotected water sources mainly earth dams, charcos and water holes in swampy areas. The rural population consist mainly of pastoral people in the districts of Ngorongoro, Kiteto, Monduli, Simanjiro and parts of Hanang. These districts are prone to environmental degradation due to overgrazing, cattle trekking and concentration of animals at watering points. They depend on groundwater. There are also areas which are adequately rainfed and are suitable for agriculture. In these areas surface water is abundant. The districts which enjoy abundant surface water are mainly Arumeru, Karatu, Babati, and Mbulu. The pastoral districts have few patches suitable for agriculture and these patches have a few water streams and springs. These are the high rise portions of Monduli, Simanjiro, Ngorongoro and Hanang. Table III-48 shows the extend of coverage with adequate and safe water in the region's rural areas. In the execution of rural water schemes it is regional strategy to mobilize village communities in the construction of such schemes. Thereafter, involve them in the management, maintenance and running of these schemes through their water committees and funds financed by user fees.

The best population coverage rates are by Mbulu/Karatu, Arumeru, Monduli and Babati in that order. Mbulu/Karatu district had a rate of 54.7%. The least covered districts are Hanang and Arusha in that order. Hanang's coverage rate is 21.8%. The average for rural areas of the region is 41.6%. With respect to the establishment of village water committees and village water

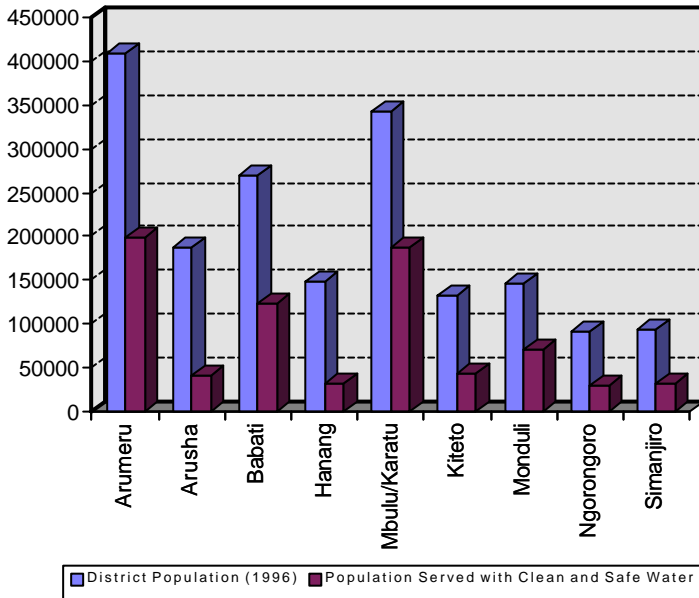
funds the situation is still discouraging. It is 36% and 22% for village water committees and village water funds respectively.

TABLE III-48: COVERAGE OF POPULATION WITH CLEAN AND SAFE WATER, VILLAGE WATER COMMITTEES AND VILLAGE WATER FUNDS, ARUSHA REGION 1996:

District	District Population (1996)	Population Served with Clean and Safe Water	Percent age of Population Served	Total Villages with Water Committees		Total Villages with Water Funds	
				Number	% All Villages	Number	% All Villages
Arumeru	409,212	197,729	48.3	22	17	-	-
Arusha	186,785	41,219	22.1	-	-	-	-
Babati	270,007	123,999	45.9	36	44	22	27
Hanang	147,513	32,099	21.8	27	51	26	49
Mbulu/Karatu	343,008	187,735	54.7	56	57	33	34
Kiteto	132,457	43,080	32.5	32	73	22	50
Monduli	145,388	70,000	48.1	10	20	10	20
Ngorongoro	90,709	29,057	32.0	-	-	-	-
Simanjiro	94,101	31,855	33.9	11	26	6	14
Total	1,819,180	756,773	41.6	194	36	119	22

Source: Compiled from data supplied by Regional Water Engineer's Annual Report 1997.

Fig. 28: Districts Population and Rural population with clean and safe water, Arusha region 1996:



3.3.5 Urban Water Supplies:

3.3.5.1 Introduction:

The demand for water supplies in urban areas is brought about by human domestic requirements which also tend to surpass rural requirement averages. The second source of demand is industrial needs. Others are for small scale gardening and surprisingly, for livestock needs. Livestock requirements are quite substantial in urban settlements outside Arusha Municipality. The smaller the urban settlement the more rural/urban mixed it is and greater is the role of livestock.

The region has one municipality, the regional capital-Arusha. There are nine headquarters of the remaining nine districts of

which three have developed into major urban settlements namely Babati, Mbulu and Karatu. The rest of the district headquarters are small urban centres namely Monduli, Kibaya, Katesh, Orkesmet, Usa River, and Loliondo. Mixed urban/rural settlements fast developing into urban centres are Mto wa Mbu, Namanga, Makuyuni. Tengeru and Wasso.

The prime objectives are to provide enough amount of safe and clean water for the urban population and to meet the requirements of the industrial sector. The current position of water supply to the district headquarters and the urban settlements is extremely inadequate.

3.3.5.2 Arusha Municipal Water Supply:

Arusha municipality estimated to have a population fast approaching a level of 200,000 requires about 42 million litres of water per day. The municipality is supplied with water from the following sources.

- 14 boreholes
- The Olesha - Masua springs in Arumeru district and
- The Ngarendalu springs in the municipality.

Water from these sources could supply the 42 million litres required in the municipality per day. However, actually supply averages 31 million litres resulting in a deficit of 11 million litres. Major causes of the deficit include power cut-offs and drought periods which normally occur between the months of September and March.

Planned strategies to improve water supplies to the municipality have started to be implemented after a feasibility study by a German development agency (KFW). The plan includes exploitation of gravity water sources of Nduruma and Mlala rivers and increasing capacity of flow from the Olgilai-Masara springs to the reservoir tanks at Sekei.

3.3.5.3 Babati - District headquarters for Babati:

Babati town is estimated to have a population of 29,000 by 1996 requiring 3.5 million litres of water a day. The town is supplied from a pumped water scheme having very old machinery which fails to pump enough water to the upper reaches of the town. The fast growing population of Babati town requires better equipment and more sources to meet its water requirement. It was recommended that more ground water sources be explored. But to date there has not been any success. Further surveys are to be undertaken.

3.3.5.4 Mbulu - District headquarters for Mbulu:

Mbulu town is estimated to have a population of 20,000 in the year 1996 requiring 2.4 million litres of water a day. The town is supplied with water from 2 gravity schemes, 4 shallow wells and 1 from a pumped scheme. At present the supply is adequate.

3.3.5.5 Monduli - District headquarters for Monduli:

This urban settlement has a critical shortage of water. Its population is about 18,000 people. Water requirement per day is about 2.2 million litres. The present water supply is enough for about 5,000 people. Supply of water is from two springs tapped

at the foot of Monduli mountain. Another source is a branch of the pipeline from Mount Meru. From this pipeline water is pumped to Monduli town but the supply is not reliable because of other uses. During the dry season water supplies from the two springs is cut down by almost 50%.

Recently, there have been efforts to explore for groundwater sources. However, it is becoming increasingly clear that there is none around the town. More surveys have been proposed for groundwater sources further away from the town.

3.3.5.6 Karatu - District headquarters for Karatu:

Karatu is a trade centre and the district headquarters for the newly formed Karatu district (1995). Its population is about 13,000 people with an average water requirement of 1.6 million litres a day. The town is supplied with water from a gravity scheme. This source caters for less than 50% of the population. Future groundwater (Boreholes) sources are to be explored.

3.3.5.7 Kibaya - District headquarters for Kiteto:

This town with a population of about 10,000 requires an average of 1.2 million litres of water a day. The town could be supplied with water from six sources. However, at present only two sources are functioning (one spring and 1 bore-hole). The pumping system of the functioning borehole is very old and can't supply enough water at its full capacity.

Supply of water suffices only 11% of the population. Major rehabilitation is required even for the present water sources let alone the four other sources.

3.3.5.8 Loliondo - District headquarters for Ngorongoro:

Loliondo town has a population of about 8,000 people which require an average of 960,000 litres of water a day. This town has a gravity water source which is pumped into a reservoir on top of a hill. During the dry season, water supply from this source falls below normal and leaves the town with very little water. There are proposals to explore for additional sources.

The next urban settlement from Loliondo is Wasso. It is the designated district headquarters for Ngorongoro district following the proposals by the district authority. Source of water for Wasso has been a gravity scheme from Wasso Springs where water is first pumped into a reservoir before distribution. This source can cater for 100% of the water requirement. However, the engine of the pumping system has been stolen leaving residents without water.

A piped motorised scheme at Wasso has been constructed. At present this source is the one which supplies water for Loliondo and Wasso.

3.3.5.9 Katesh - District headquarters for Hanang:

This small town with a high rate of population growth is estimated to have 7,000 people in 1996. Its water requirement is 840,000 litres a day. The present gravity scheme which is the only source of water for Katesh town can not supply enough water. Moreover, its water supply falls below normal during the dry season. There are proposals to explore for more sources.

3.3.5.10 Orkesment - District headquarters for Simanjiro:

This is a new settlement likely to grow into a trade centre. The newly formed Simanjiro district (1995) established its district headquarters at Orkesmet and urbanization of the place appears to be fast. Its population is about 4000 people with water requirement of 480,000 litres a day. The present water sources are 3 boreholes. One saline borehole supplies water for livestock.

The remaining two boreholes can supply about 30% of the daily requirement.

3.3.5.10 Usa River-Designated district headquarters for Arumeru:

Usa-River urban settlement has a population of about 25,000 people with an average water requirement of 3 million litres a day.

The source of water for Usa-River is a piped gravity scheme. It is unlikely that the present source will meet the future requirement of the fast growing population.

TABLE III-49: SUMMARY OF URBAN WATER SUPPLIES AGAINST DEMAND, EARACHE REGION 1996

Urban Centre	Population (1996) Est.	Water Demand Million litres/day	Water Supply mill. litres/day	% demand met
Arusha (including rural areas)	150,000	42.0	31.0	74
Babati	29,000	3.5	n.a	n.a.
Mbulu	20,000	2.4	2.4	100
Monduli	18,000	2.2	0.6 (Seasonal)	28
Karatu	13,000	1.6	0.8	50
Kibaya	10,000	1.2	n.a.	n.a.
Loliondo	8,000	0.96	n.a.	n.a.
Katesh	7,000	0.84	n.a.	n.a.
Orkesment	4,000	0.48	0.14	30
Usa River	25,000	3.0	3.0	100
Total	284,000	58.18	-	-

Source: Compiled from data supplied by Regional Water Engineer, Arusha, 1997.

3.3.6 Water Quality:

A system to monitor water quality on a continuous basis in the region does not exist except for the Arusha Urban Water Supply.

But results from spot samples reveal that the region's water supplies are of a generally poor bacteriological quality. Surface water sources notably, rivers, dams, lakes, streams and springs are particularly prone to biological pollution. This is mainly because of sharing common sources with livestock and wildlife. Faecal contamination should be zero in shallow wells and boreholes, but even here some sources do show up positive for faecal coliforms.

Chemically, water quality in the region is generally of acceptable quality. However, results from spot checks show that fluoride levels tend to exceed the 8mg/L recommended standard for Tanzania in Arumeru and parts of Hanang. Cases of low or no iodine in water occur in Endamang (Babati district) and Gendabi (Hanang district).

Further, it has been observed that between 1985/86 and 1994/95 the population consuming water from unprotected sources increased by 208%. The population that is provided with safe and clean water increased by a mere 76%. The trend is clear. A larger and larger proportion of the Arusha population are coming under risk from water borne diseases such as dysentery, diarrhoea or even cholera.

3.3.7 The Livestock Factor:

In settled communities it makes sense to plan first for human domestic water demand. But when it comes to dealing with 80%

of the regions land which is arid and occupied by pastoral tribes a different approach has to be assumed. The water requirements of a livestock herd far exceeds that of any household. It is no accident that these people put the interests of livestock ahead of family's as far as water is concerned.

The implications to the planning process are obvious. Ignore such factors as water quality. The small human population can be educated to take along small quantities of quality water for drinking purposes only. By concentrating on livestock, planners can manage conserving the fragile environment of the Masai pasture lands. See the section under Environmental Conservation.

3.3.8 Future Efforts:

The goals and strategy outlined in the Water Master Plan for the region are feasible and every effort should be done to attain them.

Coverage of 70% by 2012 is attainable. The involvement of the Maasai and Barbaig pastoral people in the planning and execution of water schemes in arid areas makes good sense as long as these peoples' opinions are taken seriously by planners. The available surface water potential of the region has been developed to an extent. An hydrometric network to monitor water run off exists and covers 29 stations. Expansion of the network has potential for sound planning of future surface water supplies. The network to monitor groundwater characteristics does not exist. Though such a system is important for the proper planning of groundwater development for rural water supplies. The need is there and should be met especially since in the future a shift from surface water to groundwater development is envisaged. Concurrently, the shift to accommodate the "livestock factor emphasis" should be properly evaluated to determine the extent this is

implementable. This is consistent with efforts at developing water schemes which are customer tailored.

3.3.9 Sanitation:

Human settlements, from villages to large towns bring with them the hazards of human waste and garbage. This is particularly critical in densely settled centres. It is doubly critical in unplanned urban settlements which abound in the region for no reason that a little political/administrative determination could not solve. Garbage dumps are breeding grounds for flies and factories of offensive smells. Water and fly borne diseases become common under these conditions. Inadequate control of sewerage disposal may easily lead to the pollution of streams, rivers and ultimately dams and lakes.

In rural areas people are required to provide for their households an adequate latrine and a pit for refuse disposal. A survey carried out by the Arusha Water Master Plan showed that only 45% of households had a latrine and 4.0% have a refuse disposal pit. See table II-47. As expected the lowest coverage was among the pastoral people.

TABLE III-50: SANITATION COVERAGE IN RURAL AREAS BY DISTRICT, ARUSHA REGION:

District	Total Households	Households with Latrines		Households with Refusepits	
		Number	Percentage	Number	Percentage
Arusha	31,496	13,255	42	3,520	11.2
Arumeru	60,106	28,859	48	1,320	2.2
Monduli	20,397	8,416	41	498	0.9

Mbulu	43,022	19,360	45	1,038	2.4
Ngorongoro	13,891	4,306	31	450	3.2
Kiteto	22,608	8,810	39	532	2.4
Hanang	19,152	6,703	35	754	4.1
Babati	38,764	22,361	51	1,492	3.4
Region	249,436	112,070	45	9,604	4.0

Source: Arusha Region, Water Master Plan, 1994.

Depending upon budgetary allocations, the Public Health department sets itself the goal of carrying out a survey of toilet facilities every year. Tables III-51 and III-52 show the results of 1993 and 1994 surveys.

TABLE III-51: DISTRIBUTION OF TOILET FACILITIES BY DISTRICT, ARUSHA REGION 1993:

District	Total Household Inspected	Households with Permanent Latrines		Households with Temporary Latrines		Households without Latrines	
		Number	Percentage	Number	Percentage	Number	Percentage
Arusha	1587	1434	90.4	126	7.9	27	1.7
Arumeru	23976	17105	71.3	6488	27.1	383	1.6
Monduli	12886	6126	47.1	2152	16.7	4608	35.8
Babati	82263	54023	65.7	23038	28.0	5202	6.3
Mbulu/Karatu	32324	19126	59.2	13099	40.5	99	0.3
Kiteto/Simanjiro	7820	3635	46.5	1405	18.0	2780	35.5
Hanang	10290	3800	36.9	4008	39.0	2482	24.1
Ngorongoro	13149	3422	26.0	2276	17.3	7451	56.7
Total	184295	108671	59.0	52592	28.5	23032	12.5

Source: Regional Health Officer's Report 1993-Arusha.

The 1993 survey shows that the worst coverage is in the districts of Ngorongoro, Monduli, Kiteto/Simanjiro and Hanang in that order. Arusha and Arumeru show excellent cover.

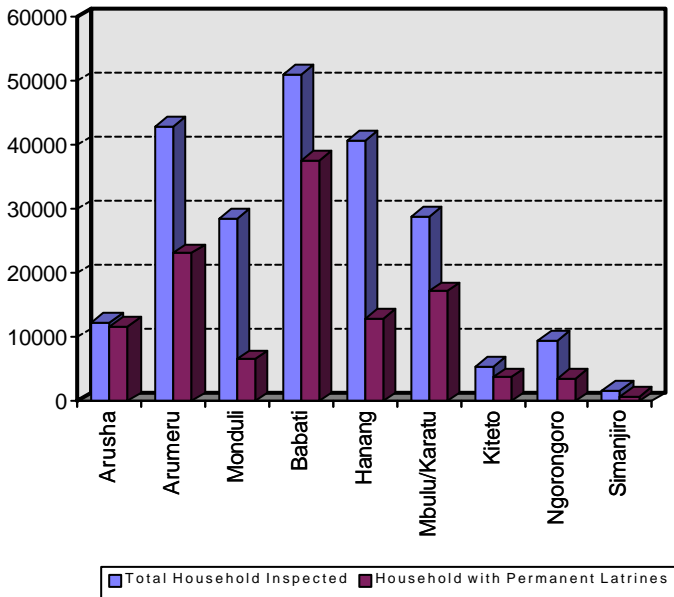
On the other hand the 1994 survey gives the worst coverage as being in Monduli, Hanang, Ngorongoro and Mbulu/Karatu in that order.

TABLE III-52: DISTRIBUTION OF TOILET FACILITIES BY DISTRICT, ARUSHA REGION 1994:

District	Total Household Inspected	Household with Permanent Latrines		Households with Temporary Latrines		Households Without Latrines	
		Number	percentage	Number	Percentage	Number	Percentage
Arusha	12420	11830	95.3	489	3.9	101	0.8
Arumeru	42879	23177	54.1	10000	23.3	9702	22.6
Monduli	28548	6556	23.0	7718	27.0	14274	50.0
Babati	51061	37691	73.9	2730	5.3	10640	20.8
Hanang	40766	13024	31.9	12793	31.4	14950	36.7
Mbulu/Karatu	28800	17200	59.7	4000	13.9	7600	26.4
Kiteto	5600	3784	67.6	800	14.3	1016	18.1
Ngorongoro	9495	3599	37.9	2579	27.2	3317	34.9
Simanjiro	1786	893	50.0	586	32.8	307	17.2
Total	211356	107754	51.0	41695	19.7	61907	29.3

Source: Regional Health Officer's Annual Report 1994 - Arusha.

Fig. 29: Total Household Inspected and Household with Permanent Latrines, by District, Arusha Region, 1994



Only Arusha comes out as having an excellent cover. The discrepancy between the two survey could be due to methodology.

SECTION IV

ECONOMIC INFRASTRUCTURE:

4.1 ROADS

Arusha region is connected to other regions and the outside world by five important roads namely: Arusha - Moshi, Arusha - Namanga, Arusha - Babati - Dodoma, Arusha - Babati - Singida and Arusha - Ngorongoro - Singida. As far as surface transport is concerned the only other transport mode connecting Arusha and the rest of the country is a single railway line to Moshi.

4.1.1 Road Classification:

The region has a total road network of 8866 kms. in length. Out of these 541 kms. are classified as trunk roads, 1831 kms are regional roads and 6494 kms are district/feeder roads. Table IV-1 shows the distribution of the road network by district.

TABLE IV-1: DISTRIBUTION OF ROAD NET-WORK BY DISTRICT ARUSHA REGION, 1996:

District	Trunk	Regional	District/Feeder Roads	Total
Arusha	9	15	170	194
Arumeru	125	239	674	1038
Babati	115	159	726	1000
Hanang	80	60	475	615
Karatu	39	64	278	381
Kiteto	-	480	1456	1936

Mbulu	-	150	536	686
Monduli	173	174	913	1260
Ngorongoro	-	240	275	515
Simanjiro	-	250	991	1241
Total	541	1831	6494	8866

Source: Regional Engineer, Arusha, 1997.

4.1.2 Road Quality:

Out of road network of 8866 km., 3.9% are tarmac, 25.1% are gravel and 71% are earth roads. Table IV-2 shows the type of road surface district wise.

TABLE IV-2: TYPE OF ROAD SURFACE (KMS) BY DISTRICT, ARUSHA REGION, 1996:

District	Tarmac	Gravel	Earth	Total
Arusha	42	44	108	194
Arumeru	125	239	674	1038
Babati	5	269	726	1000
Hanang	-	150	465	615
Karatu	-	103	278	381
Kiteto	-	480	1456	1936
Mbulu	-	150	536	686
Monduli	173	229	858	1260
Ngorongoro	-	315	200	515
Simanjiro	-	250	991	1241
Total	345	2229	6292	8860

Source: Regional Engineer, Arusha, 1997.

MAP II:

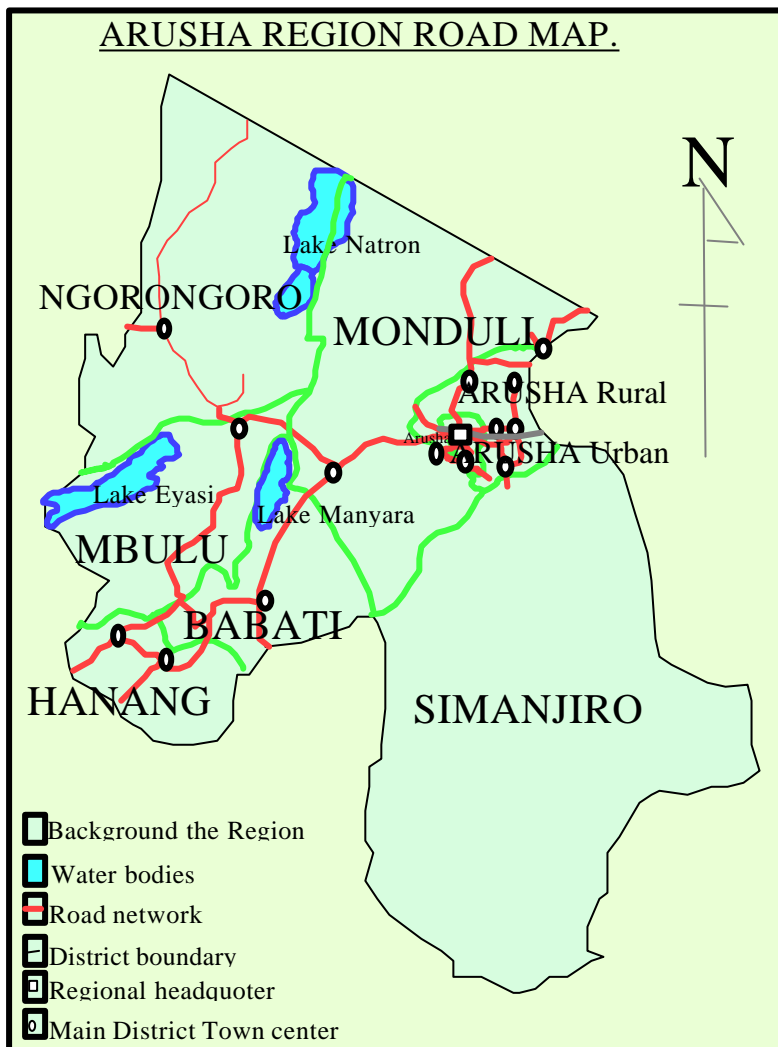
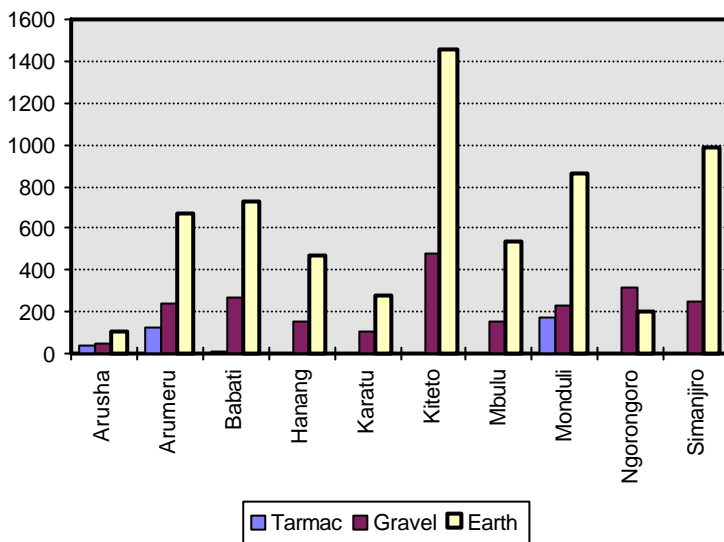


Fig. 30: Type of Road Surface (Kms) by District, Arusha Region, 1996



Generally, the state of all roads is poor. Out of 345 kms. of tarmaced roads only 43 kms. are in good condition and that is the Arusha - KIA road. The Arusha - Minjingu road of 105 kms needs resealing and the Arusha - Namanga (109 kms), Monduli junction (10 kms) and all Arusha Municipality roads (42 kms) need reconstruction. All gravel and earth roads are passable with difficulty and need periodic maintenance.

4.1.3 Road Network Connections:

Table IV-3 shows the major roads linking the region to the rest of the country. To the east Arusha is linked with Kilimanjaro region by an all-weather tarmac road. To the South the region is linked with Dodoma region by a gravel road, while to the South-West the region is linked to Singida region by another gravel road.

Table IV-4 below shows the major intra-regional connections. Arumeru is connected to the regional centre by three all-weather roads, Monduli 3 roads, Ngorongoro 2 roads and Karatu one road. Mbulu is connected by one road, Hanang one road, Babati one road. Map II displays the road network of Arusha region.

TABLE IV-3: MAJOR INTER-REGIONAL ROAD CONNECTIONS, ARUSHA REGION, 1996:

Inter-Regional Connection	Major Link Roads	Quality
Arusha/Kilimanjaro	Arusha - Moshi Road	Tarmac, all weather
Arusha/Dodoma	Arusha - Babati - Dodoma Road	Tarmac/Gravel
Arusha/Singida	Arusha - Babati - Dodoma - Singida	Tarmac/Gravel
Arusha/Mara	Arusha - Ngorongoro - Musoma	Tarmac/Gravel

Source: Regional Engineer, Arusha, 1997.

TABLE IV-4: MAJOR INTRA-REGIONAL ROAD CONNECTIONS, ARUSHA REGION, 1996:

Inter-Regional Connection	Major Link Roads	Quality
Arumeru - Arusha	Arusha - Moshi Road	Tarmac
	Arusha - Namanga Road	Tarmac
	Arusha - Oljoro Road	Gravel
Monduli - Arusha	Arusha - Kisongo - Monduli	Tarmac/gravel
	Arusha - Namanga	Tarmac
	Arusha- Mto wa Mbu	Tarmac/gravel
Ngorongoro - Arusha	Arusha - Karatu - Loliondo	Gravel/Earth

	Arusha - Monduli - Loliondo	Gravel/Earth
Karatu - Arusha	Arusha - Karatu	Tarmac/gravel
Mbulu - Arusha	Arusha - Karatu - Mbulu	Tarmac/gravel
Hanang - Arusha	Arusha - Babati - Katesh	Tarmac/gravel
Babati - Arusha	Arusha - Babati	Tarmac/gravel
Kiteto - Arusha	Kibaya - Kondoa - Babati - Arusha	Tarmac/gravel
	Kibaya - Orkesumet - Arusha	Gravel
Simanjiro - Arusha	Orkesumet - Arusha	Gravel

Source: Regional Engineer, Arusha, 1997.

From the above it is clear that compared to the rest of the country, the region is well connected internally and with the outside world. Distances are, however, very long between the regional centre and the periphery. So that Kibaya and Kiteto district generally are closer to and are serviced commercially by Dodoma region. This is just an example.

4.1.4 Road Density:

Road density wise the urban district of Arusha of course comes first. Thereafter, it is Arumeru followed by Babati which are the most favoured districts. The worst served are Ngorongoro at the bottom followed by Simanjiro, then Monduli.

TABLE IV-5: DISTRIBUTION OF ROAD DENSITY BY DISTRICT, ARUSHA REGION, 1996:

District	Land Area Sq. Kms.	Road Length Kms.	Density Kms/Sq. Km.	Ranking
Arusha	82.5	194	2.35	1
Arumeru	2,896	1,038	0.36	2
Babati	4,969	1,000	0.20	3
Hanang	3,436	615	0.18	4
Kiteto	16,305	1,936	0.12	6
Mbulu	4,352	686	0.16	5
Monduli	14,201	1,260	0.09	8
Ngorongoro	14,036	515	0.04	10
Simanjiro	18,851	1,241	0.07	9
Karatu	3,300	381	0.12	7
Total	82,428.5	8,866	0.11	-

Source: Compiled from data supplied by Regional Engineer, Arusha, 1997.

Fig. 31: Distribution of Road Density by District, Arusha Region, 1996

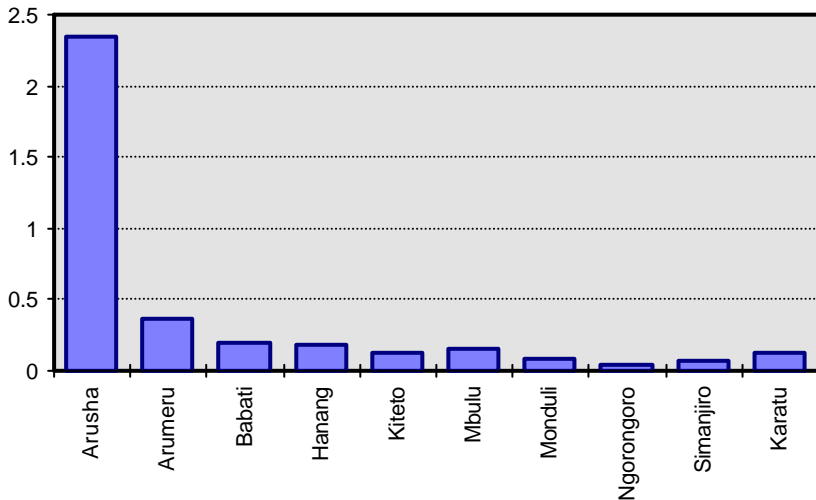


Table IV-6 shows how Arusha's road network compares to others in the country.

TABLE IV-6: STATUS ROAD NETWORK IN ARUSHA REGION AND SOME SELECTED REGIONS 1996.

Region	Total Roads (Kms)	Earth Roads (Kms)	% Earth Roads	Road Density Kms/Sq. Kms.
Arusha	8,866	6,292	71	0.11
Mtwara	5,596	5,401	97	0.34
Lindi	6,686	6,444	96	0.10
Mwanza	6,349	5,147	81	0.32
Dodoma	4,236	3,384	80	0.10
Shinyanga	5,670	4,852	86	0.11
Morogoro	3,742	-	-	0.05
Coast	3,713	3,191	86	0.12
Tanga	2,778	1,382	50	0.10
Mbeya	4,831	3,765	78	0.08

Source: Compiled for data supplied by Regional Engineer, Arusha, 1997 and the Regional Socio-Economic Profiles of Mtwara, Lindi, Mwanza, Dodoma, Shinyanga, Morogoro, Coast, Tanga and Mbeya.

From the above table, it is clear that Arusha region is favoured only in having a lower %-age of earth roads i.e. better quality roads than normal. But its road density is not out of the ordinary.

4.2 RAILWAY SERVICES:

The region is also served with a single railway line which connects the region with Kilimanjaro, Tanga, Pwani and Dar-es-Salaam regions. However, the importance of the Arusha - Moshi - Tanga/Dar-es-Salaam railway line has declined greatly in favour of the road transport.

4.3 AIR TRANSPORT:

Arusha region is served by Kilimanjaro international airport, (which is situated 48 km. from the Arusha Municipality). Arusha is another aerodrome which caters for both medium and small aircraft. In addition the region is served with 29 airstrips scattered all over the region.

In 1986 Kilimanjaro International Airport (KIA) which Arusha region shares with Kilimanjaro region handled 17% of all commercial and non-commercial air passengers demonstrating the fact that it is the second largest airport in Tanzania. Dar-es-Salaam comes first. In 1993 KIA's share of passengers went up to 28%. Arusha airport's share over the same period was 0.5% and 2.0% respectively. (See Table IV-7). With respect to an freight, KIA handled 9% in 1986 and 22% in 1993. Arusha airport handled no freight. KIA is also number two in air freight handling. (Table IV-8).

TABLE IV-7: COMMERCIAL AND NON-COMMERCIAL AIR TRAFFIC PASSENGERS HANDLED

Airport	1986	1987	1988	1989	1990	1991	1992	1993
DSM	572257	580591	569796	471163	504838	510716	437165	272753
Tanga	34602	33689	37312	20186	16985	16429	9931	6948
Arusha	6668	7099	8669	7586	8121	10602	12168	13790
Bukoba	2986	12690	9172	3888	1760	9211	2318	1456
Dodoma	13904	17718	10676	6346	7545	7801	5511	4827
Iringa	2622	2461	2264	977	1490	1645	1198	1063
Moshi	2831	2477	2935	2615	2108	2156	2260	1468
Mtwara	28607	28918	24820	19950	17445	20138	16489	18886
Songea	8797	7294	2911	3058	2930	4715	4787	2427
Tabora	11706	14060	13797	8122	10063	6029	10222	9647
Kilimanjaro	194630	206476	191931	175409	190630	195171	212262	191139
Musoma	15803	12091	10813	6219	5986	7603	10538	7300
Kigoma	7166	8295	9278	5209	6799	6678	4763	4191

Kilwa	3202	2407	2661	2286	1159	1827	-	-
Lindi	7092	7257	6302	3873	3208	4569	4458	3453
Mafia	12649	11552	11298	7880	6100	7634	6626	6183
Mbeya	3219	1873	1534	1703	1355	1106	1576	813
Mwanza	52752	74840	86210	56151	55597	71743	71182	59504
Njombe	-	-	-	73	99	-	-	317
Nachingwea	3722	2147	2425	1989	1240	3716	-	1006
Pemba++	32018	36820	26082	17443	17055	15482	18376	2313
Zanzibar++	139194	133981	174289	81225	119893	129200	115001	79214
Sumbawanga	-	-	2521	1313	539	1293	286	-
Shinyanga	-	-	1002	375	448	765	628	578
Masasi	-	-	1986	668	103	72	-	193
Lake Manyara	-	-	1262	1519	1725	2439	-	1842
Total	1156427	1204736	1211946	907226	985221	1038740	947745	691311

+ Refers to scheduled commercial traffic only

++ Data for 1993 only refers to scheduled commercial traffic

Source: Transport Statistics, Planning Commission, 1993

TABLE IV-8 SCHEDULE COMMERCIAL AIR TRAFFIC; FREIGHT HANDLED

Airport	1986	1987	1988	1989	1990	1991	1992	1993
D'Salaam	7047.9	5798.0	8225.4	5236.8	7657.9	8442.7	5517.2	5730.2
Tanga	74.2	47.3	56.1	21.6	11.9	22.6	7.8	7.7
Arusha	-	-	-	-	-	-	-	-
Bukoba	0.8	6.0	10.1	4.4	-	4.1	-	0.3
Dodoma	13.9	24.6	15.5	2.2	4.0	5.7	0.0	0.0
Iringa	1.3	0.9	-	-	-	-	-	-
Moshi	-	-	-	-	-	-	-	-
Mtwara	301.0	329.3	311.1	232.6	318.4	235.0	170.5	156.7
Songea	33.8	25.9	4.3	5.6	2.0	2.4	3.2	0.3
Tabora	18.1	22.6	0.4	7.0	15.2	8.7	11.4	12.0
Kilimanjaro	841.7	708.7	1287.5	1246.3	1348.2	1348.2	683.1	2029.2
Musoma	72.6	59.9	41.6	28.0	26.8	30.0	29.8	23.0
Kigoma	30.1	36.8	31.1	30.7	27.9	21.1	20.2	18.7
Kilwa	4.1	1.8	1.5	1.5	0.2	0.9	-	-
Lindi	32.7	32.7	22.4	21.8	25.1	20.4	15.1	6.8
Mafia	32.2	29.6	29.8	13.8	11.2	2.0	2.2	0.7
Mbeya	-	-	-	-	-	-	-	-

Mwanza	236.4	426.8	837.4	669.2	627.6	1102.1	737.7	1065.6
Njombe	-	-	-	-	-	-	-	-
Nachingwea	8.8	6.4	3.2	2.3	1.3	1.9	-	-
Pemba	104.5	111.9	66.3	37.0	30.9	16.7	10.3	5.2
Zanzibar	274.9	499.9	1202.9	660.8	319.2	200.2	69.2	123.6
Sumbawanga	-	-	10.9	8.0	-	2.8	-	-
Shinyanga	-	-	3.8	-	-	-	-	0.0
Masasi	-	-	-	-	-	-	-	-
Lake Manyara	-	-	-	-	-	-	-	-
Total	9328.8	8169.1	12161.3	8229.6	10427.8	11467.5	7277.7	9180.0

Refers to schedules commercial traffic

Source: Transport Statistics Planning Commission, 1993

4.4 TELECOMMUNICATION

The existing telecommunication network (1996) in the region consists of 6,163 telephone lines 145 telex lines and 300 telefax lines. In addition there are 17 full post offices and 17 sub-post offices for letter communications. Table IV-9.

**TABLE IV-9: DISTRIBUTION OF TELECOMMUNICATION FACILITIES
ARUSHA REGION, 1996:**

Type of Service	Aru meru	Arusha Municipality	Bab ati	Han ang	Kar atu	Kite to	Mb ulu	Mon duli	Ngoro ngoro	Sima njiro	Total
Teleph one lines	321	5,196	168	75	85	52	45	132	89	-	6,163
Telex lines	-	144	1	-	-	-	-	-	-	-	145
Telefax lines	-	300	-	-	-	-	-	-	-	-	300
Full Post Offices	2	5	1	1	1	1	2	3	2	-	17

Sub Post Offices	8	3	2	1	1	-	1	1	-	-	17
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Source: 1. Tanzania Telecommunication Co. Ltd.
2. Tanzania Posts Corporation.

4.5 ENERGY:

Energy is a prerequisite for the proper functioning of all sectors of economy. It is an essential service whose availability and quality can determine the success or failure of development endeavors. In Arusha Region the main source of energy for both industrial and domestic use is fuelwood and petroleum products and electricity (thermal and hydro).

4.5.1 Electricity:

Arusha, Monduli, Arumeru, Hanang and Mbulu (Hydom) districts are supplied in excess of demand with electricity from the National Grid System. Babati district has a separate source of 8.75 MW diesel generation owned by the TANESCO. The remaining districts - Simanjiro, Kiteto, Mbulu, Karatu and Ngorongoro have no TANESCO electricity supply. The situation of electricity demand and supply in Arusha region for 1996 and 2000 is shown on the Table IV-10.

TABLE IV-10: THE SITUATION OF ELECTRICITY DEMAND SUPPLY IN ARUSHA REGION FOR 1996 AND YEAR 2000:

District	Year 1996		Year 2000	
	Demand	Actual Supply	Projected Demand	Projected Supply
Arusha Municipality	126,000 MWH	144,000 MWH	147,000 MWH	167,000 MWH
Arumeru	3,432 MWH	4,015 MWH	4,015 MWH	4,697 MWH
Babati	2,145 MWH	2,342 MWH	2,509 MWH	2,788 MWH
Monduli	1,450 MWH	1,697 MWH	1,697 MWH	1,985 MWH
Hanang	900 KW	2,000 KW	1,350 KW	3,000 KW
Mbulu (Hydom)	200 KW	480 KW	300 KW	720 KW

Source: TANESCO Arusha, 1997.
TANESCO Katesh, 1997.

TABLE IV-11: NUMBER OF HOUSEHOLDS AND INDUSTRIES SUPPLIED WITH ELECTRICITY 1996 ARUSHA REGION:

District	Households	Industries
Arusha Municipality	19,246	33
Monduli	413	-
Arumeru	1,718	-
Babati	970	-
Hanang	734	1
Mbulu (Hydom)	103	1

Source: TANESCO, Arusha and Katesh, 1997.

4.5.2 Fuelwood:

Firewood and charcoal are the main sources of domestic energy in Arusha region. Total firewood and charcoal demand is estimated to be 3,706,900 M³ of wood. Annual charcoal wood fuel production comes from:

- Unreserved land 57%, 29% from forest reserves while 14% comes from forest plantations.

4.5.3 Biogas:

Biogas energy technology was introduced in the early 1980's for domestic use only. A total of 380 biogas plants have been constructed in Arusha region by December 1996.

SECTION V

OTHER RELATED DEVELOPMENT ISSUES

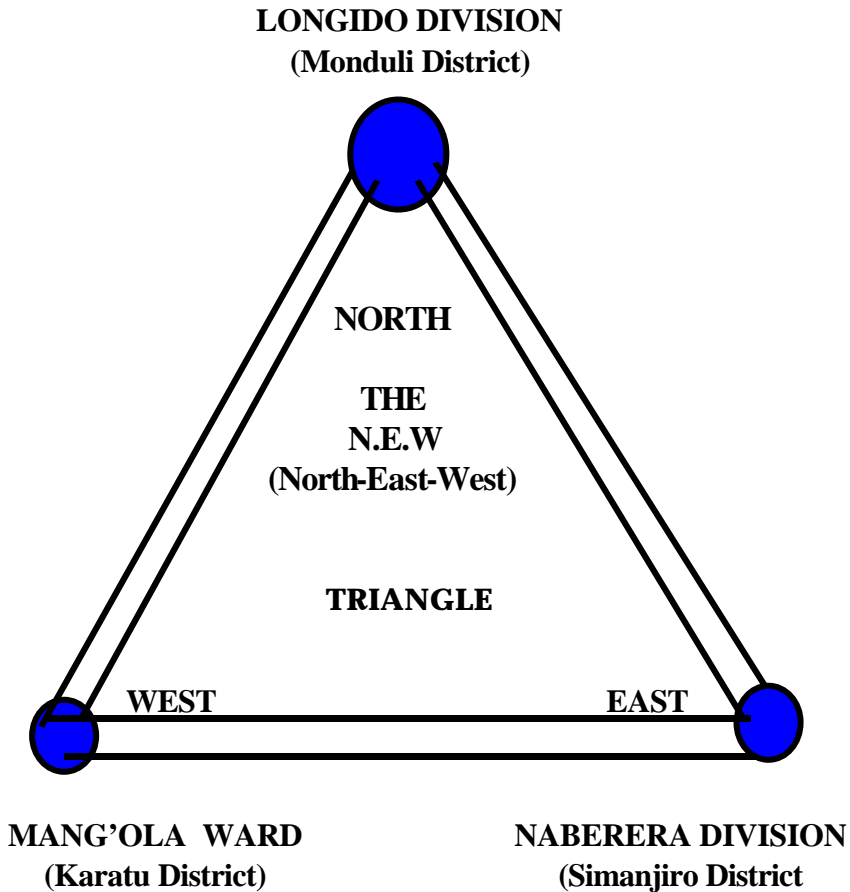
5.1 ENVIRONMENTAL CONSERVATION

Arusha region contains some of the most fragile environments due to rainfall scarcity and scanty vegetation cover. The region has some of the driest areas in the country averaging between 500 mms and 200mms of rainfall a year. Vegetation cover in these areas consist of grass and/or shrub bush which cover is soon stripped by cattle, sheep and goats early in the dry season leaving the soil bare until the rains come again.

A look at Map III reveals three major trouble spots in the region where rainfall is at its minimum. They are, Longido Division in Monduli to the north, Mang'ola ward to the west in Karatu district and Naberera Division in Simanjiro to east. These three form a triangle whose tips pin point the region's most vulnerable ecological areas. Not only are these areas the driest, they also have minimum vegetation cover and are under pressure from big concentrations of livestock and/or wildlife. If desertification is coming to Tanzania then these three angles of the triangle will be the points from which the Tanzania desert will spread.

Map III: The New Triangle, Arusha Region

Fig. 32 The North - East - West Triangle, Arusha Region



In the past, when wildlife and pastoral people with their livestock used to range freely without let or hindrance some kind of ecological balance was achieved. Cattle and wildlife used to move on well defined nomadic routes to take the most advantage

of available water and grazing. Advance scouting for water and grazing for livestock was practiced to perfect the system.

Now, however, with the coming of modern development concepts new pressures on this same rangeland have been brought to bear.

Huge tracts of land have been excised from traditional grazing areas, for cultivation, wildlife conservation and diverse government purposes. These have been excised without regard to nomadic routes or the interest of pastoral people. No wonder now there are so many conflicts between livestock keepers and cultivators as discussed earlier under the chapter on livestock.

The intrusion of crop farming into what used to be range land has precipitated the ecological/environmental crisis in which Arusha region finds itself. Environmental damage is done by uncontrolled agriculture and livestock concentrations. All these problems are man made and could be man solved. The deforestation of Hanang Moutation through the agency of agriculture and livestock has dried up traditional water sources. The blocking of traditional nomadic routes has meant livestock concentrating in certain areas for too long, thus resulting in damage to the ecology.

The construction of water points without regard to livestock movement patterns has resulted in the destruction of the environment around watering points, brought about by animal concentration for a long time in one area.

A variety of solutions could be tried to mitigate against environment damage. One obvious solution is the control of water resources. Livestock will go where water is. Cattle could be moved from one area to another through closure and opening up of watering points for specified periods. If this is coordinated with grazing availability, damage by livestock to rangelands will be kept to a minimum. This can mean an extensive exploitation of groundwater resources which are so extensive in the region.

Planners should also learn from pastoral people when it come to opening up new water points. Pastoral people move around the range in search of water and grazing for their livestock. They never do so in search of water for themselves. Their needs are insignificant in volume when compared to that of their livestock. Hence planners should also start to plan water for livestock not human domestic requirements. This will mean water quality (as defined for human consumption) is not an important criteria when planning for strategic water supply distribution.

The planning of strategic water points for livestock will also mean the time has come for a study of traditional nomadic routes with a view to establishing corridors in cultivation areas to allow livestock through.

With regard to the north-east-west (NEW) triangle of potential environmental disaster, the three points could serve as areas of concentration when it comes to the establishment of corrective watering points for livestock and the res-establishment of nomadic routes. This way desertification could be contained. A more detailed environmental study of this triangle could pin point more accurately the type of interventions required to contain a potential environment disaster. See Fig. 32.

Another area of environmental concern in Arusha region is the fuel crisis. Dependency on fuel wood (charcoal and firewood) by the huge majority of Arusha residents has meant the exploitation of forest resources to the hilt. It is estimated that 500,000 bags of charcoal are produced each year from 100,000 cubic metres wood. The demand for fuel-wood is put at 4,200,00 cubic metres per year. But the forest resources of the region can only produce on a sustainable basis 2,000,000 cubic metres. This

means Arusha is currently busy using up its forest resources capital. These resources are dwindling fast.

Attempts at afforestation by the region are commendable but more needs to be done. Every year about 33 million seedlings are distributed. Given 50% survival, this means each year about 1,300 sq kms of trees are planted. The target should be to distribute 100 million seedlings a year to sustain fuel wood supply.

Agricultural chemicals and industrial waste are another dimension of environmental pollution in the region. Arusha is the second most important industrial centre in the country, so it is likely the problem brought about by industrial pollution is second only to that of Dar es Salaam. Similarly, Arusha being one of (if not the most) the most developed regions in the country as far as agriculture is concerned, must use each year correspondingly big amounts of insecticide, fungicides, artificial fertilizers and other chemicals. The control of qualea qualea pest birds and locusts by spraying with chemicals has go on in the region for decades. This has added to the pollution of soils and water sources in the countrywide. Sustainable yields under a regime of high doses of chemical fertilizer and insecticides is unsustainable unless other interventions are brought into play. Only relevant studies on this industrial and agricultural pollution can point the way to sustainable development and a clean environment.

5.2 TOURISM:

Tourism is a very important industry in the whole Tanzania and especially so in Arusha region. The role of tourism in the economy include s the followings:-

- It creates jobs
- It generates hard currency (foreign exchange)
- It generates tax revenue for the government
- It is attractive for small and medium sized enterprises, consequently, can foster a private enterprise economy
- It has strong linkages to other sectors
- It has considerable potential for expansion and increased value added.

In Arusha region it is estimated that tourism and wildlife account for about 20% of regional GDP. Hence, it ranks third in importance after agriculture and livestock. The region receives about 80% of all tourists visiting tanzania. This is due to the fact that Arusha region has a vast scenic countryside endowed with rich flora and fauna, charming people, excellent climate and other tourist attractions as explained here under.

It has excellent tourist infracture and is next door to a key tourist receiving country which Arusha complements as shown below:-

a) **Arusha Town:**

Arusha the casptlal town of the region, is well established as tourist capital of the Northern Tourist Circuit with an impressive array of facilities. These facilities include a fully equipped conference centre (AICC), hotel facilities (over 2000 beds) an International Airport (KIA) which is only half an hour away by car. Also Arusha town is located exactly half way between Cape Town and cairo and has a lot to offer. Activities include challenging Mount Meru climbs, boating on Lake Duluti, a

Museum, snake parks, shopping in the curio shops, bazaars and cultural heritage centres etc.

b) **Arusha National Park**

The park has three district zones: A distinctive crater (often described as a mini-Ngorongoro), the Momela lakes which are fed by underground streams and Mount Meru which is one of the most rewarding mountains to climb in Africa. Animals here include: buffalo, elephants, hippo, giraffe, zebra, a variety of antelopes, blue, black and white monkey, leopard and hyena. Visitors facilities are camp sites, mountains huts, rest houses and the Momela Lodge.

c) **Tarangire National Park**

This park has a permanent supply of water so that during the dry season the animal population here rivals that of Serengeti with wildebeest, zebra, eland, elephant, hartebeest, buffalo, gerenuk, fringe eared cryx and flocks of birds of many different species. Prime game viewing months are between September and December. Visitors facilities are a luxury tented lodge and camp sites.

d) **Manyara National Park**

Manyara is a sanctuary to elusive populations of buffalo, hippo, giraffe, impala, zebra and the most famous residents-tree climbing lions. Elephants feed off fallen fruit while bushbuck, waterbuck,

baboons, hardvark, civet, leopard as well as black rhinos make their home in the forest.

Lake Manyara is a magnet for bird life and a kaleidoscope of different species which can be found around its shores, including huge flocks of flamingo. The Park is ideal for a day trip from Arusha town. The tourist season is from June to September and January to February. Visitors facilities are an hotel, camp sites, an hostel and self-catering "bandas".

e) **Ngorongoro Conservation Area (NGA)**

The Ngorongoro Conservation Area is a huge area containing active volcanoes, mountain and archaeological sites, rolling plains, forests, lakes, dunes and of course, Ngorongoro Crater and Olduvai George.

The view of Ngorongoro crater is sensational. On the crater floor, grassland blends into swamps, lakes, rivers, wood land and mountain-all a haven for wildlife, including the densest predator population in Africa. The crater is home to up to 25,000 large mammals mainly grazers. The crater elephants are strange, mainly bulls. The birdslife in the crater is largely seasonal.

In the northern, remote part of the NCA are Olmoti and Empakasi craters, lake natron (known to breeding ground for East Africa's flamingoes) and Oldonyo lengai mountain. Visitors facilities include luxury lodges and campsites such as Ngorongoro Wildlife Lodge, Ndutu Lodge and Conservation Corporation (East Africa).

f) **Olduvai Gorge:**

Olduvai is the site of some of the most important fossil humanoid finds of all time-the "Nutcracker man" or Australopithecus blisei who lived 175 million years ago. There is a small informative museum located at the visitor's centre. The gorge is a treasure trove of archeological sites filled with fossils, settlement remains and stone artifacts. Lecture tours are offered. Visitor facilities are a camp site.

5.2.1 Revenue for the Government

Foreign exchange earned from tourism percolates to all sectors stimulating their development. Of course tour operators, hotels, shopkeepers and many others benefit directly from the tourists. But the most visible earnings as made by the government through various taxes and fees. Of all areas of government revenue from tourism, fees collection from National Park visits are the most significantly.

Table V-1 shows that between 1980 and 1994 the number of non-resident visits to the parks has increased more than five times. Tourism is a very fast growing sector.

Revenue wise Table V-2 reveals that total fees collected from these visits has increased even more dramatically from T.Shs. 10,775,000 in 1980 to T.Shs. 5,612,870,000 in 1994. This is an increase of more than 500 times. In terms of foreign exchange the increase nation wise was from US \$ 1,311,000 in 1980 to US \$ 10,150,000 in 1994. This is an eightfold increase. Arusha region's share of this revenue was 65% in 1980 and 47% in 1994.

In terms of visits Arusha region's share was 85% in 1980 and 77% in 1994. This is true that Arusha is the most important single region in tourism in the country.

TABLE: V-1: NON-RESIDENT PAID FOR VISITS TO NATIONAL PARKS, ARUSHA REGION, 1980 TO 1994

National Parks	1980	1983	1986	1989	1992	1994
Serengeti	7984	8589	11610	24910	41948	45789
Manyara	9951	11396	17413	34576	38107	43334
Ngorongoro	16893	14967	18843	69852	66777	88296
Arusha	4724	2173	1913	3832	6174	10106
Tarangire	3581	1837	2404	7081	13053	17339
Total Arusha	43133	38162	52183	140281	166566	204864
Total Tanzania	50768	49603	57807	155119	181116	264744

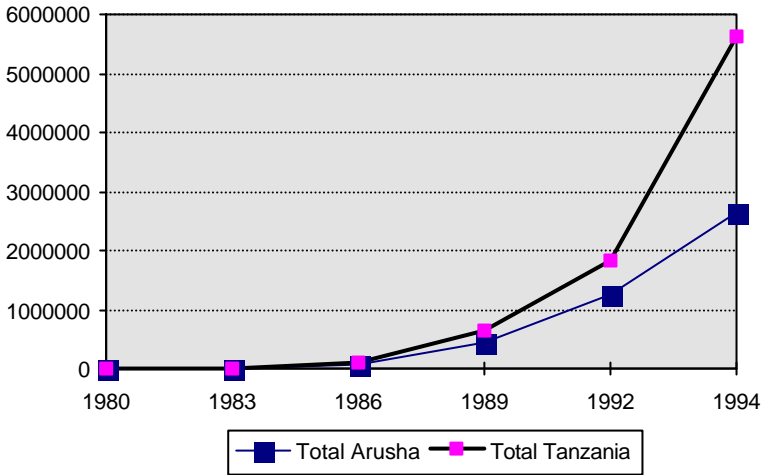
Source: Hotels and National Parks Statistics, Bureau of Statistics, Dar es Salaam, May, 1995

TABLE: V-2: TOTAL REVENUE COLLECTED BY NATIONAL PARKS, ARUSHA REGION, 1980 TO 1994 (000 TSHS.)

National Parks	1980	1983	1986	1989	1992	1994
Serengeti	3414	1928	17271	69647	374813	1086787
Manyara	850	1346	9855	81874	202353	492930
Ngorongoro	2046	4972	27588	260652	519240	1468983
Arusha	387	318	1605	8485	56735	205560
Tarangire	772	234	2541	22623	113344	461501
Total Arusha	6969	8798	58860	442681	1266485	2628974
Total Tanzania	10775	12850	90537	653287	1823891	5612870

Source: Hotels and National Parks Statistics, Bureau of Statistics, Dar es Salaam, May, 1995

Fig. 32: Total Revenue Collected by National Parks, Arusha Region compared with Total Tanzania, 1980 to 1994 (000 Tshs.)



5.3 SPECIAL PEOPLE

The Tindiga and Hadzabe, of Mbulu district, the Sonjo of Ngorongoro district and the Ndorobo of Kiteto district form a special group with special needs. These people until very recently lived away out of contact with other people in pursuit of a special life style. They lived until very recently on honey, hunting and the gathering of wild fruits and roots.

They have now been resettled in villages of their own choice where they are encouraged to settle down in preference to a migratory life. They are being taught agricultural skills and livestock keeping.

This is because the government could not guarantee these people the continuation of their life style as more and still more land became settled by sedentary people and forests dwindled. These people need encouragement to stay in their new life and in settlements. They are a disadvantaged group who need special attention otherwise they face marginalization.

SECTION VI

6.0 POTENTIAL AREAS OF INVESTMENT:

6.1 AGRICULTURE:

6.1.1 Arable Land:

Future prospects of agriculture will depend on further development of arable land. The arable land in the region is more than 2,472,860 ha., but only about 552,128 ha. (22% of arable land) is under cultivation, implying that about 1,920,732 ha. (78% of arable land) could be put to better use i.e. cultivated.

Table VI-1 highlights unexploited arable land and recommends potential crops for investment in each District.

TABLE VI-1: UNEXPLOITED ARABLE AND RECOMMENDED CROPS FOR INVESTMENT:

District	Area	Arable Land (Ha.)	Land Under Cultivation	Unexploited Land (Ha.)	Recommended Crops
Arumeru	289,600	56,084	55,400	684	Maize, beans, coffee, flowers, barley.
Arusha	8,250	6,623	6,307	316	Flowers, coffee, vegetable.

Babati	496,900	180,000	111,839	68,161	Maize, beans, pigeon peas, sunflower, groundnut, paddy, cotton.
Hanang	443,600	274,883	78,000	137,000	Wheat, pigeon peas, sunflower, maize and beans.
Karatu	330,000	96,000	NA	NA	
Mbulu	435,200	192,800	97,652	95,148	Barley, coffee, wheat, maize, beans, potatoes.
Monduli	1,420,100	247,588	90,680	156,908	Wheat, barley, paddy, sunflower, maize, beans, and coffee.
Kiteto	1,630,500	380,000	40,000	340,000	Maize, beans, finger, millets.
Simanjiro	1,885,100	420,000	30,000	390,000	Maize, beans, millet and paddy.
Ngorongoro	1,403,600	50,000	10,250	39,750	Barley, maize, beans, cassava, millets.

*Not Stated	-	596,765	-	596,765	
Total	8,242,850	2,472,860	552,128	1,824,732	

Source: Compiled from district Development Plans, Arusha, 1997.

6.1.2 Irrigation:

The irrigable land in the region is more than 60,000 ha. The current area under irrigation is only about 38,000 ha. (63%), leaving more than 22,000 ha. (37%) unexploited. Table VI-2 indicates unexploited irrigable land and recommended potential crops in districts for prospective investors.

TABLE VI-2: UNEXPLOITED IRRIGABLE LAND AND RECOMMENDED CROPS FOR INVESTMENT:

District	Irrigable Land (Ha.)	Land Under Irrigation (Ha.)	Unexploited Irrigable Land (Ha.)	Recommended Crops
Monduli	5,830	1,910	3,920	Maize, beans, paddy, vegetables, banana & finger millet.
Babati	6,724	2,562	4,162	Paddy, vegetables, sugarcane, beans, sunflower, peageon peas, maize, coffee.
Simanjiro	5,095	1,145	3,950	Paddy, maize, beans, sugarcane, banana & vegetables.

Ngorongoro	2,280	790	1,490	Maize, sweet potatoes, finger millet.
Mbulu & Karatu	9,097	1,644	7,435	Maize, beans, paddy, vegetables, sugarcane, banana and potatoes.
Arumeru	22,480	6,960	15,520	Coffee, banana, fruits, vegetables, peageon peas, paddy, maize beans and millets.
Not Stated	8,512	22,989	-	-
Total	60,000	38,000	22,000	-
%	100.0	63	37	-

Source: Regional Agricultural Office, Arusha, 1997.

6.2 LIVESTOCK:

Arusha region has one of the highest number of livestock in the country which includes 1,477,590 cattle, 1,648,474 goats and 722,168 sheep (1994/95 sample census). It is also reported that the region has more than 50,000 improved dairy cattle which is more than 23% of all dairy cattle in the country. Despite of this, the number of livestock sold annually is only about 42,140 cattle (3%) and about 25,532 goats and sheep (1%). This means that the livestock resource is not fully utilized or exploited for development of pastoral people and the region as a whole.

6.2.1 Livestock Infrastructures:

Possible areas of investment might include construction of livestock infrastructure such as dips, health centres, water points, abattoirs etc. As stated earlier the livestock infrastructure is inadequate. Few facilities are available and these are dilapidated. The current government policy is to disengage itself from further construction and running of such services, leaving the private sector to take over. Thus, given such a large number of livestock population in the region, it follows that demand for such services and other veterinary services is high.

6.2.2 Dairy Farming:

Investment in this field is highly recommended for areas such as Arumeru, Arusha, Mbulu, and Babati districts where the climate is conducive and intensive use of land is unsuited for indigenous cattle.

6.3 FORESTRY:

Arusha region has a high rate of depletion of forest resources. The main underlying reasons for this situation is high demand of forest products which are estimated at 4,200,000.m³ of wood per annum, compared to the existing capacity of 2,000,000m³ only.

Thus investments in this sector should be directed to reforestation activities such as tree planting. Individuals, companies, Non-governmental and governmental institutions could take a leading role.

6.4 BEEKEEPING:

It is estimated that there are 30,000 beekeepers in the region owning more than 284,500 traditional hives and 3,200 modern hives. These hives are estimated to produce 1,600 tonnes of honey and 300 tonnes of beeswax.

Arusha region has about 255,500 ha. of forest resources, all over the region. This forest resource area is ideal for beekeeping and current levels of beekeeping activities leave a lot of potential for further beekeeping development in the region. Individuals particularly youth, women and are hereby challenged to venture into the beekeeping industry either individually or as groups with the support ideally of NGOs.

6.5 INDUSTRIES:

Industry is a very important sector in the economy. It is the foreign exchange earner of the future. Also domestically manufactured goods substitute for imported goods and in turn save foreign

exchange that would have otherwise been used to import the same goods. The industrial sector could also be the main source of employment especially in the urban areas. For example in Arusha there are about 69 large and medium scale industries which employ more than 9,653 people in and around Arusha town. In addition the region has about 247 small scale industries. The sector also facilitates the development of other sectors of economy through supply demand relationships.

6.5.1 **Climate for Industrial Investment in Arusha Region:**

(a) **Infrastructure Availability:**

The headquarters of the region is linked with the neighboring country Kenya by a good tarmaced road. It is also linked with Kilimanjaro region, Monduli and Babati districts by tarmaced roads. Other infrastructures include KIA and Arusha airports, electricity, telecommunication etc.

(b) **Resources Availability:**

The region is endowed with a diversity of natural resource including: minerals, forests, wildlife, agricultural products, livestock products etc., which can be the source of raw materials for both large, medium and small scale industries.

(c) **Availability of Markets:**

Given that there is improved/modern technology that would produce goods of standard quality then such products can compete in both local and foreign markets.

(d) **Political Stability:**

The prevailing peace and security in Arusha and Tanzania as a whole creates a good environment for industrial investments in the region.

(e) **Government Attitude and Tax System:**

The current government policy on industries encourage the development of private, industrial enterprises. Tax exemptions and tax holidays are offered to investors. Moreover, the tax system is currently under review to encourage more investments.

(f) **Linkages with other Sectors:**

The industrial sector has strong backward and forward linkages with other sectors through demand and supply relationships. For example, agriculture and livestock sectors provides raw material to textiles, food industries, leather, animal food processing, breweries and canning industries. On the other hand, industrial sector supplies its products. Such as agricultural inputs, tools, machines, clothing material, processed food etc. to other sectors.

6.5.2 **Agro-Processing:**

Basied on the data on crops currently produced in the region and existing potential for the production of even more crops is very high. Investment opportunities exist agro-processing especially in the following:

- (a) Oil milling industries - from sunflower, groundnut and cotton
- (b) Human food processing industries - maize and wheat milling
- (c) Animal food processing industries - from maize waste products & from oil milling industries.
- (d) Sugar processing industries - from sugar cane.

6.5.3 **Processing of Livestock Products:**

This include processing of livestock products such as milk processing, leather tanning and meat canning.

6.6 **MINING:**

Section 2.3.8 shows the wide variety of minerals available in the region. They range from gemstones to industrial minerals and others such as meerschaum, salt, bentonite, carbonates and magnesite. Yet the technology and hence the level of exploitation is very low. The infrastructure exists for favourable investment by the large scale miner. The favourable infrastructure included appropriate laws and favourable tax regimes.

6.7 **WILDLIFE AND TOURISM:**

Arusha region is endowed with many and fairly large wildlife conservation areas which support a diversity of wild animal species. These include Ngorongoro Conservation Area, National Parks such as Manyara, Tarangire, Arusha (Momela) and part of Serengeti National Park. Moreover, there are more than 13 Game controlled areas in the region.

Furthermore, Olduvai Gorge is the site of most important fossil hominid finds of all time the "Nutcracker Man" who lived about 175 million years ago. The gorge is a treasure trove of archeological sites.

Not only that but also Arusha Town is well established, as a tourist capital of the Northern Tourist Circuit, with impressive facilities such as a fully equipped conference centre, hotels with over 2,000 beds, and an International Airport (KIA). Apart from that, Arusha Town also offers challenging Mount Meru climbing, boating on Lake Duluti, museums, snake parks, shopping in curio shops etc.

All these attractions and resources form investment opportunities in various areas, such as: tour operation, camping sites, establishment, operation of tourist hotels, curio shops, tourist and local hunting, animal and lizards capturing etc.

6.8 ECONOMIC INFRASTRUCTURE:

(a) Roads:

Much has still to be done to bring many roads especially in the countryside to satisfactory levels of competence. Roads need upgrading, from gravel to tarmac and from earth to gravel. This is necessary if the momentum to develop the region's agriculture, tourism and industrial bases is to be maintained. Investors are welcome.

(b) Electricity:

The demand for electricity in the region by far exceeds the supply. The over dependency of Arusha people on fuel wood for domestic energy is a clear indication of this shortage. If the region's forests are to be saved then more and yet more people have to have access to electricity. Yet there is not enough electricity to go round. Investors are encouraged to explore this area for commercial or bilateral/multilateral investment.

6.9 EDUCATION:

It is government policy to involve the private sector as much as possible in the delivery of education from the elementary level to the highest. Already the secondary school level has seen some privatisation. Investment by the small to medium investor can be in the establishment and running of pre-schools and primary schools. Vocational training to prepare youths for self employment is desperately needed. Assistance in the form of materials and educational supplies would also be welcome.

6.10 HEALTH:

Like education, the health sector needs privatisation. Health services in rural areas and town areas are in great demand. Investment in drug stores, dispensaries, health centres and hospitals is open to individuals, non-governmental organisation, private companies and others. Investment in equipment, drugs, and training would also go a long way in improving the sector.

6.11 WATER:

This utility has stagnated the development of rural areas of Arusha region. Areas that could be settled or opened to livestock grazing are undeveloped for lack of water supplies. Yet this sector lends itself very well to the small and the large investor. The small investor could finance a shallow well at minimum cost. Every bit helps. The larger investor can take on deep boreholes and piped systems.

6.12 ENVIRONMENTAL CONSERVATION:

Arusha has a very fragile environment due to minimal rainfall and poor soil cover. The presence of large herds of livestock and/or wildlife regardless of land carrying capacity limitations threatens to destroy this environment and usher in the desert. Environmental studies and follow up action could be financed by well wishers to the advantage of the region and indeed of all humanity. Areas of study are:

- (a) The NEW (north-east-west) triangle focusing on the driest points in Monduli, Simanjiro and Mang'ola (Karatu) with a view to controlling desertification.
- (b) Traditional migration routes for maximum utilization of water and grazing and the establishment of livestock corridors in cultivation areas.
- (c) Strategic distribution of water supply facilities for livestock.
- (d) Industrial pollution
- (e) Pollution by agricultural chemicals.

ANNEX A

ARUSHA REGION IN A NUTSHELL

1.0 **GENERAL:**

1.1 **Location:**

Northern Tanzania. Between longitudes 35° and 38° east latitudes 2° and 6° south.

1.2 **Land Frontiers:**

North - Republic of Kenya.

East - Kilimanjaro and Tanga regions

South - Dodoma region

West - Singida, Shinyanga and Mara regions.

1.3 **Land Area:**

Total is 82,428.5 sq. kms. of which 3,571 sq. kms. or 4.3 percent is water bodies. The largest region of Tanzania occupying 9.2 percent of Tanzania Mainland. The land area is 78,857.5 sq. kms.

1.4 **Administrative Units:**

Ten districts of Arumeru, Arusha, Babati, Hanang, Karatu, Mbulu, Kiteto, Monduli, Ngorongoro and Simanjiro. 44 divisions; 177 wards and 542 villages.

1.5 **Population:**

(a) Total

1967 Census:	610,474
1978 Census:	973,254
1988 Census:	1,348,170
1996 Projection:	1,819,180
1998 Projection:	1,963,200
2000 A.D. "	2,120,189

(b) Characteristics 1988 Census

Growth rate 1978/88:	3.82%
Sex ratio:	102
Population density:	16.2 per sq. km.
Average household size:	5.4
Net Lifetime migration:	141,724
Urbanisation (1996):	15.6%.

(c) Ethnicity:

Major groups: Iraqw, Arusha, Maasai, Meru, Barbaig.

Minor groups: Sanjo, Gorowa, Rangi, Chaga, Pare, Nguu, Hadzabe, Ndorobo.

(d) Climate:

Temperatures average 24°C in lowlands and 21°C in highlands.

Rainfall: Monomodal and bimodal. Ranging from 1,200 mms. per annum to below 400 mms.

(e) **Agro-economic Zones:**

- (i) **Banana Coffee Zone:** Over 1000 mms rainfall per year. Very high population density. Crops mainly coffee, bananas, flowers, dairy farming. Areas of Arusha and Arumeru districts.
- (ii) **Rift Valley Highland Zone:** 800 to 1000 mms. of average rainfall annually. Moderately high population density. Crops mainly maize, wheat, barley, legumes and some coffee. Dairy and traditional livestock keeping. Mainly the districts of Mbulu, Karatu, Babati, Hanang and Ngorongoro.
- (iii) **Maasai Steppes Zone:** Rainfall below 800 mms per year average. Very low population density. Crops mainly maize and legumes. Traditional livestock keeping. The districts of Monduli, Kiteto, Simanjiro and Ngorongoro.

2.0 **ECONOMIC INFRASTRUCTURE:**

2.1 **Roads:**

8866 kms of roads made up of 345 kms tarmac, 2229 kms. gravel and 6292 kms earth surface.

Road density: 0.11 kms of road per sq. km of land.

Road quality: generally passable.

2.2 **Railway Services:**

One railway link to Moshi and hence to Dar-es-Salaam and Tanga.

2.3 **Air Transport:**

One international airport (Kilimanjaro International Airport). One aerodrome for medium aircraft and 29 air strips.

2.4 **Telecommunications:**

6,163 telephone lines

145 telex lines

300 telefax lines

17 full post offices and 17 sub post offices.

2.5 **Electricity:**

National Grid electricity to Arusha, Arumeru, Monduli, Katesh and Hydrom (Mbulu). Separate generator at Babati: Supply exceeds demand in these centres.

3.0 **BASIC SOCIAL FACILITIES:**

3.1 **Health Facilities (1996)**

Hospitals: 15 (7 private)

Health Centres: 13 (all public)

Dispensaries: 333 (205 private)

MCH Clinics: 216 (all public)

3.2 **Education Facilities (1996):**

Pre Schools:

Teachers	156
Enrolment	7,170

Primary Schools:

Number	608
Teachers	6,299
Enrolment	256,054

Secondary Schools (1995):

Number	50 (29 private)
Teacher	673
Enrolment	9,337.

3.3 **Water Supply facilities (1995):**

Dams	-	77
Charcos	-	13
Lakes	-	10
Boreholes with hand pump	-	18
Shallow wells with hand pump	-	131
Borehole piped schemes	-	60
Surface water piped schemes	-	83 spring sources
	-	42 river sources.

4.0 **PRODUCTIVE SECTOR FACILITIES:**

4.1 **Agriculture (1997):**

2,472,940	Ha. arable land.
520,130	Ha. under cultivation.
59,466	Ha. irrigable land.
38,000	Ha. irrigable land exploited.

4.2 Livestock:

(a) Livestock Units

	1978	1984	1994/95 (Est.)
All Cattle:	2,067,206	1,855,880	1,477,589
All Goats:	1,495,967	1,231,014	1,648,473
All Sheep:	1,057,386	758,467	722,168
Donkeys	N.A.	107,768	102,472
Pigs	N.A.	55,223	15,974

(b) Improved Livestock:

	1978	1984	1993/94 (Est.)
Dairy Cattle	N.A	26,820	36,421
Beef Cattle	N.A	16,712	13,196
Total Cattle	40,914	43,532	49,617
Goats	374	N.A	N.A
Sheep	687	N.A	N.A

(c) Livestock Facilities (1997)

	Total	Working
Dips	262	8
Health Centres	74	74
Markets	60	60
Abattoirs	9	9
Hidesheds	146	146
Crushes	192	192
Slaughter Slabs	148	148

	Dams & Charcos	104	104
4.3	Forestry (1997):		
	Total Forest land		2,555 sq. kms.
	Total Forest Reserves		133,444.5 Ha.
	Total wood capacity	2,000,000	cu. meters per year.
4.4	Beekeeping (1997):		
	Traditional beehives	284,500	
	Modern beehives	3,200	
4.5	Fishery (1997):		
	Fishing Vessels	5,461	
	Fishing dams		5
4.6	Wildlife:		
	National Parks		4
	Game Controlled Area		13
	Hunting Blocks	18	
4.7	Industry:		
	Large Scale industries		15
	Medium size industries	54	
	Small scale industries		247
4.8	Mining:		

- (a) Gemstones: Tanzanite, ruby, garnet, emerald, aquamarine, almadate, amethyst etc.
- (b) Industrial minerals: Phosphate, graphite, sodium carbonate.
- (c) Others: salt, meerschaum, bentonite, carbonate, magnesite etc.

5.0 **SELECTED SOCIAL/ECONOMIC DEVELOPMENT INDICATORS (1996):**

5.1 **Primary Education:**

Average area per school (sq. kms.)	=	137
Population per school	=	2,992
Pupils per 1000 population (1995)	=	139
Gross Enrolment Rate (%) (1995)	=	65
Pupils per school	=	427
Population sex ratio 1988	=	102
Total Enrolment sex ratio	=	108
Std I Enrolment sex ratio	=	98
Pupils per classroom	=	80
Pupils per Teacher	=	41
Pupils per stream	=	40
% shortage of teachers to requirements	=	14
% shortage of teacher houses to requirements	=	69
% shortage of school toilets to requirements	=	72
% shortage of classrooms to requirements	=	41

5.2 **Secondary Education:**

Population per school	=	36,384
Pupils per 10,000 people		
"O" level	=	50
"A" level	=	1.2
Pupils per teacher		
Public Schools	=	N.A
Private Schools	=	14

5.3 **Adult Literacy:**

1967	=	26%
1978	=	41.9%
1988	=	58.1%

5.4 **Health:**

(a) Facilities:		
Population per hospital	=	116,680
Population per dispensary	=	5,256
Population per hospital bed	=	457
Population per facility	=	4,848
Facilities per 10,000 people	=	2.1
Land area per dispensary	=	251 sq.kms.
Land area per facility	=	231 sq.kms.

(b) Services:		
Under One Child Immunisation Coverage		
BCG (0-2 yrs)	=	94%
DPT3	=	88%
Polio3	=	86%
Measles	=	79%

Prospective mothers

Two or more T.T. Vaccinations = 22%.

(c) Basic Indicators

Infant Mortality Rate (IMR)

1978 - 108

1988 - 75

1995 (Est) 52

Underfive Mortality Rate (U5MR)

1978 - 179

1988 - 119

1995 (Est) 78

	Urban	Rural	
IMR	72	76	(1988)
U5MR	114	120	(1988)

Maternal Mortality Rate (MMB)

1992 - 102

1993 - 158

1994 - 114

1995 - 159

Life Expectancy

1978 Average - 50

1988 Male - 57

1988 Female - 58

1988 Average - 57

Acquired Immunity Deficiency Syndrome (AIDS)

Rate of AIDS per 10,000 population (1996) - 153

5.5. **Water Supplies**

Water supply Population Copverage (1996)

Rural Areas	-	41.6%
Urban Areas	-	Variable from 28% to 100%.

5.6. Sanitation

Popullation covered with toilet facilities

1993	-	87.5%
1994	-	70.7%

5.7 Regional Economy

a) Regional GDP at Current Prices (Million)

TShs		
1980	-	2,704
1985	-	6,892
1990	-	58,657
1994	-	145,192

b) Regional GDP per capita at Current prices

	Tshs	US \$
1980	2,709	330
1985	5,736	348
1990	41,131	209
1994	91,028	165

6.0 OTHER ISSUES

Tourist Attractions (Major)

- Serengeti national Park

- Ngorongoro Crater (N.C.A)
- Lake Manyara National park
- Mount Meru national Park

ANNEX B

ARUMERU DISTRICT

1.0 GENERAL

- 1.1 Land - 2,896 sq kms
- 3.5% of regional land area

1.2 Administrative Units

Divisions	-	6
Wards	-	37
Village	-	133

1.3 Population

a) Population 1988 Census:

Total	-	321,604
Sex Ration	-	98
Growth rate (78/88)	-	3.06%
Population density	-	111.1 per sq km
% of regional total	-	23.8
Household size	-	5.3
urbanisation (1966)	-	6%

b) Population Projections

	1995 A.D.	2000 A.D.
Total	396,936	461,386
density per sq km)	137.1	159.3

Growth rate % (1988/2000)	3.0	3.0
---------------------------	-----	-----

c)	<u>Other Census</u>		
		<u>1967</u>	<u>1978</u>
	Total	167,854	238,020
	Density (per sq km)	58	82
	Growth rate % (67/78)	-	3.23

2.0 Economic Infrastructure

2.1 Roads

Tarmac -	125 kms
Gravel -	239 kms
Earth -	<u>674 kms</u>
Total	1,038 kms
Road density -	0.36 kms/km ²

2.2 Telecommunications

Telephone lines -	321
Full Post Offices	- 2
Sub-Post offices	- 8

2.3 Electricity

Demand -	3,432 MWHs
Supply -	4,015 MWHs
Number of households supplied	1,718

3.0 Basic Social facilities (1996)

3.1 Health

Hospitals	- 3 (2 private)
-----------	-----------------

Health Centres	-	2 (all public)
Dispensaries	-	51 (24 private)

3.2	<u>Education (Primary)</u>		
	Number	-	148
	Total Enrolment	-	70,832

3.3. Water supply (1995)

a) Rural Areas

Dams	-	4
Lakes	-	1
Hand pumped boreholes		1
Hand pumped shallow wells		1
Borehole piped schemes		6
Springs piped schemes		37
Rivers piped schemes		5

b) Urban Areas (Usa River)

Piped gravity scheme

4.0 Productive Sector Facilities

4.1. Agriculture (1997)

Arable land:	-	56,080 Ha
Under cultivation	-	55,400 Ha
Irrigable land exploited-		6,960 Ha
Irrigable land potential -		15,520 Ha

4.2 Livestock

a) Livestock Units

	1978	1984
All cattle	214,101	180,920
All Goats	214,626	156,804

	All Sheep	219,407	145,699
	Donkeys	N.A.	9,366
b)	Improved Livestock		
		1978	1984
	Dairy cattle	N.A.	24,204
	Beef cattle	N.A.	5,312
	Total	23,353	29,516
c)	Livestock Facilities		
	Dips	-	41 (all not working)
	Health Centres	14	
	Markets	17	(6 Primary)
	Abattoirs	NIL	
	Hidesheds	69	(all Private)
	Crushes	4	
	Slaughter slabs	71	

5.0 **SELECTED SOCIAL/ECONOMIC DEVELOPMENT INDICATORS 1996**

5.1 Primary Education

Average area per school (sq kms)	20
Population per school	2,765
Pupils per 1000 population (1995)	169
Gross Enrolment Rate (%) 1995	67
Pupils per school	479
Std I Enrolment Sex Ratio	99
(Population sex ratio 1988)	96
Pupils per classroom	80
Pupils per teacher	41

% shortage of teachers to requirements	15
% shortage of teachers houses to requirements	84
% shortage of school toilets to requirements	63.2
% shortage of classrooms to requirements	43.3

5.2 Health

Population per dispensary	-	7,783
Population per health facility		7,088
Health facilities per 10,000 people		1.4
Population per hospital/health centre bed		3,308
Land area per dispensary		57 sq kms

5.3 Water and Sanitation

Rural population covered with clean water supplies 48.3%

Population covered with toilet	1993	98.4%
	1994	77.4%

ANNEX C

ARUSHA DISTRICT

1.0 GENERAL

1.1 Land Area

Land	-	82.5 sq kms
	-	0.1% of regional land area

1.2 Administrative Units

Divisions	-	3
Wards	-	15
Villages	-	10

1.3 Population

a) Population 1988 Census

Total	-	132,861
Sex ratio	-	108
Growth rate % p.a (1978/88)		4.50
Population density (Per sq km)		1,632.8
% of regional total		10.0
Household size		4.2
Urbanisation (1996)		80%

b) Population Projection

	1995 A.D	2000 A.D
Total	179,127	220,073
Density (per sq kms)	2,184.5	2,683.8
Growth rate (1988/2000) % p.a	4.10	4.10

c) Other Census

	<u>1967</u>	<u>1978</u>
Total	46,362	85,553
Density (per sq km)	562	1,037
Growth rate (1967/78) % p.a	-	5.87

2.0 Economic Infrastructure

2.1 Roads

Tarmac	-	42 kms
Gravel	-	44
Earth	-	108 kms
Total	-	194 kms

Road density - 2.35 kms/km²

2.2 Railway

Once railway station connecting with Moshi thence to Tanga and Dar es salaam

2.3. Telecommunications

Telephone lines -	5,196
Telexlines	- 144
Telefax lines	- 300
Full Post Offices	- 5
Sub-Post offices	- 3

2.4 Electricity

Demand	-	126,000 MWHs
Supply	-	144,000 MWHs
Number households supplied-	19,246	

Number industries supplied - 33

3.0 **BASIC SOCIAL FACILITIES (1996):**

3.1 **Health:**

Hospitals	=	3 (1 private)
Health centres	=	4 (all public)
Dispensaries	=	72 (69 private)

3.2 **Education (Primary):**

Number	=	23
Total Enrolment	=	29,553

3.3 **Water Supply (1995):**

- (a) Rural Areas
 - Piped schemes = 10

- (b) Urban Areas (Arusha Municipality)
 - Boreholes = 14
 - Olesha - Masua Springs
 - Ngareudaly springs.

4.0 **PRODUCTIVE SECTOR FACILITIES:**

4.1 **Agriculture (1997):**

Arable land:	6,620 Ha.
Under cultivation:	6,310 Ha.
Irrigable land:	N.A.
Irrigable land exploited:	N.A.

4.2 Livestock:

(a) Livestock Units:

	1978	1984
All cattle	59,430	18,982
All goats	6,418	8,234
All sheep	5,839	5,291
Donkeys	N.A	111

(b) Improved Livestock:

	1978	1984
Dairy cattle	N.A	1,309
Beef cattle	N.A	30
Total	726	1,339

(c) Livestock Facilities:

Dips	-	3 (2 not working)
Dams /charcos	-	NIL
Health Centre	- 1	
Livestock Market	-	1 (primary)
Abattoirs	-	1
Hidesheds	-	33 (one government)
Chushes	-	1
Slaughter slabs	-	32

5.0 SELECTED SOCIAL/ECONOMIC DEVELOPMENT INDICATORS (1996):

5.1 Primary Education:

Average area per school (sq. kms) = 4

Population per school	=	8,121
Pupils per 1000 population (1995)	=	158
Gross Emolment Rate (%) (1995)	=	77
Pupils per school	=	1,285
Std I Emolment Sex Ratio	=	102
(Population Sex Ration (1988) =		108
Pupils per classroom	=	77
Pupils per teacher =		37
% Shortage of teachers to requirements =		14
% Shortage of teacher houses to "	=	94
% Shortage of school toilets to "	=	73
% Shortage of classrooms to requirements		23

5.2 **Health:**

Population per dispensary	=	2,488
Population per health facility	=	2,267
Health facilities per 10,000 people	=	4.4
Population per hospital/health centre bed		457
Land area per dispensary	=	1 sq.km.

5.3 **Water and Sanitation:**

Rural population covered with clean water supplies =22.1%

Population covered with toilet facilities

1993 = 98.3%

1994 = 99.2%

ANNEX D

BABATI DISTRICT

1.0 GENERAL

1.1 Land Area:

Land = 4,969 sq. kms.
= 6% of regional land area.

1.2 Administrative Units:

Division = 4
Wards = 21
Villages = 81

1.3 Population:

(a) Population 1988 Census:

Total	=	207,352
Sex Ratio		107
Growth Rate % (1978/88)	=	-
Population Density (Per sq.km.)		41.9
% of regional total	=	15.4
Households size	=	5.3
Urbanization (1966)	=	11%.

(b) Population Projections:

	1995 A.D	2000 A.D
Total	= 261,097	308,109
Density (per sq.km)	52.5	62.0
Growth Rate %		

(1988-2000) 3.30 3.30

(c) **Other Censuses**

	1967	1978
Total =	See Hanang	See Hanang
Density (per sq.km)	"	"
Growth Rate % (1967/78) =	"	"

2.0 **ECONOMIC INFRASTRUCTURE:**

2.1 **Roads:**

Tarmac	=	5 kms
Gravel	=	269 kms.
Earth	=	726 kms.
Total	=	1,000 kms.
Road density	=	0.20 km/km ²

2.2 **Telecommunications:**

Telephone lines	=	168
Telex lines	=	1
Full Post Offices	=	1
Sub Post Offices	=	2

2.3 **Electricity:**

Demand	=	2,145 MWHs
Supply	=	2,342 MWHs
Households supplied	=	970.

3.0 **BASIC SOCIAL FACILITIES (1996):**

3.1 **Health:**

Hospitals	=	2 (1 private)
Health centre	=	1 (public)
Dispensaries	=	40 (25 private)

3.2 **Education (Primary):**

Number of schools	=	105
Total Enrolment	=	40,468

3.3 **Water Supply (1995):**

(a) **Rural Areas:**

Dams	=	2
Charcos		2
Lakes	=	2
Hand pumped boreholes	=	2
Hand pumped shallow wells	=	38
Borehole pipes schemes	=	1
Springs piped schemes	=	9
Rivers piped schemes	=	5

(b) **Urban Areas (Babati):**

Pump piped scheme.

4.0 **PRODUCTIVE SECTOR FACILITIES:**

4.1 **Agriculture (1997)**

Arable land	180,000 Ha
Under Cultivation	111,840 Ha
Irrigable land	4,162 Ha
Irrigable land exploited	2,562 Ha

4.2 **Livestock**

a) **Livestock Units**

	<u>1978</u>	<u>1984</u>
All cattle see Hanang		209,655
All goats see Hanang		133,783
All sheep see Hanang		62,389

Donkeys see Hanang 8,883

b)	Improved Cattle		
		1978*	1984
	Dairy cattle	N.A.	16
	Beef cattle	N.A.	146
	Total	N.A.	162

* See under Hanang.

c)	Livestock Facilities*		
	Dips	-	37 (36 not working)
	Health centres	-	15
	Markets	-	11 (all primary)
	Abattoirs	-	1
	Hidesheds	-	25 (1 government)
	Crushes	-	54
	Slaughter slabs	-	24

* all facilities excluding dips include Hanang district.

5.0 **SELECTED SOCIAL/ECONOMIC DEVELOPMENT INDICATORS (1996)**

5.1 Primary Education

Average area per school (sq kms)	47
Population per school	2,571
Pupils per 1000 population (1995)	149
Gross Enrolment rate (%) (1995)	66
Pupils per school	385
Std I Enrolment Sex Ratio	102
(Population sex Ratio 1988)	105
Pupils per classroom	129
Pupils per teacher	44
% shortage of teachers to requirements	22
% shortage of teacher houses to requirements	31

% shortage of school toilets to requirements	94
% shortage of classrooms to requirements	66

5.2 **Health**

Population per dispensary	6,527
Population per health facility	6,072
Health facilities per 10,000 population	1.6
Population per hospital/health centre bed	1,140
Land area per dispensary	124 sq kms

5.3 **Water and Sanitation**

Rural population covered with clean water supplies	45.9%
Population covered with toilet facilities 1993	- 93.7%
1994	- 79.2%

ANNEX E

HANANG DISTRICT

1.0 GENERAL

1.1 Land Area

Land	-	3,436 sq. kms
	-	5.3% of regional land area

1.2 Administrative Units

Division	-	5
Wards	-	21
Villages	-	53

1.3 Population

a)	Population 1988 Census	
	Total	113,170
	Sex ratio	104
	Growth Rate % (1978/88)	3.43
	Population density	
	(per sq km)	25.5
	% regional total	8.4
	Household size	5.9
	Urbanisation (1996)	4.7%

b) Population Projections

	1995AD	2000AD
Total	142,645	168,328
Density (per sq. km)	32.2	37.9

	Growth Rate % (1988-2000)	3.30	3.30
c)	<u>Other Census*</u>		
		<u>1967</u>	<u>1978</u>
	Total	125,838	229,063
	Density (per sq km)	13.4	24.4
	Growth Rate % (1967/78)	-	5.60

* Hanang includes babati

2.0 Economic Infrastructure

2.1 Roads

Tarmac	-	NIL
Gravel	-	150 KMS
Earth	-=	465 kms
Total	-	615 kms
Road Density	-	0.14 kms/km ²

2.2 **Telecommunications**

Telephone lines	-	75
Full Post offices	-	1
Sub Post Office	-	1

2.3 Electricity

Demand	-	900 KW
Supply	-	2,000 KW
House holds supplied	-	734
Industries supplied	-	1

3.0 **BASIC SOCIAL FACILITIES (1996)**

3.1 Health

Dispensaries	-	26 (16 private)
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Health Centres	-	1 (public)
Hospitals	-	No hospital

3.2	<u>Primary Education</u>		
	Number of schools	-	52
	Total Emolment	-	26,210

3.3 Water Supply (1995)

a)	Rural Areas		
	Dams	-	6
	Lakes	-	3
	Hand pump shallow wells	-	16
	Borehole piped schemes	-	3
	Springs piped schemes	-	3
	Rivers piped schemes	-	3
b)	Urban Areas (Katesh)		
	Gravity piped scheme		

4.0 **PRODUCTIVE SECTOR FACILITIES**

4.1 Agriculture (1997)

Arable land	-	274,880 Ha
Under cultivation	-	78,000 Ha
Irrigable land	-	N.A
Irrigable land exploited	-	N.A

4.2 Livestock

a)	Livestock Units		
		1978*	1984
	All cattle	489,287	194,211
	All goats	303,714	95,291
	All sheep	208,700	42,360
	Donkeys	N.A	16,370

* Includes Babati district

b) Improved cattle

	<u>1978</u>	<u>1984</u>
Dairy cattle	N.A	107
Beef cattle	N.A	5
Total	235	112

* Including Babati

c) Livestock Facilities

Dips	-	39 (all not working)
Charcos	-	4
Other facilities	see Babati	

5.0 **SELECTED SOCIAL/ECONOMIC DEVELOPMENT INDICATORS 1996**

5.1 Primary Education

Average area per school (sq km)	85
Population per school	2,837
Pupils per 1,000 population (1995)	175
Gross Enrolment Rate (%) 1995	56
Pupils per school	504
STD I Enrolment Sex Ratio	125
(Population Sex Ratio (1988)-	103
Pupils per classroom	122
Pupils per teacher	68
% shortage of teachers to requirements	18
% shortage of teacher houses to requirements	76
% shortage of school toilets to requirements	56
% shortage of classrooms to requirements	50

5.2 Health

Population per dispensary	5,486
Population per health facility	5,283
Health facilities per 10,000 population	1.9
Population per hospital/health centre bed	7,132
Land Area per dispensary	171

5.3 Water and Sanitation

Rural Population covered with clean water supplies		21.8%
Population covered with toilet facilities	1993	75.9%
	1994	63.3%

ANNEX F

MBULU/KARATU DISTRICT

1.0 GENERAL

1.1 Land Area

- Land - 3,300 sq kms (new Karatu district)
- 4,352 sq kms (new Mbulu district)
- Karatu district 4.0% of regional land area
- New Mbulu district 5.2% of regional land area.

1.2 Administration Units

- Divisions - 7
- Wards - 29
- Villages - 98

1.3 Population

a) Population 1988 Census

Total	-	267,663
Sex ratio		104
Growth Rate % (78/88)		3.28
Population density		
(per sq km)		35.0
% of regional total		19.8
Household size		6.2
Urbanisation (1996)		9.6%

b) Population Projections

	1995AD	2000AD
Total	332,375	388,291

Density (per sq km)	43.4	50.7
Growth Rate (88/2000)	3.1%	

c) Other Censuses

	1967	1978
Total	163,528	193,267
Density (per sq km)	21.4	25.3
Growth Rate (67/78)	-	1.55%

2.0 ECONOMIC INFRASTRUCTURE

2.1	<u>Roads</u>	Mbulu	Karatu
	Tarmac (kms)	Nil	Nil
	Gravel (kms)	150	103
	Earth (kms)	536	278
	Total (kms)	686	381
	Road Density kms/km ²	0.16	0.12

2.2 Telecommunications

	Mbulu	Karatu
Telephone lines	45	85
Full post Offices	2	1
Sub Post Offices	1	1

2.3 Electricity (Mbulu-Hydom)

Demand	200 KW
Supply	480 KW
Households supplied	103
Industries supplied	1

3.0 BASIC SOCIAL FACILITIES (1996) MBULU/KARATU

3.1	Health	
	Dispensaries -	41 (19 private)
	Health Centres	2 (public)
	Hospitals -	4 (2 private)

3.2 Primary Education

Number of schools	136
Total Enrolment	49,071

3.3 Water Supply (1995)

a) Rural Areas

Dams	-	4
Charcos		1
Lakes	-	3
Hand pump boreholes		7
Hand pump shallow wells		56
Borehole piped schemes		6
Springs piped schemes		6
Rivers piped schemes		10

b) Urban Areas

Mbulu -	Two gravity piped schemes
Karatu -	One gravity piped scheme

4.0 **PRODUCTIVE SECTOR FACILITIES**

4.1 Agriculture (1997)

Arable land -	288,800 Ha
Under cultivation	N.A
Irrigable land	7,435 Ha

Irrigable land exploited 1,644 Ha

4.2 Livestock

a)	Livestock Units 1978	1984	
	All cattle	310,182	328,257
	All Goats	343,989	264,273
	All sheep	167,691	106,982
	Donkeys	N.A	22,136
b)	Improved cattle	1978	1984
	Dairy cattle	N.A	59
	Beef cattle	N.A	172
	Total	1,225	231
c)	Livestock Facilities		
	Dips	-	62 (57 not working)
	Charcos and Dams	5	
	Health centres	17	
	Markets	-	10 (all primary)
	Abattoirs	-	4
	Hidesheds	-	5 (all govt)
	Crushes	-	47
	Slaughter slabs-	9	

5.0 **SELECTED SOCIAL/ECONOMIC DEVELOPMENT INDICATORS 1996**

5.1 Primary Education

Average area for school (sq kms)	56
Population per school	2,522
Pupils per 1,000 population (1995)	140
Gross Enrolment Rate (% 1995)	67
Pupils per school	361
Std I Enrolment Sex Ratio	101

(1988 population Sex Ratio) 104

5.0 **SELECTED SOCIAL/ECONOMIC DEVELOPMENT INDICATORS 1996**

5.1 **Primary Education**

Average area for school (sq kms)		56	
Population per school		2,522	Pupils
per 1,000 population (1995)	140		
Gross Enrolment Rate (%) 1995		67	
Pupils per school		361	
Std I Enrolment Sex Ratio		101	
(1988 Population Sex ratio)		104	
Pupils per classroom		61	Pupils
per teacher	40		
% shortage of teachers to requirements	6		
% shortage of teacher houses to requirements		52	
% shortage of school toilets to requirements		66	
% shortage of classrooms to requirements		15	

5.2 **Health**

Population per dispensary		8107
Population per health facility		7072
Health facilities per 10,000 population	1.4	
Population per hospital/health centre bed		629
Land area per dispensary		187 sq kms

5.3 **Water and Sanitation**

Rural population covered with clean water supplies		54.7%
Population covered with toilet facilities	1993	99.7%
	1994	73.6%

ANNEX G

MONDULI DISTRICT

1.0 GENERAL

1.1 Land Area

Land	-	14,201 sq kms
	-	17.0% of regional area.

1.2 Administrative Units

Divisions	-	3
Wards	-	14
Villages	-	49

1.3 Population

a) Population 1988 Census

Total		108,964
Sex Ratio		100
Growth Rate (78/88)		4.13%
Density (per sq km)		7.7
% of regional total		8.1
Household size	5.3	
Urbanization (1996)		12.4%

b) Population Projections

	1995AD	2000AD
Total	140,154	167,906
Density (per sq km)	9.9	11.8
Growth Rate (88/2000)	3.60%	3.60%

c) Other Censuses (Including Ngorongoro)

	<u>1967</u>	<u>1978</u>
Total	71854	118,796
Density (per sq km)	5.1	8.4
Growth Rate (67/78)	-	4.68%

2.0 **ECONOMIC INFRASTRUCTURE**

2.1 Roads

Tarmac	-	173 kms
Gravel	-	229 kms
Earth	-	838 kms
Total	-	1260 kms
Road density	-	0.09 kms/km ²

2.2 Telecommunications

Telephone lines	-	132
Full Post Offices	-	3
Sub Post Offices	-	1

2.3 Electricity

Demand	-	1,450 MWHs
Supply	-	1,697 MWHs
Households supplied	-	413

3.0 **BASIC SOCIAL FACILITIES (1996)**

3.1 Health

Dispensaries	-	38 (15 private)
Health Centres	-	2 (public)
Hospitals	-	1 (public)

3.2 Primary Education

Number of schools	-	51
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Total Enrolment - 61,399

3.3 Water Supply (1995)

a)	Rural Areas		
	Dams	-	33
	Charcos	-	10
	Lakes	-	1
	Hand pump boreholes	-	3
	Hand pump shallow wells	-	1
	Borehole piped schemes	-	11
	Spring piped schemes	-	7
	Rivers piped schemes	-	18
b)	Urban Areas (Monduli)		
	Two springs piped scheme		
	Mount Meru piped scheme		

4.0 **PRODUCTIVE SECTOR FACILITIES**

4.1 Agriculture (1997)

Arable land	243,680 Ha
Under cultivation	90,689 Ha
Irrigable land	3,920 ha
Irrigable land exploited	1,910 Ha

4.2 Livestock

a)	Livestock Units		
		1978	1984
	All cattle	334,981	300,639
	All goats	272,376	233,421
	All sheep	187,905	164,893
	Donkeys	N.A	21,074

b)	<u>Improved Cattle</u>		
		1978	1984
	Dairy cattle	N.A	788
	Beef cattle	<u>N.A</u>	<u>12</u>
	Total	15,102	800

c) Livestock Facilities

Dips	-	34 (33 not working)
Dams and charcos	-	70
Livestock markets	-	19 (11 secondary)
Abattoirs	-	2
Hidesheds	-	8 (5 govt)
Crushes	-	25
Slaughter slubs	-	4
Health centres	-	7

5.0 **SELECTED SOCIAL/ECONOMIC DEVELOPMENT INDICATORS 1996**

5.1 Primary Education

Average area per school (sq kms)	278
Population per school	2,851
Pupils per 1000 population (1995)	108
Gross Enrolment Rate (%) 1995	56
Pupil per schools	322
Std I Enrolment Sex Ratio	127
1988 Population Sex Ratio	97
Pupils per teacher	31
Pupils per class	75
% surplus of teachers to requirements	
% shortage of teacher houses to requirements	81

% shortage of school toilets to requirements	73
% shortage of classrooms to requirements	46

5.2 **Health**

Population per dispensary	3688
Population per health facility	3418
Health facilities per 10,000 population	2.9
Population per hospital/health centre bed	1,274
Land area per dispensary	374 sq kms

5.3 Water and Sanitation

Rural Population covered with clean water supplies	48.1%
Population covered with toilet facilities	
	1993 64.2%
	1994 50.0%

ANNEX H

KITETO DISTRICT

1.0 GENERAL

1.1 Land Area

Land	-	16,305 sq kms
	-	19.5 % of regional total

1.2 Administrative Units

Divisions	-	7
Wards	-	14
Villages	-	44

1.3 Population (includes Simanjiro)

a)	Total	-	127,355
	Sex Ratio	-	108
	Growth Rate (78/88)		7.63%
	Density (per sq km)		3.6
	% of regional total	-	9.4
	Household size		5.6
	Urbanization (1996)		6.2%

b) Population projections

	1995AD	2000AD
Total	210,246	302,174
Density (per sq km)	6.0	8.6
Growth Rate (88/2000)	7.2%	7.2%

c)	Other Census	1967	1978
	Total	35,038	61,024
	Density (per sq km)	1.0	1.7
	Growth Rate (67/78)	-	4.98%

2.0 **ECONOMIC INFRASTRUCTURE**

2.1 Roads

Tarmac	-	Nil
Gravel	-	480 kms
Earth	-	1,456 kms
Total	-	1,936 kms
Road density	-	0.12 kms/km ²

2.2 Telecommunications

Telephone lines	-	52
Full Post offices	-	1

3.0 **BASIC SOCIAL FACILITIES 1996**

3.1 Health*

Dispensaries	48 (31 private)
Health Centres	- 1 (public)
Hospitals	- 1 (public)

* Includes Simanjiro

3.2 **Primary Education**

Number of Schools	-	61*
Total Enrolment	-	7465

* Includes Simanjiro

3.3. Water Supply (1995)

a) Rural Areas	
Dams	15
Hand pump shallow wells	2

	Boreholes piped schemes	17
	Springs piped schemes	5
b)	Urban Areas (Kibaya)	
	One spring	
	One borehole.	

4.0 **PRODUCTIVE SECTOR FACILITIES**

4.1 Agriculture 1997

	Arable land	380,000 Ha
	Under cultivation	40,000 ha
	Irrigable land	N.A
	Irrigable land exploited	N.A

4.2 Livestock

a) Livestock Units*

	1978	1984
All cattle	408,321	352,585
All goats	125,108	119,980
All sheep	65,807	74,701
Donkeys	N.A	13,471

* Includes Simanjiro

b) Improved cattle*

	1978	1984
Dairy cattle	Nil	22
Beef cattle	Nil	Nil
Total	Nil	22

* Includes Simanjiro

c) Livestock Facilities

Dips	Nil
------	-----

Dams and charcos	13
* health centres	13
Markets	6
*Abattoirs	1
*Hidesheds	5 (all private)
* CRushes	14
* Slaughter slabs	5
* Includes Simanjiro	

5.0 **SELECTED SOCIAL/ECONOMIC DEVELOPMENT INDICATORS 1996**

5.1 Primary Education

* Average area per school (sq kms)	576
* Population per school	3714
* Pupils per 1000 population (1995)	71
Gross Emolment Rate (%) 1995	62
* Pupils per school	244
Std I Enrolment Sex Ratio	128
Population Sex Ratio	109
Pupils per classroom	
56	
Pupils per teacher	31
% shortage of teachers to requirements	11
% shortage of teacher houses to requirements	72
% shortage of school toilets to requirements	81
% shortage of classrooms to requirements	35
* Includes Simanjiro district	

5.2 Health*

Population per dispensary	4,380
Population per health facility	4,205
Health facilities per 10,000 people	2.4

Population per hospital/health centre bed	1,812
Land area per dispensary	732 sq kms

* Includes Simanjiro district

5.3

Water and Sanitation

Rural population covered with clean water supplies 32.5%

Population covered with toilet facilities 1993	64.5%
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1994	81.9%
------	-------

ANNEX I

SIMANJIRO DISTRICT

1.0 **GENERAL**

1.1 Land Area

Land	-	18,851 sq kms
	-	22.6% of regional area

1.2 Administrative Units

Divisions	-	6
Wards	-	12
Villages	-	43

1.3 Population

See under Kiteto

2.0 **ECONOMIC INFRASTRUCTURE**

2.1 Roads

Tarmac	-	Nil
Gravel	-	250 kms
Earth	-	991 kms
Total	-	1241 kms
Road Density	-	0.07 kms/km ²

2.2 Telecommunications

Telephone lines	-	Nil
Post Offices	-	Nil

3.0 **BASIC SOCIAL FACILITIES 1996**

3.1 Health*

Dispensaries	-	48 (31 private)
Health Centres	-	1 (public)
Hospitals	-	1 (public)

* Includes Kiteto

3.2 Primary Education

Number of school	-	61*
Total Envolment	-	7,450

* Includes Kiteto

3.3 **Water Supply 1995**

a) Rural Areas

Dams	9
Hand pump shallow wells	12
Boreholes piped schemes	10
Springs piped schemes	5
Rivers piped schemes	1

b) Urban Area (Orkesment)

3 boreholes

4.0 **PRODUCTIVE SECTOR FACILITIES**

4.1 Agriculture 1997

Arable land	420,000 ha
Under cultivation	30,000 ha
Irrigable land	3,950 Ha
Irrigable land exploited	1,145 ha

4.2 Livestock

- a) Livestock Units
(see Kiteto)

- b) Improved cattle
(see Kiteto)

- c) Livestock facilities
 - Dips 36 (all not working)
 - Dams and charcos 4
 - Livestock markets 6
 - All other facilities See Kiteto

5.0 **SELECTED SOCIAL ECONOMIC DEVELOPMENT INDICATORS 1996**

5.1 **Primary Education**

* Average area per school (sq kms)	576
* Population per school	3,714
* Pupils per 1000 population (1995)	71
Gross Enrolment Rate (%) 1995	59
* Pupils per school	244
Std I Enrolment Sex Ratio	149
1988 Population Sex Ratio	109
Pupils per classroom	66
Pupils per teacher	36
% shortage of teachers to requirements	36
% shortage of teacher houses to requirements	71
% shortage of school toilets to requirements	75
% shortage of classrooms to requirements	50
* Includes Kiteto district	

5.2 **Health***

Population per dispensary	4380
Population per health facility	4205
Health facilities per 10,000 population	2.4
Population per hospital/health centre bed	1,812
Land area per dispensary	732 sq kms
* Includes Kiteto district	

5.3 **Water and Sanitation**

Rural Population covered with clean water supplies	33.9%
Population covered with toilet facilities 1993	64.5%*

	1994	82.8%
* Includes Simanjiro district		

ANNEX J

NGORONGORO DISTRICT

1.0 GENERAL

1.1 Land Area

Land	-	14,036 sq kms
	-	16.8% of regional area

1.2 Administrative Units

Divisions	3
Wards	14
Villages	31

1.3 **Population**

a) Population 1988 Census

Total	69,101
Sex Ratio	93
Growth Rate (78/88)	-
Density (per sq km)	4.9
% of regional total	5.1
Household size	4.9
Urbanisation (1996)	8.8%

b) Population projections

	1995AD	2000AD
Total	87,625	103,924
Density (per sq kms)	6.2	7.4
Growth Rate (88/2000)	3.40%	3.40%

c) Other Censuses

See under Monduli

2.0 **ECONOMIC INFRASTRUCTURE**

2.1 Roads

Tarmac	-	Nil
Gravel	-	315 kms
Earth	-	200 kms
Total	-	515 kms
Road density	-	0.04 km ²

2.2 Telecommunications

Telephone lines -		89
Full Post offices	-	2

3.0 **BASIC SOCIAL FACILITIES 1996**

3.1 Health

Dispensaries	17 (6 private)
Health centres	Nil
Hospitals	1 (private)

3.2 Primary Education

Number of schools	32
Total Enrolment	8607

3.3 **Water Supply 1995**

a) Rural Areas	
Dams	4
Hand pump boreholes	5
Hand pump shallow wells	5
Boreholes piped schemes	6
Springs piped schemes	11

b) Urban Areas (Loliondo/Wasso)

Wasso springs piped water scheme

4.0 **PRODUCTIVE SECTOR FACILITIES**

4.1 Agriculture 1997

Arable land	50,000 Ha
Under cultivation	10,250 Ha
Irrigable land	1,490 ha
Irrigable land exploited	790 ha

4.2 Livestock

a) Livestock Units

	1978	1984
All cattle	234,342	270,631
All goats	229,736	218,728
All sheep	202,037	156,152
Donkeys	N.A	10,357

b) Improved cattle

	1978	1984
Dairy cattle	N.A	315
Bef cattle	N.A	11,035
Total	273	11,350

5.0 **SELECTED SOCIAL ECONOMIC DEVELOPMENT INDICATORS 1996**

5.1 Primary School

Average area per school (sq km)	439
Population per school	2835
Pupils per 1000 population	98
Gross Enrolment Rate (%)	52
Pupils per school	269
STd I Enrolment Sex Ratio	169
(1988 population Sex ratio	92
Pupils per classroom	65
Pupils per teachr	33
% shortage of teachers to requirements	10
% shortage of teacher houses to requirements	69
% shortage of school toilets to requirements	66
% shortage of classrooms to requirements	40

5.2 Health

Population per dispensary	5154
Population per health facility	4868
Health facilities per 10,000 population	2.1
Population per hospital/health centre bed	1168
Land area per dispensary	826 sqkms

5.3 Water and Sanitation

Rural population covered with clean water supplies	32.0%
Population covered with toilet facilities 1993	43.3%
1994	82.8%

ANNEX K

INFORMATION ABOUT TANZANIA

1.1 GENERAL

Location: (29^oE-41^o; 1^oS - 12^oS)

Land Frontiers:

To the North: Kenya and Uganda

To West: Burundi, Rwanda and Zaire

To South: Zambia, Malawi and Mozambique

To East: Indian Ocean

AREA OF MAINLAND

Land area 881,289 Sq.Km.

Water area (Inland) 61,495 Sq.Km.

Tanzania area 942,784 Sq.Km.

TANZANIA MAINLAND AREA BY REGIONS (SQ KM)

Total	942,784		
Arusha	82,428	Morogoro	70,799
Coast	32,407	Mwanza	35,248
Dodoma	41,311	Lindi	66,046
Iringa	58,936	D'Salaam	1,393
Kigoma	45,066	Rukwa	75,240
Kagera	39,627	Ruvuma	66,477
Kilimanjaro	13,309	Shinyanga	50,781
Mara	30,150	Singida	49,341
Mbeya	62,420	Tabora	76,151

Mtwara

16,707

Tanga

26,808

Population

TOTAL POPULATION AND LIFE EXPECTANCY FOR TANZANIA - BY REGIONS, 1967, 1978, 1988, 1996:

REGION	TOTAL POPULATION				LIFE EXP. 1988	
	1967 (No.)	1978 (No.)	1988 ('000)	1996** ('000)	M Yrs	W Yrs
Dodoma	709,380	972,005	1,234.9	1,472.5	57	58
Arusha	610,474	926,223	1,348.4	1,784.0	46	51
Kilimanjaro	652,722	902,437	1,106.0	1,703.5	50	50
Tanga	771,060	1,037,767	1,307.3	1,521.8	45	47
Morogoro	682,700	939,264	1,254.0	1,519.4	44	47
Coast	428,041	516,586	636.5	740.9	44	45
Dar es Salaam	356,286	843,090	1,357.6	1,945.7	47	49
Lindi	419,853	527,624	645.0	744.8	57	62
Mtwara	621,293	771,818	887.4	976.7	46	48
Ruvuma	395,447	561,575	781.4	1,001.3	46	48
Iringa	689,905	925,044	1,206.0	1,472.9	45	48
Mbeya	753,765	1,079,864	1,472.7	1,857.0	45	48
Singida	457,938	613,949	789.9	949.4	44	48
Tabora	502,068	817,907	1,033.8	1,232.6	46	50
Rukwa	276,091	451,897	693.3	954.7	44	47
Kigoma	473,443	648,941	857.8	1,047.6	48	50
Shinyanga	899,468	1,323,535	1,768.6	2,194.83	48	51
Kagera	658,712	1,009,767	1,358.8	1,659.5	54	55
Mwanza	1,055,883	1,443,379	1,874.4	2,270.9	53	54
Mara	544,125	723,827	968.6	1,202.0	48	51
Tanzania Mainland	11,958,654	17,036,499	22,582.4	28,252.2	49	51
Zanzibar North	56,360	77,017	97.1	119.0	46	47
Zanzibar South	39,087	51,749	70.2	91.8	45	50
Zanzibar Urban	95,047	142,041	208.4	290.4	46	52
Pemba	72,015	106,290	137.4	172.6	46	48
Pemba	92,306	99,014	127.7	160.4	45	50
Zanzibar Is.	354,815	476,111	640.7	834.2	46	49
Tanzania United Rep.	12,313,469	17,512,610	23,223.1	29,086.4	47	50

Note: The projections are based on the national Population Census of 1988, and the calculated growth rates since the 1978 census.

Source: Bureau of Statistics.

Land Use

	(Ha (millions))	Proportion
Small holder cultivation	4.1	5%
Large scale agriculture	1.1	1%
Grazing Land	35.0	39%
Forest and Wood Lands	44.0	50%
Other Lands	4.4	5%
Total	88.6	100%

Arable Land:

Arable Land (Ha) 3,634,000

Lakes

Victoria	34,850 sq km
Tanganyika	13,350 sq km
Nyasa	5,600 sq km
Rukwa	2,850 sq km
Eyasi	1,050 sq km
Natron	900 sq km
Manyara	320 sq km

Mountain summits (metres above sea level)

Kilimanjaro	5,895
Meru	4,566

Climate

(a) Rainfall

Main rain season on the coast is between March and May and the second season is between October and December. Rainfall is well distributed throughout the year but there is a peak during March and May.

Average maximum temperature (degrees centigrade)

	Jan.	Apr.	July	October
Dar es Salaam	31.6	30.1	28.6	31.3
Arusha	28.9	25.3	21.1	27.3
Dodoma	31.4	28.4	26.0	30.2

Average minimum temperature (degrees centigrade)

	Jan.	Apr.	July	October
Dar es Salaam	23.3	22.9	18.3	31.3
Arusha	12.2	16.9	12.6	27.3
Dodoma	19.2	13.5	16.2	30.2

Gross Domestic Product at factor cost (billion Shs.) 1992.

At current price	688.0
At constant prices	32.2
GDP growth rate at 1976 prices 1985-92	3.69%
Per capita	27,355
At current price	27,355
At constant price	1,280

1.2 SOCIAL SERVICES

HEALTH FACILITIES

YEAR	HOSPITALS	RHC	DISPENSARIES
1960	98	22	975
1980	149	239	2,600
1990	173	276	3,014

Education: Enrolment rates 1995 compared with other East Africa countries

COUNTRY	GROSS ENROLLMENT	
	PRIMARY	SECONDARY
KENYA	94	28
UGANDA	76	20
TANZANIA	67	13

1.3 NATIONAL PARKS

National Parks (area in sq km)

PARK	LOCATION AND PARTICULARS
<p>(i) SERENGETI NATIONAL PARK</p>	<p>LOCATION: At the border of Arusha & Mara Region, about 32 km from Arusha town</p> <p>AREA SIZE: 14,763 square km. It is the largest and oldest Park in Tanzania having been established under the British Colony in 1951. It contains the greatest and most spectacular concentration of plain animals left any where in Africa.</p> <p>MAJOR ATTRACTIONS: Wildebeest about 1.7 million, Lions 3,000. About 35 species of animals and 500 species of birds, Buffalos, Chetah, Leopards etc.</p>
<p>(ii) LAKE MANYARA NATIONAL PARK</p>	<p>LOCATION: Some 125 Kilometres South West of Arusha town. It was officially established and gazzetted as a National Park in 1960.</p> <p>AREA: Lake Manyara National Park covers a total area of 320 square kilometres, 230 kilometres constituting Lake Manyara itself.</p> <p>MAJOR ATTRACTIONS: The Rift Valley edge on the West with the vast lake underneath. Natural forest with many natural rivers and springs. Tree-climbing lions, various species of animals plus about 360 species of birds, Elephants, Hippos, Leopards, Baboons etc.</p>
<p>(iii) TARANGIRE NATIONAL PARK</p>	<p>LOCATION: South of Arusha town along the Dodoma Highway. It was established in 1970.</p> <p>AREA: Tarangire National Park covers some 2,600 Square kilometres.</p> <p>MAJOR ATTRACTIONS: Tree climbing pythons, zebra, kongoni, elephant, buffalo, waterbuck, gazettes and oryx.</p>

<p>(iv)ARUSHA NATIONAL PARK (MOMELA)</p>	<p><u>LOCATION:</u> The Park is located between Mount Meru and Mount Kilimanjaro. Formally Ngudoto National Park until 1967. Was commissioned as National Park in 1960.</p> <p><u>AREA:</u> The park covers some 137 square Kilometres.</p> <p><u>MAJOR ATTRACTIONS:</u> Ngurdoto Crater, Lake Momella, Mount Meru and the Natural Momela Forests. There are many species of Animals and birds. The most common being African elephant, colobus and velvet monkey, hippo, duicker and a number of bird species.</p>
<p>(v)KILIMANJARO NATIONAL PARK</p>	<p><u>LOCATION:</u> The Kilimanjaro National Park which derived its name from Mount Kilimanjaro is part and parcel of the Mountain. It was established in 1973.</p> <p><u>AREA:</u> The boundaries of the Park include the natural forest under and around the Mountain. It covers some 760 square Kilometres.</p> <p><u>MAJOR ATTRACTIONS:</u> Mount Kilimanjaro with its three peaks Shira (3,962 metres) Mawenzi and Kibo (5,149 and 5,895 metres respectively) above sea level form the largest part of the Park's attraction. There are also various species of Animals, plants and birds.</p>
<p>(vi)MIKUMI NATIONAL PARK</p>	<p><u>LOCATION:</u> It is situated some 216 km along the Dar - Zambia Highway. It was established in 1964.</p> <p><u>AREA:</u> Mikumi National Park which borders with Africa's largest Game reserve, the Selous is the third biggest National Park after Serengeti and Ruaha National Park and covers 3230 sq km.</p> <p><u>MAJOR ATTRACTIONS:</u> The plains surrounding River Mkata which are rich in flora and fauna are by themselves a wonderful scenarial. The common animals found in the park include zebra, buffalos, elephants, Hippos, lions and Impalas.</p>

<p>(vii)UDZUNGWA NATIONAL PARK</p>	<p><u>LOCATION:</u> This Park is located South of Mikumi National Park along the Mikumi-Ifakara Highway. The Park was established in 1992.</p> <p><u>AREA:</u> The Park which derives its identity from the famous Udzungwa mountain has an area of 1990 square kilometres.</p> <p><u>MAJOR ATTRACTIONS:</u> Its unique species of Fauna and Flora which called for its declaration as a National Park. The Udzungwa Mountains and Forests are a good source of Rivers and springs, one of them being the famous Kilombero River, which constitutes the essential part of the multi-hactoral its total Kilombero Sugar Plantations. Additional attractions: Lions, Buffalos, Giraffes etc.</p>
<p>(viii)RUAHA NATIONAL PARK</p>	<p><u>LOCATION:</u> The name Ruaha, is derived from the Hehe word "Luvaha" meaning a river.</p> <p><u>AREA:</u> Park covers an area of 12,950 square kilometres, the second largest in the country. Ruaha National Park which was established in 1964 is situated some 130 km west of Iringa town.</p> <p><u>MAJOR ATTRACTIONS:</u> The Ruaha River by itself is an attraction, leave alone some hundreds of species of Flora which sorround it. Besides there are a lot of Gocodiles, Hippos, Elephants etc.</p>
<p>(ix) KATAVI NATIONAL PARK*</p>	<p><u>LOCATION:</u> It is located in Mpanda District, Rukwa Region. It was established in 1974.</p> <p><u>AREA:</u> The Katavi National Park which is about 40 kilometres South -East of Mpanda town covers an area of 2,253 square kilometres.</p> <p><u>MAJOR ATTRACTION:</u> Lakes Chala and Chada plus other springs and rivers whose waters feed into lake Rukwa constitute a unique environment. Animals in the park include zebra, sable, eland, leopard, buffalo, lion, antelops etc. Animals like, Buffalos, Elephants, Zebras and BushBucks are a good attraction to visitors.</p>

<p>(x) MAHALE NATIONAL PARK</p>	<p><u>LOCATION</u> Located some 120 south of Kigoma town along the shores of lake Tanganyika, Mahale National Park is yet another attraction in Tanzania's Natural Heritages.</p> <p><u>AREA:</u> Mahale nation Park has about 1,613 square kilometres and was gazzetted in 1948.</p> <p><u>MAJOR ATTRACTIONS:</u>Chimpanzees are a major attraction. Also there is a good number of monkey species including red colobus monkeys. It is estimated that there are 700 Chimpanzees in Mahale and 15 species of monkeys whose habits tally with those of the Chimps.</p>
<p>(xi) GOMBE NATIONAL PARK</p>	<p><u>LOCATION:</u> Gombe National Park is situated 16 km north of Kigoma town in western Tanzania. It is a narrow strip of mountainous country bounded in the east by the eastern rift valley escarpment and by lake Tanganyika in the west</p> <p><u>AREA:</u> Covering some 52 square kilometres. National park, was commssioned in 1968.</p> <p><u>MAJOR ATTRACTIONS:</u>Ever green forests and primates. These include Chimpanzees, Baboons, blue monkey red tails and red colobus.</p>
<p>(xii) RUBONDO NATIONAL PARK</p>	<p><u>LOCATION:</u> The Park which form park of a number of archipelagos in Lake Victoria covers some 240 square Kilometres. it was established in 1977</p> <p><u>MAJOR ATTRACTIONS:</u> The Chimpanzees. But other attractions include, Hippos, Giraffes, and Elephants. the absence of man-eaters such as Lions & Leopards ensures a safe walk in Rubondo Park even some fishing activities with boats under Park wardens are carried out.</p>
<p>(xiii) NGORONGORO</p>	<p><u>LOCATION:</u> It is situated west of Arusha town some 230 kms.</p> <p><u>AREA:</u> The park covers 8320 sq km</p> <p><u>MAJOR ATTRACTION:</u> Wildebeest, Lions, Buffalos, Leopards, Variety of birds species, Giraffes, elephants etc</p>

