This Poverty and Human Development Report 2005 is the third in a series produced by the Research and Analysis Working Group of the Government of Tanzania's Poverty Monitoring System. This monitoring system aims to provide timely, reliable information about poverty levels and trends and the results of analyses of data concerning poverty in Tanzania. This is the first report of the Research and Analysis Working Group since the start of the new National Strategy for Growth and Reduction of Poverty (NSGRP), which translates into " Mkakati wa Kukuza Uchumi na Kupunguza Umasikini Tanzania (MKUKUTA)".

MKUKUTA emphasises the importance of broad-based growth in reducing poverty. Accordingly, this PHDR 2005 reports on analysis of data about smallholder producers and strategies for improving their livelihoods. The report also presents recent information from surveys by the National Bureau of Statistics on agriculture, health and HIV/AIDS and from the population census. Together with data from the earlier household budget survey, these data are the basis for poverty mapping, providing for the first time in Tanzania estimates of household income at the district level. These estimates are mapped and analysed to assess their association with other indicators of well-being. The geographic disparities which are highlighted in this spatial analysis require attention if there is to be equitable access to high quality public services and adequate social protection, which are also goals of MKUKUTA.

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Poverty and Human Development Report 2005

United Republic of Tanzania

Poverty and Human Development Report 2005

PRSP	Poverty Reduction Strategy Paper
PSLE	Primary School Leaving Examination
PSSS	Policy and Service Satisfaction Survey
RAWG	Research and Analysis Working Group
REPOA	Research on Poverty Alleviation
ROA	Ruembe Out-growers Association
SCF	Save the Children Fund
SDC	Swiss Agency for Development and Cooperation
SEDP	Secondary Education Development Programme
SME	Small and Medium–size Enterprise
STI	Sexually Transmitted Infections
TACAIDS	Tanzania Commission for AIDS
TB	Tuberculosis
TCDD	Tanzania Coalition on Debt and Development
TDHS	Tanzania Demographic and Health Survey
TEHIP	Tanzania Essential Health Interventions Project
TGNB	Tanzania Governance Notice Board
THIS	Tanzania HIV Indicator Survey
TNVS	Tanzania National Voucher Scheme
TRCHS	Tanzania Reproductive and Child Health Survey
TRIT	Tea Research Institute of Tanzania
TzPPA	Tanzania Participatory Poverty Assessment
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
URT	United Republic of Tanzania
USAID	United States Agency for International Development
VIP	Ventilated Improved Pit Latrines
WATCO	Wakulima Tea Company
WHO	World Health Organisation
ZEF	Zentrum fur Entwicklungsforschung, Centre for Development Research, University of Bonn

TANZANIA
POVERTY AND HUMAN DEVELOPMENT REPORT 2005

United Republic of Tanzania

POVERTY AND HUMAN DEVELOPMENT REPORT 2005

THE RESEARCH AND ANALYSIS WORKING GROUP

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The report has been edited by Paul Sullivan, who also advised on the layout with Mkuki na Nyota Publishers.

EXECUTIVE SUMMARY

As in the past, this Poverty and Human Development Report 2005 has been prepared under the auspices of the Research and Analysis Working Group of the poverty monitoring system. At the beginning of the fourth phase of Tanzania's Government, the members of the RAWG hope that this report will provide useful material with which to renew efforts for poverty reduction, especially among the poorest of Tanzania's population. Moreover, to do so inclusively, according to the principles of good governance as articulated in MKUKUTA and in the same open spirit in which MKUKUTA itself was developed.

This is the third in a series of Poverty and Human Development Reports. Earlier reports, in 2002 and 2003, provided information about progress towards targets of the first Poverty Reduction Strategy – targets which were similar to the Millennium Development Goals. This 2005 report has been prepared at a time when the PRS itself has been reviewed and revised. The PRS provided a vehicle for increasing public allocations to priority sectors, where education and health featured particularly strongly. The new strategy, the National Strategy for Growth and Reduction of Poverty (NSGRP), MKUKUTA in its Swahili acronym, continues the priority accorded to improving human capabilities and in addition puts emphasis on poverty-reducing growth.

Income poverty reduction and rural growth

GDP growth rates overall, and in agriculture, have increased in recent years, with especially positive growth in 2004 when GDP overall grew by 6.7 per cent and agricultural GDP by 6.0 per cent. The extent to which this growth has reduced poverty is mitigated by changes in inequality and may be affected by international and rural-urban terms of trade. Growth has had a greater impact on poverty reduction in areas where the proportion of households with incomes below the poverty line is lowest, notably in Dar es Salaam. Projections suggest that rural poverty may have been reduced somewhat, but there are uncertainties around data and modelling assumptions.

If MKUKUTA targets are to be met, it is clear that rural poverty reduction needs to be accorded critical priority. Since poverty reduction is sensitive to growth, a strategy must be put in place that ensures high growth for a sustained period of time. This calls for two things to happen. First, agriculture must grow at a sustained rate of at least 6 per cent per annum. Second, growth needs to be broad based and strategies that promote such broad-based growth must be developed and implemented.

Agricultural production has fluctuated around low levels for most food and cash crops. Similarly, productivity has remained low, especially among smallholder farmers who constitute the majority of agricultural producers in Tanzania. The quality of export crops has remained low relative to export crops produced by neighbouring countries. A combination of low production, low productivity and low quality of agricultural produce has significant limiting effects on rural growth and therefore on poverty reduction.

Major factors contributing to this situation include low levels of education and literacy among smallholder farmers, exposure to variable weather conditions, price shocks, limited investments and weak institutional arrangements. These structural problems justify the consideration of alternative institutional arrangements, which would involve smallholders

becoming increasingly better organised - in forms generally referred to as producer associations – and in integrated systems of production, extension services, transportation, processing and marketing. Such an integrated approach could help overcome many of the constraints faced by smallholders by encouraging increased production and productivity, raising prices by increasing the quality of produce and by taking advantage of supply chain linkages and ensuring greater access to productive opportunities.

Producer associations can play a critical role in safeguarding the interests of smallholders. They also provide a vehicle to ensure a steady supply of produce for processing and marketing. Investment in cooperative producers' associations could encourage vertically integrated enterprises of production, processing and marketing, adding value to members' produce. The democratic development of such associations needs to be accelerated under the programme for small and medium-scale enterprises and the Cooperative Reform and Modernisation programme.

There is much the Government can do to encourage the development of such integrated systems. Macroeconomic stability must be sustained, more investment needs to be directed to improving rural infrastructure, action should be taken to reduce the cost of doing business, regulatory mechanisms must be strengthened. Government's own capacity needs to be enhanced to keep up with global changes to help the economy thrive within the international environment in which it is operating.

Improvements in the rural infrastructure are critical – roads, power, communication, water. The development of integrated producer systems will place additional demands on the infrastructure compared with the demands of current systems of production. The more widespread use of cost effective technologies, especially in road improvements and maintenance and in the provision of improved water supplies, will be an important part of a strategy to ensure equitable access.

Households and individuals should be enabled to take full advantage of the emerging opportunities. This is only possible if they are appropriately educated and healthy, and this means that efforts to ensure equitable access to basic social services must be continued and sustained.

Education

The Primary Education Development Programme has raised enrolment rates in primary schools. Attendance rates are lower than enrolment, with little gender differential, though boys tend to be in school at an older age than girls. Children with disabilities are much less likely to be in school than other children. Data from the population census and the household budget survey show little difference in attendance by younger, orphaned children compared to those who are not orphaned. After the age of 9, a slightly smaller proportion of orphaned children is attending school compared with children who have not been orphaned.

Estimates of the retention rate (the proportion of children enrolled in standard 1 who stay through standard 7) and the reported primary school leaving examination pass rates both show improvements in 2004.

Some critical inputs to ensure sustained quality of education lag behind the increasing enrolment. Though the number of classrooms and desks have increased with the higher number of children in school, the ratio of teachers to pupils has not kept pace with increased enrolment. There are large geographic disparities in the pupil/teacher ratio,

most pronounced when qualified teachers are taken into account. Many more teachers are needed so that pupil-teacher ratios are reduced, and continued training and retention of trained teachers is important, so that the proportion of teachers who are qualified continues to increase. More books are needed.

Health, survival, nutrition and HIV/AIDS

Recent data indicate substantial reductions in infant and under-five mortality and more modestly reduced rates of child malnutrition, though the prevalence of stunting in children, 38 per cent, is still very high. Life expectancy at birth, now estimated from the 2002 population census at 51, has changed little since the 1988 census. Maternal mortality is unchanged, and continues to be very high, now estimated to be 578 (per 100,000 live births). More effective prevention and treatment of malaria are likely to be important contributors to improved health, especially in reducing infant and under-five mortality. Immunisation rates have been sustained at a high level.

However, there remain substantial urban-rural, regional and socio-economic differences. Rural poor children are more likely than their urban counterparts to die, and when they survive, they are more likely to be malnourished.

Evidence of changing disparities over time is mixed. In less poor regions/districts and less poor households, rates of stunting in children improved more than in poorer areas, but overall, rural children experienced a reduction in rates of stunting between 1996-2004, while urban children did not. Analysis of infant mortality in the 1990s suggests a widening gap between the poorest and less poor. It is possible that more recent health measures might be helping to redress this.

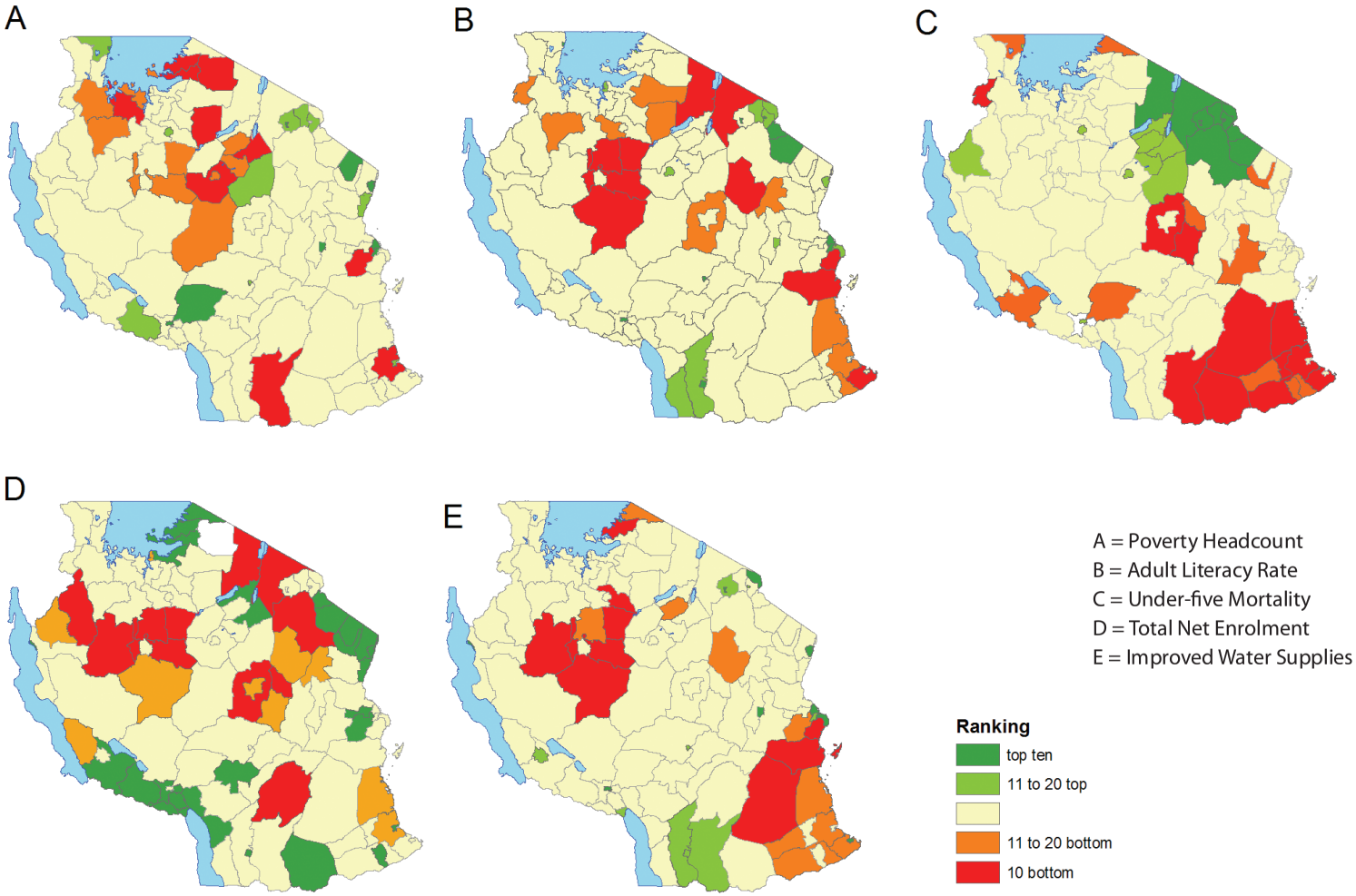
The lack of qualified human resources for health care is a major limiting factor in implementing health policies and reforms. One of the most critical challenges is the availability and effective use of qualified personnel. Strategies need to be put in place to increase effective capacity and performance. The TEHIP experience is useful here. Training and innovative management tools (for building district planning capacity and improving the performance of health workers) have been key in the TEHIP successes to date.

The continuing high rate of child malnutrition, especially in young children, remains a concern, and needs attention, with special focus on very young children and mothers, especially adolescent mothers. The modest improvements in nutritional status which have occurred have likely been the result of improved management of malaria and higher rates of micronutrient supplementation. These need to be complemented by much greater attention to strategies for improved feeding practices for young children.

High rates of maternal mortality need to be reduced. Emergency obstetric care needs to be improved, and access to antenatal care and delivery facilitated, including through improved referral services, especially for poor and rural women.

Newly available information which is nationally representative indicates an HIV prevalence rate in adults of 7 per cent. This implies that about 1 million adults in Tanzania are HIV positive. While this is lower than previous estimates based on ante-natal attendance and blood donors, the prevalence of infection is serious in its own right, in its impact on affected individuals and their families, in the provision of care, both formally organised in the health and welfare systems, and informally provided by members of the household and community. The impact is also felt by the many children who are orphaned, whose numbers will increase rapidly.

Map 2.12 Top and Bottom Districts for Selected Indicators



SOURCE: Household Budget Survey 2000/01, Population Census 2002 and Ministry of Education 2002

Vulnerable children

Overall, the 2002 population census reports that 10 per cent of children under the age of 18 have lost their mother, or their father, or both. In Makete, almost one-quarter of children (24 per cent) have been orphaned, and in 10 more districts, more than 15 per cent of children have been orphaned. Analysis using poverty mapping techniques[1] and data from the population census suggests that household conditions where these children live have a limited impact on years of schooling or on children's working status. These impacts are felt more in urban than rural environments. This is the first analysis of its kind in Tanzania with a national data set, and it now needs to be complemented with more in-depth work in areas most severely affected.

Children living with a disability are significantly deprived of opportunities. They tend to live in poorer areas. Further, their educational performance lags far behind that of physically able children. Census data suggest that the number of disabled children is relatively small, though it is likely that the number is under-reported. Their specific educational needs merit priority attention. Much of the disability reported is physical – loss of capacity in the limbs – and it is expected that future prevalence will be reduced by the sustained high rate of child immunisation against polio. Similarly, trachoma-related loss of vision, most prevalent in the central parts of the country, is likely to be reduced as a result of programmes to provide vitamin A supplementation.

Specific vulnerable groups go largely undetected in most surveys. The small size of these groups makes them statistically invisible, especially in surveys with small sample sizes. Poverty mapping techniques are helpful in these cases. Additional analysis should be undertaken for other groups, such as the elderly, which can be identified from the census information, and it is expected that this will be done soon.

Water and sanitation

Improvements in health and education will result from better access to improved water supplies and sanitation. Less than half of rural households have access to an improved source of drinking water. In seven districts, less than 10 per cent of households have such access. Over 90 per cent of households report having toilet facilities – mostly pit latrines, and it is not possible with available data to know whether they constitute basic sanitation.

Cost effective strategies are needed more quickly to increase access to improved water supplies for rural households and for those in peri-urban areas.

Spatial analysis

There are considerable differences in outcomes among regions and districts and there is some evidence that the unequal outcomes are related to unequal opportunities. Some patterns of relationships are evident, but the general picture is one of variation across geographic areas for the different indicators. This suggests that specific focus may be needed in districts ranking poorly to address the specific issues for which improvements are needed. The accompanying map summarises this information.

[1] The methodology is summarised in the chapter, Spatial Analysis, and in more detail in Kilama and Lindeboom, et al., Where are the Poor in Tanzania, forthcoming.

There are some geographic concentrations of districts which have a more general pattern of relatively poor indicators. Districts with the worst indicators tend to cluster in the same areas, while districts with the best indicators are more scattered, and most of them are located in and around urban centres, except for under-five mortality where districts with relatively low mortality rates are also clustered in the North. Districts in the Southeast have the worst adult literacy rates, under five mortality rates and access to improved water. Districts in Kilimanjaro and Arusha (Arumeru and Arusha districts) stand out with strong indicators.

There are important considerations for policy in addressing such disparities and inequities, especially in those districts which have the poorest indicators. Policies and strategies should contribute to greater investment in human resources of the poorest, to greater and more equal access to public services and information, to improved equality of property rights, and to greater fairness in access to markets.

In a resource constrained environment, there may be difficult budget decisions to be made with respect to measures to increase equitable investments in human resources and access to services. The unit cost of an intervention aimed at poor households is likely to be higher if they live in an isolated area, and therefore it is evident that with an equal per capita budget allocation, fewer people will be reached there.

Areas with many people - urban areas - have the highest poverty density, larger numbers of poor people per square kilometre, even though these areas are not the areas with the highest proportions of their population who are poor. Large districts tend to be sparsely populated, and thus have low poverty density, even though a larger proportion of their inhabitants may be among the poorest – living below the poverty line. Hence a trade-off may be needed between a strategy which reaches a larger number of poor people with lower unit costs and one where more is spent per capita on higher unit-cost services to reach people in isolated areas.

The equitable provision of essential services is important for enhancing the capabilities of otherwise disadvantaged poor people to participate in and benefit from social and economic development. Strengthened local authorities' management is necessary, with greater financing through formula-based allocations and with more equitable deployment of staffing for social services. Stronger co-ordinated efforts to improve economic and social conditions and the provision of essential services would do much to reduce the state of generalised insecurity in which many poor Tanzanians live, and would underpin a strategy for social protection, which is a goal of MKUKUTA.

Recommendations for indicators and monitoring systems

The monitoring of MKUKUTA, building on the progress of the poverty monitoring system, will need to incorporate a broader array of indicators to help assess progress in achieving growth in the rural economy and indicators of governance. A revised monitoring system, with identification of suitable indicators, is expected to be in place early in 2006. Administrative data systems are an indispensable source of information for annual, routine monitoring, and in some sectors they need substantial strengthening. Governance is one of the three clusters of MKUKUTA, and work is in progress within the review of the poverty monitoring system to develop an agreed set of indicators by which the state of governance may be generally assessed and trends reported.

The analysis of trends in income poverty has been hindered by the low frequency with which

estimates of income poverty are available. It is especially troubling that the analysis of any changes in rural poverty rates is still inconclusive. The survey programme of the National Bureau of Statistics includes a household budget survey and an integrated labour force survey in 2005/06. New information will therefore be available from these surveys which will assist in a more complete assessment of changes in households' economic situation and poverty rates. The National Bureau of Statistics is also considering the development of an annual survey of household income and expenditure to provide more regular and timely assessments of trends in income poverty.

More systematic information is needed for tracking and research purposes and for communicating to a wider public - assessing the flow of finances for basic services, the availability of teachers and health staff and other critical inputs, especially books, drugs and medical supplies - so that trends in performance and differences in performance, between boys and girls, between social and economic groups, and geographic differences, are better understood and can be more effectively addressed. More analytic work is needed with the data sets now available from the National Bureau of Statistics to explore socio-economic differences in outcomes. This analytic work should be complemented by greater systematic use of panel studies and information from surveillance sites. Focused facility based surveys could be useful in monitoring the quality of services provided.

The programme of analytic work needs now to give the greatest priority to understanding what might be the most effective strategies for improving broad-based rural growth. Household surveys need to pay greater attention to income generating strategies, household investments in farm and non-farm enterprises and patterns of asset accumulation. Panel surveys would greatly facilitate the understanding of poverty dynamics and patterns of growth.

Additional analytic work is also required to underpin MKUKUTA's commitment to the development of a national framework for social protection, which needs to incorporate measures to strengthen the capacities of individuals, households and communities to minimise their vulnerability, and to provide the necessary support to those who are in a desperate condition. To complement the quantitative analysis of national data sets, more qualitative and locally-specific analysis is needed in those areas of the country where there are especially vulnerable people.

INTRODUCTION

This is the third in a series of Poverty and Human Development reports. Earlier reports, published in 2002 and 2003, provided information about progress towards targets of the first Poverty Reduction Strategy – targets which were similar to the Millennium Development Goals. This report in 2005 has been prepared at a time when the PRS itself has been reviewed and revised. The PRS provided a vehicle for increasing public allocations to priority sectors, where education and health featured particularly strongly. The new strategy, the National Strategy for Growth and Reduction of Poverty (NSGRP), MKUKUTA in its Swahili acronym, puts more emphasis on poverty-reducing growth, and this provides the framework for the Poverty and Human Development Report 2005.

Throughout the report there is concern about equity – about equal opportunities for all to enhance their capabilities. This is a critical aspect of equitable development, as well as being a necessary condition to ensure that everyone may fully participate in and benefit from accelerated economic growth.

Governance is one of the three clusters of MKUKUTA, and work is in progress within the review of the poverty monitoring system to develop an agreed set of indicators by which the state of governance may be generally assessed and trends reported. In this current report, information about aspects of governance has been included in the main sections of the report. Future reports will more specifically address governance by reporting on the indicators which are to be agreed in the revised monitoring system.

The report is structured as earlier reports: the next chapter provides recently available data about the status and trends in indicators of poverty in its many dimensions. Indicators from the PRS of income and non-income poverty are included for continuity of the trend analysis. Wherever data are available, they have been used to provide information about MKUKUTA's targets.

The status chapter also reports on evidence of disparities between urban and rural, between males and females and between households with different levels of income. The usual routine information systems are used, but many interesting new analyses are reported from recently available data sets, especially the Demographic and Health Survey of 2004, the Tanzania HIV Survey of 2003/04, the Population Census, 2002 and the Agricultural Sample Census of 2002/03.

Chapter 2, a spatial analysis, provides for the first time in Tanzania, estimates of income poverty for each district. The methodology by which these estimates are derived – poverty mapping - is summarised here and a fuller methodological report is in process. Maps are included in this chapter, plus an assessment of the relationship of income poverty with other indicators of well-being by district. It is expected that the information in this chapter will be particularly useful for local government planning purposes, in assessing the particular priorities for support of local authorities and in the use of formulae for allocating financing across local authorities.

Because of the increasing attention to strategies to strengthen poverty-reducing growth, Chapter 3 provides an analytical view of promoting rural growth, particularly in small-holder agriculture. The constraints faced by smallholders in their efforts to improve their livelihoods and lessons from promising initiatives are explored here.

A concluding chapter assesses the conclusions of each of the preceding chapters and draws out the most critical lessons and challenges.

The report has been prepared, as in the past, under the auspices of the Research and Analysis Working Group of the poverty monitoring system. At the beginning of the next phase of Tanzania's Government, it is the hope of the members of the RAWG that this report will provide useful material with which to renew efforts for poverty reduction, especially among the poorest of Tanzania's population. Moreover, to do so inclusively, according to the principles of good governance as articulated in MKUKUTA and in the same open spirit in which MKUKUTA itself was developed.

The Research and Analysis Working Group welcomes comments and suggestions about the contents of the Poverty and Human Development Reports, and especially looks forward to suggestions which would be helpful in communicating the information in this report to as wide an audience as possible.

CHAPTER 1: STATUS OF POVERTY

Introduction

This chapter presents data for indicators of the current status of income and non-income poverty, based on operational targets specified in the MKUKUTA, as well as the PRS targets, together with data for past years wherever possible, so that trends may be assessed.

Reporting of poverty indicators in previous Poverty and Human Development Reports has followed a common classification: indicators of income poverty and those of non-income poverty. MKUKUTA is based on three clusters: growth and reduction of income poverty, the quality of life, and social well-being, governance and accountability. This status chapter follows the common classification. The first section is concerned with income poverty, the second with indicators of non-income poverty which are associated with MKUKUTA's cluster 2.

For this year's PHDR, issues of governance are incorporated in the two main sections of the status chapter and in the analytical chapter 3. The revised poverty monitoring system will include specific indicators of governance which will be agreed in the process of revision, and these indicators will be reported in the next PHDR.

Income Poverty[2]

The outcome which MKUKUTA's first cluster aims to achieve is sustained, broad-based and equitable growth. It proposes to achieve this through:

- strategies of sound economic management
- accelerating GDP growth
- improving food availability and accessibility
- reducing income poverty among rural as well as urban households

The emphasis, therefore, is not only on the aggregate growth of the economy as a whole, but on ensuring that this growth is sustained and equitably shared. Inequality matters not only from a social perspective, but also because if unchecked it can jeopardise efforts to ensure that growth reduces poverty.

Table 1 summarises the current data on income poverty indicators. For some indicators - GDP, agriculture and inflation – data are made available on an annual basis. Baselines for employment indicators are from the Integrated Labour Force Survey of 2001. The estimates cited here are from national definitions of unemployment which include those who have been discouraged from looking for work. New estimates will be available from the survey to be undertaken early in 2006. A more extensive list of indicators is expected, as a result of the revision to the monitoring system, fully to incorporate the targets of MKUKUTA.

[2]The normal practice has been followed in estimating poverty which is to use reports of household consumption and match them with established poverty lines. Expenditure patterns tend to be more stable than income and are commonly used as the best indicators of income poverty. The term "income poverty" has been used throughout since it is in more common usage than the more technically correct "consumption poverty."

Table 1. Income poverty indicators, baseline and targets

Indicator	Baseline		Trend				Targets	
	Estimate	Year	2001	2002	2003	2004	PRS 2003	MKUKUTA 2010
% of the population below the basic needs poverty line	36	2000-01					30	19
% of the population below the food poverty line	19	2000-01					15	10
GDP growth rate (%)	4.9	2000	5.7	6.2	5.7	6.7	6	6-8
Agricultural growth rate (%)	3.4	2000	5.5	5.0	4.0	6.0	5	10
Inflation rate (%)	5.9	2000	5.2	4.5	3.5	4.1	4	4
% of working age population not currently employed	13	2000-01						7

Sources: National Bureau of Statistics (2002); Economic Surveys, various

The Household Budget Survey is the main source of estimates of the incidence of income poverty. The results of the last survey, conducted in 2000/01, have been extensively reported by the National Bureau of Statistics and by earlier Poverty and Human Development Reports. In summary, the change in the percentage of households living below the poverty line was small between 1991/92 and 2000/01, with a greater decline in poverty among households in Dar es Salaam than among rural households or those in other urban areas.

At the same time the overall economic growth rate has been accelerating, with especially encouraging growth in agricultural GDP in 2004. After taking account of the population growth rate, per capita economic growth rates are more modest, and not yet sufficient to generate significant poverty reduction.

Current status of Poverty

Both the Poverty and Human Development Reports in 2002 and 2003 assessed the trend of poverty in the 1990s based on the Household Budget Surveys (HBS) of 1991/92 and 2000/01 (RAWG 2002, 2003). These surveys indicate that about 36 per cent of Tanzanians were living below the poverty line in 2000/01; only 3 percentage points less than the 39 per cent estimated in 1991/92. The incidence of poverty in rural areas decreased from 41 to 39 per cent; in Dar es Salaam the decrease was from 28 to 18 percent. Other urban areas, except Dar es Salaam, recorded a small decrease in poverty in the 1990s from 29 to 26 per cent of households. Based on this trend it is only in Dar es Salaam that the target to halve the incidence of poverty by the year 2010 is likely to be reached.

Though poverty declined markedly in Dar es Salaam, the drop in poverty was not sufficient to significantly reduce national poverty rates. This is mainly because Dar es Salaam constitutes a small proportion of the national population (7.4 per cent in 2002). It is obvious in this case that declines in poverty in Dar es Salaam have only a minor effect on national poverty rates. While the decline in poverty in rural households in the 1990s was very small, it accounted for more than half the drop in the national poverty rate. Urban areas accounted for 27 per cent of the reduction in poverty during 1992-2001 (World Bank, 2005). Consequently acceleration in national poverty reduction could more quickly be achieved through an accelerated decline in rural poverty.

Explaining the current level of Poverty

Several factors account for the current level of poverty. We know that growth and inequality are both important in determining poverty reduction. Unlike data on GDP growth, data on income inequality are not available on an annual basis. This section tries to relate current growth and inequality with poverty but with the data limitations in mind. It is based on recent work of the World Bank in Tanzania towards the Country Economic Memorandum, and analysis of Professor M. Wuyts (2005).

Growth

Tanzania experienced weak economic growth in the early 1990s when the growth rate was lower than that of the population. Since the mid 1990s, however, the country experienced higher growth rate, increasing from the average of 4.0 per cent between 1995-1999 to 5.8 per cent between 2000-2004. In 2004 the growth rate was 6.7 per cent, which exceeded the targeted level of an annual increase of 6 per cent. The major challenge the country is facing is how to sustain this growth rate at the same time as ensuring that the benefits of growth are broadly shared.

Table 2. Average annual GDP growth rate, 1990 to 2004

1990-1994	1995-1999	2000-2004
2.5	4.0	5.8

Source: URT 2004, Economic Survey

Much of this growth has been attributed to the macroeconomic reforms which the country adopted in the 1990s, though growth in agriculture still depends critically on weather conditions. Some of the policy reforms include trade and exchange liberalisation, parastatal sector reform, investment promotion, tax reforms, financial sector reforms and civil service reforms. The reforms encouraged private sector participation in the economy. Foreign direct investment has increased tremendously since the end of the 1990s.

With the data which are available, analyses have examined the extent to which recent growth has contributed to poverty reduction, and have assessed possible relationships between growth and poverty reduction. Two elements have been analysed: the components of growth and the poverty elasticity of growth. The analysis of the composition of growth assesses the extent to which incomes from the sectors which are growing faster are affecting rates of poverty where poverty is concentrated. Analysis of the poverty elasticity of growth examines the extent to which poverty is reduced in response to the recent growth rate of the economy, which is in turn related to the composition of growth.

Composition of growth

National estimates of GDP are broken down into nine sectors.[3] The mining sector has recorded the highest rate of growth since 1990. Tourism, manufacturing and construction had relatively lower growth rates in the 1990s but have shown large increases in recent years.

[3]The sectors are agriculture; mining and quarrying; manufacturing; electricity and water; construction; tourism; transport and communication; finance, insurance, real estate & business services; and public administration and other services.

Other sectors of the economy have lower growth rates, averaging less than 5 per cent for the whole period 1990 to 2004.[4]

Agriculture remains by far the sector with the largest share of GDP. Its share averages approximately 50 per cent since 1990. While the mining sector has the highest growth rate, its share of GDP remains one of the lowest because it is growing from a very low base. Tourism and finance, insurance, real estate and business services also have relatively high shares of GDP; other sectors' shares are less than 10 per cent each.

In the analysis of the relationship between growth and poverty reduction, the greatest interest, however, is in the assessment of components of growth between agriculture and non-agriculture. According to the Household Budget Survey, 80 per cent of the poor are rural (NBS, 2002) and 81 per cent of the poor live in households where the main economic activity of the head of household is agriculture. Furthermore, 70 per cent of the employed work in agriculture (ILFS, 2002). Agriculture therefore deserves prominence in the discussion of growth and poverty. Table 3 shows estimates of growth rates in agriculture and other sectors (aggregated into industry and services) from 1990 to 2004.[5]

Table 3. Average annual growth, 1990-2004

Economic activity	Avg. Ann. Growth Rate			Avg. Contr. To Growth		
	1990-94	1995-99	2000-04	1990-94	1995-99	2000-04
Agriculture	3.1%	3.6%	4.8%	1.5%	1.8%	2.3%
Industry	2.0%	5.4%	8.7%	0.3%	0.9%	1.5%
Services	1.9%	3.8%	5.9%	0.7%	1.3%	2.0%
Total GDP (factor cost)	2.5%	4.0%	5.8%	2.5%	4.0%	5.8%

Source: URT 2004, Economic Survey

The growth rate in agriculture since 1995 has been lower than that of the non-agricultural sectors. With an estimated population growth rate of 2.8 per cent, the average per capita growth in agriculture has been only of 0.3 per cent and 0.8 per cent in 1990-94 and 1995-99 respectively. Moreover, while agriculture makes the largest contribution to total growth, its share is falling - from 1.5 per cent out of a total of 2.5 per cent - to 2.3 per cent out of the total 5.8 per cent. Non-agricultural sectors made much smaller contributions to overall growth rates in the early 1990s but their contributions to total growth of GDP are increasing fast. The low rate of agricultural growth is perhaps the main reason why reduction in rural poverty is slow despite the recent high growth rate of the economy as a whole. Significant poverty reduction depends on higher growth in the rural economy, and particularly in the agricultural sector.

Poverty elasticity of growth

The poverty elasticity of growth is a measure of the effect of growth on poverty reduction. The World Bank has recently undertaken an analysis of poverty elasticity of growth under different growth scenarios disaggregated between rural and urban. Table 4 summarises the results of this analysis.

[4]See appendices for details of growth and share of each sector between 1990 and 2004.
[5]See Appendix Table 1 for the detailed disaggregated data.

The estimated poverty elasticities are lower for rural than for urban areas. The same rates of growth cause a smaller reduction in rural poverty rates because poverty is deeper among rural households than among urban households.

Table 4. Poverty elasticities assuming different consumption growth rates

	1% growth	5% growth	10% growth
Rural	-1.3	-1.6	-1.8
Urban	-2.6	-2.0	-2.0

Source: Calculated from HBS 2001

Inequality

While growth increases the size of the cake, inequality leads to its disproportionate distribution. Regardless of the rate of growth achieved overall, a high level of inequality may lead to very little, if any, impact on poverty reduction.

Analysis of the household budget surveys indicates that there has not been a significant increase in inequality in the 1990s. The most commonly used indicator of inequality, the Gini coefficient, increased from 0.34 in 1991/92 to 0.35 in 2000/01.[6] Inequality appears to have increased to a greater extent in urban areas, especially in Dar es Salaam, where the Gini coefficient increased from 0.30 in 1991/92 to 0.36 in 2000/01. Other urban areas, apart from Dar es Salaam, experienced a small increase in the Gini coefficient in the 1990s from 0.35 to 0.36 between the two household budget surveys. On the other hand, the Gini coefficient in rural areas remained unchanged at the level of 0.33.

Compared to other East African countries, Tanzania has a relatively lower level of inequality, with lower values of Gini coefficient, as shown in Table 5 below.

Table 5. Gini coefficients of three East African countries in the 1990s

Country	Gini coefficient	Share of total income	
		Bottom 10%	Top 10%
Kenya (1997)	0.45	1.8	34.9
Tanzania (1993)	0.38	2.8	30.1
Uganda (1999)	0.39	2.6	31.2

Source: World Bank 2001

The least poor 10 per cent of the population in both Kenya and Uganda controls a bigger share of national income than those in Tanzania. At the other end of the income distribution, the poorest 10 per cent of the population in Tanzania controls a bigger share of the national income than their counterparts in Kenya and Uganda.

While measures of income inequality show no significant increase in the 1990s, and Tanzania seems to be more equitable than other East African countries, inequality remains an issue that can have an adverse impact on efforts to reduce poverty.

[6] Gini coefficient measures inequality in the distribution of income. Its value ranges from zero to one, with zero representing perfect equality and one representing perfect inequality.

Decomposition of changes in poverty

Table 6 summarises the results of an analysis of changes in poverty which have taken place during the 1990s, from the date of the household budget survey in 1990/91 and that of 2000/01. The data in the table show the change in poverty rate nationally, in Dar es Salaam, other urban areas and in rural households, and then shows how much of this change is attributable to the effects of growth, how much to changes in inequality, and how much remains to be explained, the residual. [7]

The data in Table 6 show that generally, poverty reduction has been influenced to a greater extent by growth than by changes in inequality[8] or by any residual component. Moreover, growth had a greater impact on poverty reduction in areas where the rate of poverty was lower than in other areas, notably in Dar es Salaam.

Table 6. Decomposition of changes in poverty (%)

	Country level	Dar es Salaam	Other urban	Rural
Poverty 1991	38.6	28.1	28.7	40.8
Poverty 2001	35.4	17.6	26.0	38.7
Change 1991/2001	-3.2	-10.5	-2.7	-2.1
Growth impact	-8.4	-18.4	-6.6	-5.3
Inequality impact	5.5	12.4	4.0	2.7
Residual	-0.2	-4.5	-0.2	0.6

Source: World Bank 2005

The data also show that changes in inequality have adversely affected poverty reduction. The World Bank's analysis for the Country Economic Memorandum (2005) concluded that, whereas in the 1990s growth in Tanzania reduced poverty rates in all areas, changes in inequality mitigated the impact of this growth on poverty reduction. In Dar es Salaam, for example, the report indicates that all income groups benefited from growth, but the non-poor benefited more than proportionally. Had inequality not increased and the rate of growth remained the same, poverty in Dar es Salaam would have dropped an additional 10 percentage points.

Are MKUKUTA's poverty targets likely to be achieved?

Table 1 summarises the targets for various indicators of income poverty. In the case of GDP overall and its sectoral composition, growth rates are estimated on an annual basis. However, information to generate estimates of the incidence of poverty is generally available only on an infrequent basis. Even in countries with a well-established tradition of conducting national household surveys, it is not uncommon to find that surveys of household income and expenditure are 3 to 5 years apart. Projections of poverty rates, therefore, are commonly used in order to provide estimates when there are no direct estimates available from a survey. This section provides information about such projections beyond the 2000/01

[7] For further information on the decomposition of poverty into growth components, inequality components and residual, see Datt and Ravallion (1992)
[8] More discussion on inequality in relation to poverty reduction to follow

data and onwards in order to assess the likelihood that expected economic growth will be sufficient to attain the target of reducing the incidence of poverty by half by 2010.

Poverty projections

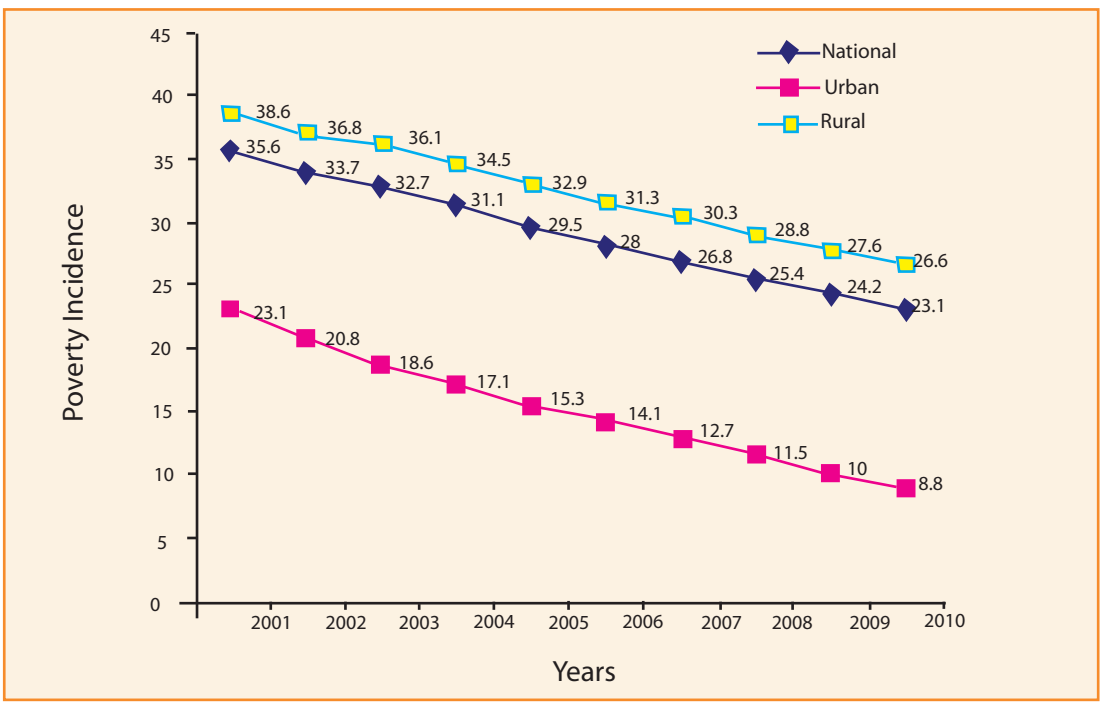
Growth and distribution need to be taken into account to project future rates of poverty. The following simplified assumptions have been made in order to generate the projections for the period of MKUKUTA:[9]

- the growth rate of per capita income (GDP) is used as a proxy for changes in consumption.
- to generate separate projections of rural and urban poverty rates, per capita growth in agricultural GDP and per capita growth in non-agricultural GDP are used as proxies for changes in rural and urban consumption respectively.

Many urban households engage in agricultural production, and many rural households' livelihoods depend on non-agricultural as well as agricultural enterprise. The direct association of rural households with agriculture and urban households with non-agriculture is a simplification, but one which is helpful for this exposition.

Figure 1 presents poverty projections to 2010. The projections have used actual per capita rural (agricultural) and urban (non-agricultural) growth rates for the period 2002 to 2004, available in the Government's Economic Survey. For the period from 2005 through 2010, the average growth rates for the period 2001 to 2004 have been used - per capita rural of 2.2 per cent and urban of 4.4 per cent. [10]

Figure 1. Projected poverty, 2001-2010



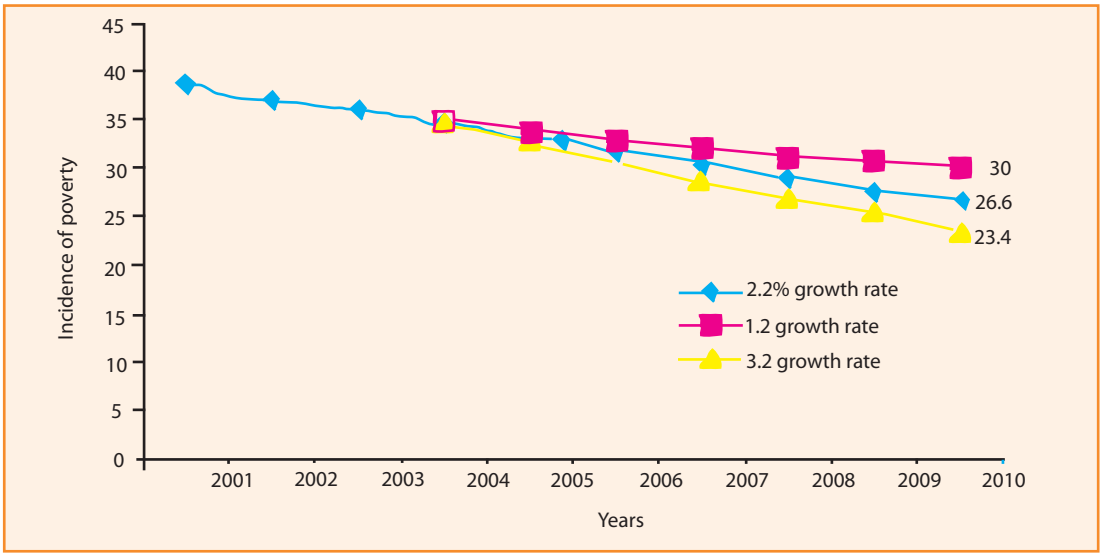
Source: Adapted from Demombynes and Hoogeveen, 2004

[9] Discussion of the uncertainties about this prediction will be discussed below
[10] In computing per capita growth rate an average population growth rate of 2.9 was used

If these growth rates are sustained over the period to 2010, MKUKUTA's aim of halving the incidence of poverty by the year 2010 will not be reached. The overall national poverty rate will be 23 per cent, as opposed to the target of 19 per cent. The disaggregated analysis, however, shows that a separate urban target will be reached. With a sustained urban growth rate of 4.4 per cent per annum, the rate of urban poverty is projected to be 8.8 per cent by 2010, compared with a target of 14 per cent. On the other hand, a continuing rural growth rate of 2.2 per cent per annum will result in a rural poverty rate of 26.6 per cent, compared with a target of 20 per cent.

These projections are based on a number of assumptions. Deviations from the rates of growth which have been projected will lead to different outcomes. For example, a small change in rural growth would lead to a substantial change in the rural poverty rate in 2010. Figure 1.2 shows projected rural poverty rates assuming average agricultural growth of 2.2 per cent, as well as 1.2 per cent and 3.2 per cent for the period 2005 to 2010.

Figure 2. Projected rural poverty with 1% more and less per capita agricultural growth



Source: Adapted from Demombynes and Hoogeveen, 2004

These projections show that with this smaller growth in agriculture, the rural poverty rate declines only to 30 per cent rather than 27 per cent. On the other hand, should agricultural growth be 3.3 per cent per annum, the projected rural poverty rate in 2010 would be 23 per cent, not too far off the target.

Other changes may take place. Migration from rural to urban areas is likely to affect the relative weight of agricultural to non-agricultural production. The likehood that increasing urban migration will lead to reduced overall poverty depends on whether migrants are able to take up higher income opportunities than those they left behind.

The projections are based on per capita growth in GDP in agricultural and non-agricultural sectors, since direct annual estimates of household income and expenditure are difficult and costly to generate. The use of per capita GDP growth as a proxy for changes in household poverty rates assumes that changes in growth mirror the changes in household expenditure. This may not necessarily be the case. If a substantial amount of growth is channelled into savings, for example, the direct relationship which has been assumed may no longer be valid.

Another factor which needs to be taken into account is the likely change in the terms of

trade between Tanzania and the rest of the world, and between agriculture (rural) and non-agricultural (urban) sectors within Tanzania. Prices – and relative prices – are important. GDP growth rates are measured at constant prices and so they do not take into account price changes over time which may differ between urban and rural and between Tanzania and its trading partners.[11] For an open economy such as Tanzania's, international terms of trade determine the extent to which changing earnings from exports result in increased purchasing power, and the consequent reduction in rates of poverty, taking into account the changing costs of imports.

During the 1990s, the composition of Tanzania's exports has changed substantially. Traditional export crops are a much smaller proportion of exports while minerals and tourism constitute a much larger proportion. Export prices for Tanzania's traditional cash crops have fallen over this period too. World market prices have fallen, but it is also possible that prices for Tanzanian exporters may have fallen because of lower quality exports. Both have implications for crop producers, and it is possible that the relative price changes have adversely affected rural households in Tanzania. There may be rising production, as captured in the GDP data, but this may not necessarily be associated with lower rates of rural poverty.

A similar assessment is involved in examining relative changes in poverty between rural (agricultural) and urban (non-agricultural). If their relative purchasing power changes because the relative prices of agricultural produce fall compared to the prices of goods and services provided by urban residents, increased rural production measured by agricultural GDP will not result in reduced poverty.

Conclusions and Recommendations

Summary of progress

GDP growth rates overall, and in agriculture, have increased with especially positive growth in 2004. The extent to which this growth results in reductions in poverty, and especially in reduced rural poverty, is mitigated by changes in inequality and may also be affected by changes in the terms of trade, both internationally and rural-urban.

Policy and operational issues identified

Rural growth is critical in reducing poverty in Tanzania, and growth in smallholder agriculture is most critical. Measures are needed to increase smallholders' productivity, to assist in improving the quality of produce and to command higher prices for their produce by moving up the value chain.

Recommendations for indicators and monitoring systems

The survey programme of the National Bureau of Statistics includes a household budget survey and an integrated labour force survey in 2005/06. New information will therefore be available from these surveys which will assist in a more complete assessment of changes in households' economic situation and poverty rates.

[11] It is only in a closed economy where growth rate of GDP can necessarily lead to poverty reduction after correcting inequality (Wuyts, 2005).

More information about changes in prices and terms of trade might usefully be incorporated into the monitoring system whose revision is under consideration.

Non - Income Poverty

The main operational targets of MKUKUTA concern education and health, nutrition, HIV/AIDS, water and sanitation and social protection. Effective universal access to quality public services is also a goal of cluster 2 in MKUKUTA.

A. EDUCATION

Table 7. Summary of data on education indicators

Indicator %	Year						Targets	
	1997-99	2000	2001	2002	2003	2004	PRS 2003	MKUKUTA 2010
Primary net enrolment ratio Girls Boys	57 58 56	59 60 59	66 66 66	81 79 82	89 87 90	91 90 91	90	99
Primary gross enrolment ratio Girls Boys	78 77 78	78 78 79	85 84 86	99 96 101	105 102 109	106 104 108	100	99
Cohort completing std 4	86 (1997)	86	-	-	84			95
Cohort completing std 7 Girls Boys	69 (1997) 73 76	70 70 69	74 76 71	-	72 72 73			90
Students passing PSLE Girls Boys	20 14 27	22 15 29	29 21 36	27 20 34	40 33 48		50	60 60 60
Enabling environment (primary school) Pupil/teacher ratio Pupil/desk ratio Pupil/classroom ratio			 46 4 80	 54 5 82	 57 5 81	 59 5 73		
Dip. & Grade A primary school teachers Pupil/diploma-grade A teachers			50 93			58 102		
Secondary net enrolment ratio [12] Girls Boys				6 7 6	7 7 6	8 9 7		50
Secondary gross enrolment ratio [13] Girls Boys				10 10 11	10 10 11	12 11 13		
Students passing form IV exams Girls Boys			64 56 71	77 72 81	88			70[14] 70 70
Proportion of 18-25 in higher education (above secondary)	-	-	-	0.5	-	-		
Literacy rate of population aged 15+ Female Male	-	71 64 80	-	69 62 78	-			80 80 80
Literacy rate of population aged 15-24 Female Male	-	82 80 84	-	78 76 81	-			

Sources: MoEC Basic Statistics Education (BSE) (various years); NBS (2002a), HBS 2000-01; NBS (2003), Census 2002.

[12] Secondary net enrolment includes all students who are enrolled in Forms I to IV and aged from 14 to 17 as the numerator, and the population of children aged from 14 to 17 as the denominator.

[13] Secondary gross enrolment uses all students enrolled in Form I to IV (regardless of age) as the numerator, and children aged from 14 to 17 as the denominator

[14] The MKUKUTA target is that at least 70 per cent of girls and boys pass at division I to III

Enrolment in primary education

There has been considerable progress in Tanzanian primary education, in particular in enrolment rates, following the implementation of the Primary Education Development Plan (PEDP) [15] in 2000. Children are entering school at an earlier age and there is an increase in the proportion of children going to school. Gross enrolment ratios went up from 78 in 2000, to 106[16] in 2004, surpassing the 100 PRS target set for 2003. During the same period, net enrolment went up from 59 to 91, achieving the 2003 PRS target of 90. The net enrolment of boys and girls is quite comparable. But there are increasing disparities over the years, with more over-aged boys retained in primary education.

Notwithstanding these remarkable achievements, data in Table 8 suggest that Standard 1 enrolment in 2003 and 2004 fell short of the PEDP targets by almost 20 per cent in 2004. Standard 1 enrolment is expected to stabilise in the long term. All the over-aged children should eventually be enrolled in primary school, leaving only the target group of seven year olds.

Table 8. Standard one enrolment: PEDP target versus actual

Year	PEDP Target enrolment	Actual enrolment	% deviation from target
2002	1,500,000	1,632,141	8.1
2003	1,600,000	1,481,354	-8.0
2004	1,640,969	1,368,315	-19.9

Source: URT 2001:5; URT 2002b:27; URT 2003b:16; URT 2004: 24.

A close scrutiny of the 2002 census data, from reports of children actually attending school, reveals that gross and net attendance ratios[17] in primary schools are lower than the reported gross and net enrolment ratios for the same year: 91 and 68 versus 99 and 81 respectively. The actual attendance of seven years olds was in fact less than 50, peaking to 82 for 11 year olds (see Figure 3 and Appendix Table A.2). These data also suggest a substantial number of over-aged children, in particular boys, in primary schools in 2002. For example, close to three fourths of all 14 year olds and almost a quarter of 17 year olds were still attending primary school according to the 2002 population census.

Further analysis[18] of enrolment figures suggests an over reporting of male and female pupils aged 8 and 9 years. This may have been the result of parents misreporting the age of their children to help ensure their enrolment through the PEDP which imposed much stricter school entry age requirements than had previously been the case (see Appendix Table A.3).

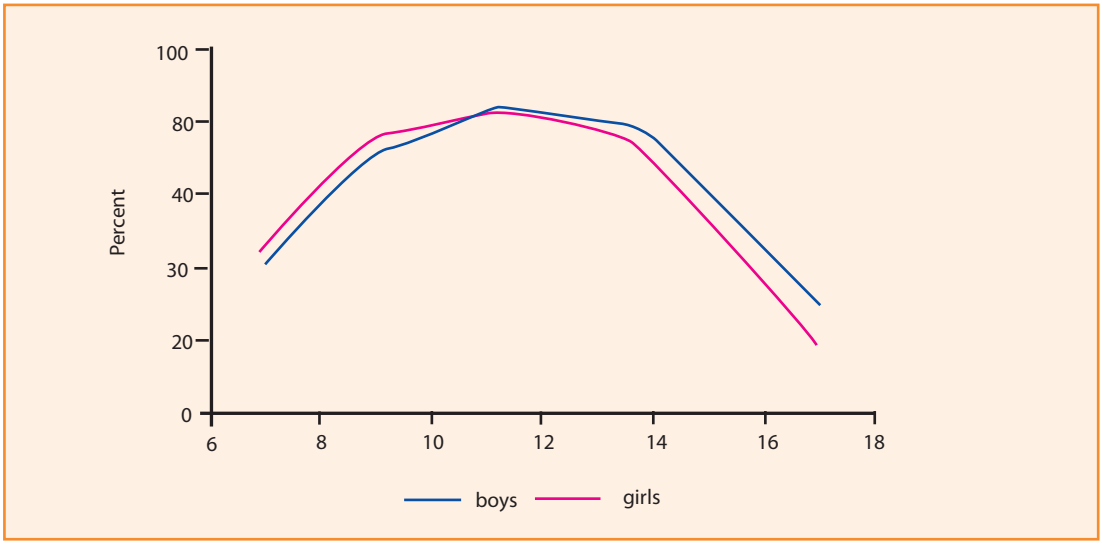
[15] A five year plan to achieve universal basic seven-year education by 2006, nine years ahead of the MDG target; government abolished school fees in primary schools.

[16] Gross enrolment ratios are calculated using all enrolled students as a numerator and children between the ages of 7 to 13 as the denominator. Since the numerator can include numbers of children outside the age range of those in the denominator, ratios can exceed 100. This happens when there are children outside the school going-ages (i.e. 7-13 years) enrolled in primary education.

[17] Attendance ratios refer to children actually going to school. Reported enrolment ratios are based on routine data.

[18] Applying official 2004 MoEC figures of reported net enrolment to 2002 census population projected to year 2004.

Figure 3. Primary school attendance by age, 2002



Source: NBS 2003, Census 2002

According to a rapid appraisal of school attendances in a few schools in Kilombero and Ulanga DSS (Demographic Surveillance Site) villages, for the most part children enrolled in schools attend classes most of the time (Msechu and Mtenga 2005). The 2003 Policy Service Satisfaction Survey (PSSS) found that parents are generally pleased with PEDP, with the abolition of school fees and the resultant expansion of enrolments (REPOA 2003). According to parents, the main achievements of PEDP are improved quality of school buildings (84 per cent), fall in the cost of schooling (73 per cent) and an increase in the number of classrooms (71 per cent). The poor were only slightly more appreciative of the cost reduction than the less poor (79 per cent versus 71 per cent).[19] Preliminary findings of the 2005 Afrobarometer survey suggest that roughly 85 per cent of the respondents believe that the current government is addressing educational needs 'very or fairly well' (REPOA, 2005).

Despite the availability of primary education free of school fees to all children, the cost for keeping a child in primary school can be considerable for a poor family: ranging from roughly TShs 20,000 in Geita to TShs 30-40,000 in Rombo (Ewald et al, 2004). Parents still have to meet some of the costs of primary education through community financing,[20] and in Kilombero and Ulanga this often results in poor attendance of students, especially those coming from poor families (Msechu and Mtenga 2005). As noted by the 2002/03 Tanzania Participatory Poverty Assessment (TzPPA), other factors limiting poor children's access to education include distance to schools, fewer schools and schools of poor quality in areas where the poor live, and having to engage in income generating activities (R&AWG 2004). According to PSSS (2003) findings, over a quarter (28 per cent) of the respondents knew of people who could not afford to send their children to school, a third of the poorest quintile

[19] REPOA (2003), page 21. Question: 'In the last three years, have you noticed any significant changes in the following?' Options: improvement, the same, deterioration, DK. Text figures indicate 'Improvements'.
[20] In the form of cash or labour.

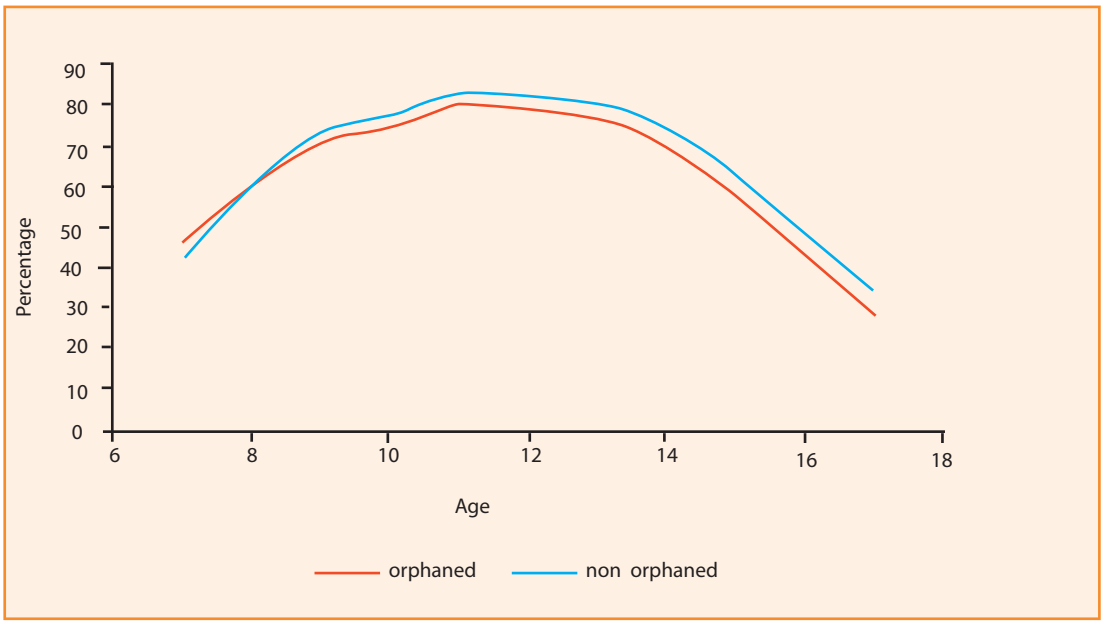
(32 per cent) compared to a quarter of the least poor. It seems therefore that some of the differences in enrolment across income groups evidenced in the pre-PEDP years[21] may well have continued its implementation.

> *"These days we are required to contribute a lot of money for building schools and buying desks and there is no mercy for those who cannot afford. Imagine one family having to pay TShs 20,000 as contribution for building the ward secondary school... and there are still other contributions related to primary schools... the child still needs to wear uniform..."*
>
> (Male focus group discussant, Kilombero Msechu and Mtenga, 2005: 15)

THE MOST VULNERABLE CHILDREN IN PRIMARY AND SECONDARY SCHOOLS

An objective of PEDP is to ensure primary schooling for all disadvantaged children, including orphans and children with disabilities (URT 2001). Figure 4 suggests that at entry age there is not much difference in attendance of orphaned (single and/or double) and non-orphaned children in primary schools. At later ages however, orphans do not fare as well though the differences are small. In contrast, attendance of children with a disability is much poorer than those without a disability in both primary and secondary schools (see Figure 5).

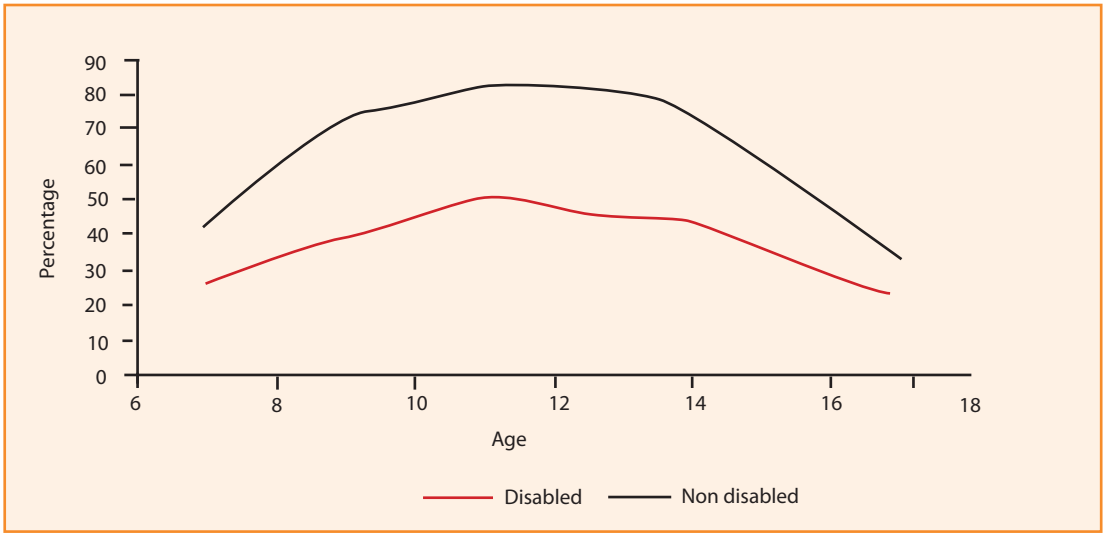
Figure 4. Attendance of orphans in primary/secondary schooling, 2002



Source: NBS (2003), Census 2002

[21] An important finding of the 2000/01 HBS was that attendance of children in the poorest households may have declined over the 1990s. Only 50 per cent of children aged from age 7 to 13 from the poorest households were in school compared to 66 per cent from better off households.

Figure 5. Attendance of children with disabilities in primary/secondary schooling, 2002



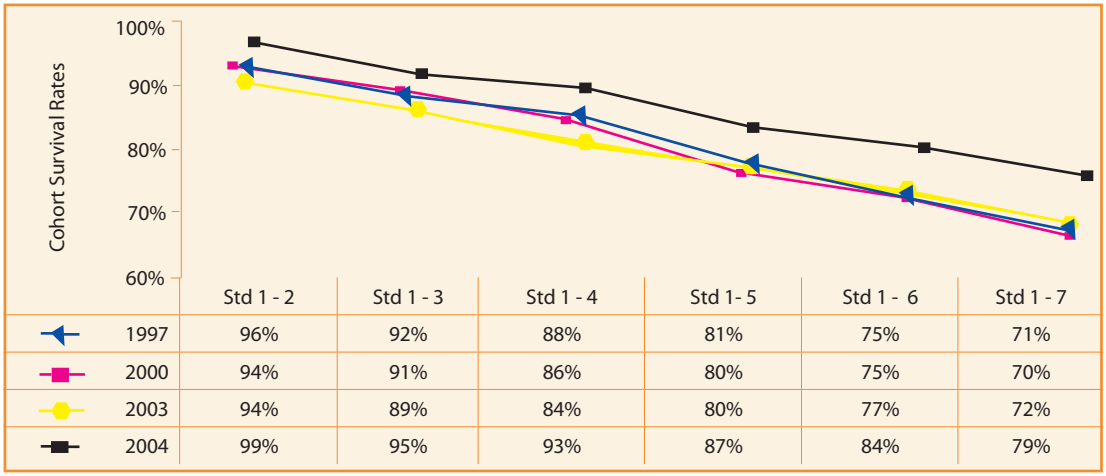
Source: NBS (2003), Census 2002

QUALITY OF PRIMARY EDUCATION

Several indicators of quality of education have been examined: retention rates and indicators of an enabling environment – pupil-teacher, pupil–desk and pupil- classroom ratios.

Retention rates[22] for 2003 were not very different from those observed in the pre-PEDP years (see Figure 6). Between 2000 and 2003, only around 70 per cent of the students who had entered Standard 1 completed Standard 7. Rates for 2004 however, reflect a dramatic improvement in the retention of the cohort. Compared to 2003, there was a 10 per cent increase in retention.

Figure 6. Cohort retention rates in primary school, overall, 1997-2004.



	Std 1 - 2	Std 1 - 3	Std 1 - 4	Std 1- 5	Std 1 - 6	Std 1 - 7
1997	96%	92%	88%	81%	75%	71%
2000	94%	91%	86%	80%	75%	70%
2003	94%	89%	84%	80%	77%	72%
2004	99%	95%	93%	87%	84%	79%

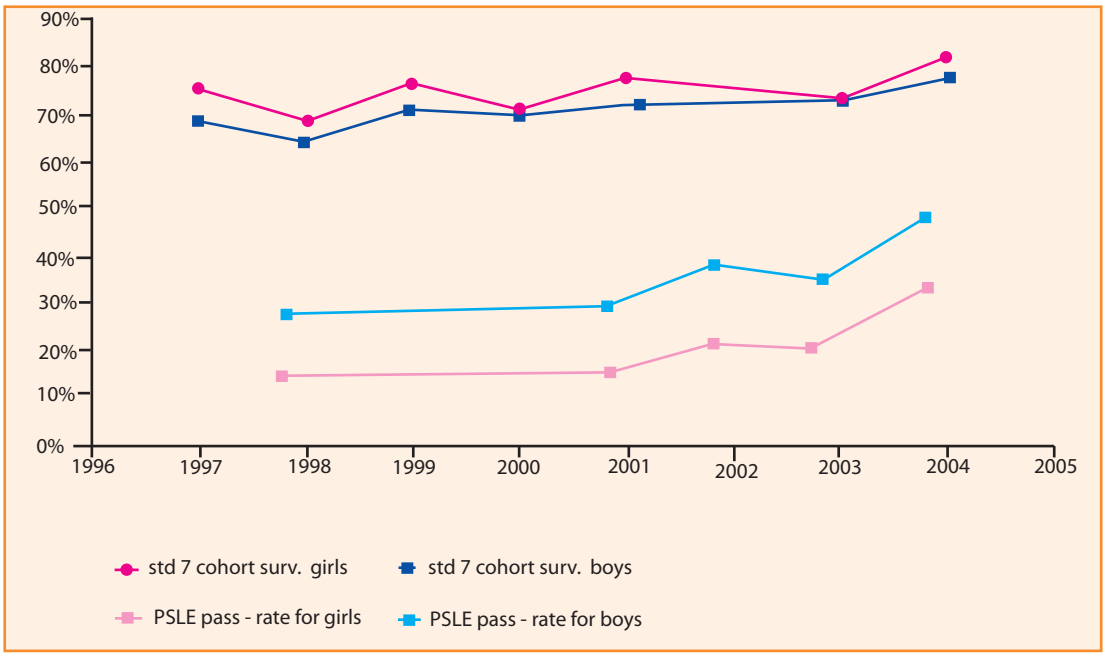
Source: MoEC: BSE 1997-2004

[22] These estimates of cohort retention rates are based on actual progression, dropout and repetition rates observed during a period of time and applied to a hypothetical cohort of children enrolled in Standard 1.

Compared to boys, the retention of girls within primary education appears to be marginally better (see Figure 7 and Appendix Tables A.4 and A.5). But there remain concerns regarding the performance of girls in Standard 7. Primary School Leaving Examination (PSLE) pass rates for boys have always been much better than for girls. Between 2000 and 2004, boys' performance exceeded girls' by about 15 percent. From 1997 to 2002, the overall pass rates fluctuated from between 20 and 30 per cent, with a substantial increase of 33 per cent from 2002 to 2003.

Follow-up work is warranted to provide insight into the possible underlying reasons behind this sudden and dramatic improvement from 2003 to 2004 - in retention and in PSLE pass rates, and generally in the variable performance between girls and boys.

Figure 7. Standard 7 cohort retention rates for boys and girls, and PSLE pass rates, 1997-2003



Source: MoEC: BSE 1997-2004

Three enabling environment indicators: pupil-teacher, pupil-desk and pupil-classroom ratios, reflect the conduciveness of the teaching environment and are indicators of the quality of education delivered. As indicated in Table 7, PEDP has been very successful in constructing new classrooms. The number of pupils per classroom decreased from 82 in 2002, to 73 in 2004. The number of new desks has also kept pace with the increasing number of pupils. However, enrolments have outpaced the hiring and training of new teachers, and the number of pupils for each teacher has increased on average from 54 in 2002, to 59 in 2004.

Overall, qualified teachers in primary schools, defined as those with a diploma or Grade A teachers, increased from 50 per cent of the total number of teachers in 2001 to 58 per cent

in 2004, a relative increase of 16 per cent. This increase in qualified teachers is not uniform across regions; it is more pronounced in Arusha, Dar es Salaam, Iringa, Kigoma, Mbeya, Lindi and Shinyanga (a more than 20 per cent increase), with hardly any changes in Kilimanjaro and Singida (less than 5 per cent) (see Appendix Table A.6). To assess access to quality teachers, it is important to consider the change in the ratio of pupils to qualified teachers. Primary pupils in only two regions experienced increased access to qualified teachers (in Dar es Salaam and Shinyanga). For most regions the situation has worsened. The number of pupils without qualified teachers has increased over the past three years. The situation is particularly acute in Mara and Mtwara which experienced a more than 30 per cent increase in pupil/qualified-teacher ratio.

Another very important indicator of an enabling learning environment is the pupil to textbook ratio. Results of the 2004 Public Expenditure Tracking Study (PETS) on primary education showed a decrease in the number of textbooks available in classrooms during the first two post-PEDP years compared to the pre-PEDP years (REPOA & MoF, GoT, 2004: 55). During this time a substantial amount of the funds sent to councils for the purchase of textbooks was not used in a timely fashion for this purpose.

In the Policy and Service Satisfaction Survey of 2003, almost half (45 per cent) of all parents interviewed were concerned about poor examination performance, and about 40 per cent mention the shortage of teachers, a lack of textbooks and large classes[23] as constituting "major problems" still facing the basic education system. When asked what the government should do to improve the education system, over 90 per cent said providing more textbooks was "very important." The main problems identified affect poor parents more than the better off, in particular poor examination results (REPOA 2003). A lack of clean water and toilets is also of concern, especially to poor, rural parents. A third of all parents are concerned with transparency in the use of money. Focus group discussions with parents of children attending schools in Kilombero and Ulanga DSS indicate that most are concerned with the lack of transparency in the use of funds from community contributions (Msechu & Mtenga 2005).[24]

Only 1 per cent of the PSSS respondents reported having paid a bribe to a teacher or head teacher in the previous 12 months - the lowest for the five sectors that were surveyed (police, health, judiciary and local government, listed in descending order of reported corruption). In the 2003 Afrobarometer survey, 45 per cent of the respondents thought there was "some corruption" in the education sector, an increase from 36 per cent in the 2001 survey. However, education scored 'below' the other sectors covered, namely (in descending order with the sector showing most corruption first) elected leader, government officials, police, customs officials, judges and magistrates, Tanzanian businessmen and foreign businessmen.

Altogether, the audits of the Ministry of Education have improved since the early nineties (TGNB 2005). After receiving an 'Adverse' opinion in Fiscal Years 1999 and 2000, the Ministry received a 'Qualified' opinion in the next three years. The share of expenditure questioned was down to less than 1% in Fiscal Year 2003. Fiscal Year 2002 was also the only year in which the Ministry of Education had a higher share of questioned expenditure than the national average, 7 per cent versus 4 per cent.

[23] In a study in Kinondoni District, the average number of pupils per classroom space in sample schools rose from 126 in 1999/2000 to 171 in 2000/2001, and decreased to 145 and 130 in the two subsequent years; sample schools had a range of 40 to 60 pupils per stream (TCDD 2003).

[24] Even though some financial reports are posted on school boards, they are not in places that are easily accessed by the community and not in a format that can be easily understood by most community members given the low literacy levels.

In summary, routine information pertaining to the quality of education is mixed. On the one hand many more classrooms have been constructed, but availability of textbooks and qualified teachers, compared to the increased numbers of pupils, has worsened over the past couple of years. On the other hand there are dramatic improvements in the reported PSLE pass rates.

Enrolment in secondary education

Gross and net secondary school enrolment rates [25] are recent additions to the list of poverty monitoring indicators. As shown in Table 7, the overall gross and net secondary enrolment increased from 10 to 12 per cent, and from 6 to 8 per cent, from 2002-2004, respectively.

An inadequate number of secondary schools was noted to be one of the key bottlenecks for secondary school enrolment. Following the successful implementation of PEDP in primary education, secondary education followed with its SEDP in the financial year 2003/04, focusing primarily on increasing the number of places in secondary schools to absorb the growing output of primary pupils. Available official figures for Form I enrolment in public and private schools indicate an absolute increase of almost 50 per cent from between 2003 and 2004 (see Appendix Table A.7).

Despite the much poorer performance of girls in PSLE, Form I enrolment data for 2004 suggest a near gender balance at entry level (see Appendix Table A.7). After Form IV however, the retention of girls drops substantially, and decreases further to a ratio of 2 boys to 1 girl in Form VI.

Of concern is the overall low transition from Form IV to Form V. Only 30 per cent of the 2003 Form IV cohort entered Form V in 2004. This could be for several reasons, including an inadequate number of available places, poor performance and inability to pay school fees.

Quality of secondary education

Data in Table 9 suggest substantial improvement in Form IV results from 2001 to 2003 in each of the Division I to III. In 2001 and 2002, boys reportedly performed much better than girls in each of the three divisions. Disaggregated data for 2003 are not available.

Table 9. Certificate of secondary education examination results, Divisions I to III,

Year	Division (per cent passed)								
	I			II			III		
	All	Male	Female	All	Male	Female	All	Male	Female
2001	3	4	1	4	5	2	12	15	8
2002	4	6	2	6	7	3	15	17	12
2003	8	-	-	8	-	-	24	-	-

Source: MoEC: BSE 2001-2004

[25] In calculating these rates, it is assumed that the target population of Form I to Form IV students are between 14 and 17 years of age.

Adult literacy

Literacy rates estimated from 2002 census data are comparable to HBS estimates (2000/01), though census rates were slightly lower (see Table 7). Males generally fare much better than females. The overall adult literacy rate (for 15 year-olds and older) is 78 per cent for males and 62 per cent for females. Literacy rates in the younger age group (15-24 years) are 81 per cent and 76 per cent, respectively – higher rates overall and with a much smaller gender differential.

Conclusions and recommendations

Summary of progress

Much of the information presented in this section is based on routine data from the Ministry of Education and Culture, and the conclusions are not different from those of the last PHDR in 2003.

PEDP has raised enrolment rates in primary school, and now SEDP is raising them in secondary. Actual primary attendance rates are lower than enrolment, with little gender differential, though boys tend to be in school at an older age than girls. Children with disabilities are much less likely to be in school than other children. Available survey and census data show little difference in attendance by younger, orphaned children compared to those who are not orphaned. After the age of 9, slightly smaller proportions of orphaned children are attending.

Issues of quality remain a concern. Though the number of classrooms and desks has increased with the higher number of children in school, the ratio of teachers to pupils has not kept pace with increased enrolment.

Nonetheless, estimates of the retention rate (the proportion of children enrolled in standard 1 who stay through standard 7) and the reported primary school leaving examination pass rates, both show improvement in 2004.

Policy and operational issues identified

Strategies are needed to facilitate access and enrolment of disabled children in school.

Many more teachers are needed to reduce pupil-teacher ratios, and continued training and retention of trained teachers is important so that the proportion of teachers who are qualified continues to increase.

More books are needed, and pupils' access to books needs to be more systematically reported through routine information systems and/or through more systematic tracking surveys.

Recommendations for indicators and monitoring systems

Information about early childhood and pre-schools is lacking, and needs to be included in routine data systems as well as in periodic surveys and population censuses.

For secondary and tertiary education, data for indicators of quality are lacking.

Much more information is needed from surveys and qualitative studies to shed light on the reasons for children's non-attendance, once enrolled in school, and strategies are needed

to facilitate higher levels of attendance.

Similarly, more systematic information is needed for tracking and research purposes and for communicating to a wider public. To understand and effectively address performance, the differences in performance between boys and girls, between different social and economic groups, and geographic differences, the following data are needed:

- an assessment of the flow of finances
- the availability of teachers
- the availability of critical teaching and learning inputs (especially books)
- the involvement of parents in school management committees

In addition, the reasons for recent improvements in retention rates and examination results need to be better understood.

B. Health

Several new sources of information about health, nutrition and HIV have been made available since the last PHDR, including new analyses of data from the 2002 population census, data from the 2003 HIV/AIDS indicator survey, the first in Tanzania to provide nationally representative data on HIV, and the 2003/04 demographic and health survey. They provide new information about progress towards national goals and targets and about geographic and other disparities in indicators of these development outcomes. They are summarised in the table below.

Table 10. Health indicators, Tanzania Mainland, 1999-2004.

Indicator %	Year					Targets	
	1996	1999	2002	2003	2004	PRS 2003	MKUKUTA 2010
Infant mortality rate[26] (per 1000 live births)						85	50
DHS	88	99			68		
Census			95				
Under-five mortality rate[26] (per 1000 live births)						127	79
DHS	137	147			112		
Census			162				
Life expectancy at birth	52 (1988)		51				
Female			52				
Male			50				
Children 12-23 months immunised against:							
Measles							
TRCHS/DHS	81	78			80		
EPI[27]		72	89		94		
DPT (3)						85	
TRCHS/DHS	85	81			86		
EPI[27]		76	89		94		
Prevalence of stunting in under-fives	44	44			38		20
Prevalence of wasting in under-fives	7	5			3		2
HIV prevalence among pregnant women							5
ANC surveillance			9.6				
THIS				6.8			

Table continued on next page

[26] Data recorded according to year of data collection, but for mortality data this refers to a number of years preceding the survey; e.g. the infant and under-five mortality rates refer to the number of infant and under-five deaths during the 5 years preceding the survey for the DHS, and 3 years preceding the census.

[27] EPI = Expanded Programme of Immunisation, Ministry of Health (routine data system)

Table 10. Health indicators, Tanzania Mainland, 1999-2004 (continued).

Indicator %						Targets	
	1996	1999	2002	2003	2004	PRS 2003	MKUKUTA 2010
HIV prevalence among men and women aged 15-24							
THIS							
Overall				3.5			
Male				3.0			
Female				4.0			
Blood donor estimates							
Overall		7.7	7.7	6.7			
Male		6.7	7.0	6.0			
Female		10.9	10.1	9.0			
Knowledge of HIV/AIDS transmission (THIS)							
AIDS virus can be transmitted to a child through breastfeeding							
Male				63.0			
Female				69.3			
With comprehensive knowledge[28]							
Male				54.2			
Female				46.3			
Maternal mortality ratio (per 100,000 live births)	529				578		265
Coverage of births attended by trained personnel[29]		36			46		80
Births taking place in health facility		44			47		
Population within 5kms of a health centre or dispensary	(1991/92)	(2000/01)					
Dar es Salaam	95	96					
Other urban	89	98					
Rural	77	68					
Tanzania Mainland	79	75					
Population within 10kms of a hospital	(1991/92)	(2000/01)					
Dar es Salaam	96	97					
Other urban	89	98					
Rural	45	36					
Tanzania Mainland	51	47					

Sources: NBS/Macro International 1996, TDHS 1996; NBS/Macro International 1999, TRCHS 1999; NBS/Macro International 2005, TDHS 2004/5; NBS 1993; HBS 1991/92; NBS 2002, HBS 2000/01; TACAIDS/NBS/Macro International 2005, THIS 2003-04.

[28] Comprehensive knowledge means knowing that consistent use of condoms and having just one uninfected, faithful partner can reduce the chance of getting the AIDS virus; knowing that a healthy-looking person can have the AIDS virus; and knowing that HIV cannot be transmitted by mosquito bites or by sharing food with a person who has AIDS.

[29] In the 2002 and 2003 P&HDR the concept of 'skilled' birth attendant was defined as a doctor and/or nurse/trained midwife. The preliminary 2004 TDHS defines a 'health professional' as Doctor/AMO, clinical officer, assistant clinical officer, nurse/midwife or MCH aide.

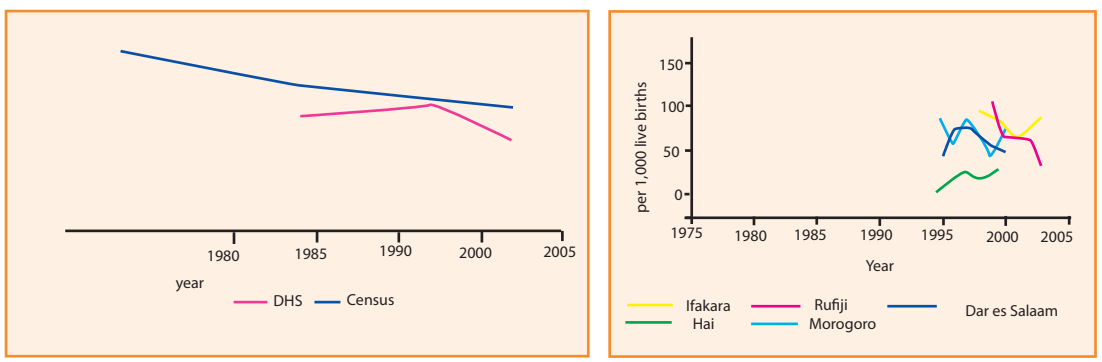
Infant and child mortality

The previous Poverty and Human Development Report (2003) reported stagnation in the decline of infant and child mortality in the late 1980s and up to the mid 1990s, followed by a slight increase in mortality thereafter (R&AWG 2003:30). [30] This increase was largely due to an increase in neonatal mortality, especially in urban areas, and was attributed to the increased prevalence of HIV/AIDS.

Analysis of data from the 2002 population census and more recent survey data, however, point to a reduction in mortality, with a particularly sharp drop in the most recent few years. Indirect estimates from census data show a decline in infant and under-five mortality rates during the period 1978 to 2002. Infant mortality fell from 137 to 95 per 1,000 live births, and under-five mortality from 231 to 162 per 1,000 live births. The trend generated by the preliminary 2004/05 DHS survey data is particularly optimistic. From the1999 and 2004/05 surveys, infant and under-five mortality declined from 99 to 68 and from 147 to 112 per 1,000 live births, respectively. Much of this decline is likely to be the result of improved malaria control – both increased use of preventive mosquito nets (detailed in the following section) and improved curative care through a more effective drug treatment. According to these estimates, both infant and child mortality rates have surpassed the 2003 PRS targets and if this decline can be sustained, the MDG targets for 2010 are within reach.

On the whole, available data from surveillance sites confirm the declining trend in infant and child mortality in recent years. Between 1995 and 2000, AMMP (Adult Mortality and Morbidity Project) data showed a decline in infant mortality of between 11 and 15 per cent in two of the three sentinel sites (Dar es Salaam and Morogoro Rural) (MoH/AMMP 2004) (see also Figure 8). Rufiji demographic surveillance site showed a 32 per cent decrease in infant mortality between 1999 and 2002 (PHDR 2003:33). Both surveillance systems show a comparable decline in child mortality rates. Surveillance data from Ifakara, on the other hand, suggest little change in infant mortality but an increase in child mortality from 1997 to 2003. As observed in Figure 8, surveillance data show a fluctuating trend, mainly due to the small number of observations that are subject to random annual fluctuations.

Figure 8. Infant mortality estimated from different sources



Source: NBS DHS 1991/92-2004, NBS Census 2002, AMMP, 2003 and Ifakara 2005

[30] Quoting DHS data from 1987-92, 1991-96 & 1994-99.

The introduction of evidence-based planning as part of the Tanzania Essential Health Interventions Project (TEHIP)[31] is largely responsible for the impressive decline in child mortality rates - by over 40 per cent - in the two districts of Rufiji and Morogoro. Interventions adopted included IMCI (Integrated Management of Childhood Illnesses)[32], syndromic management of sexually transmitted infections, safe motherhood initiative, treated bed nets, and TB treatment.

Census data from 2002 suggest considerable geographic variation in mortality rates. Regionally, infant and under-five mortality ranged from 41 and 58 deaths per 1,000 live births in Arusha, to 129 and 217 in Lindi. More disaggregated information about districts is provided in the next chapter. In summary, infant mortality ranged from 31 in Ngorongoro (Arusha region), to 148 deaths per 1,000 live births in Ruangwa (Lindi region). Compared to infants and under-fives in urban areas, those in the rural areas had higher mortality rates per 1,000 live births: for infants, 78 versus 99, and for under-fives, 123 versus 162. These urban/rural differences are confirmed by the 2004 demographic and health survey.

Surveillance data from Ifakara indicate that as expected, infants and under-fives of the poorest mothers had a higher probability of dying compared to those of mothers from the least poor quintiles. [33] The gap in infant mortality however, appears to be closing. Infant mortality in the poorest quintile showed a steady decline from 130 per 1,000 live births in1997, to 84 in 2003. In contrast, infant mortality in the least poor quintile seemed to fluctuate in the same time period, with an observed slight increase from 50 to 67 per 1,000 live births. The ratio of infant mortality in the lowest quintile to the highest quintile dropped from 2.6 in 1997 to 1.25 in 2003.[34] The respective ratio for Mainland Tanzania for the period 1996 to 1999 was 1.25 (TRCHS/DHS, 1999).

Malaria mortality and morbidity

Malaria is one of the most important causes of morbidity and mortality in infants and under-fives. The PRS indicator intended to reflect the burden of mortality due to malaria is based on information obtained from hospitals. Unfortunately, the Health Management Information System (HMIS) has not been able to provide it. Therefore, as in the 2003 PHDR, this section is based on population-based information obtained from demographic surveys and surveillance sites.

The 2004 TDHS data indicate that the percentage of under-fives reported to have had fever in the two weeks prior to the survey, a proxy indicator for malaria, declined from 35 per cent in 1999, to 23 per cent in 2004. Further, 58 per cent of under-fives with fever were given anti-malarial drugs, and there was little urban-rural difference (65 per cent versus 57 per cent).

The proportion of child deaths due to malaria/acute febrile illness, between 1993-1995 and 2000-2002, shows a slight decline in the three AMMP sentinel areas, ranging from 0.3 per cent in Morogoro to 7.0 per cent in Dar es Salaam (MoH/AMMP 1, 2004: 42). Ifakara data also suggest a decline in child deaths due to malaria or acute febrile illness: from 10.4 per

[31] In addition to improving health workers' performance to effectively deliver the interventions, along with small funding increases – US$1 per capita, simple user-friendly tools were introduced around 1997 to allow decentralized planners to incorporate burden of disease into their work in a manageable and practical way (de Savigny et al, 2004).

[32] Evidence from a study undertaken by Armstrong et al, 2004 suggests child mortality levels to be 13 per cent lower in the IMCI districts, than in comparison districts. IMCI was associated with 3.8 fewer deaths per 1,000 child years.

[33] IFAKARA DSS, 2005 unpublished

[34] Rufiji surveillance data also suggest a decline in under-five mortality rates between 1998 and 2000 for the better off as well as the poorest quintiles, though there are variations in improvement levels between the quintiles (Msechu and Mtenga 2005).

1,000 person years in 2000, to 3.7 per 1,000 person years in 2003.

Consistent use of bed nets, especially treated ones, is a key preventive measure in reducing malaria transmission. The proportion of households owning bed nets has increased from roughly 25 per cent nationally in 1999 (TRCHS 1999), to 46 per cent in 2004 (TDHS 2004/05). Even though, in comparison to rural households, roughly twice the proportion of urban households owned a bed net (74 per cent versus 36 per cent), there was little difference in the percentage of under-fives reported to have slept under a net (38 per cent versus 36 per cent). Regarding use of nets by pregnant women, according to the 2004/5 survey data, roughly 33 per cent had reportedly slept under a net, and 11 per cent under a treated net, the night before the survey.

Data from the National Malaria Control Program also suggest an increase in under fives sleeping under nets, and in particular those sleeping under treated nets. Bed net use increased from 46 per cent in 2001 to 53 per cent in 2003, and the use of treated nets increased from 15 to 26 per cent over the same time period (Joint Health Sector Review Meeting 2005).

The rollout of the Tanzania National Voucher Scheme (TNVS)[35] may further accelerate the use of treated nets in pregnant women and children under five. Effectively reaching out to all pregnant women, and especially the poorest, is a prerequisite to the success of the national voucher scheme.

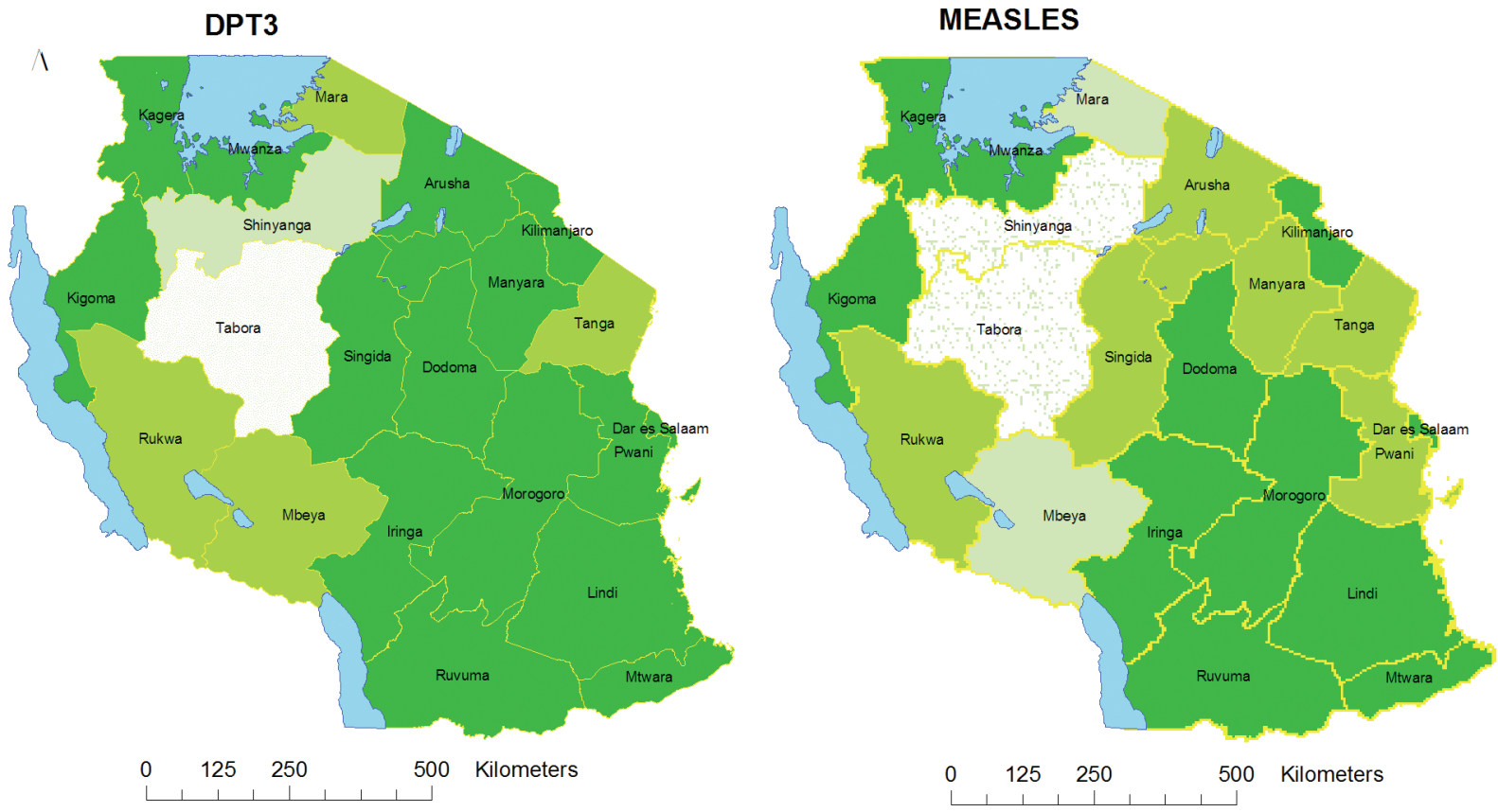
Child Immunisation

Tanzania continues to have high levels of child immunisation compared to other sub-Saharan countries. As shown in Figure 9, survey data indicate that the coverage of both DPT3 and measles vaccinations have returned to 1996 levels after a slight decline in 1999. The 2004 coverage rates are 80 per cent for measles and 86 per cent for DPT3, exceeding the 85 per cent DPT target that was set for 2003. In general, compared to the rural areas, coverage levels for both vaccinations is higher by about 10 percentage points in the urban areas. Available routine EPI data, on the other hand, show not only a slight continued improvement in the coverage of both DPT3 and measles vaccinations, but also at much higher levels. EPI's reported 2004 immunisation levels for both DPT3 and measles reached 94 per cent. Since EPI estimates are based on community assessments of the numbers of children, it is likely that the denominator is underestimated and therefore coverage rates overestimated.

Regional variations in DPT3 immunisation range from full coverage in the Eastern regions of Mtwara, Kilimanjaro and Morogoro, to less than 80 per cent in parts of western Tanzania, such as Rukwa, Tabora, Shinyanga and Mara. Map 1.1 shows the regional pattern of child immunisation. A somewhat similar pattern is observed when looking at measles, ranging from close to full coverage in Iringa and Kilimanjaro (above 95 per cent), to less than roughly 80 per cent in Mbeya, Tabora, Shinyanga and Mara. Generally, regions located in the Southeast tend to have better coverage of DPT3 and measles vaccination than those in the Northwest.

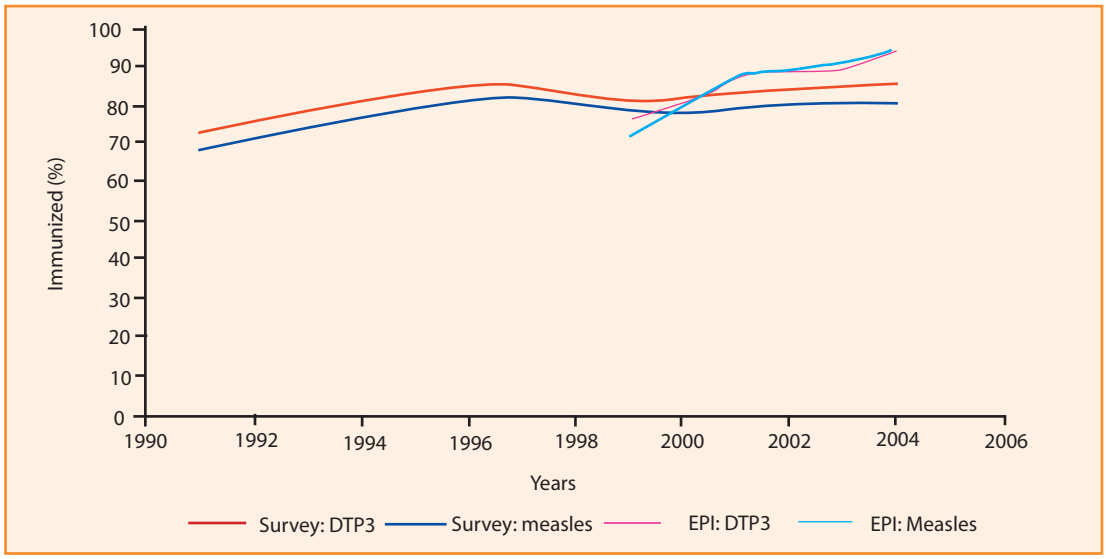
[35]The Scheme provides discount vouchers to all pregnant women attending antenatal clinics to purchase treated nets at a minimal cost. Recent figures from the Malaria Control Programme suggest that over 75 per cent of women who received a voucher used it to purchase an ITN (NATNETS Programme Tanzania, 2005).35

Map 1.1 Child Immunisation by Region,2004



SOURCE: Tanzania Demographic and Health Survey 2004-2005 Preliminary Report

Figure 9. Immunisation coverage, 1991-2004



Source: NBS, Macro 1992, 1996, 1999 and 2004/05 and Ministry of Health 2003-2005

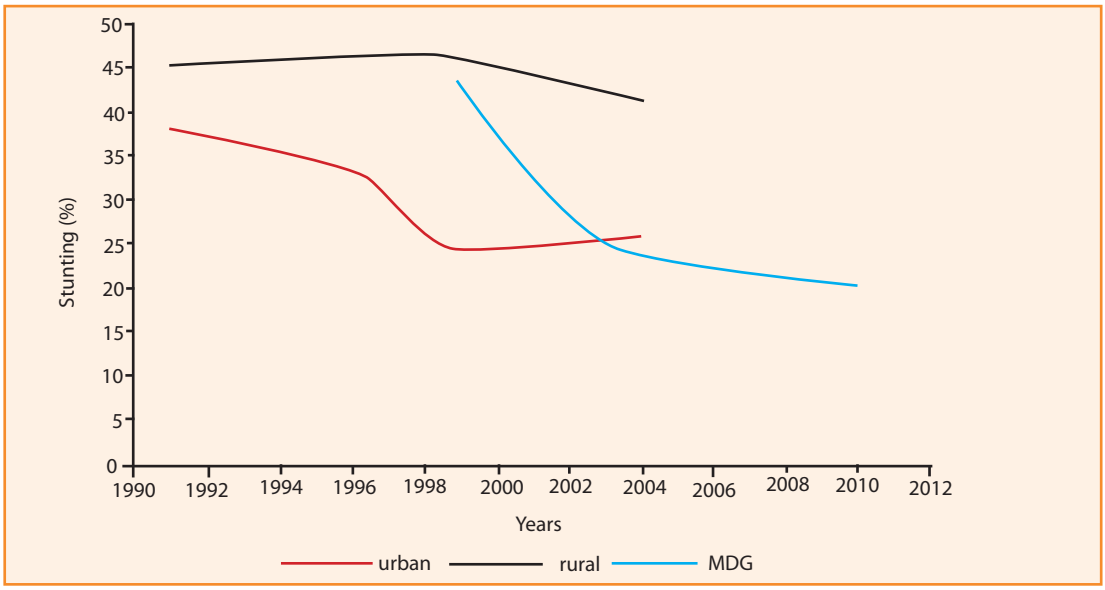
Child nutrition

Malnutrition continues to be a major cause of morbidity and mortality in under-fives in Tanzania. This is likely to be caused by inappropriate feeding practices and repeated incidences of childhood illnesses. Malnutrition starts with low birth weight, itself a manifestation of poor maternal health.

At the national level, under-five nutrition status did not change during the 1990s (DHS surveys). There is an improvement from 1999 to 2004, though this is much less substantial than the recent reductions in child mortality. The prevalence of stunting went down from 44 per cent in 1999 to 38 per cent in 2004. Wasting dropped from 5 per cent to 3 per cent during the same time period. Surveillance data from Rufiji and Ifakara also suggest a decrease in moderate and severe stunting in under-fives. From 1999 to 2002 the prevalence of stunting decreased from 42 to 32 in Ifakara, and from 44 to 34 in Rufiji.

It is the declining stunting rate in rural children which accounts for the recent improvements observed at the national level. Between 1999 and 2004, the prevalence of stunting in the urban areas increased slightly to 26 per cent. Rural rates on the other hand, declined from 48 per cent to 41 per cent in the same time period (see Figure 9). However, given the current still high rural rates, it is unlikely that Tanzania will reach the target of 20 per cent stunting set for 2010.

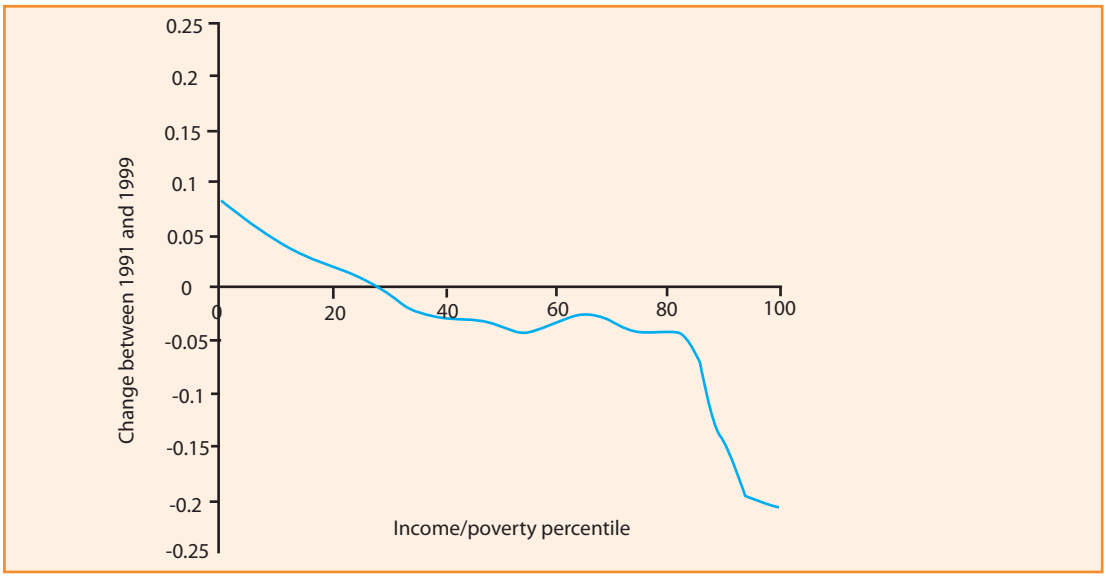
Figure 10. Prevalence of stunting in urban and rural areas, 1991-2004.



Source: DHS, 1991/92-2004

Findings of a recent study undertaken by REPOA[36] indicate a widening gap between the poorest and least poor between 1991/92 and 1999: an increase of roughly eight per cent in prevalence of stunting in children from the poorest households, and a large decrease of about 20 per cent in those from the least poor households (see Figure 11).

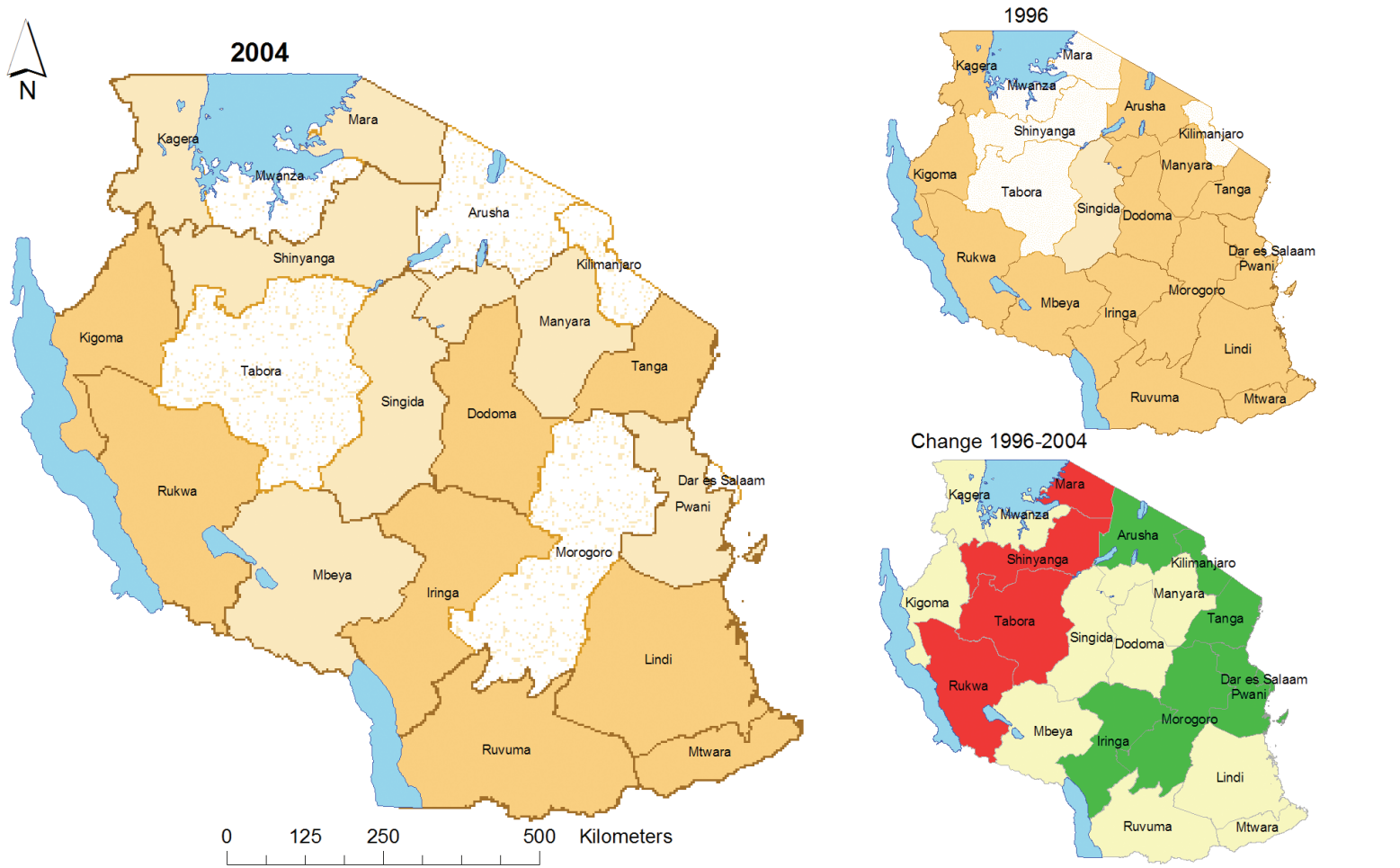
Figure 11. Proportion change in the prevalence of stunting by income/poverty percentile (concentration index growth curve), 1991-1999



Source: Lindeboom & Kilama, 2005

[36] The REPOA study analyses the DHS data-sets independently and pooled together

Map 1.2 Percentage of Children Stunted by Region, 2004 and 1996



SOURCE: Tanzania Demographic and Health Survey 1996 and Tanzania Demographic and Health Survey 2004-05 Preliminary report

Overall, children from roughly 30 per cent of the poorest households did not show any improvement in their nutritional status. Rather, the prevalence of stunting worsened in this group.

Children in most regions have a high prevalence of stunting, from 36 to 54 per cent. Map 1.2 shows the regional data for 2004 and the changes which have occurred since 1996.

Children in Dar es Salaam, Kilimanjaro, Arusha, Tabora and Mwanza have relatively better nutritional status, with prevalence rates of stunting ranging from 17 to 34 per cent. Map 1.2 also clearly shows that the percentage of under-fives who were stunted fell between 1996 and 2004 and major improvements can be observed in Iringa, Morogoro, Coast, Arusha and Kilimanjaro. Rates of stunting worsened in Mara, Shinyanga, Tabora and Rukwa, though stunting rates in Mara and Tabora still remain below the national average observed in the latest Demographic and Health Survey. Relating regional poverty estimates with the change in under-five stunting prevalence, it becomes clear that regions with lower rates of poverty showed higher rates of improvement in stunting, compared to poorer regions. (See also district based poverty maps in the next chapter.)

Child malnutrition is the result of inadequate feeding and care as well as childhood illness. More effective treatment and prevention of malaria is likely to result in improved nutritional status. At the same time, findings of a recent evaluation of a nutrition programme in Kagera stress the fundamental role of feeding interventions in reducing stunting in under-fives, in particular in the lowest income groups (Alderman et al, 2005).

HIV/AIDS

HIV/AIDS is considered to be one of the most impoverishing forces facing Tanzanians, mainly affecting individuals in the prime of their productive and childbearing years with consequent repercussions for their families (R&AWG 2004). Recent projections from ESRF (2003) show that by 2015, the economy will be 8.3 per cent smaller and the per capita GDP will be around 4 per cent lower as a result of HIV/AIDS.[37] The pandemic threatens to undermine the rights and well-being of Tanzanians in almost every aspect; in health and education, livelihood and food security, political and economic development.

Until 2004, HIV/AIDS prevalence estimates depended on blood donor data and on ANC (antenatal care) attendees in surveillance sites. These surveillance estimates are generated annually and therefore have the advantage of facilitating analyses of trends over time. The estimates, however, are not based on a national, geographically representative sample. Information is obtained from very specific sub-populations and is not representative of a cross-section of the Tanzanian population currently at risk. The 2003-04 Tanzania HIV/AIDS Indicator Survey (THIS) was the first attempt to produce reliable national and regional level estimates on the prevalence of HIV/AIDS in Tanzania (TACAIDS, NBS and Macro 2005).

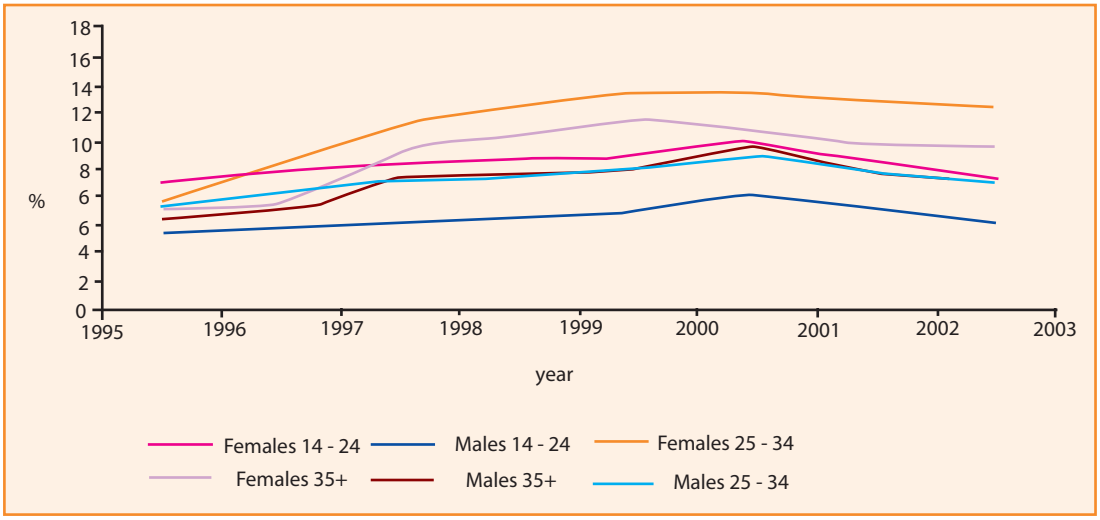
In contrast to earlier official national estimates [38], the recently released national survey data produce an estimate of the overall prevalence rate of 7 per cent, 7.7 per cent in females and 6.3 per cent in men. The new estimate implies that roughly 1,070,000 people [39] between

[37] The REPOA study analyses the DHS data-sets independently and pooled together
[38] Official national prevalence rate estimated at 12% at the first Joint Annual Review on HIV/AIDS in 2004.
[39] Rather than earlier estimates of 2+ million, current estimates are derived by applying national survey results to the national population of adults (updated from the 2002 census).

15-59 years are currently HIV positive: 610,000 women and 460,000 men. Data also indicate an average prevalence in pregnant women of 6.8 per cent which is lower than the 7.7 per cent estimated among all women. Surveillance data[40] from 2002 had reported a much higher prevalence rate of 9.6 per cent among ANC attendees (NACP No. 17, 2003: 11).

According to blood donor data, the percentage of the 14-24 year age group which is HIV positive has been on the decline since 2001, implying a decrease in new infections in both males and females (see Figure 12). The overall reported prevalence rate in 2003 was 8.8 per cent, 8.2 per cent for male blood donors, compared to 11.9 per cent in female blood donors (NACP No. 18, 2004:10).

Figure 12. Blood donor data: age and sex specific HIV prevalence, 1996-2003



Source: NACP Report No. 18, 2004

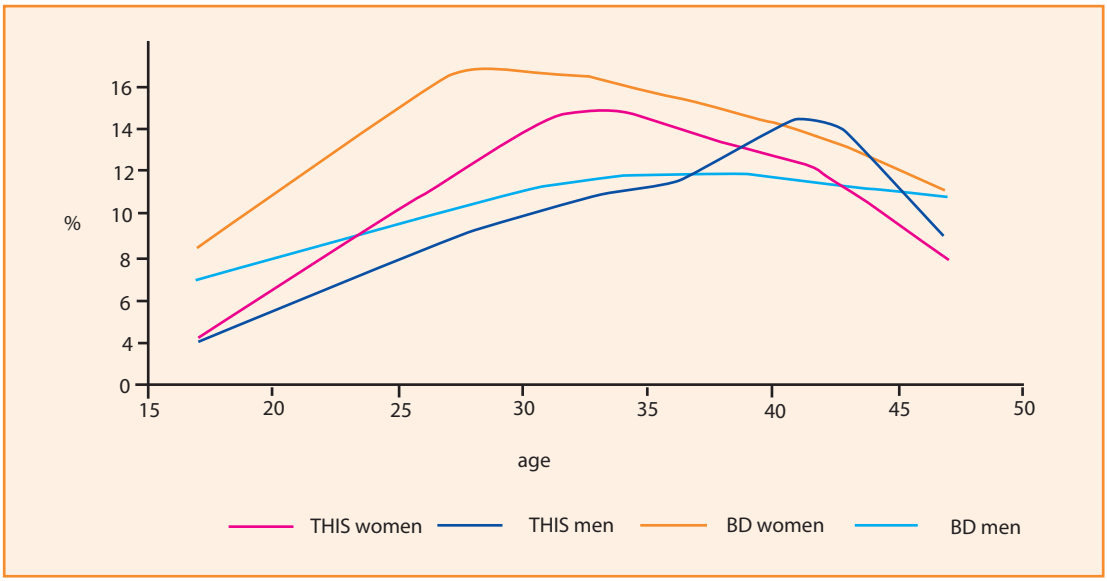
Women, in particular young women, are biologically and socially more vulnerable to infection. Women also tend to contract the infection earlier, and die younger, than men. As expected, survey data suggest that prevalence rates in women peak at an earlier age (13 per cent at 30-35 years) than in men (12 per cent at 40-45 years), though they peak much later than suggested by the female blood donor data (see Figure 13). [41]

These national averages conceal marked variations across geographical areas and across socio-economic groups. Survey data show substantial regional variation, ranging from an average prevalence of 2.0 per cent [42] in Manyara and Kigoma, to over 13 per cent in Iringa and Mbeya. Dar es Salaam has a prevalence rate of 10.9 per cent, higher than the national average of 7 per cent.

[40] Covers 24 antenatal clinics across 6 regions

[41] Blood donors, as mentioned earlier, are a select group and are likely to show a higher prevalence of HIV/AIDS when compared to the general population.

Figure 13. Age specific HIV prevalence rates by sex, 2003, 2004

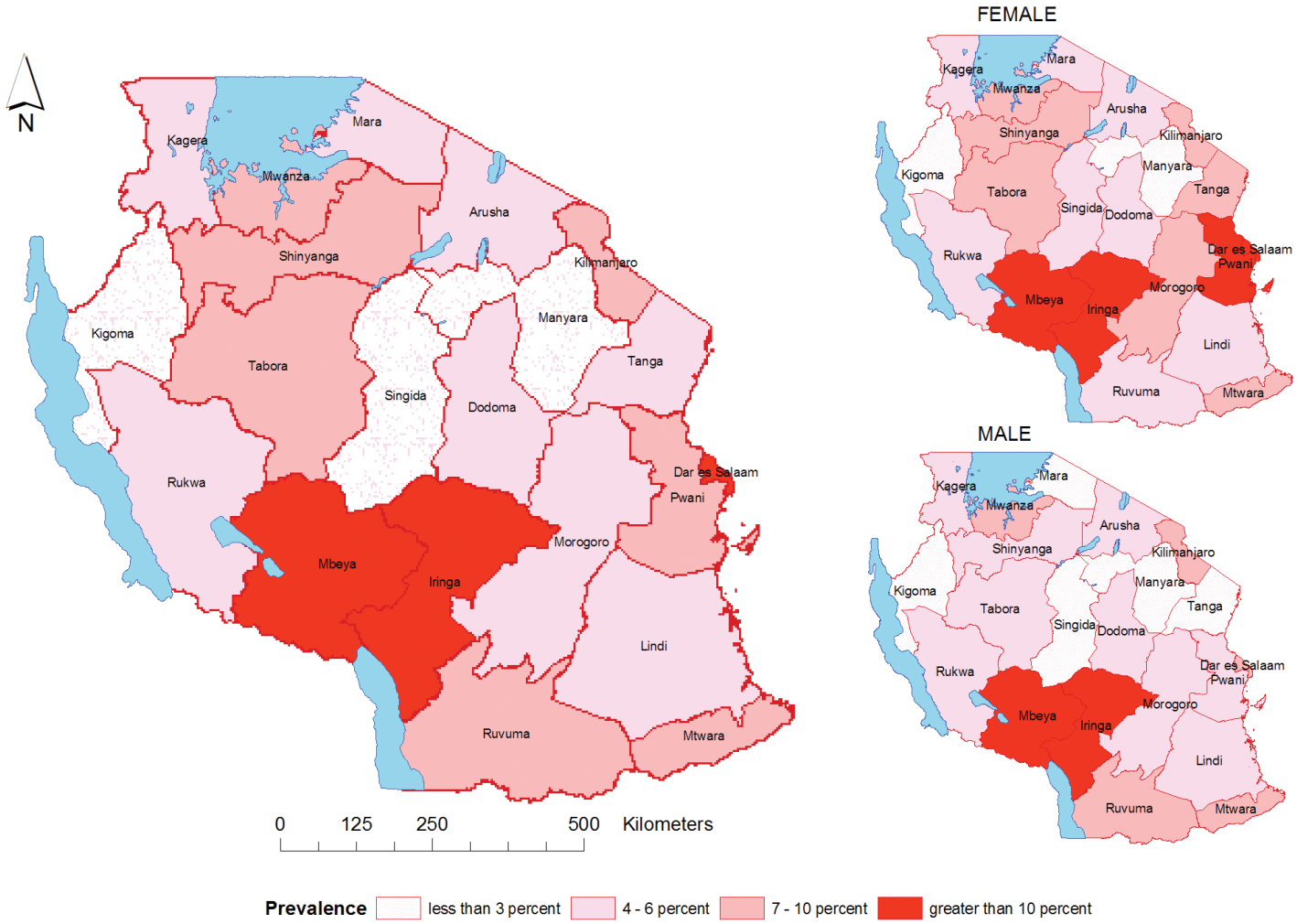


Source: NACP report No. 18, 2003 and TACAIDS, NBS and Macro 2005

The risk of being HIV positive is twice as high for residents of urban areas than for rural residents, and this is true for both men and women (see Figure 13). The overall urban infection rate is 12.0 per cent, compared to 5.8 per cent in the rural areas. Urban youths (15-24 years) – both female and male – are more likely to be infected than those in rural areas (5.5 per cent versus 2.5 per cent). [43] Data also suggest a positive relationship between HIV prevalence rates and wealth (3.4 per cent in the poorest quintile versus 10.5 per cent in the least poor quintile). Once again, similar trends are observed in both men and women. Of interest is the relatively higher HIV prevalence in men compared to women in the poorest quintile (4.1 per cent versus 2.8 per cent); and quite the opposite in the least poor quintile where women are more at risk than men (11.4 per cent versus 9.4 per cent). The difference between the poorest and the least poor may actually be even more pronounced than that estimated, given the higher non-response rate – about twice as high - in the least poor quintile, when compared to the poorest (18.4 per cent versus 9.8 per cent).

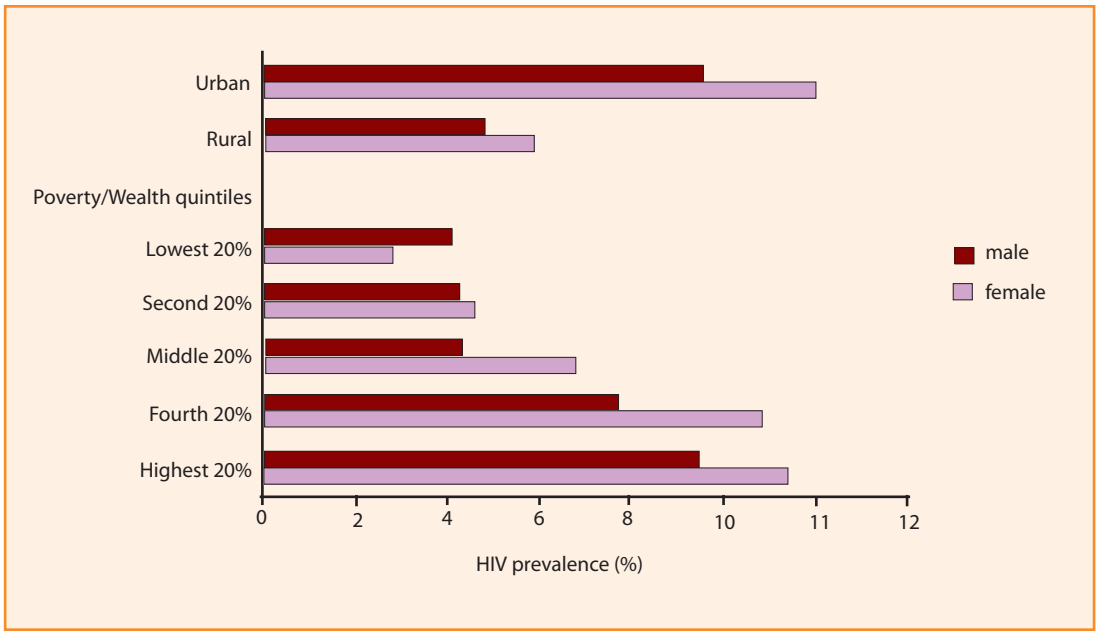
[42] 15-59 years, male and female
[43] TACAIDS, NBS and Macro 2005: 97.
[44] The odds-ratios were 1.33 and 1.098; statistically significant at 0.001.

Map 1.3 HIV Prevalence Rates for Adults Aged 15-49 Years, by Region 2003/04



SOURCE: Tanzania HIV/AIDS Indicator Survey 2003-04

Figure 14. HIV prevalence rates by residence and poverty/wealth status



Source: TACAIDS, NBS and Macro 2005

Further analysis reveals that in both rural and urban areas a reduction in poverty is associated with increasing HIV prevalence. In the rural areas, the probability of being HIV positive increases by 33 per cent as one moves from a lower to an upper quintile. The corresponding risk for an urban resident is 10 per cent. [44]

The overall increase in HIV prevalence in the past decade has also resulted in a continuing increase in the number of TB patients. This has occurred despite the fact that TB treatment completion rates improved from 76 per cent in 1998 to 80.7 per cent in 2002 (MoH, 2003-2005). More than 50 per cent of TB patients are HIV positive (Smithson 2005: 6).

Even if HIV prevalence has begun to decline, the impact will continue to increase because of the long incubation period between infection and death. The current burden of AIDS morbidity and mortality is likely to double over the next decade. It is imperative that HIV remains at the top of the policy agenda.

The poverty monitoring system does not identify specific indicators to assess knowledge of HIV/AIDS transmission. This section therefore proposes two indicators for which information is available from the national survey and which are also commonly covered by other behavioural surveys. One of the indicators is focused on mother to child transmission. The other is a composite measure of general knowledge regarding the transmission of HIV/AIDS.

National survey data suggest that most adults are informed about HIV and AIDS. At least two-thirds of the adults know the major facts about HIV transmission and prevention. Specific knowledge regarding HIV transmission or prevention, as indicated by responses to the individual knowledge areas, is widespread. But the composite measure suggests that collectively only about half of those interviewed had a deeper understanding of HIV. Nonetheless, when compared to the findings of the 1999 TRCHS, knowledge regarding transmission of HIV/AIDS appears to have improved significantly. Compared to men,

women's knowledge of condom use appears to have improved substantially in the last five years.

The one area where men and women are not well informed concerns the prevention of mother to child transmission. Data indicate that while between 70 per cent and 60 per cent of the interviewed men and women know that the virus can be transmitted to an infant through breastfeeding, less than 20 per cent are aware that this transmission can be stopped if both mother and baby take antiretroviral medication. This is not surprising since the prevention of mother to child programmes are still new in Tanzania.

Maternal health

Women's health status continues to be compromised by early and repeated pregnancies, and inadequate family planning and maternal health care services, especially in the rural areas. This has implications for both infant and maternal mortality and morbidity.

Data from the 2004/05 demographic and health survey show that pregnancy related mortality has not improved over the last two decades. The maternal mortality ratio for the period 1995 to 2004 was 578 per 100,000 live births, not significantly different from the 1987 to 1996 ratio of 529 per 100,000 live births. Surveillance of maternal mortality is being undertaken in some sites, but conclusions from the data so far are compromised by the small number of deaths in pregnant women and random fluctuations in both pregnancy related mortality and childbirth. The data which are available from surveillance in Ifakara suggest a substantial decline in the maternal mortality ratio, from 295 per 100,000 live births in 2000, to 160 in 2003.

Because of the difficulties in obtaining precise estimates of maternal mortality, a proxy indicator is monitored: assisted deliveries by health professionals. Nationally, between 1999 and 2004, there was a slight increase in the proportion of births assisted by health professionals, from 41 per cent in 1999 to 46 per cent in 2004. Estimates from earlier demographic and health surveys are not comparable to the most recent estimate based on 2004 survey data because of different definitions employed for 'skilled' attendance.[45]

Another proxy indicator for maternal mortality is the percentage of births taking place in a health facility. Survey data for the 1990s showed a steady decline from 53 per cent in 1991, to 44 per cent in 1999, and a slight improvement thereafter. By 2004, facility-based deliveries had reverted to 1996 levels of 47 per cent.

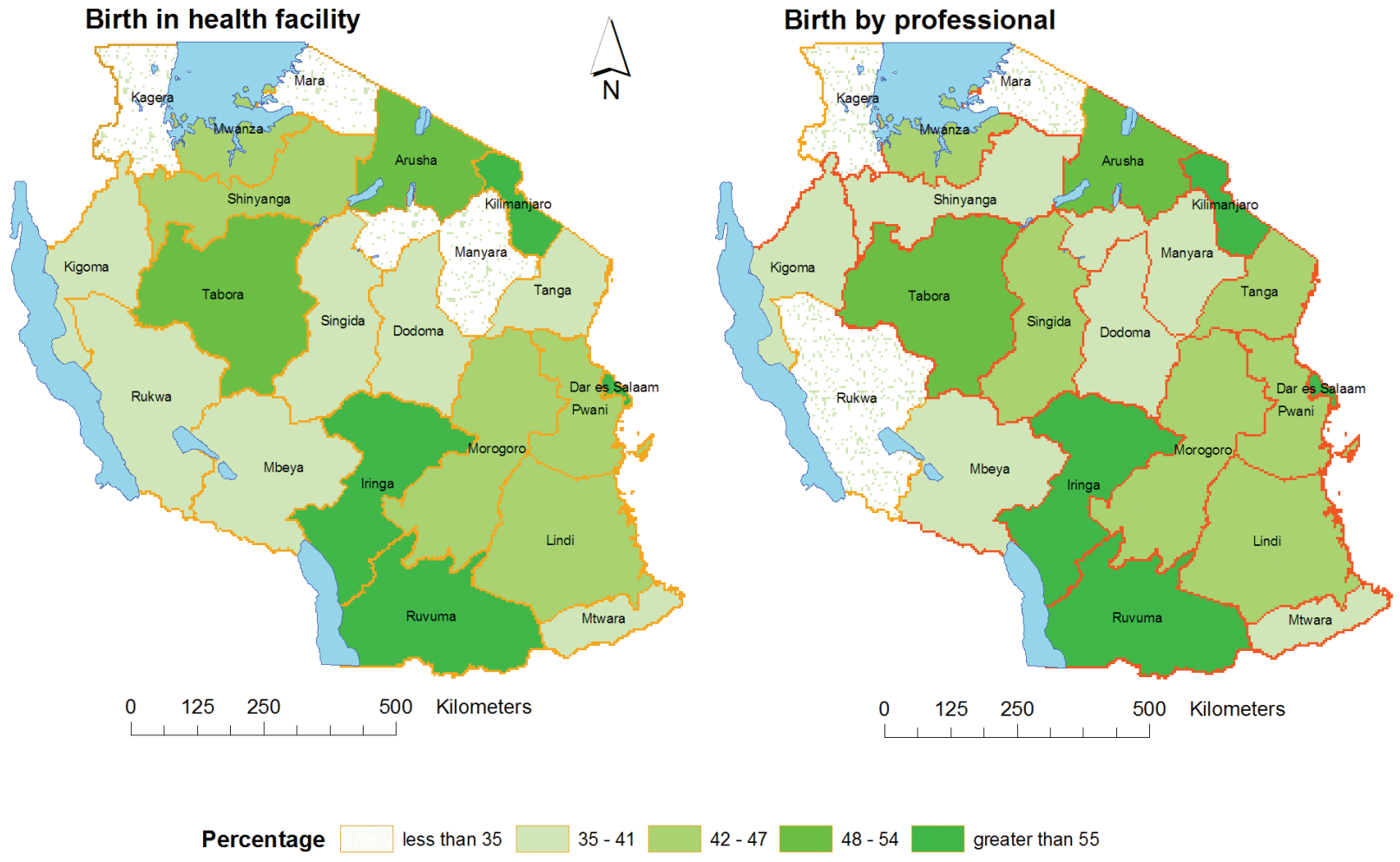
There is considerable urban/rural and regional variation in both these indicators. Urban women are twice as likely as rural women to have had a health provider in attendance during delivery, or to have delivered at a health facility (roughly 80 versus 39 per cent). Regionally, figures for both indicators ranged from about 30 per cent in Mara and Kagera to roughly 90 per cent in Dar es Salaam. In most regions, with the exception of Tabora, Arusha, Iringa, Ruvuma, Dar es Salaam and Kilimanjaro, less than 50 per cent of births take place at a health facility; or receive professional care. Furthermore, pregnant women in regions with relatively greater income poverty have less access to both health facilities and skilled attendants.[46] The data are shown in map 1.4 on the next page.

Effective access to quality health care, but especially to emergency obstetric care services, is a prerequisite to ensuring improved maternal health care.

[45] In the 2002 and 2003 P&HDR the concept of 'skilled' birth attendant was defined as a doctor and/or nurse/trained midwife. The preliminary 2004 TDHS defines a 'health professional' as Doctor/AMO, clinical officer, assistant clinical officer, nurse/midwife or MCH aide.

[46] r = -0.44, p-value = 0.045;r = -0.047, p-value = 0.032

Map 1.4 Percentage of Birth in Health Facility, Percentage Attended by a Professional, by Region, 2004



SOURCE: Tanzania Demographic and Health Survey 2004-2005 Preliminary Report

Access to quality health care

There remain many obstacles in accessing quality health care, including health care charges and other "unofficial" costs.[47] For example, there are long distances, inadequate and unaffordable transport systems, poor quality of care, poor governance and accountability mechanisms and poorly implemented exemption and waiver schemes meant to protect the most vulnerable and poor people (REPOA October 2005; RAWG 2005; Mamdani & Bangser 2004; RAWG 2004; REPOA 2003; SCF 2005; SDC 2003).

Exemptions, and waivers in particular, are not effective as a means of protecting vulnerable social groups and the very poor (IHRDC 2004, SCF 2004, SDC 2003). The absence of clear policy guidelines and the inherent difficulties entailed in defining who is poor and who is not, makes it very difficult to implement the waiver scheme. Also, communities are generally not adequately informed of exemptions and waivers, who qualify for them, and how to obtain them. Most important, facilities are generally discouraged from granting exemptions and waivers as they are not compensated for the resulting loss in revenue.

Several studies have shown that poor households with limited assets resort to a number of short-term survival strategies [48] to pay for health care, especially in emergencies and for chronic illnesses (Msechu and Mtenga 2005, REPOA 2004, Msuya et al. 2004, SCF 2003, SDC 2003, WDP 2004). This further impoverishes them and exacerbates the risks of long-term vulnerability.

The 2003 PSSS found that for 73 per cent of respondents, health care had become "less affordable" in the last 5 years (REPOA 2003). Cost of treatment was ranked as the most serious problem in the health sector, with 50 per cent stating it to be a "serious problem". When asked about personal experiences with corruption, 6 per cent reported having paid a bribe to a health worker in the previous 12 months - the second highest of any sector.

Proximity to primary health care facilities is good, especially in urban areas. Almost 100 per cent of the urban population and close to three-quarters of the rural population live within 5 kilometres of a health centre, or a dispensary (see Table 10). A comparison of HBS data from 1991/92 and 2000/01 suggests that, for Dar es Salaam based residents, the overall proximity to a health facility (hospitals/health centres/dispensaries) has remained almost the same, and has improved for those located in other urban areas. Whereas for the rural population it has slightly worsened, suggesting an increasing and/or a more scattered rural population. Access to essential referral care is perhaps the single most prominent barrier to health care for the poor; in addition to direct health care costs, those associated with transport and subsistence are prohibitive (ACCESS 2004).

Regarding quality of care, there have been improvements in the availability of drugs but some continuing deficiencies prevail.[49] The cost of drugs, in particular, still makes them unavailable to many poor people. The shortage of skilled providers continues to persist and is likely to be further aggravated in an attempt to meet the increased health care demands induced by HIV/AIDS. Altogether, many poor women in rural areas fail to access quality primary care when they need it most, and many more fail to obtain the necessary referral for more skilled care.

[47] For drugs and supplies, as well as unofficial payments

[48] Coping strategies include using their own savings, engaging in petty trade, borrowing money, taking a loan, selling critical assets, taking children out of school, reducing the number of meals taken in a day, etc.

[49] The situation of drug supplies has improved tremendously in facilities where the indent system - ordering health supplies according to demand - has been adopted, but most facilities still experience drug shortages especially towards the end of ordering quarters. Overall, most rural dispensaries are characterised by having inadequately trained staff, experiencing frequent drug stock outs, being poorly equipped, providing short and inadequate patient consultations, poor prescribing practices and long waiting times (Msechu & Mtenga, 2005).

There appears to be an absolute shortage of resources at the primary health facility level, which in turn impacts negatively on the quality of care delivered (RAWG 2004). From 2001/02 to 2004/05, the total per capita expenditure, and that at the local government level, doubled: from roughly TShs 4,200 to TShs 8,700, and from about TShs 1,400 to about TShs 2,400 (see Table 11).[50] But in real terms this increase would be substantially less. In addition, it is not clear how much of the released amount was actually made available at the primary facility level.

There have been two national public expenditure tracking studies[51] covering the health sector: the 1999 and the 2001 studies covering three and five districts, respectively. The 1999 study found that only 12 per cent of the funds reached the intended beneficiaries. The 2001 study found that less then half the funds reached the intended beneficiaries.

Table 11. Total and per capita actual health expenditure in Tanzania, Fiscal Years 2000 to 2004

	2001/02		2002/03		2003/04		2004/05	
	TShs billion	TShs per capita	TShs billion	TShs per capita	TShs billion	TShs per capita	TShs billion	TShs per capita
Local Government	47.73	1,400	59.18	1,700	66.09	1,900	87.28	2,400
Total	141.05	4,200	176.36	5,100	220.10	6,300	312.81	8,700

Source: MoF Public Expenditure Review, 2005 and authors' calculations using NBS, Census 2002

Note: To obtain population estimates for the non-census years, an annual growth rate of 2.5 per cent was applied. Figures for 2004/05 are budgeted numbers and not actual expenditure.

All in all, adequate management and information systems have not been put in place to ensure appropriate collection and utilisation of fees. Also, communities do not have access to relevant information - about budgets, incomes, expenditures, use of medical supplies, etc. - and are generally not involved in the planning and financial management of health services. Further, reliable mechanisms for raising concerns and for channelling these to the district level for action are not in place. Essentially, communities are not able to ensure the effective use of available resources.

Interestingly, the most recent Afrobarometer results show a marked improvement in the respondents' assessment of the Government's performance in the health sector. In 2001, 50 per cent of respondents thought the Government was performing well, while in 2003 this had gone up to 70 per cent, and remains at that level according to preliminary results for 2005. According to the Auditor General's Report, the Audits of the Ministry of Health have improved since the late 1990s (TGNB 2005). Whereas it received an adverse opinion in Fiscal Years 1999 and 2000, it received a qualified opinion from Fiscal Year 2001 to Fiscal Year 2003. Also there has been a significant decrease in the amount of questioned expenditures, from 46 per cent in Fiscal Year 1999 to 4 per cent in Fiscal Year 2002, although it went up again to 5 per cent in Fiscal Year 2003, slightly above the national average of 4 per cent.

[50] These figures relate to the health expenditure, and exclude off-budget support and incomes from cost sharing.

[51] REPOA and ESRF 2001. "Pro Poor Expenditure Tracking," draft report submitted to the PER Working Group, March 2001, Dar es Salaam; and Price Waterhouse Coopers 1999. "Tanzania Public Expenditure Review: Health and Education Financial Tracking Study," commissioned by the Government of Tanzania and DfID, March 1999, Dar es Salaam.

HUMAN RESOURCES IN THE HEALTH SECTOR

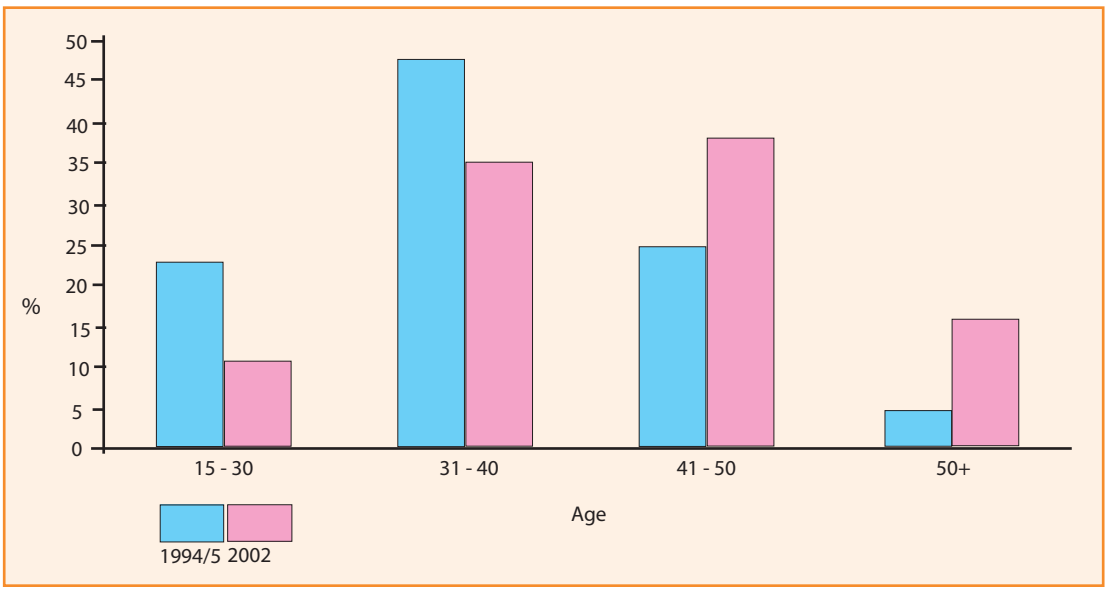
Human resources are the single most important input in the health sector. The most pressing problems facing the health system are a lack of health personnel, sufficiently trained and appropriately deployed, and poor health worker performance (Mliga, Mwakilasa & Mwakalukwa, 2005).

The total number of active health workers in 2001/02 was estimated at 54,200, with unskilled workers forming the largest group (31 per cent), followed by the professional group of nurses and midwives (24 per cent) (Kurowski et al, 2003: 24 [52]). Between 1994/5 and 2001/02, the number of active health workers per 100,000 population decreased by 35 per cent: from the observed 249.4 to an estimated 162.1 per 100,000 population. Shortage of health staff is even more acute when differentiated by cadres, with significant deficits among skilled health professionals.

The estimated ratios of currently active professionals per 100,000 population are 38.9 for nurses, 2.5 for physicians and 25.3 for medical cadres (i.e. medical officers, assistant medical officers and clinical officers).

The decline in human resource followed a freeze in civil service employment adopted by the Government in1993 [53]; it is also responsible for the ageing cohort that will need to be replaced within the very near future (see Figure 15). Roughly 50 per cent of all budgeted

Figure 15. Age composition of health sector employees, 1994/5 – 2002



Source: Kurowski et al, 2003

Deployment of available health workers is highly imbalanced (Kurowski et al, 2003). Overall, 65 per cent of the 54,200 health workers in 2002 were located in the public sector, 22 per cent in private not-for-profit and 14 per cent in private-for-profit. Roughly 84 per

[52] Study based on a survey sample of 23 districts. Corresponding absolute numbers are roughly 67,600 and 54,200; estimates are based on a sample of the 2001/02 human resource census data; per capita figures are calculated using NBS, Census 1988 and 2002, using the 1988 census and an exponential annual growth rate of 2.7%, n=7.

[53] The employment freeze was lifted in 1998 for priority sectors, including health.

cent of the health workers, mainly constituting low skilled cadres, were employed in the rural areas. The16 per cent who are employed in urban areas represent a disproportionate share of high skilled cadres. Even after corrections for infrastructure [54], regional variation in staff per population remains significant, and the disparities are even greater at the district level. The number of nursing staff per 10,000 population for example, varied between 1.6 in Mkuranga and 16.2 in Ilala. These disparities are also confirmed by findings of a recent facility-based survey of the current status of human resource quality, availability and distribution in six districts of Northern Tanzania (covering 129 facilities) (Olsen OE, Ndeki S, Norheim OF, 2005).

The barriers to improving the human resource situation are many and imposing, in particular for highly skilled workers in the public sector who are overburdened, poorly paid and working under conditions that are demoralizing (Kurowski et al., 2003; Mliga, Mwakilasa & Mwakalukwa, 2005).

Poor health worker motivation and performance is commonly manifested in many of the documented issues faced by patients: in lack of courtesy to patients, illegitimate charging for drugs and equipment, high levels of absenteeism, "dual practice", and poor task performance such as failure to conduct proper patient examinations. These problems among health staff not only negatively affect quality of care, but also reduce the utilisation of health services and ultimately impact negatively on health outcomes. According to Kurowski et al (2003), staff productivity was around 57.5 per cent [55]. Through improved staff management and optimised staffing levels, the potential exists to achieve a productivity gain of 30 per cent (for example, by addressing breaks, waits for patients, social contacts, unexplained absences).

Existing constraints in staffing are likely to be further aggravated by the HIV epidemic's impact on increased mortality and morbidity in the work force; and because of increasing demands placed on the health sector for additional care of those infected, and the rolling out of the national treatment plan. Unless many of the aforementioned issues are addressed, there is the real possibility both of failing adequately to respond to the HIV/AIDS epidemic, and of hampering effective delivery of essential health care.

Conclusions and Recommendations

Summary of progress

Recent data indicate substantial reductions in infant and under-five mortality and more modestly reduced rates of child malnutrition, though the prevalence of stunting in children, 38%, is still very high. Life expectancy at birth, now estimated from the 2002 population census at 51, is little changed compared to the estimate from the 1988 census. Maternal mortality is unchanged and continues to be very high, now estimated to be 578 (per 100,000 live births).

More effective prevention and treatment of malaria are likely to be important contributors to improved health, especially to the reduction in infant and under-five mortality. Immunisation rates have been sustained at a high level.

Newly available information which is nationally representative indicates an HIV prevalence rate in adults of 6.8 per cent. This implies that about 1 million adults in Tanzania are HIV positive.

[54] 55% of the active workforce is employed in hospitals, 13% in health centres and 32% in dispensaries.

[55] Based on time and motion studies in 10 public facilities in the Rufiji district and Kinondoni and Ilala Municipalities; defined as the time health workers spent on patient care, outreach activities, administrative tasks, in meetings, in training activities, on cleaning, preparatory and maintenance activities, and research.

There remain substantial urban-rural, regional and socio-economic differences. Rural poor children are more likely than their urban counterparts to die, and when they survive are more likely to be malnourished.

Evidence of changing disparities over time is mixed. In less poor regions/districts and less poor households, rates of stunting in children improved to a greater extent than in poorer areas, but overall, rural children experienced a reduction in rates of stunting, while urban children did not, between 1996-2004. Analysis of infant mortality in the 1990s suggests a widening gap between the poorest and less poor. This may be evidence of greater inequities in outcomes. However, more recent health measures might help redress this.

Policy and operational issues identified

The lack of qualified human resources for health care is a major limiting factor in implementing health policies and health reforms within the country. One of the major challenges is securing the availability and effective use of qualified human resources. Strategies need to be put in place to increase effective capacity and performance, primarily in the public sector. The TEHIP experience is useful here. Training and innovative management tools (for building district planning capacity and improving the performance of health workers) towards improved productivity were key to its success.[56]

The continuing high rate of child malnutrition, especially in young children, remains a concern and needs attention, with special focus on very young children and mothers, especially adolescent mothers. Strategies for improved feeding practices for young children need to be explored.

High rates of maternal mortality need to be reduced. Emergency obstetric care needs to be improved, and access to antenatal care and delivery facilitated, including improved referral services, especially for poor and rural women.

Recommendations for indicators and monitoring systems

More analytic work is needed with the data sets now available from the census and the demographic and health survey to explore socio-economic differences in health outcomes. This analytic work can be complemented by greater systematic use of panel studies and information from surveillance sites.

Focused facility based surveys can be useful in monitoring the quality of care provided.

The monitoring system does not adequately attend to the needs of adolescents. In the absence of adequate information on adolescent fertility and reproductive and sexual behaviour, it is not possible to assess the effectiveness of programmes that aim to promote gender equity, safe reproduction and the retention of girls in primary and secondary education.

Further analysis is needed of future financing strategies towards improved health care delivery and their equity implications.

More systematic use of tracking surveys would be helpful to assess the flow of resources to primary health care facilities and to better understand the use of these resources and their impact on the quality of health services. The tracking surveys need to include information not only about financing for "other charges," but also for supplies of drugs and other medical supplies.

[56] The MoH is working towards activating the Zonal Training Centre system, with national scaling up of the TEHIP Tools and IMCI.

C. VULNERABLE CHILDREN

The Poverty Reduction Strategy and MKUKUTA have recognized the problems of groups of people who are particularly vulnerable and who therefore need special attention. There are data from the population census which shed some light on the conditions of specific groups who might be considered to be most at risk, and they are presented here.

The general perception of vulnerable groups, including vulnerable children, is that they live under disadvantaged conditions and that they are therefore more likely to be poor. Except for the Labour Force Survey which explicitly sought information on working children,[57] specific vulnerable groups go largely undetected in most surveys. The small size of these groups makes them statistically invisible, especially in small surveys. Poverty mapping techniques[58] and analysis of the 2002 population census data has made it possible to assess in greater detail some specific aspects of vulnerability. Estimates of income poverty and indicators of vulnerability are possible at district level, allowing for a geographic focus. In addition, it is possible to attribute poverty based on information from the household budget survey to individual characteristics as reported in the population census.

Since MKUKUTA puts special emphasis on the protection of vulnerable children, and particularly the increasing numbers of those who have been orphaned, analysis with poverty mapping techniques has been undertaken to look into aspects of vulnerability among:

- children with a disability
- children who have lost at least one parent (single or double orphans)
- children living in child-headed households
- children living in households with adults aged 60 and above (i.e. without 'productive' adults)[59]

A study on poverty among people with disabilities (Lindeboom 2005) also looked into the educational attainment of children from households headed by a person with a disability.

Additional work could be undertaken for similar analyses of other groups which can be identified from the census information, such as the elderly, and it is expected that this will be done in the near future.

Children with a disability

There is a clear link between the prevalence of disability among children and district poverty levels. The disabled tend to live in poorer areas. Also at the household/individual level there appears to be a relation between poverty and child disability. The application of poverty mapping techniques for small socio-economic groups suggests that children from households with disabled children have higher probabilities of being poor than those from households without disabled children.

Children with disabilities have relatively low primary school attendance, and there is a marked difference in years of schooling between disabled and non-disabled children.

[57] See Poverty and Human Development Report 2003 and Chapter 3, Spatial Analysis, below.
[58] The methodology is summarised in the following chapter, Spatial Analysis, and in more detail in Kilama and Lindeboom, et al., Where are the Poor in Tanzania, forthcoming.
[59] Study on Vulnerable Children (UNICEF, 2005 under revision)

Thus, at the age of 17, children with disabilities have missed 4 years of primary education compared to 1.7 years among children without disabilities.

Orphanhood

The relationship between orphanhood and poverty mirrors the association between poverty and HIV/AIDS prevalence at district level. Orphanhood, in particular maternal orphanhood, is more prevalent in better-off districts which also have higher population densities.

At the individual level the relationship between orphanhood and poverty is more intuitive, though it is not a strong one. Slightly more children from households with orphans are estimated to be living below the poverty line compared to children from households without orphans (42 per cent compared with 37 per cent). Living conditions, indicated by the availability of household assets, access to clean water and housing characteristics, do not seem to differ between households with orphans and those without orphans.

Though differences are small, census data also suggest that a slightly larger proportion of orphaned children is working, compared to non-orphaned children, and these differences are more pronounced in urban than in rural areas. Differences in years of primary schooling between orphaned children and others are also small. At the age of 17, orphaned and non-orphaned children lack, on average, 2 and 1.7 years of primary education, respectively.

Children from child-headed households

Geographically, child-headed households are more common in urban than in rural areas, and in better-off districts.

At an individual level, children from child-headed households are more likely to be working than children from adult-headed households. Roughly 16 per cent of 10 year olds from child-headed households were working (paid, unpaid or self employed), compared to 10 per cent of children of the same age from adult-headed households, and a larger percentage of urban children than rural children were working.

There are very small differences in years of schooling between children from child-headed households compared to those from adult-headed households, and this shows up only among rural children, where there is a 0.3 year gap in years of primary education among 17 year-olds; 2.3 years missed for those from child-headed households and 2 years missed for children aged 17 from adult-headed households.

Children living with the elderly

The elderly and older children play an increasing role in caring for people living with HIV/AIDS and orphaned children. Households consisting of only elderly persons and children (without adults in the productive age-groups) are more prevalent in rural areas (3.4 per cent versus 0.7 per cent in Dar es Salaam and 1.7 per cent in other urban areas). In the district-level analysis, overall, such households do not appear to be disproportionately poorer than others. In rural areas, living conditions of children from households with elderly persons and children are comparable with those of children from households with adults in the productive age-groups. In urban areas, however, these children seem to be worse off in terms of possession of household assets, energy use, use of improved drinking water sources and quality of housing.

Neither years of schooling nor working status seems to be influenced by the absence of productive adults in the household. The differences in lack of years of primary education and the proportion of children working are small and not statistically significant.

Children from households headed by a disabled person

The disability of the head of a household is likely to be an important impoverishing force for the household as a whole and, given the general belief that poverty is inter-generational, it is fair to assume that children will also be impoverished.

According to Lindeboom (2005), within urban areas there were substantial differences in household and housing characteristics between households headed by a person with a disability and other households. Urban households headed by a disabled person were worse off in terms of household assets and quality of housing. These differences were also observed in rural areas but were less pronounced.

The number of years of schooling of children in households headed by a person with a disability are slightly fewer than those of children in other households; again differences being more pronounced in urban compared to rural areas.

Small and statistically insignificant differences were found in the proportion of children working in households headed by a person with a disability compared with children in other households.

What makes children vulnerable?

Given the limited set of indicators provided by the 2002 Housing and Population Census, it is not possible to assess all aspects of children's vulnerability. Results from two studies, one on vulnerable children, the other on disability, suggest that household conditions have a limited impact on years of schooling and working status. These impacts are felt more within urban than rural environments.

It should be noted that this conclusion is the result of an initial analysis of the quantitative information available from national data sets. This analysis needs to be complemented by more qualitative, sociological analyses and more specific follow-up in smaller areas of the country where the indications are that children, households and communities are disproportionately more vulnerable.

A category of children that is significantly deprived of opportunities is children living with a disability. They tend to live in poorer areas. Further, their educational performance lags far behind that of physically able children. Census data suggest that the number of disabled children is relatively small, though it is likely that the number is under-reported. Their specific educational needs merit priority attention.

D. WATER AND SANITATION

This section of the report is based extensively on material made available by WaterAid, Tanzania.[60] MKUKTA has six operational targets for water supply, sanitation and waste management, expanding on the more limited set of PRS indicators. For access to water, MKUKUTA now puts some emphasis on the time it takes to go, collect and return with water, which is a more inclusive indicator of the demands of domestic water management. The set of indicators is summarised in the table below.

Table 12. Water and sanitation indicators, Tanzania mainland, 1999-2004

Indicator %	Year				Targets	
	1999	2002	2003	2004	PRS 2003	MKUKUTA 2010
Rural population with access to clean & safe water within 30 minutes spent collecting water Routine data Census	-	 42	53	-		65
Urban population with access to clean and safe water Routine data Census	-	 85	73	-		90
Urban population with access to improved sewerage facilities	-	-	17	-		30
Households living in slums without adequate, basic, essential utilities	-	-	-	-		
Households with access to basic sewerage services	-	-	-	-		
Schools with adequate sanitary facilities	-	-	-	-		100
Population with access to basic sanitation Census	-	 91[61]	-	-		95
Cholera outbreaks	-		-	-		50% of 2005

Source: NBS (2003) Population and Housing Census 2002; routine information on access to water and sewerage services from respective ministries; information on cholera outbreaks from Epidemiology Unit, Department for Preventive Services, MoH [62]

Note: A dash (-) means data not available.

[60] See http://homepage.mac.com/globalimpacts/FileSharing 1.html

[61] This includes flush toilets, pit latrines and ventilated improved pit latrines (VIPs).

[62] WaterAid is currently working with the Epidemiology Unit of the Department for Preventive Services in the Ministry of Health on a study analysing existing cholera data generated by Infectious Diseases Week Ending reports (IDWE) with a view to developing a meaningful indicator for measuring cholera outbreaks.

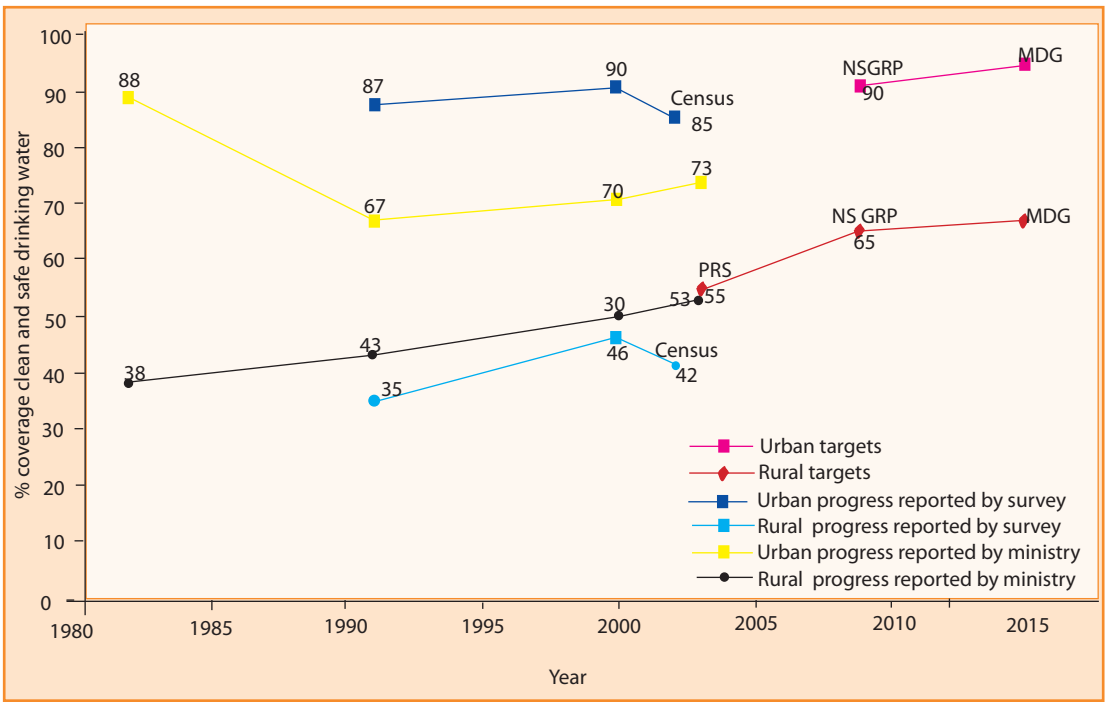
Access to clean and safe water

There are two main sources of information about access to water: household surveys and censuses; and the routine information of the Ministry of Water and Livestock Development which is based on estimates reported by District Water Engineers and Urban Water Authorities. The targets have been set by the Ministry based on routine data and based on the notion of 'coverage' or the number of people covered by water points and water schemes that are in place and functioning.

As discussed below these estimates are often at variance with information from surveys of households. Also, the routine 'coverage' indicator does not claim to report on the time needed to fetch water. The MKUKUTA target is therefore far more challenging than it first appears. The 53 per cent coverage reported for 2003 does not include a time dimension whilst the MKUKUTA target of 65 per cent for the rural population does.

Figure 16 below shows how access to water in urban and rural areas has changed since the early 1980s. Both survey and routine data suggest that an increasing percentage of households have access to an improved source of water. The most recent census shows a fall in these percentages.

Figure 16. Urban and rural water supply coverage against PRS and MKUKUTA targets and the MDGs



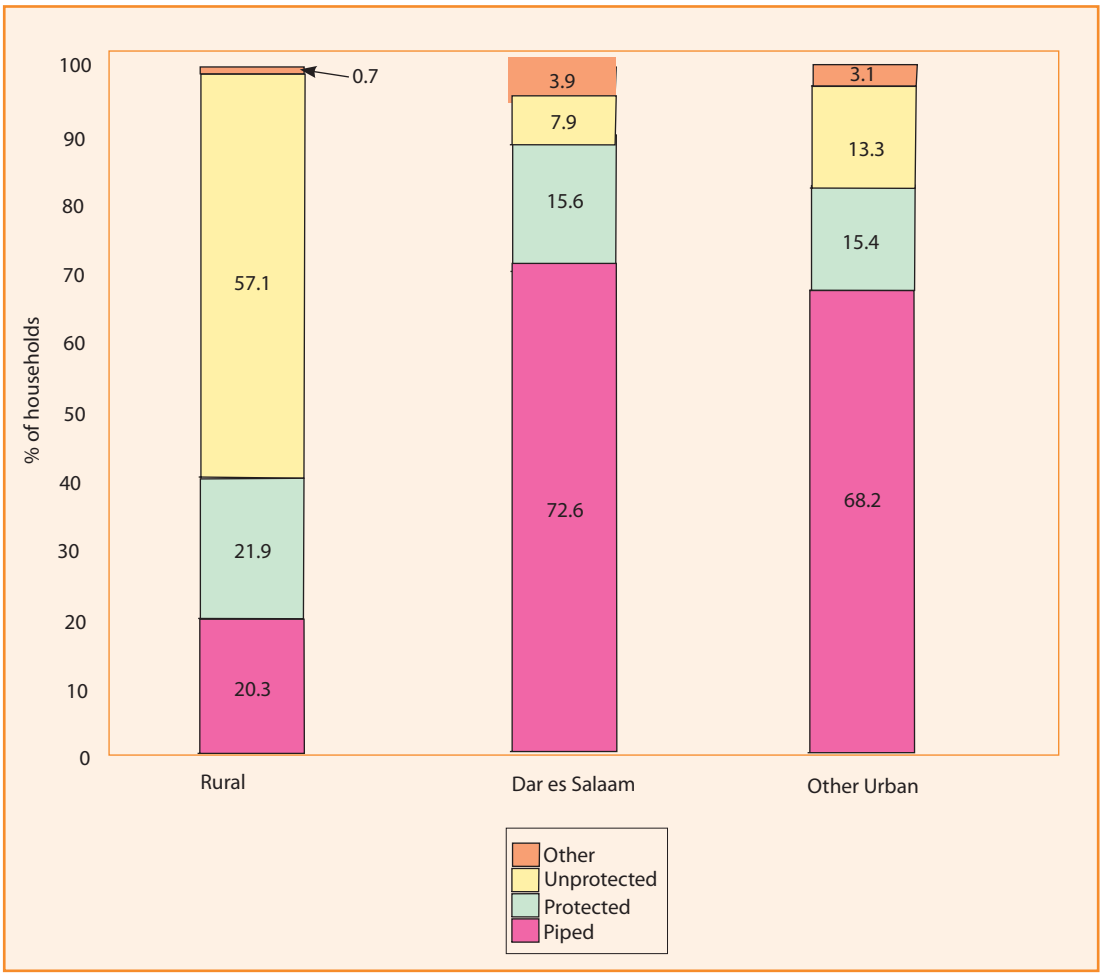
Source: Population Census 2002

According to census data, 42 per cent of rural households and 85 per cent of urban households in Tanzania now have access to an improved water source [63] for their drinking

[63] Improved water supply is defined as those households that get their main source of drinking water from a piped supply or from a protected well or spring.

water. (See Figure 17.) The census did not include questions about the time needed to fetch water. Demographic and health surveys typically do ask such questions, and information from earlier surveys has been reported in previous Poverty and Human Development Reports. Similar information from the most recent demographic and health survey is not yet available.

Figure 17. Percentage of households by main source of drinking water



Source: Census 2002

The census estimate of 42 per cent of rural households with access to improved water supply is notably less than the 2003 routine data figure of 53 per cent. Conversely, the census reported consistently higher rates of access to improved water supply for urban areas.

For urban areas the reason for the consistently lower coverage rate reported by routine data is twofold. First, the Urban Water and Sewerage Authorities report on only the coverage of the municipal piped systems they manage. Private sources, including boreholes and protected shallow wells, most of which are not registered, are not included in the coverage estimate. Second, the many households without a connection to the municipal supply

who obtain their drinking water from their neighbours are underestimated.

For rural areas there is no obvious pattern of either over or under reporting between the census and the Ministry's routine data. Survey data from the Household Budget Survey are similar to those from the census. There are also a number of extreme regional discrepancies between census and routine data (see Table 13). While some of these discrepancies can be attributed to methodological differences between survey and routine data collection systems, there remain unexplained discrepancies which call into question the validity of relying on routine data for monitoring progress towards the targets.

Table 13. Comparison of reported rural water supply statistics

Region	Census 2002 % of rural HH with access	Ministry Routine Data 2003 % of rural population served	Difference in % points
Pwani	15	59	- 44
Mtwara	29	64	- 35
Kilimanjaro	74	54	+ 20
Dodoma	50	77	- 27

While the census reports that overall 42 per cent of rural households have access to improved water supply, this average masks a very uneven distribution across districts which are examined further in the next chapter on spatial analysis. Seven districts have fewer than 10 per cent of rural households with improved water supply: Sikonge (4 per cent), Igunga (5 per cent), Kishapu (9.6 per cent), Liwale (8 per cent), Mkuranga (6 per cent), Rufiji (9 per cent) and Mafia (3 per cent). At the other end of the scale there were four districts in which over 80 per cent of rural households were reported to have access: Arumeru (82 per cent), Mwanga (82 per cent), Kyela (83 per cent) and Rombo (93 per cent).

The 2003 Afrobarometer survey found that for 52 per cent of respondents the Government was doing "very badly" or "fairly badly" in delivering water to households, and preliminary 2005 results suggest that the situation has not improved: close to 54 per cent of the respondents remain dissatisfied.

Access to sewerage facilities [64]

The current aggregate figure for coverage of sewerage facilities in city and municipal urban areas is 17 per cent.

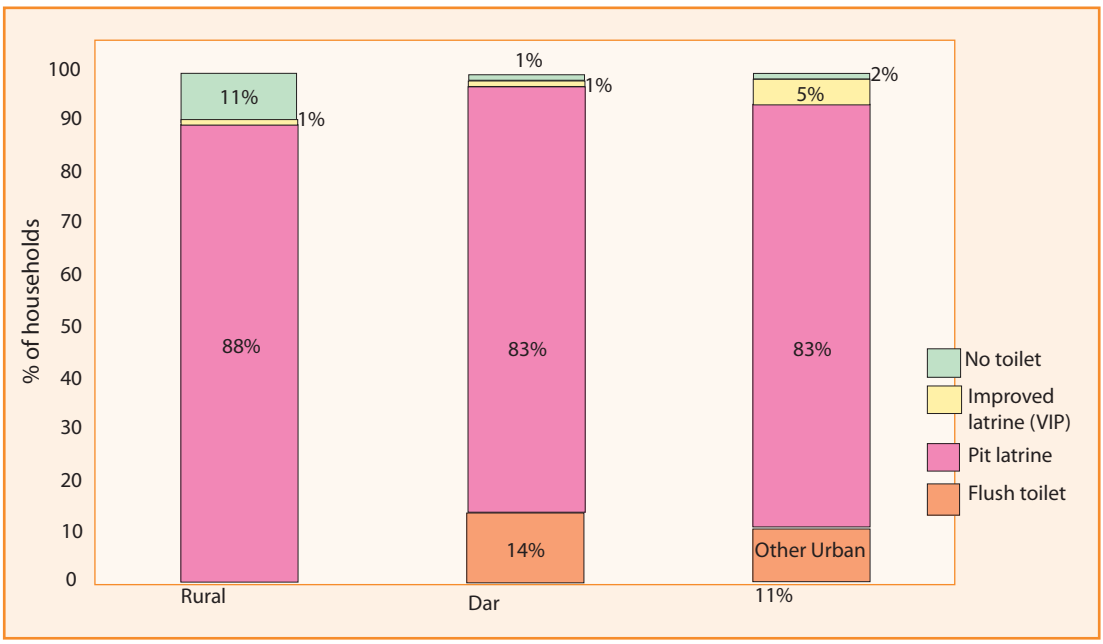
Households living in slums without adequate basic essential utilities will be a challenging indicator to report. First, there will need to be agreement on what a 'slum' is. A less pejorative term would be unplanned areas. Second, the definition of adequate utilities needs to be agreed. These definitions need to be debated. No further comment is made about this indicator here.

It is probably not possible to get data about schools and sanitary facilities from the census; the status of this indicator would rely on data from the Ministry of Education and Culture.

[64] Access to sewerage facilities is only reported by the Ministry of Water and Livestock Development. The source of the data is Urban Water and Sewerage Authorities.

Regarding basic sanitation, census and survey data report on the existence of household toilet facilities, with response options limited to flush toilet, pit latrine, ventilated improved pit latrine (VIP), no facility and other. Consistent with previous surveys [65], the census reports a very high percentage (87 per cent) of households as having pit latrines and only 9 per cent of households with no toilet facility at all (see Figure 18). The data are consistent across all national surveys and are supported by other more detailed surveys (CWIQ, WaterAid). These data, however, do report the quality of toilet facilities. Response options fail to distinguish between adequate and inadequate sanitation: the term VIP is too specific and the term pit latrine too broad since the term pit latrine covers both adequate and inadequate sanitation.

Figure 18. Household toilet facilities.



Source: Census 2002

There are notable geographical variations: in four districts more than 50 per cent of rural households had no toilet facilities: Ngorongoro (57 per cent), Kiteto (58 per cent), Simanjiro (61 per cent) and Monduli (79 per cent). These are all districts in which the majority of people are pastoralists.[66]

Another limitation of these data is that they do not reflect actual use of facilities, nor are there regularly reported data on other hygiene practices which would help reduce the prevalence of water and sanitation related diseases.

Cholera

There is a close link between water supply, sanitation, hygiene practices and waterborne diseases such as cholera. The spread of cholera in particular is influenced by the interaction

[65] As far back as 1973 the government introduced a 'latrinisation' campaign under a programme called "Mtu ni Afya" (You are your health) aimed at ensuring that each household would have a latrine. The campaign was given added impetus following a cholera outbreak in 1977. Latrine coverage increased from 20-50 per cent between 1973 and 1980, reaching 85 per cent in the 1988 Census.

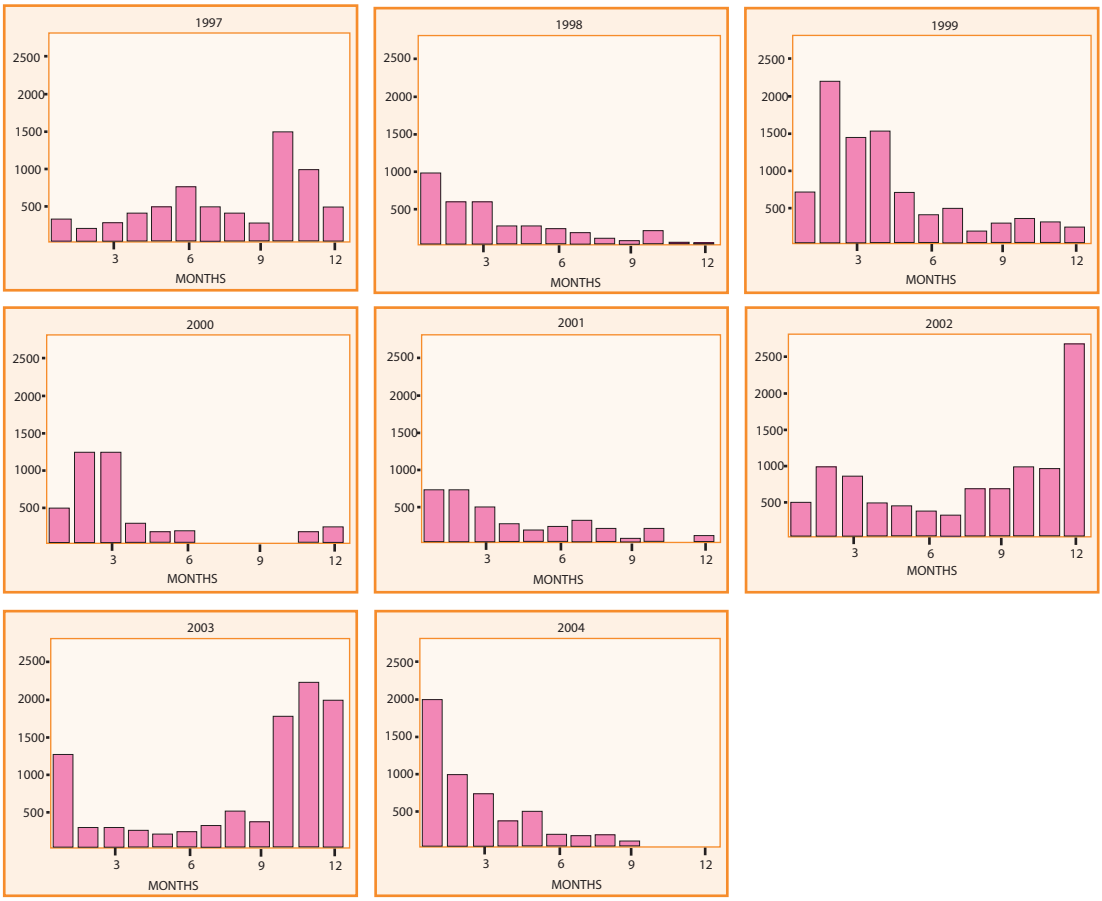
[66] Though many still depend on their transhumant livelihoods and so would see little point in building permanent toilet facilities, increasing numbers of families are building permanent bases around new health, education and water supply infrastructure.

of all three of these factors. It is for this reason that cholera outbreaks are a pertinent 'outcome indicator' reporting on the environmental change emerging from the combination of water supply, sanitation and hygiene promotion initiatives. Currently the Ministry of Health reports on annual 'case fatality rates' (CFR) against the WHO recommended standard of below 1%. This is only an indicator of effective clinical management of cholera cases and not of the public health measures taken to prevent cholera.

Since the first major officially reported cholera epidemic in Rufiji, 1977-78, cholera is reported to have spread to most regions of the country. Tanzania reports cholera outbreaks almost every year.

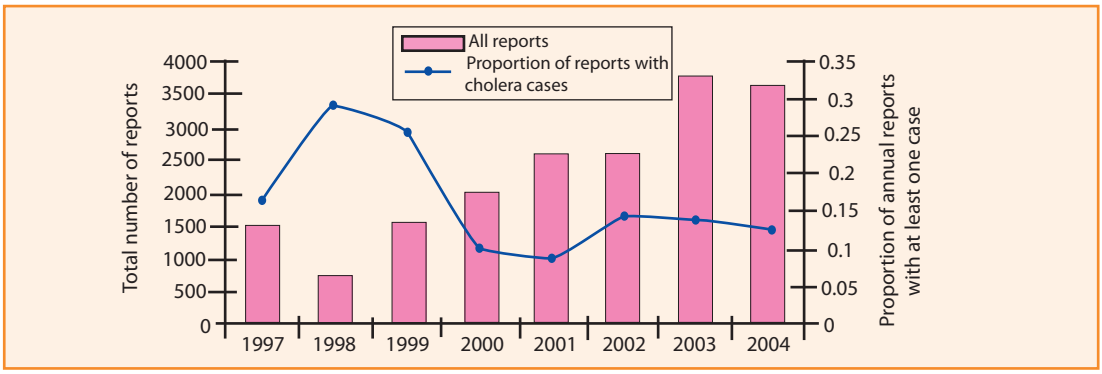
In some regions like Dar es Salaam, cholera can be considered endemic. Cholera transmission shows a seasonal pattern, generally with a larger proportion of cholera cases being reported during the rainy seasons October to December and March to May (see Figure 18). Over the past three years, 2002-04, reports of cholera cases have persisted throughout the year and it is clear that the total number of annual cases reported has also increased. This may be a reflection of a real increase in cases or it may also be a result of improved reporting procedures.

Figure 19. Total cholera cases reported monthly, 1997 - 2004



Available data from Infectious Diseases Week Ending (IDWE) reports [67] from 1994 onwards suggest a steady if rather slow improvement in the frequency of reporting from districts (see Figure 20). By 2003 just over 60 per cent of the 5824 expected district reports for the year were submitted. In the 1990s, when reporting was erratic, the ratio of cholera reported to reports submitted is higher than in later years, when reporting has become more regular.

Figure 20. Proportion of annual reports reporting at least one cholera case



Source: Department for Preventive Services, MOH.

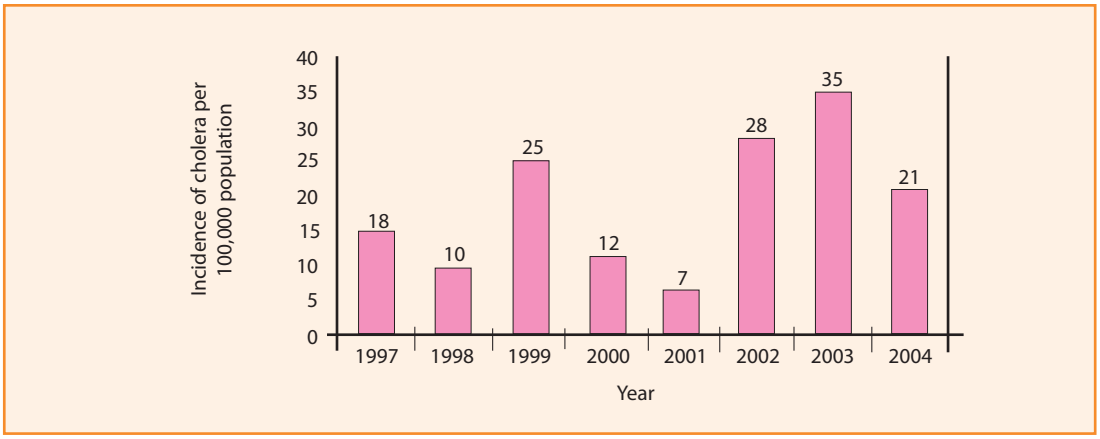
The MKUKUTA operational target for cholera is to reduce cholera 'outbreaks' by half by 2010. Monitoring progress against this indicator would require a clear definition of what an outbreak is and how it may be counted. This is especially challenging in areas of Tanzania where cholera has become endemic such as Ilala municipality in Dar es Salaam. Even in areas where cholera is not endemic, defining and confirming an outbreak is a subjective business especially in areas where bacterial confirmation of cases is hindered by absence of laboratories.

Also, reporting on the number of outbreaks does not indicate the volume of cases. For example, one area can have two outbreaks a year with hundreds of cases each, and another area can have 12 outbreaks but very few cases in each. Generally speaking, fewer cases can indicate an effective clinical response to an outbreak. But fewer cases can also indicate heightened public awareness and good hygiene behaviour that stops the disease from spreading. Therefore a possible addition or an alternative to measuring outbreaks may be to measure the incidence or cholera 'attack rate'. [68] Though this is more objective than counting outbreaks, clearly defining the reporting period of an outbreak remains problematic. Cholera attack rates fluctuate so much year on year that tracking year on year changes is not helpful (see Figure 21).

[67] IDWE reports are compiled by the Department for Preventive Services. IDWE data is compiled by Districts from health facilities and covers infectious diseases including cholera. Records from 1994 onwards are available.

[68] Cholera attack rates are often expressed in terms of new cases of cholera reported per 100,000 population per year; Department of Health: Directorate of Health Systems Research and Epidemiology (Notification System) Pretoria, South Africa

Figure 21. Cholera attack rate for Tanzania Mainland



Source: Department for Preventive Services, MOH.

Conclusions and recommendations

Summary of progress

Less than half of rural households have access to an improved source of drinking water. In seven districts, less than 10 per cent of households have such access.

Over 90 per cent of household report having toilet facilities – mostly pit latrines, and it is not possible with available data to know whether they constitute basic sanitation.

Policy and operational issues identified

Cost effective strategies are need to more quickly improve access to improved water supplies for rural households and for those in peri-urban areas.

Recommendations for indicators and monitoring systems

There are important limitations of, and challenges encountered in, the definitions of MKUKUTA indicators and in their monitoring. The indicators for water and sanitation are being reviewed as part of the review of the monitoring system, along with identifying reliable sources of data.

Tracking studies would be helpful, linked with the Public Expenditure Review process.

CHAPTER 2: SPATIAL ASPECTS OF POVERTY AND INEQUALITY

Introduction

This chapter reports on estimates of household income poverty at district level for the first time in Tanzania. Previously, poverty estimates obtained from household budget surveys were available at the regional level. By combining information from the population census and the household budget survey, it has proved possible to arrive at poverty estimates for smaller administrative areas. The availability of district level poverty information has many advantages. The information can be used, for instance, for improved targeting of anti-poverty programs, or to make budget allocations to districts more pro-poor by including poverty levels into the formulae for district budget allocations.

The poverty estimates for 119 districts are presented in the form of so-called poverty maps. An advantage of such a spatial representation of poverty is that it can be combined with other geographic data for social amenities like schools, health centres, or biophysical, environmental and agro-climatic information. Poverty maps can give visually oriented, more comprehensive and integrated data bases that can be immensely valuable for evidence-based development planning and policy formulation.

A spatial representation of poverty gives rise to new questions for research. For instance it provides pointers towards the importance of district characteristics in explaining poverty. It also provides insight into the extent to which physical isolation and poor agro-ecological endowments may affect communities' rates of poverty. Poverty mapping techniques also lend themselves to estimating poverty for small vulnerable groups such as orphans or people with disabilities, and to considering geographic inequality in greater detail. Inequality is further pursued in this chapter.

This chapter is organised as follows. The next two sections explore evidence of geographic disparities in poverty - in household income poverty as evidenced by data on household consumption - and in aspects of non-income poverty. Section two presents poverty maps and briefly discusses how they have been derived. Section three provides information taken from the National Bureau of Statistics' 2002 population census, from the Ministry of Education and Culture's basic statistics in education (2002, 2004) and from statistics of the Ministry of Health. In the final section we discuss some of the policy implications from this analysis.

Income poverty at regional and district level

Poverty estimates in Tanzania have, to date, been obtained from periodic surveys. Household Budget Surveys (HBS) have been conducted with detailed questions about income and expenditures from which poverty estimates were derived. The most recent household budget survey, conducted in 2000/01, provides regional estimates of income poverty. These estimates, presented in Table 1, show large differences among regions.

The estimates are unable to show variation in poverty within regions because the samples which generated these estimates were not large enough.

For planning purposes, poverty estimates for smaller administrative levels are most useful. To meet this demand Elbers, Lanjouw and Lanjouw [69] developed a small area poverty estimation method also known as poverty mapping. The method generates poverty estimates for relatively small geographical areas by enriching household budget survey data with census data which are available at much smaller levels of geographic disaggregations. The poverty mapping technique not only provides estimates of poverty at the district level but also generates regional poverty estimates with greater precision. Both are presented below.

To derive the poverty map for Tanzania, data from the 2000/01 Household Budget Survey were combined with the population data from the 2002 Tanzanian Housing and Population Census, both conducted by the National Bureau of Statistics (NBS). This method combines the strength of both data sources, i.e. the high level of detail on household income present in the HBS and the large number of observations of the population census.

The Tanzania poverty maps were derived in a four step procedure. The first step involved comparing the variables that are available in the HBS and the Census and selecting those variables that are defined and measured in an identical way. Once these variables were identified, the second step involved exploring the relationship between these variables and per capita consumption. As there is no information on income or consumption in the census, this was done through an analysis of HBS survey data. Regressions were estimated, explaining per capita consumption with variables such as household size, education and housing characteristics.

In the third step, the regression relation that was estimated for the HBS was used to infer for each household in the census its per capita consumption. This is possible because in step 1, common variables between the census and HBS were identified, and in step 2 a relation was estimated using variables that were present in both the HBS and the 2002 Population Census.

Finally, once consumption was derived for every household in the census, estimates such as the proportion of households that are poor, or indexes of inequality, were inferred and then mapped.

A more detailed explanation of the poverty mapping methodology and derived estimates will be published shortly. [70]

Poverty incidence is defined as the percentage of people below the basic needs poverty line. In Tanzania, the basic needs poverty line in 2000/01 was set to be TShs 262 per adult equivalent per day. [71]

[69] Elbers, Lanjouw J.C. and Lanjouw, P (2003). Micro-level estimation of Poverty and inequality. Econometrica, Econometric Society, vol 71(1), pages 355-364

[70] Blandina Kilama, Wietze Lindeboom et al., Where are the Poor in Tanzania, forthcoming

[71] National Bureau of Statistics (2001) Tanzania Household Budget Survey 2000/01

Income poverty estimates at regional level

As Table 14 illustrates, the regional poverty estimates derived from the household budget survey have high standard errors.[72] By combining the HBS data with census information, new regional poverty estimates have been derived with much smaller standard errors. They are also shown in Table 14.

Table 14. Percentage of households below the basic needs poverty line, by region, 2000/01

REGION	Households below poverty line original (HBS)		Households below poverty line simulated (poverty map)	
	estimate %	std error	estimate %	std error
Dodoma	34	5.5	32	3.1
Arusha/Manyara	39	7.0	31	1.4
Arusha	-	-	21	1.5
Manyara	-	-	43	2.4
Kilimanjaro	31	6.3	28	1.3
Tanga	37	5.8	26	1.3
Morogoro	29	3.0	28	1.9
Pwani	46	8.3	38	2.1
Dar es Salaam	18	2.7	19	1.2
Lindi	53	14.1	39	2.3
Mtwara	38	4.3	38	2.0
Ruvuma	41	8.3	37	2.1
Iringa	29	5.3	28	1.6
Mbeya	21	5.1	23	1.1
Singida	55	4.8	49	3.4
Tabora	26	3.7	40	2.1
Rukwa	31	3.9	36	2.0
Kigoma	38	3.7	38	2.3
Shinyanga	42	6.5	43	2.4
Kagera	29	8.9	29	2.0
Mwanza	48	6.3	43	1.7
Mara	46	8.4	50	2.6

Source: HBS 2001 and Blandina Kilama, Wietze Lindeboom et al., Where are the Poor in Tanzania, forthcoming

For Dodoma, the new estimate is 32 per cent with a standard error of 3.1, and a 95 per cent confidence range of between 26 per cent and 38 per cent. Poverty mapping, therefore, has generated estimates of regional poverty rates with greater precision than the previously

[72] Standard errors are the usual measures of the precision with which a number has been estimated. If a poverty estimate is 30 per cent with a standard error of 2, we can be 95 per cent confident that the real poverty rate will lie between 30 plus or minus twice the standard error of 2, ie between 26 per cent and 34 per cent. High standard errors imply that estimates are imprecise and therefore less useful. An example is taken from Table 14. According to the HBS, the rate of poverty in Dodoma is 34 per cent with a standard error of 5.5. This implies that with 95 per cent confidence we can claim that the percentage of households in Dodoma who are poor is between 23 per cent and 45 per cent, a range so wide that it is almost uninformative.

available estimates.[73] The new estimates are not significantly different from the HBS's estimates, except for Tabora.

Income poverty estimates at district level

Using the poverty mapping technique, which allows for lower level estimation of poverty, we are able to estimate poverty at district level. Because districts are smaller, with correspondingly smaller sample sizes than regions, standard errors are higher. But in more than 90 per cent of the cases, standard errors of the resulting district estimates were below the standard errors of the HBS's regional estimates. Appendix Table A.10 provides the district level point estimates and their standard errors.

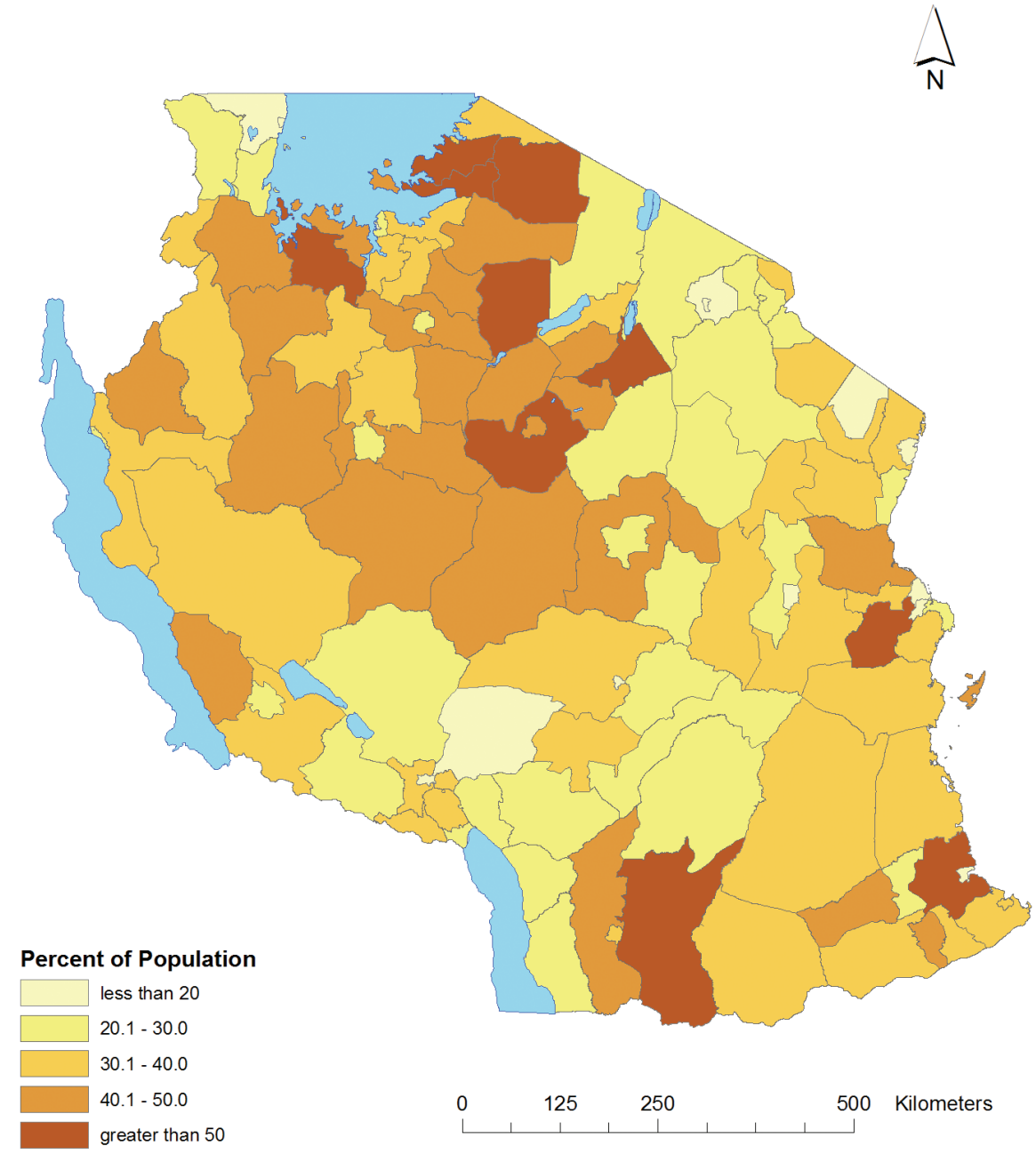
The highest rates of income poverty are estimated in Bunda (68 per cent), Musoma Rural (64 per cent), Geita (62 per cent), Serengeti (61 per cent) and Singida rural (56 per cent), all with more than half the population living below the basic needs poverty line. The lowest rates of income poverty are estimated in Bukoba Urban (11 per cent), Arusha Urban (12 per cent), Mbeya Urban (12 per cent), Mbarali (13 per cent), Morogoro Urban (14 per cent) and Kinondoni (14 per cent), all with less than 15 per cent of the population living below the basic needs poverty line. The map shows a tendency for the poorer areas to be clustered, whereas better-off areas are more scattered and mainly located in and around urban centres.

The map 2.1 and the data in the appendix table A 10 show differences in income poverty among districts. A measure of the extent of inequality is provided by the Gini coefficient, and this has been calculated for income poverty as well as for indicators of non-income poverty. The results are shown in Table 15 below.[74] It is clear from the table that access to improved water is the most inequitably distributed, and that income poverty rates are more unequal among districts than are under-five mortality rates, adult literacy rates and net primary enrolment. The value of the coefficient for net primary enrolment shows that there is little inequality in enrolment rates among the districts.

[73] As the HBS was drawn from the 1988 National Master Sample, the population census and the HBS used a different rural-urban classification for some of the enumeration areas. In addition, the distribution of household size in the HBS differed substantially from the distribution in the census. Differences in de jure and de facto definitions may explain part of this difference. HBS under-reports smaller households, which was not expected and is difficult to explain. Weights were applied to adjust for these differences. It matters which classification and which weights were used for regional poverty estimates. The second column in Table 14 presents poverty estimates that followed the HBS classification and weights. The fourth column presents poverty estimates that used the census classification and weights.

[74] The higher the value of the coefficient, the greater the inequality among districts. If the coefficient had a value of 1, there would be perfect inequality. A coefficient value of 0 means perfect equality – all districts would have the same poverty rates and values of non-income poverty.

Map 2.1 Percent of Population Below the Basic Needs Poverty Line by District, 2001



SOURCE: Calculations from Population Census 2002 and Household Budget Survey , 2000/01

Table 15. Measures of inequality and variation: Gini coefficient, Theil index and its decomposition

	Gini coefficient	Overall Theil index	Within region variation	Between region variation
Income poverty	0.20	0.071	47.3%	52.7%
Adult literacy rates	0.11	0.018	46.3%	53.7%
Net primary enrolment	0.08	0.008	40.8%	59.2%
Access to improved water	0.29	0.160	37.4%	62.6%
Under-five mortality	0.16	0.047	26.4%	73.6%

Source: Authors' calculations, Kilama and Lindeboom et al., Where are the Poor in Tanzania, forthcoming

Table 15 also shows values for the Theil index and its disaggregation, measuring the extent to which variations across districts are due to differences across regions or to differences within regions.[75] The Theil index for income poverty is 0.071, of which 47 per cent is attributable to inequalities within regions and 53 per cent to inequalities between regions. This disaggregation helps determine at what level more effective programming might take place. In the case of income poverty, interventions at district level need to be complemented equally with more regional approaches.

This is not always the case, as can be seen in Table 15. Applying the Theil index to under-five mortality, for instance, results in 74 per cent of the overall variation attributable to between-region differences and only 26 per cent to within-region differences. This implies that there are more generally common factors which determine rates of under-five mortality than there are district-specific factors, and that a more general approach to reducing under-five mortality is needed than in the case of income poverty. There are intermediate conclusions for strategies to deal with water supplies, where the differences between regions account for 63 per cent of the overall difference, and variation within regions accounts for 37 per cent.

The low value of the Theil index for net primary enrolment indicates that there was little overall variation in the estimates, and therefore that the disaggregation into within-regional and between-regional differences is not so important.

[75] See Shorrocks (1984). The decompositions are implemented using S. P. Jenkins's Stata program, ineqdeco

OTHER INDICATORS AT DISTRICT LEVEL

Education

Adult literacy

Adult literacy rates by district are shown in the following map 2.2 based on data reported in the population census.

Districts with above average literacy rates are in Dar es Salaam, the South (Southern Highlands), the North - in Arusha and Kilimanjaro and around Lake Victoria. Low literacy rates are noted in the coastal districts of Mkuranga, Lindi and Mtwara. The lowest literacy rates are in Ngorongoro, Monduli and Kiteto, largely attributed to the pastoralist way of life.

In contrast to the usual association between higher literacy and lower poverty, in southern Morogoro Region and western Ruvuma Region there are higher poverty rates together with higher literacy rates, while in Ngorongoro there is a relatively low rate of poverty, but also low literacy rates.

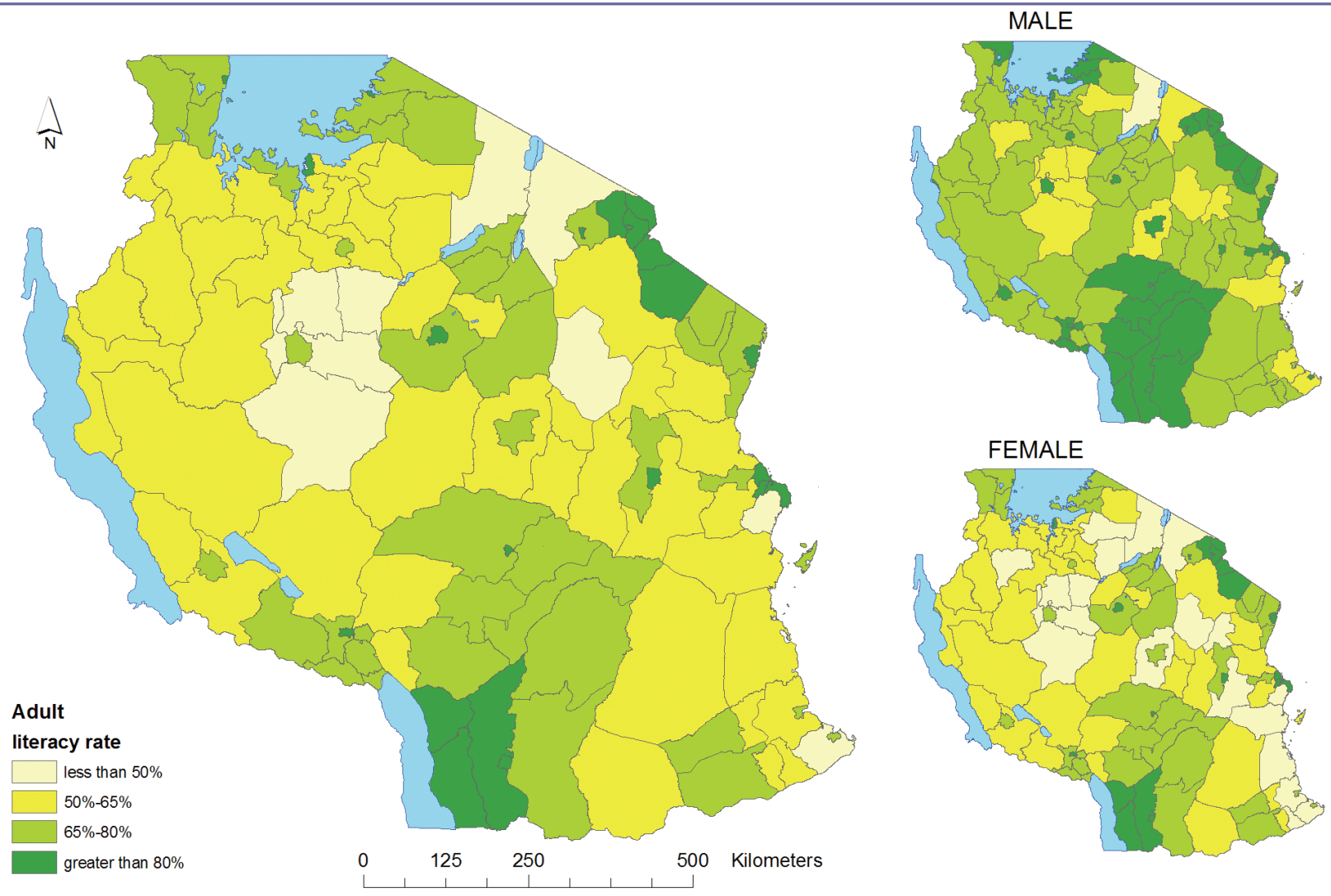
There is no district where women are more literate than men. Districts where women have the largest disadvantage (between 20 and 26 per cent) in literacy rates compared to men, are found along the Southern Coast and in the West.

Primary school enrolment

In 2002, higher primary school enrolment rates were associated with lower rates of poverty. This negative relationship of net enrolment and poverty seems to have disappeared in 2004, indicating that the Primary Education Development Programme has had a levelling effect on enrolment in primary education.

Table 16 shows the results of an analysis of poverty and some education indicators in 2002 and in 2004. The analysis uses Pearson correlation coefficients which have much lower values in 2004 than in 2002, indicating that the correlation between rates of poverty and primary school enrolment, pupil/classroom ratios and pupil/teacher ratios became much weaker in 2004 than had been the case in 2002. As the table also shows, the coefficients associated with pupil/classroom ratios were much lower than those associated with pupil/teacher ratios, indicating that classroom construction has been more successful in the poorer districts than has the deployment of teachers. Nonetheless, teacher pupil ratios also show substantial improvement.

Map 2.2 Adult Literacy by District, 2002



SOURCE: Calculations from the Population Census 2002

Table 16. Poverty correlates: Pearson correlation coefficients of education variables with district poverty rates

Variable	2002	2004
Net primary school enrolment	-0.27**	-0.10
Pupil/classroom ratio	0.22*	0.14
Pupil/teacher ratio	0.43**	0.26**

*Note: * significant at 5% level; ** significant at 1% level*

Source: Authors' calculations using 2002 Population and Housing Census, NBS 2003 and Basic Statistics on Education, Ministry of Education and Culture, 2002 and 2004, Kilama and Lindeboom et al., Where are the Poor in Tanzania, forthcoming

By 2004, slightly more than half the districts have recorded net enrolment rates to match or exceed the MKUKUTA target of 90.5 per cent for 2004, and about a quarter were within 10 per cent of reaching the target. Seven districts were more than 20 per cent below target: Uyui (58.1 per cent), Kibondo (63.4 per cent), Nzega (65.1 per cent), Dodoma Rural (66 per cent), Igunga (67.2 per cent), Ulanga (68.3 per cent) and Urambo (69.2 per cent).

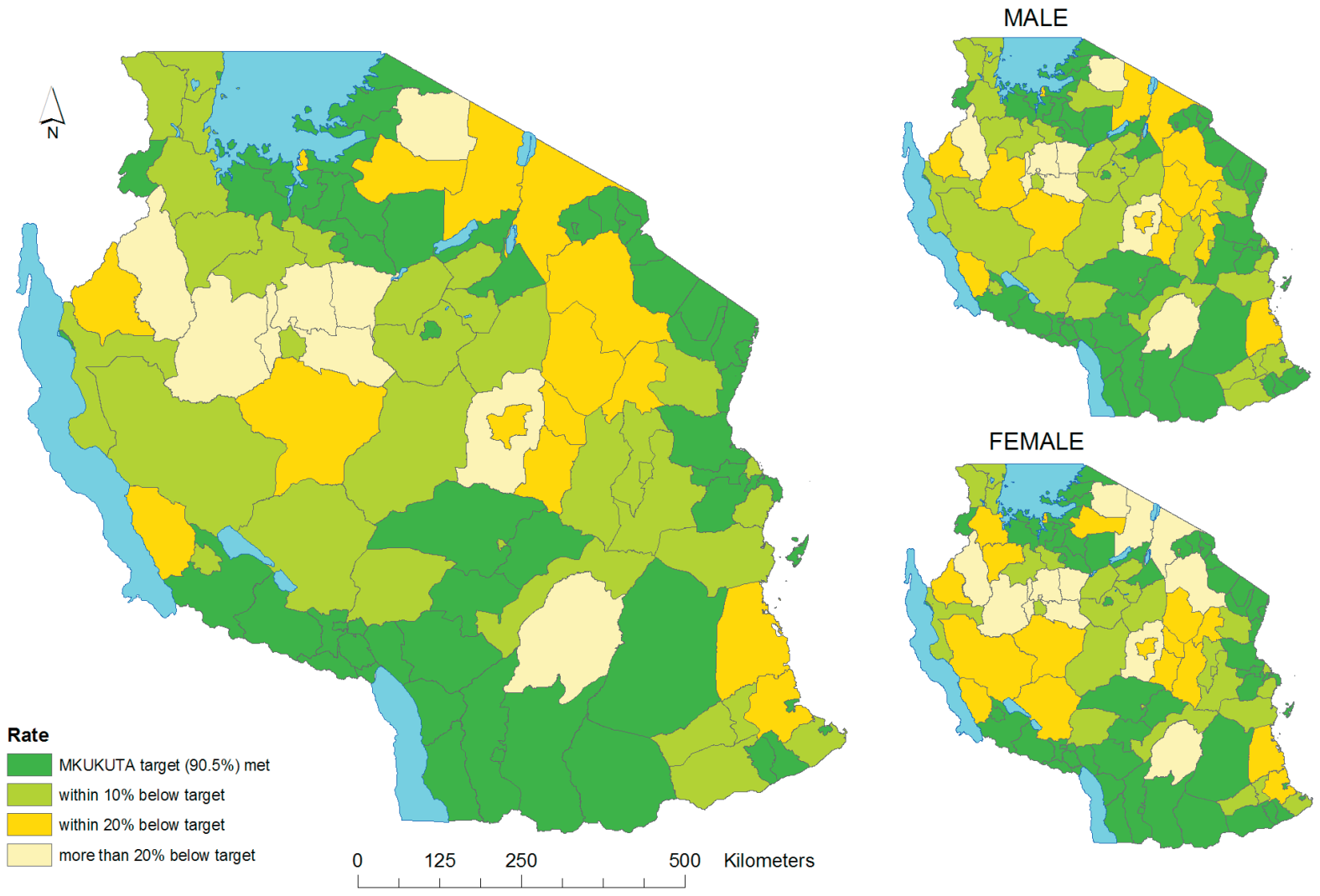
There are gender gaps in net primary enrolment. The north-eastern districts of Ngorongoro, Bariadi, Simanjiro, Monduli and Nzega have substantially fewer girls enrolled than boys, while in Mbinga, Karagwe, Kondoa and Moshi Rural, more girls than boys are enrolled (see map 2.3).

Pupil-teacher ratios

Map 2.4 shows the pattern of pupil-teacher ratios. Districts with higher ratios in 2002 had lower net enrolment rates in 2004 among girls. A reason for this may be that large class sizes may have discouraged parents from enrolling their children in school.

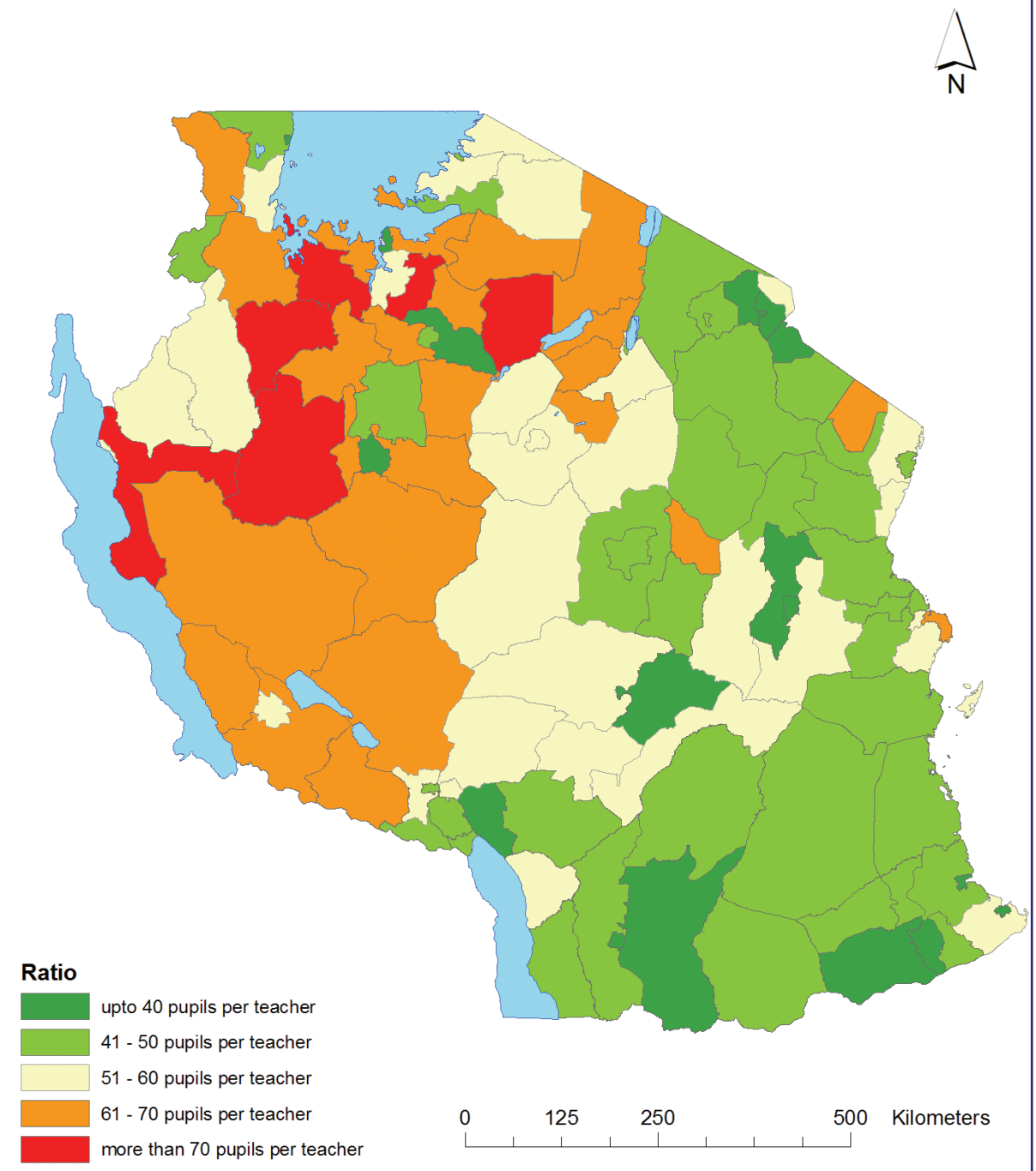
Those districts which had higher pupil-teacher ratios also tended to have larger proportions of children aged between 7-13 who were working and they tended to have lower school enrolment rates. Districts with higher proportions of school-age children working and not in school also tend to have higher rates of poverty (Map 2.5)

Map 2.3 Boys and Girls Aged 7 - 13 Enrolled in Primary School by District, 2004



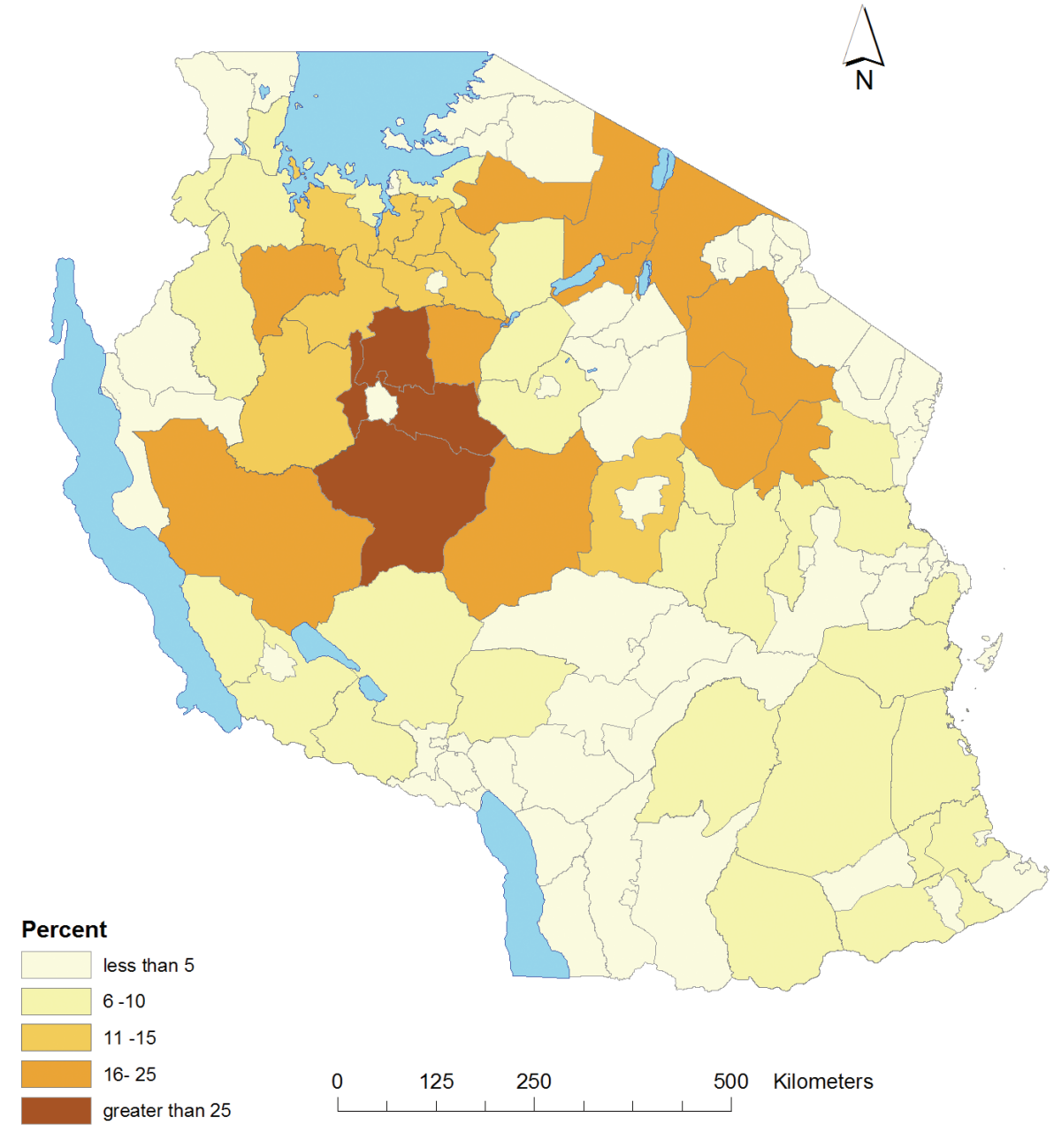
SOURCE: Ministry of Education 2004

Map 2.4 Pupil-Teacher Ratio by District, 2002



SOURCE: Ministry of Education 2002

Map 2.5 Children 7-13 Years Working and Not in School, by District, 2002



SOURCE: Population Census 2002

Vulnerability of children

Children working and not in school

In more than two thirds of the districts in Tanzania, fewer than a quarter of children aged between 7 - 13 are working and do not go to school. On the other hand, Tabora, Shinyanga and parts of Arusha region have a high prevalence of working children not in school. In the high prevalence districts of Ngorongoro, Monduli, Simanjiro, Kiteto and to the centre of the country towards the West in Manyoni, Sikonge, Mpanda, Uyui, Nzega, Kishapu, Maswa and Bariadi, the proportion of children between 7 - 13 who are working and not going to school ranges from 25 to 39 per cent.

This would suggest that in those districts more resources, and teachers in particular, may be needed to strengthen the education system. School systems may need to be adapted where pastoralism and long distances to school discourage enrolment. Satellite schools for the first few standards of primary school might be established with good effect.

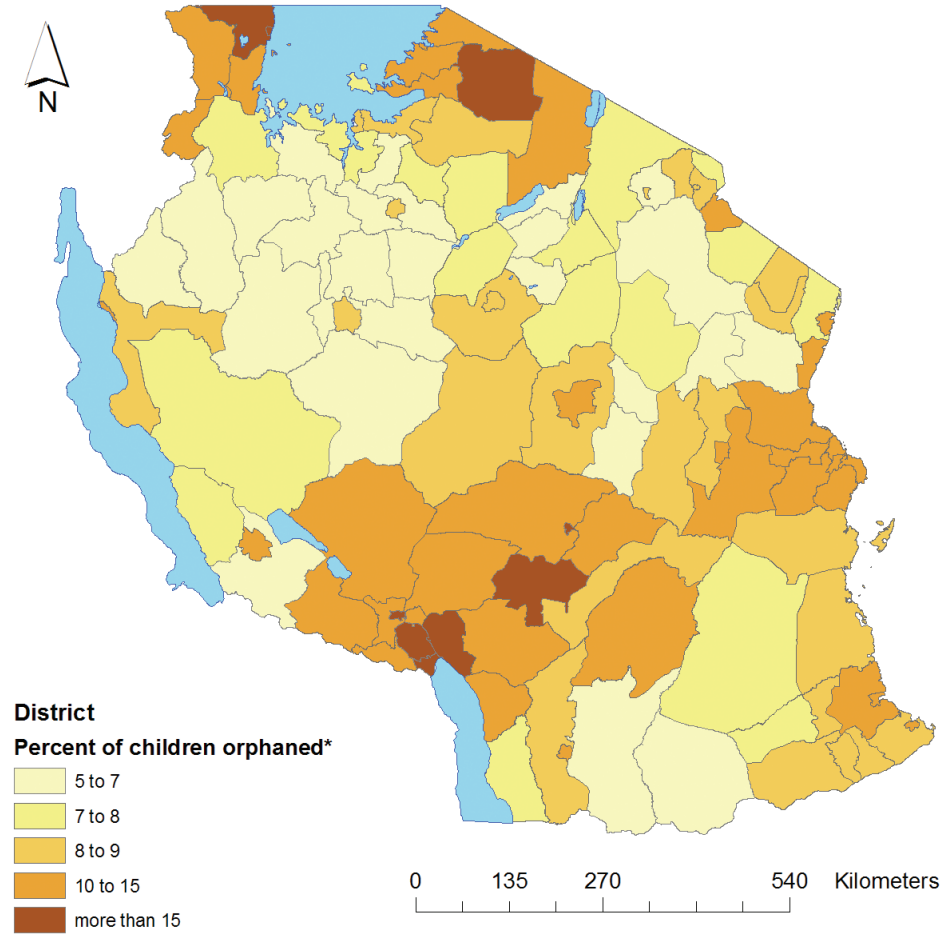
Orphanhood

Another indicator of possible vulnerability of children is orphanhood, which has been discussed in chapter 2 above. Map 2.6 shows the geographic pattern of orphanhood, by district, based on the population census reports of children under the age of 18 who have lost their mother, or father, or both.

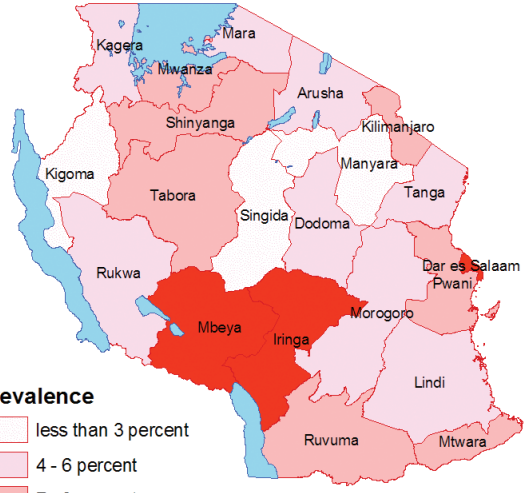
The map shows the relatively high prevalence of orphaned children in districts in the Southern Highlands. In Makete, 24 per cent of children have been orphaned. In 10 more districts, more than 15 per cent of the children are orphaned, most of them in the Southern Highlands: Kyela (19 per cent), Iringa Urban (19 per cent), Rungwe (17 per cent), Mbeya Urban (16 per cent), Mufindi (16 per cent), Iringa Rural (15 per cent); but also in Kagera: Bukoba Rural (18 per cent) and Bukoba Urban (16 per cent); and in Mara: Serengeti (16 per cent) and Tarime (15 per cent).

The map is accompanied by a regional map of HIV prevalence in adults, and it is clear that the higher rates of orphanhood are associated with higher rates of HIV prevalence. The analysis reported in the status chapter above suggests that orphaned children in 2002 were only slightly more likely to live in poor households, and that overall, district-level analysis did not show significant differences in the conditions of orphaned children compared with those who are not orphaned. Nonetheless, households, communities and districts with much higher percentages of orphaned children are straining to provide the necessary support. Co-ordinated public intervention is sorely needed in these areas.

Map 2.6 Percentage of Children Under 18 Years Who Have Been Orphaned, 2002



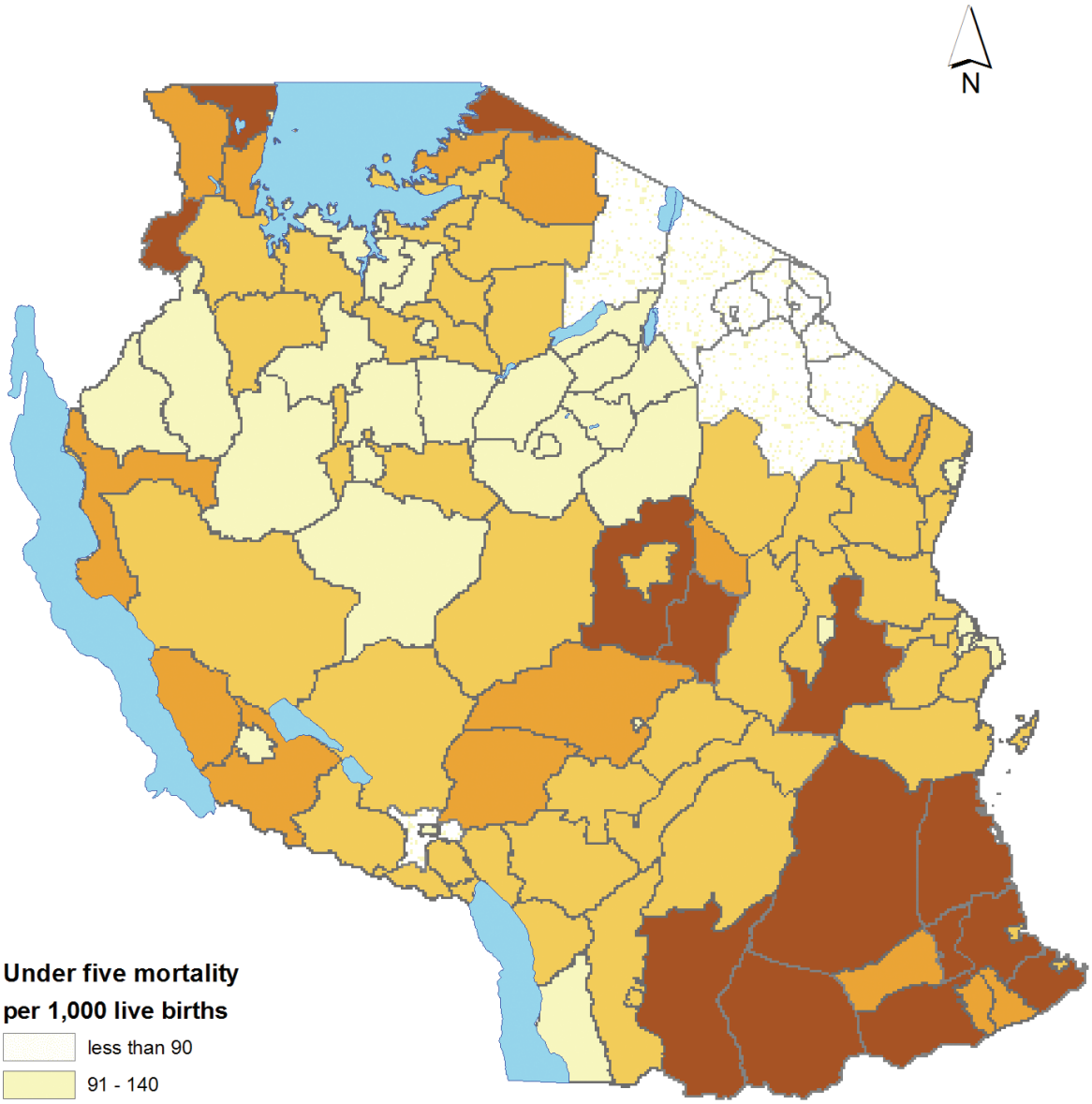
HIV/AIDS Prevalence in Adults, by region, 2004/05



* Lost either mother or father or both parents

SOURCE: Population Census 2002 and Tanzania Demographic and Health Survey 2004-2005 Preliminary report

Map 2.7 Death of Children Under Five Years (per 1,00 Live Births), by District 2002



SOURCE: Population Census 2002

Mortality, health, water and sanitation

Under-five mortality

Map 2.7 shows the geographic pattern of under-five mortality. South-Eastern districts have higher under-five mortality than most other districts in the country.

There does not seem to be a one-to-one relationship between district poverty rates and under-five mortality rates.[76] Districts in the North-West (mainly in Tabora, Shinyanga and Mwanza) have low under-five mortality rates but relatively high poverty rates, while in the South (Lindi, Mtwara and the eastern part of Ruvuma) there are high under-five mortality rates and high poverty rates.

In most districts, under-five mortality has declined. Map 2.8 shows district estimates of under-five mortality based on the 1988 and 2002 population censuses. There has been little or no improvement in Lindi, Mtwara and parts of Ruvuma.

Map 2.9 shows that facilities providing health services are mainly concentrated in urban areas and in districts with major roads. A higher concentration of health facilities per square kilometre is associated with lower under-five mortality.

Water and sanitation

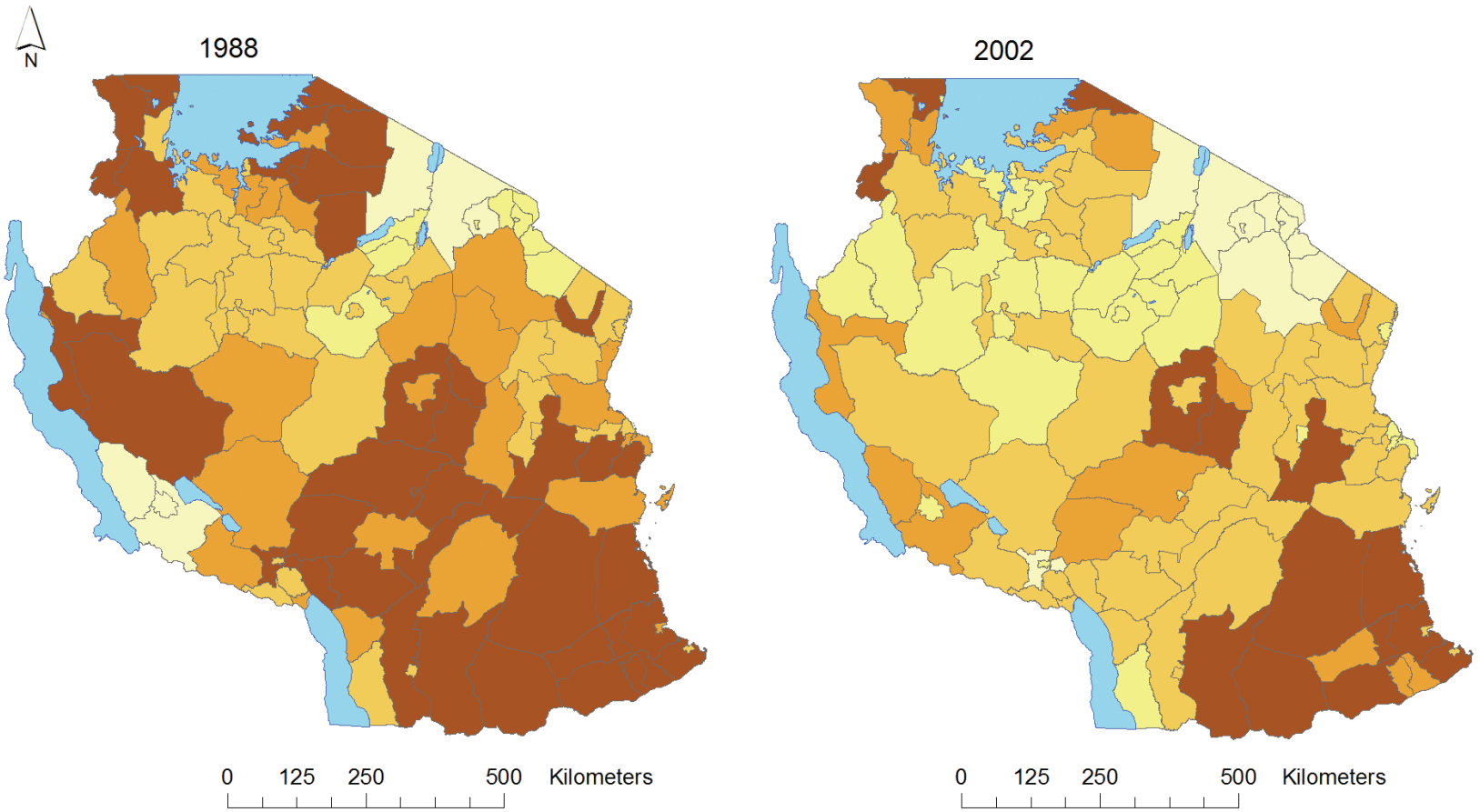
Improved water supplies and sanitation also have an impact on under-five mortality rates. Diarrhoeal and other water-borne diseases are common causes of young child deaths. A cleaner environment and safer storage of waste provides a safer environment with a reduced risk of disease. Overall, access to and use of improved toilets, defined as flush toilets or improved ventilated pit latrines, is very low. Even though a high proportion of households has a latrine, in most cases this latrine is not improved and may well be unsanitary and unsafe. On average, fewer than 5 per cent of households have access to an improved toilet. The highest access is in urban areas, and highest in Moshi urban district (36 per cent). In over a third of the districts, less than 1 per cent of households has an improved toilet.

Map 2.10 shows the inequitable water supply infrastructure across the country.

Only 42 per cent of rural households have access to improved water sources compared to 88 per cent in Dar es Salaam and 84 per cent in other urban areas. While the overall difference in access to improved water supply between urban and rural areas is high, available information from some of the districts provides further evidence about the depth of disparities. There are seven districts in which fewer than 10 per cent of rural households have access to improved water supply: Sikonge (4 per cent), Igunga (5 per cent), Kishapu (10 per cent), Liwale (8 per cent), Mkuranga (6 per cent), Rufiji (9 per cent) and Mafia (3 per cent). There are some difficulties in extending water supplies in these districts: Liwale and Sikonge have very low population densities, salinity is an issue in Mkuranga, and fluoride is a problem in Kishapu. In another 67 mainland districts fewer than 50 per cent of rural households have access to improved water sources. In addition, where district census data are complemented with water point mapping data, even in districts where over 50 per cent of households have access to improved water supplies, there can be considerable differences between and within wards. [77]

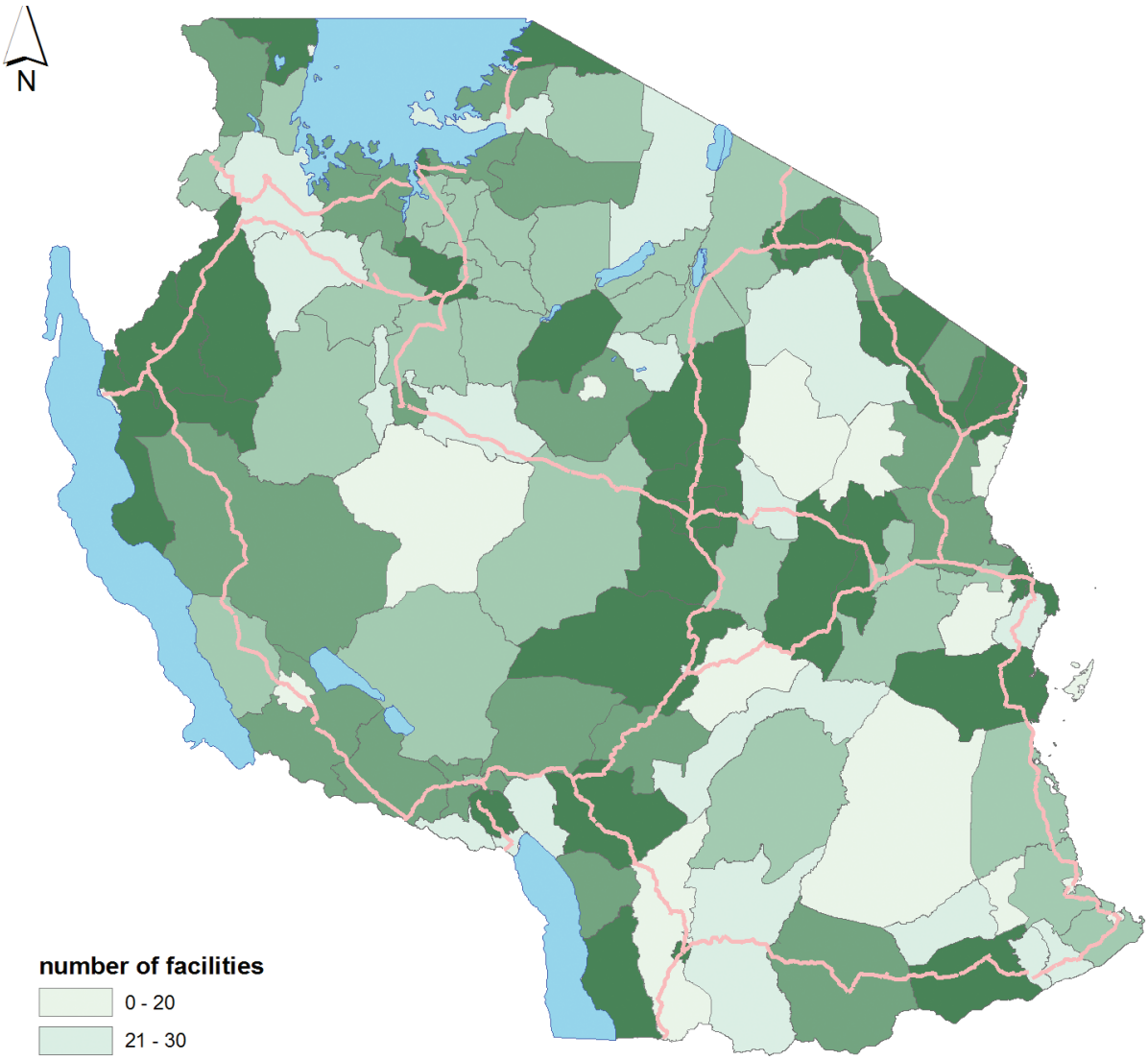
[76] Correlation is not very strong (0.18) but statistically significant at five per cent level.
[77] WaterAid (2005). Water and Sanitation in Tanzania: An Update based on the 2002 Population and Housing Census.

Map 2.8 Under Five Mortality Rates, by District, 1988 and 2002



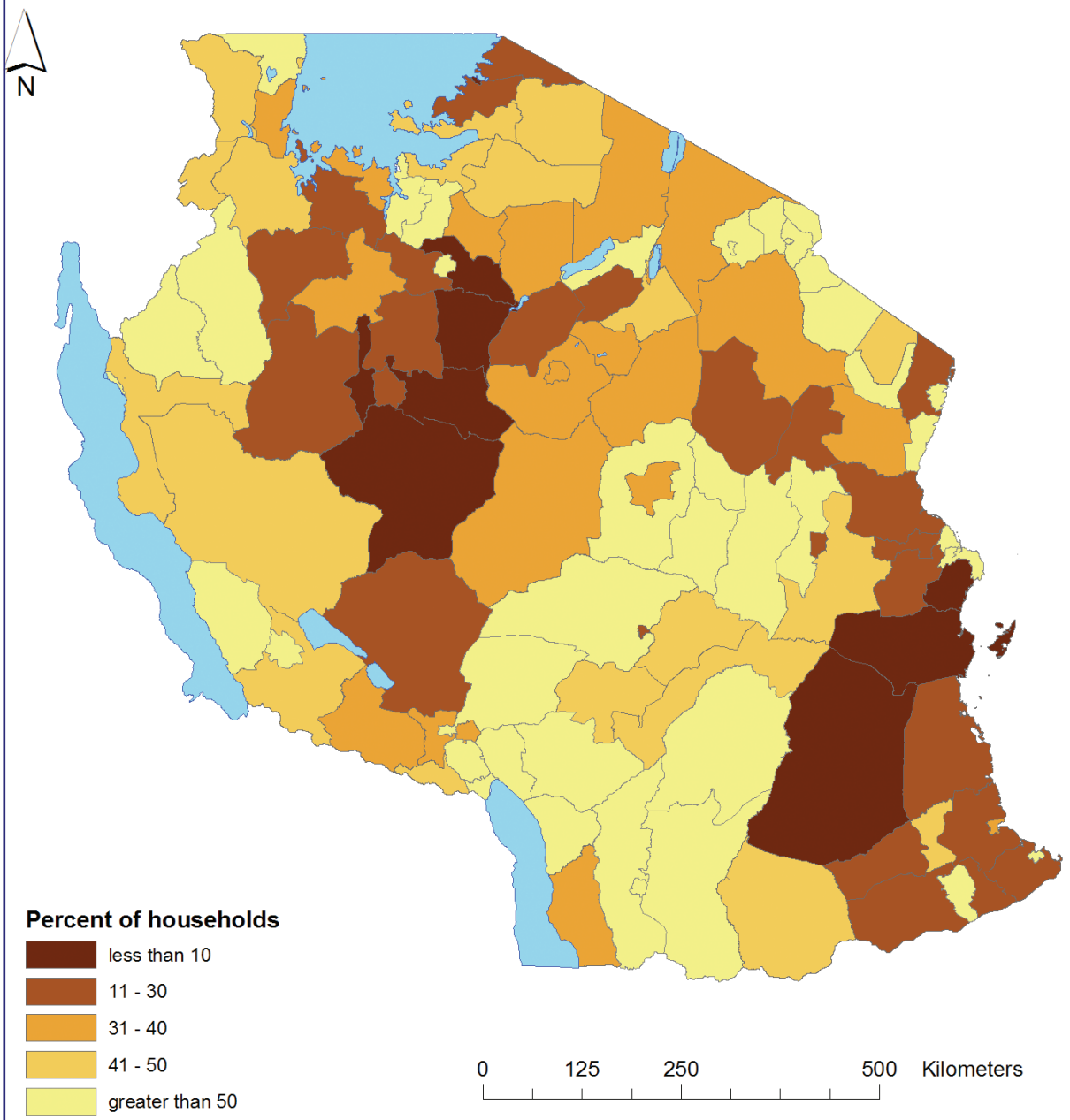
SOURCE: Population Census 2002

Map 2.9 Health Facilities, by District and the Road Network



SOURCE: Ministry of Health 2002/04

Map 2.10 Access to Improved Water Supplies, by District, 2002



SOURCE: Population Census 2002

Infrastructure

Access to the road network

Access to the road network helps with access to markets and services. Map 2.11 shows population density at ward level, together with the road network. It is clear that pockets of the country are densely populated, but that much of the land area of Tanzania remains sparsely inhabited. Population density follows the main roads - areas near main roads are densely populated - just as are urban centres. Road networks similarly tend to follow population concentrations.

Population density and the road network have also been shown to be strongly associated with other indicators of development, and the more widespread use of geographic information systems will permit analysis for even smaller geographic areas. The TEHIP work in Rufiji, for example, has also shown a strong relationship between indicators of survival and health within the district and proximity to population centres and road networks.[78] Likewise, Alderman et al. (2005)[79] report for Kagera the existence of a strong relationship between malnutrition and the proximity to and passability of roads.

Access to electricity

Most households do not have access to electricity. The highest percentages of households with electricity are in Kinondoni, Ilala and in Iringa Urban. At the other end of the spectrum are districts like Mtwara Rural and Kilindi (Tanga) where only 0.06 and 0.07 per cent respectively have access to electricity. In about a quarter of the districts less than 1 per cent of households has access to electricity.

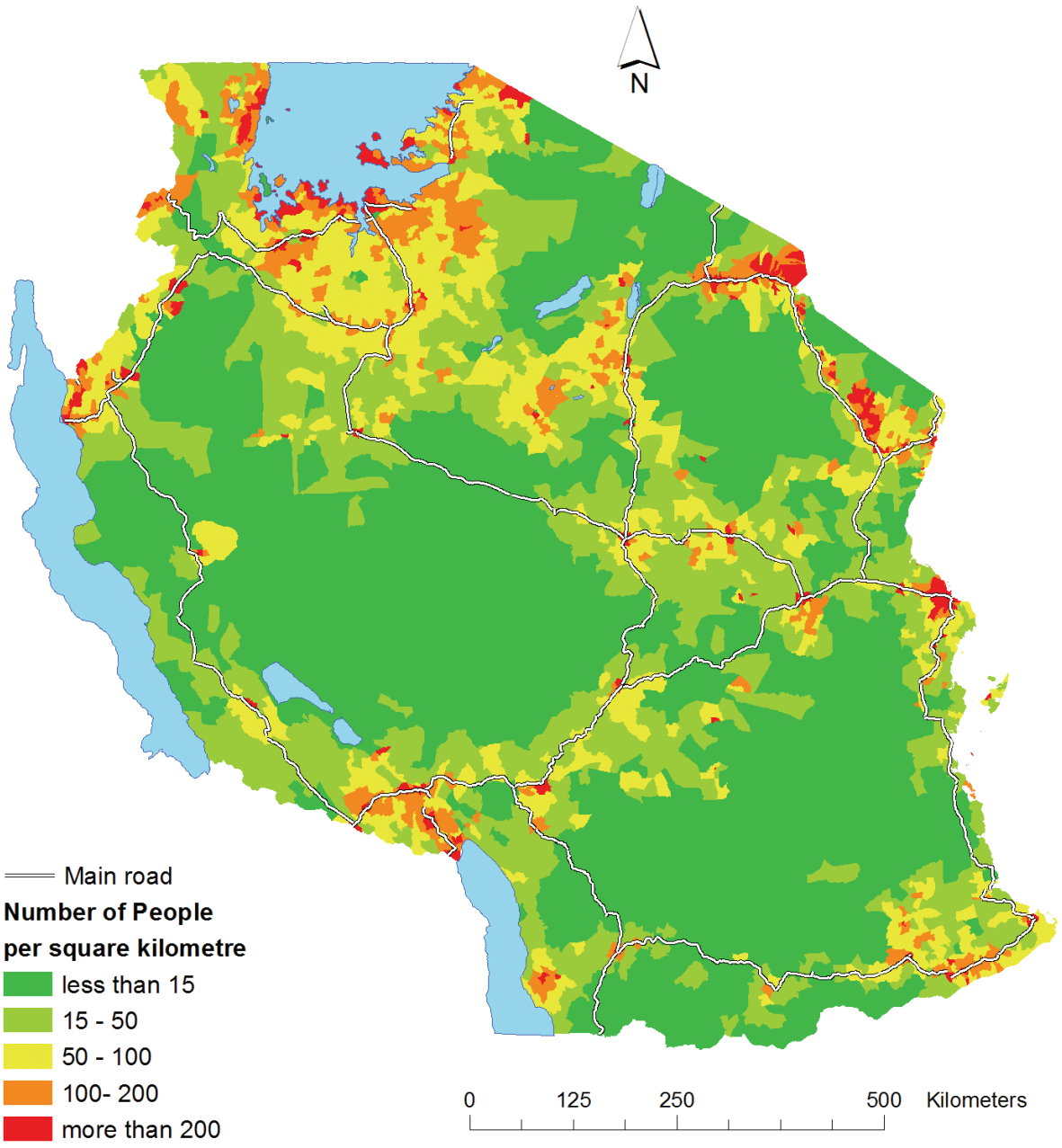
Access to electricity is usually associated with the prosperity of the specific area. Electricity is generally available in the urban centres for example, but not necessarily in some of the more densely populated rural areas. Thus areas with a high population concentration in Shinyanga and Mwanza regions go without electricity. The largest proportion of non-urban households with access to electricity can be found in the North-Eastern part of country; this is because of the presence of the Pangani Grid that runs from Arusha to Pangani.

Other indicators of poverty, which have not been shown here in map form, show that poor quality housing, as reflected in poor flooring and roofing, is associated with higher rates of poverty.

[78] De Savigny D, Kasale H, Mbuya C & Reid G (2004). Fixing Health Systems. Ottawa: International Development Research Centre (IDRC) (in collaboration with Ministry of Health, Tanzania).

[79] Alderman, H., H. Hoogeveen and M. Rossi. Reducing Child Malnutrition in Tanzania. Combined Effects of Income Growth and Program Interventions. Journal of Economics and Human Biology. Forthcoming

Map 2.11 Population Density, by Ward and Main Roads, 2002



SOURCE: Population Census 2002

Radio ownership

A radio is a quite common household asset. Based on district means, on average almost 50 per cent of households own a radio, ranging from 83 per cent in Moshi Urban to almost 16 per cent in Arumeru district. In 12 districts, less than a third of households own a radio. Districts with higher percentages of households with radios tend to have lower rates of poverty.

Table 17 below presents the coefficients of correlation between the district data on poverty rates and on various measures: access to improved water supplies, improved latrines or flush toilets, electricity, radio, telephone, bicycle, material for flooring, wall construction and roofing. In all cases, except for wall materials, there are strong correlations. In the case of improved water supplies, improved toilet facilities, electricity, radio, radio and telephone, increased ownership or access is associated with reduced rates of poverty. On the other hand, those districts where higher proportions of households own a bicycle or have a home of earth flooring and poor quality roofing material, are districts with higher rates of poverty.

Table 17. Poverty correlates: Pearson correlation coefficients of household characteristics with district poverty rate

Variable	Pearson correlation coefficient
Piped or protected drinking water source	- 0.50**
Flush toilet or ventilated improved pit latrine	- 0.50**
Electricity	- 0.53**
Ownership of radio	- 0.35**
Ownership of phone	- 0.51**
Ownership of bicycle	0.42**
Flooring: earth	0.55**
Poor quality material used for wall construction	0.10
Poor quality material used for roof construction	0.56**

Note: ** significant at 1% level

Source: Authors' calculation using 2002 Population and Housing Census, NBS 2003, Kilama and Lindeboom et al., Where are the Poor in Tanzania, forthcoming

Implications for policy

The data and the maps presented in the previous sections suggest considerable differences in outcomes among regions and districts and there is some evidence in these data that the unequal outcomes are related to unequal opportunities. Some patterns of relationships are evident from these maps, but the general picture is one of variation across the different indicators which have been presented.

A summary of critical indicators - income poverty rate, net primary enrolment, under-five mortality, adult literacy and access to improved water - ranked by district, is presented in Table 18. This table lists, for each of these indicators, the 20 districts which have the best values and the 20 districts with the worst values. Appendix Table A.9 has the data for all districts.

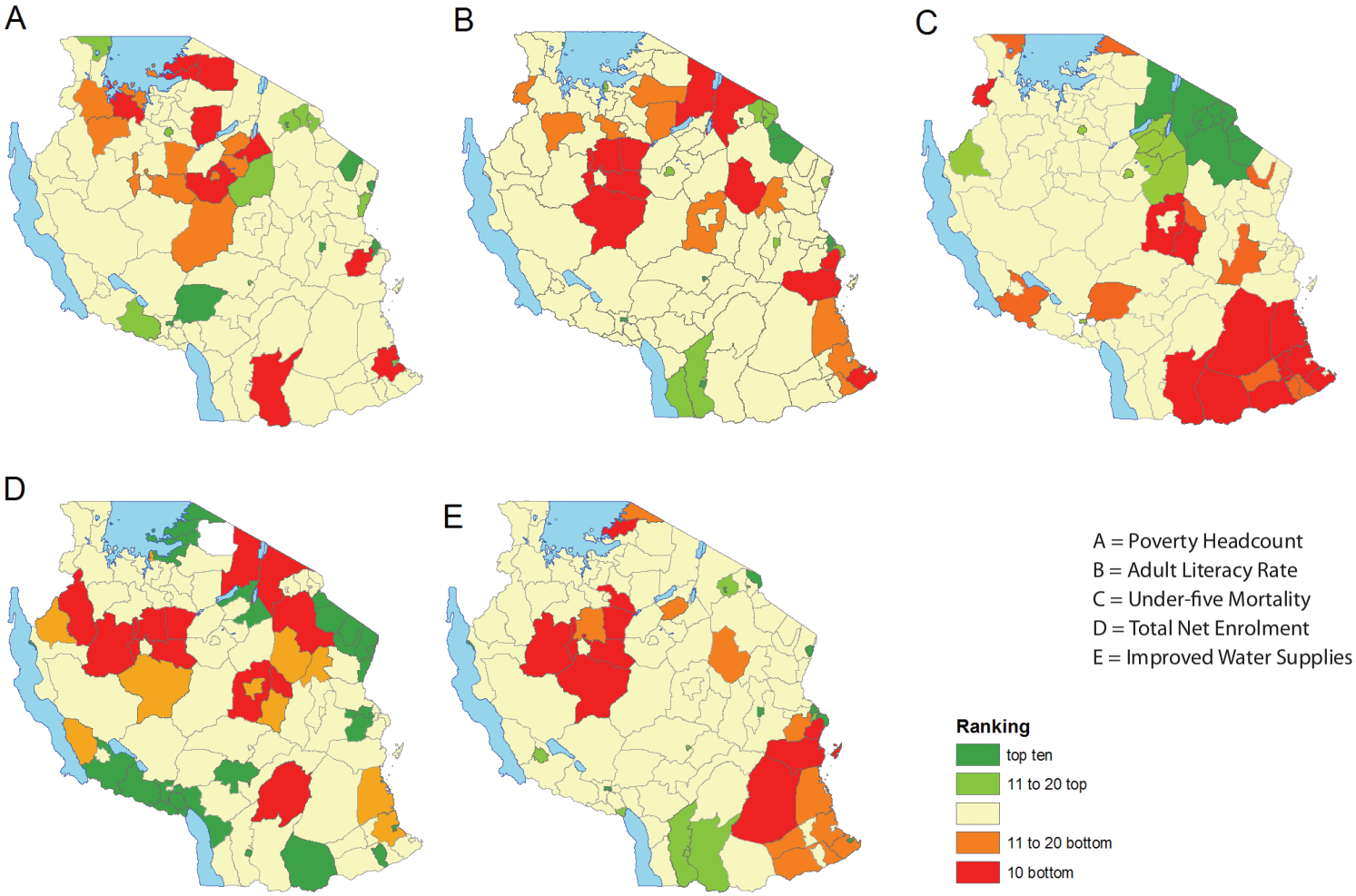
The rankings in Table 18 show that different indicators produce different rankings, that specific districts have relatively higher or lower rankings for different indicators. This suggests that specific focus may be needed in districts ranking poorly to address the specific issues for which improvements are needed.

Table 18. Districts ranked by income poverty rate, net primary enrolment, under-five mortality, adult literacy and access to improved water

	Per cent of households below basic needs poverty line		Net primary enrolment rate		Under-five mortality rate (per 1,000 live births)		Adult literacy rate		Per cent of house-holds with access to improved water (piped or protected source)	
Rank	District	Value	District	Value	District	Value	District	Value	District	Value
1	Bukoba (U)	11	Lushoto	100	Ngorongoro	40	Moshi (U)	96	Arusha (U)	99
2	Arusha (U)	12	Korogwe	100	Monduli	48	Arusha (U)	94	Nyamagana	97
3	Mbeya (U)	12	Muheza	100	Arusha (U)	55	Ilala MC	93	Mbeya (U)	96
4	Mbarali	13	Tanga (U)	100	Moshi (R)	57	Nyamagana	92	Mtwara (U)	96
5	Morogoro (U)	14	Kibaha	100	Simanjiro	57	Bukoba (U)	92	Rombo	93
6	Kinondoni	14	Kisarawe	100	Arumeru	58	Kinondoni	92	Moshi (U)	92
7	Nyamagana	15	Karatu	100	Moshi (U)	63	Iringa (U)	92	Kinondoni	92
8	Lushoto	16	Mwanga	100	Hai	65	Mwanga	91	Musoma (U)	92
9	Ilala MC	16	Same	100	Mwanga	68	Same	90	Kigoma (U)	89
10	Tanga (U)	17	Moshi (U)	100	Rombo	73	Songea (U)	90	Temeke	89
11	Bukoba (R)	17	Babati	100	Same	84	Mbeya (U)	90	Tanga (U)	89
12	Moshi (U)	18	Kigoma (U)	100	Babati	91	Moshi (R)	89	Morogoro (U)	88
13	Arumeru	18	Ukerewe	100	Karatu	93	Temeke	87	Arumeru	85
14	Iringa (U)	18	Magu	100	Nyamagana	100	Tanga (U)	87	Kyela	85
15	Lindi (U)	18	Nyamagana	100	Hanang	103	Musoma (U)	87	Songea (U)	85
16	Kondoa	21	Tarime	100	Mbeya (U)	106	Hai	86	Iringa (U)	85
17	Mbozi	21	Musoma (R)	100	Mbulu	107	Morogoro (U)	85	Ilala MC	81
18	Hai	22	Bunda	100	Singida (U)	108	Mbinga	84	Namtumbo	79
19	Shinyanga (U)	22	Musoma (U)	100	Kasulu	109	Ilemela	84	Songea (R)	77
20	Pangani	22	Mufindi	100	Kondoa	110	Songea (R)	83	Moshi (R)	75
100	Singida (U)	46	Mpwapwa	79	Korogwe	192	Ngara	57	Mtwara (R)	26
101	Sengerema	46	Kilindi	78	Kongwa	195	Shinyanga (R)	57	Kisarawe	25
102	Biharamulo	48	Kiteto	76	Sumbawanga (R)	195	Meatu	55	Nzega	25
103	Igunga	48	Kilwa	76	Newala	197	Tandahimba	54	Tandahimba	25
104	Bukombe	48	Ilemela	75	Nachingwea	198	Kilindi	53	Nachingwea	25
105	Uyui	48	Nkansi	75	Tandahimba	200	Lindi (R)	53	Mbulu	24
106	Ukerewe	48	Sikonge	75	Bukoba (R)	204	Bukombe	53	Kiteto	23
107	Manyoni	49	Dodoma (U)	75	Tarime	207	Kilwa	52	Lindi (R)	23
108	Hanang	49	Kisulu	74	Morogoro (R)	209	Dodoma (R)	52	Tarime	22
109	Mbulu	49	Simanjiro	72	Ngara	212	Bariadi	51	Kilwa	22
110	Babati	50	Kongwa	72	Tunduru	212	Rufiji	51	Rufiji	21
111	Kisarawe	51	Ngorongoro	71	Namtumbo	213	Igunga	49	Mafia	17
112	Lindi (R)	51	Monduli	71	Mpwapwa	217	Uyui	49	Musoma (R)	17
113	Meatu	53	Urambo	69	Kilwa	217	Nzega	49	Liwale	16
114	Namtumbo	55	Ulanga	68	Lindi (R)	220	Sikonge	49	Urambo	14
115	Singida (R)	56	Igunga	67	Liwale	221	Mkuranga	47	Kishapu	13
116	Serengeti	61	Dodoma (R)	66	Masasi	225	Mtwara (R)	46	Uyui	11
117	Geita	62	Nzega	65	Mtwara (R)	231	Monduli	43	Igunga	9
118	Musoma (R)	64	Kibondo	63	Dodoma (R)	239	Kiteto	42	Mkuranga	9
119	Bunda	68	Uyui	58	Rwangwa	250	Ngorongoro	28	Sikonge	7

Source: Authors' calculation using 2002 Population and Housing Census, NBS 2003, Ministry of Education Basic Statistics 2004, Kilama and Lindeboom et al., *Where are the Poor in Tanzania*, forthcoming

Map 2.12 Top and Bottom Districts for Selected Indicators



SOURCE: Household Budget Survey 2000/01, Population Census 2002 and Ministry of Education 2002

However, there are some geographic concentrations of districts which have a general pattern of relatively poor indicators. They are mapped in Map 2.12, which shows the 20 districts with the poorest indicators and the 20 districts with the best.

From Map 2.12, we see that districts with the worst indicators tend to cluster in the same areas, while districts with the best indicators are more scattered, and most of them are located in and around urban centres, except for under-five mortality where districts with relatively low mortality rates are also clustered in the North. Districts in the Southeast have the worst adult literacy rates, under-five mortality rates and access to improved water. Districts in Kilimanjaro and Arusha (Arumeru and Arusha districts) stand out with strong indicators.

There are important considerations for policy in addressing such disparities and inequities, especially in those districts which have the poorest indicators. Concern with equality of opportunity implies that public action should focus on the distribution of assets, economic opportunities and political voice, rather than directly on inequality in outcomes. In doing so, policies can contribute to greater investment in human resources of the poorest, to greater and more equal access to public services and information, to improved equality of property rights, and to greater fairness in markets.

In a resource constrained environment, there may well be difficult budget decisions to be made with respect to measures to increase equitable investments in human resources and access to services. Cost-effectiveness considerations may mean that coverage is determined by lower unit costs. To the degree that the unit cost of an intervention aimed at poor households increases in isolated areas, it is evident that with an equal per capita budget allocation, fewer people will be reached in isolated areas. Hence a trade-off may be needed between reaching a larger number of poor people with lower unit costs, versus one where more is spent per capita on higher unit-cost services to reach people in isolated areas. The map which follows illustrates the dilemma.

Poverty density: a policy dilemma

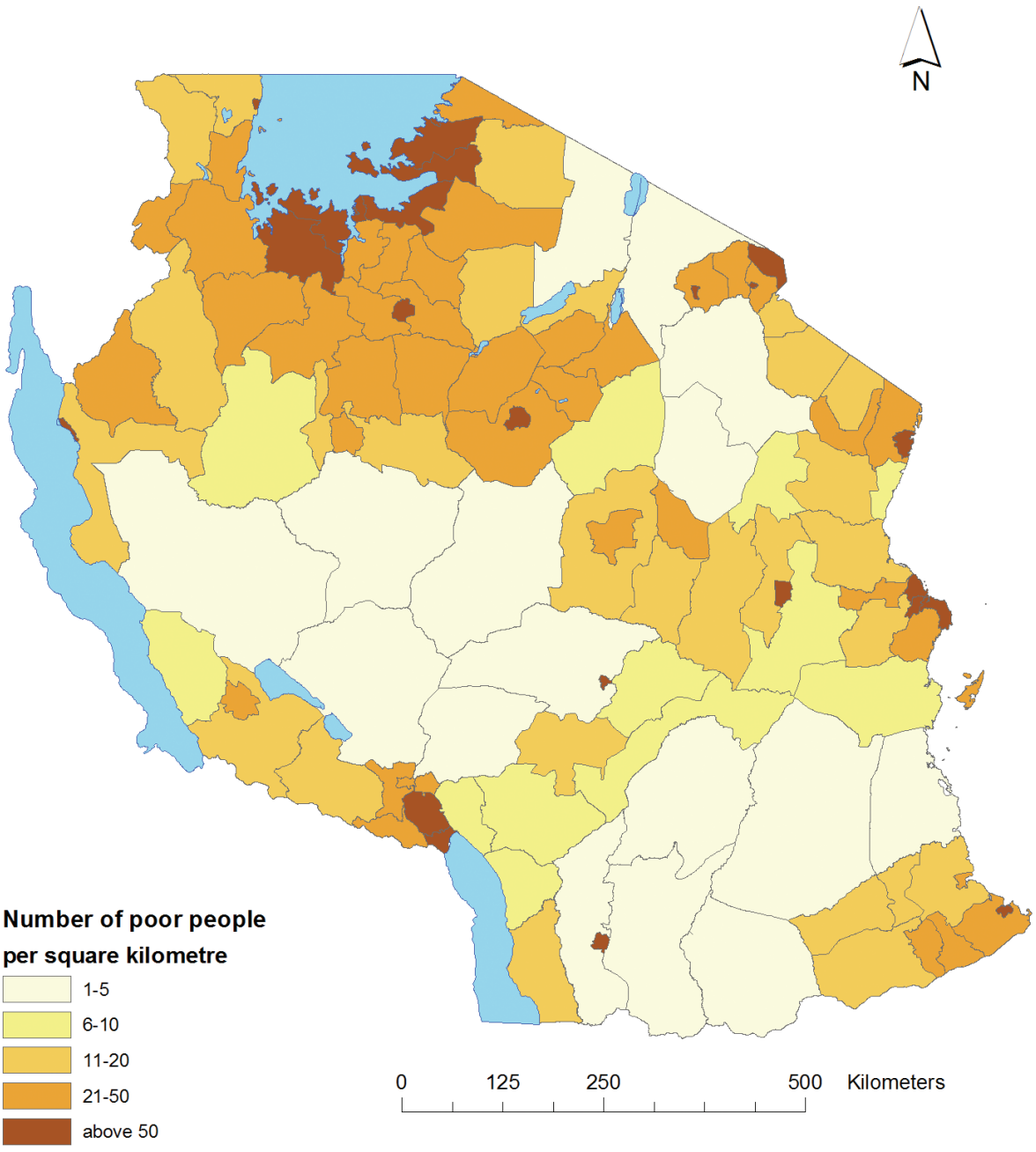
Poverty density measures the number of poor persons per square kilometre. This is shown in Map 2.13. Areas with many people - urban areas - have the highest poverty density, have larger numbers of poor people per square kilometre, even though these areas are not the areas with the highest proportion of their population who are poor.

Arusha, Kinondoni, Ilala, Temeke and Ilemela have the highest poverty density, while Liwale, Ngorongoro, Simanjiro have the lowest number of poor people per square kilometre. Large districts tend to be sparsely populated, and thus have low poverty density, even though a larger proportion of their inhabitants may be among the poorest – living below the poverty line.

Current Government budget allocations to districts for education and health are derived from the use of formulae which are heavily weighted by population size (or the school-age population in the case of allocations for primary education). There is also provision in the formulae for some consideration for long distances in large districts, and for relative poverty rates. The increasing use of formulae such as these, and the use of more specific formulae according to the service to be provided - education, health, water, or others - accords with the conclusions from this spatial analysis.

In order to enhance equitable access to high quality essential services, it will be important to ensure that trained staff are also distributed more fairly, and that other potentially distorting factors are taken into account. These include the additional resources made available through specific projects and programmes supported by development partners, as well as the resources local authorities can generate from their own sources of revenue.

Map 2.13 Number of People Below Basic Needs Poverty Line per Square Kilometre by District



SOURCE: Calculations from Population Census 2002 and Household Budget Survey , 2000/01

CHAPTER 3: RURAL GROWTH & POVERTY REDUCTION

Introduction

If MKUKUTA targets are to be met, it is clear that critical priority is needed for rural poverty reduction. Since poverty reduction is sensitive to growth, a strategy must be put in place that ensures high growth for a sustained period of time. This calls for two things to happen. First, agriculture must grow at a sustained growth rate of at least 6 per cent per annum. Second, growth needs to be broad based, and strategies that promote such broad-based growth must be developed and implemented.

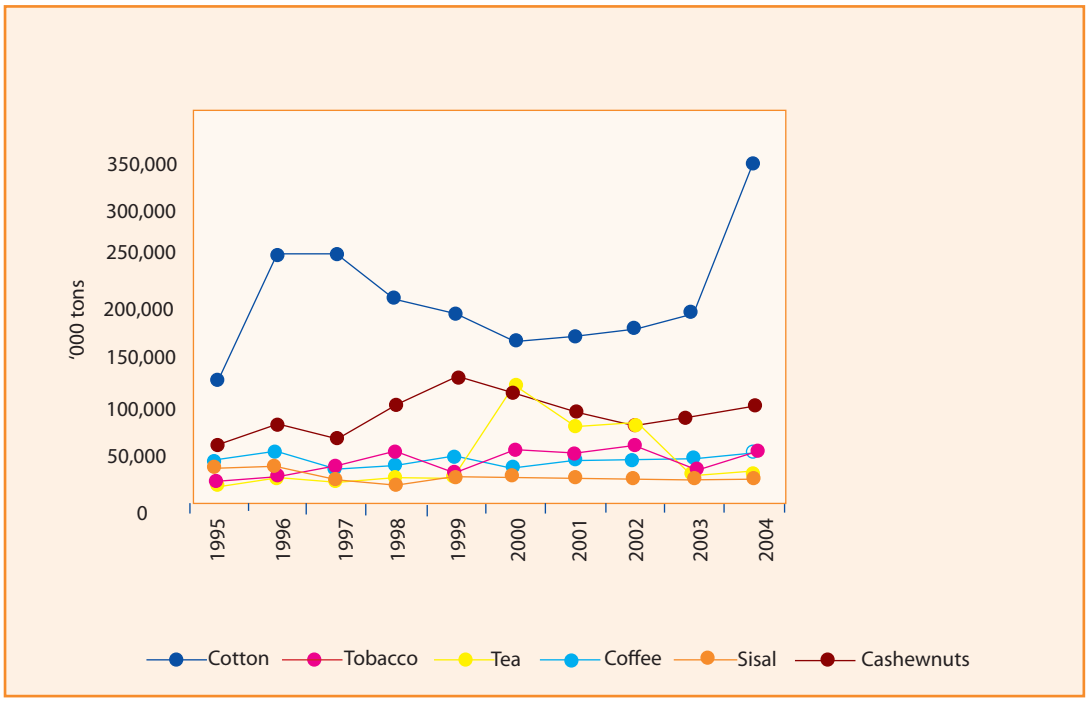
The analysis in this chapter recognises that Tanzanian agriculture is driven mainly by smallholder producers. They have limited education and experience, are frequently exposed to shocks and have to deal with weak institutional arrangements for production. This has led to low increases in agricultural production and insufficient improvements in the quality of production. Therefore, to promote production and quality in an environment/economy such as Tanzania's, there is a need to reconsider the traditional approach to agriculture - based on smallholder farmers competing in liberalised markets - and to consider new approaches to promote sustained, high quality production. In this chapter it is argued that an integrated production system that links production, extension services, transportation, processing and marketing is able to overcome some of the constraints, especially those due to exposure to price shocks and limited access to information, credit, inputs and markets for final produce.

The following section shows that current production and quality levels for most crops are unacceptably low and unstable. This is followed by Section 3 which outlines the context in which the production process and marketing are taking place and which focuses on the constraints faced by smallholders. Section 4 proposes an integrated system as a way to address these weaknesses and draws from good practice examples.

Production and processing trends

Production of both food and cash crops has fluctuated around low levels, and some have actually declined over the last decade. Figure 21 shows the trends in major crops. Most cash crop production levels, such as for tea, tobacco, sisal, and coffee, have fluctuated around 50 million tons a year. Only cotton and cashews have recorded significant jumps in production. Cashew production increased in 1999 to about 130 million tons but has since declined to an average of 100 million tons a year. Cotton production, although increasing in the mid 1990s, subsequently declined steadily until it began to increase slowly after 2000 and then it rapidly increased in 2004.

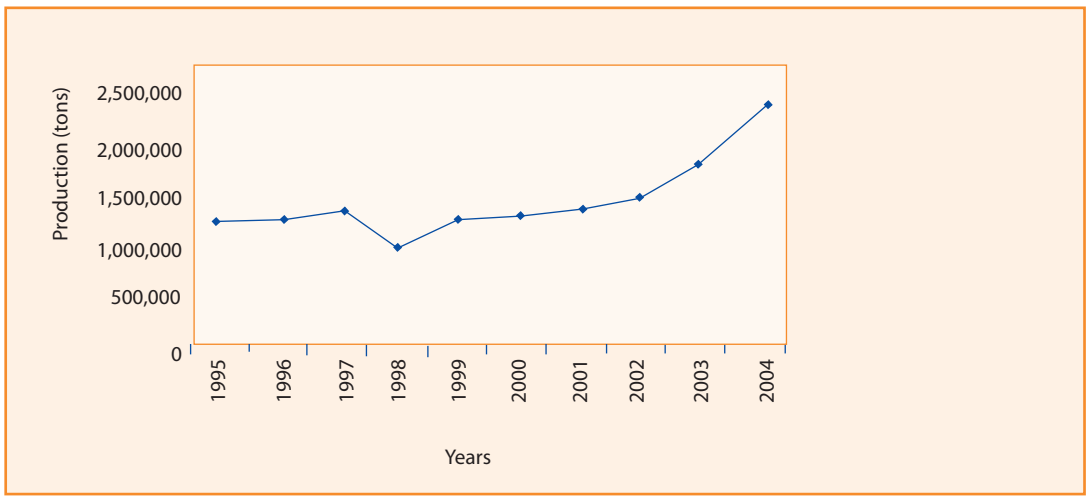
Figure 22. Trend in the production of major cash crops, 1995-2004



Source: URT, Economic Surveys, various years

Sugar cane recorded a much higher growth in production from 2001 after several years of stagnation as shown in Figure 22. This significant growth can be attributed to the privatisation of sugar cane estates and the adoption of the out grower model of production which began in early 2000.

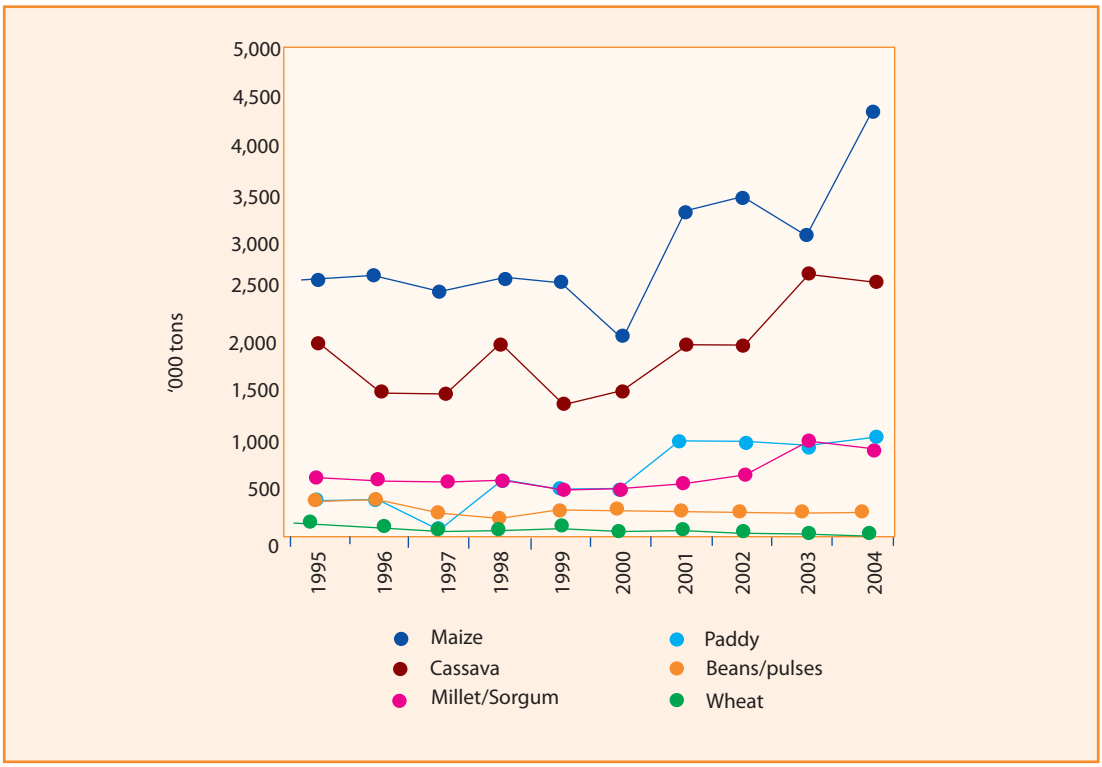
Figure 23. Trend in the production of sugar cane, 1995-2004



Source: URT, Economic Surveys, various years

Food crop production has demonstrated a similar pattern of production at low levels. Maize and cassava show a recent upwards trend from the year 2000 onward as indicated in Figure 23.

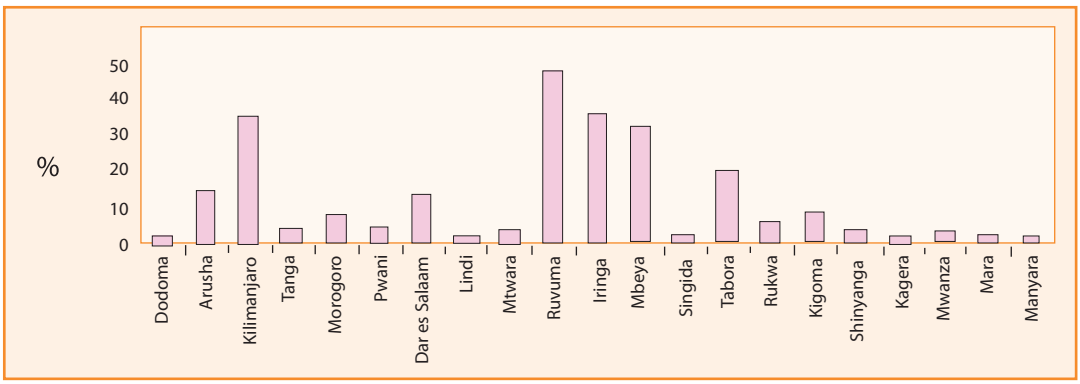
Figure 24. Production trend in major food crops, 1995-2004



Source: URT, Economic Surveys, various years

Fertiliser use is still low in most areas of the country. The exceptions are in Iringa, Mbeya, Ruvuma, and Kilimanjaro Regions, as shown in Figure 24, where more than 30 per cent of households are reported to be using fertilisers. The first three of these regions are among the big four producers of maize.

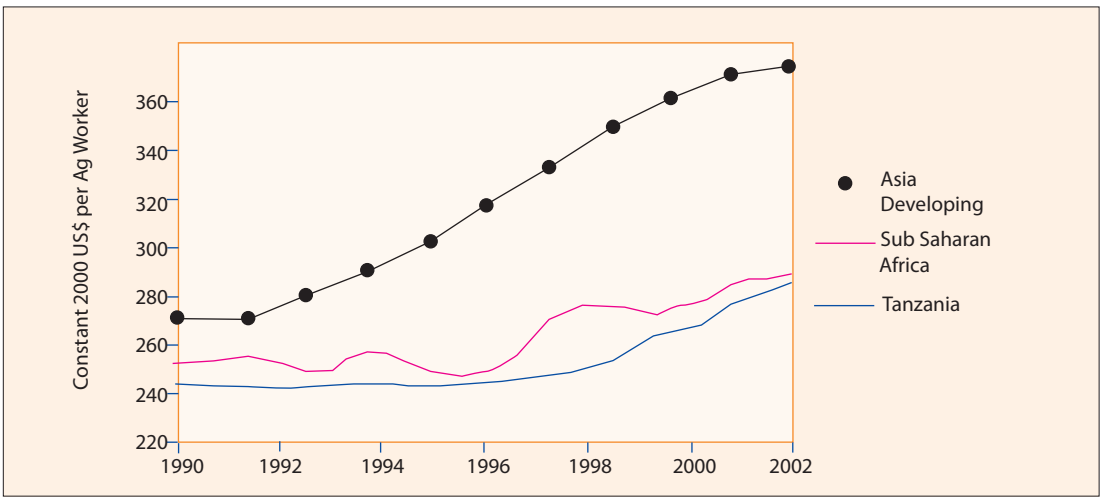
Figure 25. Households using fertilisers, by region, 2002/03



Source: NBS, Agricultural Sample Census 2002/03 - preliminary report of draft basic tables

Current levels of agricultural growth are not sufficient to meet the poverty goals as embodied in the MKUKUTA. Achieving these will require a growth process that is quantitatively faster and qualitatively different. Past growth has depended on expansion of the area cultivated and labour productivity increases have been insufficient to support faster growth and poverty reduction. As shown in Figure 26, labour productivity in Tanzania has trended up since 1994 but at levels below those of the Sub Saharan Africa (or Asia).

Figure 26. Agricultural labour productivity (agricultural value added per agricultural worker)

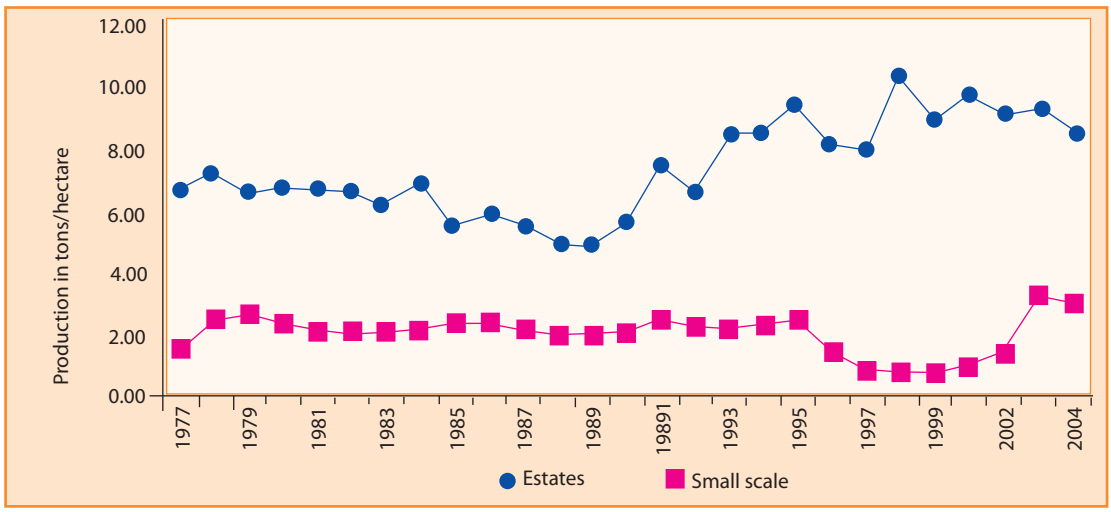


Notes: (1) countries with incomplete data for series excluded: (2) Asia Developing includes India and China (3) Sub-Sahara Africa excludes South Africa.

Source: Development Data Platform, World Bank

Productivity has been especially low for smallholders compared to agricultural undertakings by estates or large commercial farms. The comparison of productivity between smallholders and large scale estates is most detailed in time series information on tea production as shown in Figure 27.

Figure 27. Production of tea per hectare by type of producer, 1997-2004

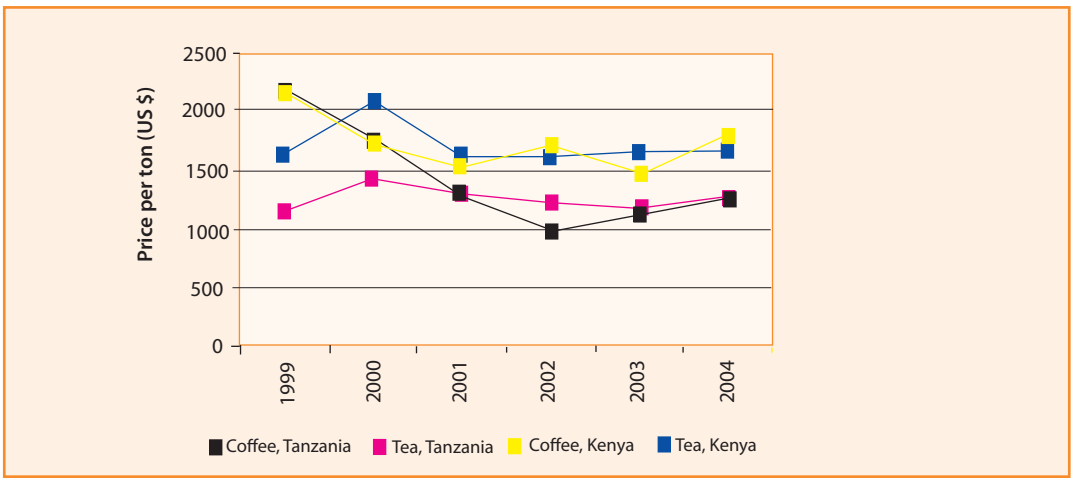


Source: URT, Economic Surveys, various years

Clearly, tea yields from smallholders have been consistently lower than from estates since the mid 1970s to the present. In the mid to late 1990s, productivity of estates increased while that of smallholders plummeted. This suggests there is room for significant increases in smallholder productivity if the constraints they face are understood and tackled. This is also the case for other crops. Production rates in 2002/03 by smallholders growing maize (0.73 tons/hectare) and sorghum (0.43 tons/hectare) compare poorly with production by large farmers (4.0 tons/hectare for maize; 2.7 tons/hectare for sorghum).[80]

Associated with low levels of production and productivity in smallholder agriculture is the declining quality of export crops. While data are limited for assessing the quality of crops exported from Tanzania, a comparison of average prices fetched by exports of coffee and tea from Tanzania and Kenya is considered a good proxy. Figure 27 shows that both Tanzanian and Kenyan coffee fetched the same average price before 2000, but subsequently the price for Tanzanian coffee dropped far below the Kenyan coffee price.

Figure 28. Export prices of coffee and tea from Tanzania and Kenya, 1999-2004



The average price of tea from Tanzania has also been consistently below the price of Kenyan tea. These figures show that, other things being equal, the quality of coffee and tea exported from Tanzania has been consistently lower than that from Kenya during the first half of this decade. It is likely that this trend also applies to food and other cash crops.

Constraints on smallholder production

Most rural Tanzanians are young, and most smallholders lack education. The recent Agricultural Sample Census (2002/03) estimates there are 4.8 million households cultivating about 44 million hectares overall, mostly with family-based labour. Although production varies widely between crops, the vast majority of households rely on a single crop as their main source of livelihood. Crop production is the main activity for about 50 per cent of smallholder households. Overall, few household members are engaged in livestock (2 per cent) and fishing (1 per cent) as their main activities, although there are regional variations.

[80] Source: NBS, Agricultural Sample Census 2002/03 - preliminary report of draft basic tables

Nonetheless, approximately 70 per cent of smallholder households have one or more off-farm income sources.

Smallholder agricultural households are modest in size (averaging 5 members), and the majority of members are under 20 years (53 per cent). Nearly 14 per cent are under 5 years. Just over a quarter (28 per cent) are students, and 10 per cent are unable to work due to health, age or disability. Although most households are male-headed (80 per cent), many are also headed by females (20 per cent). This reconfirms earlier findings of the Household Budget Survey (2000/01) which estimated 22 per cent of rural households as female-headed.

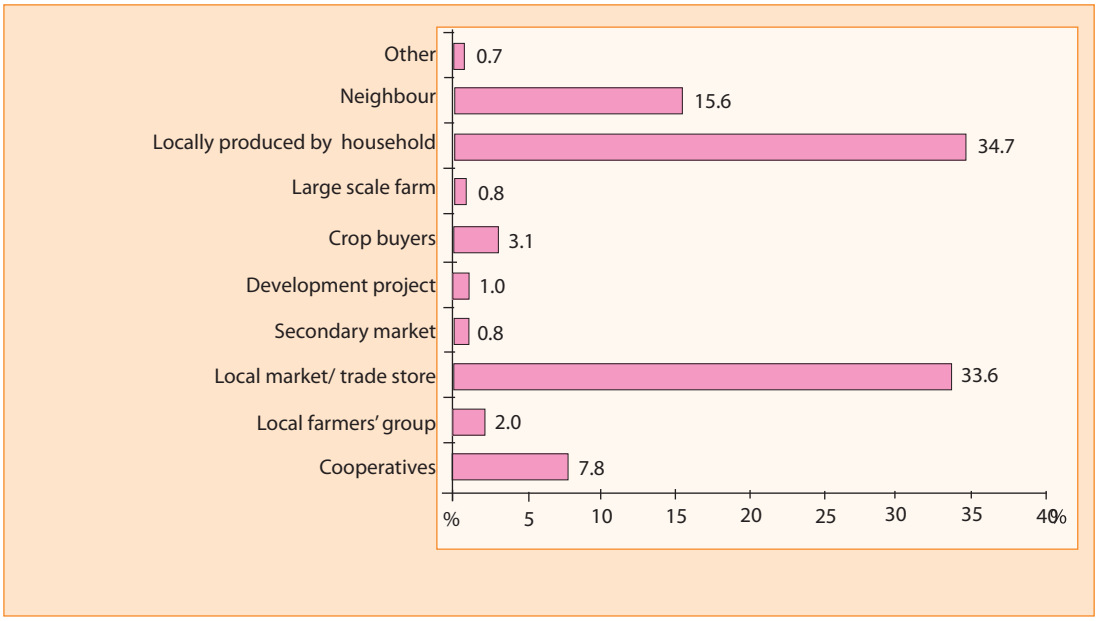
The lack of education is constraining many households. Overall 31 per cent of heads of smallholder households have had no education and 63 per cent have had some level of primary schooling, although only about 20 per cent completed Standard Four.

Beyond education, what other factors are holding back smallholders from increasing their productivity? By and large, land is not a binding constraint to production. Overall 63 per cent of households reported to be using all the land available to them for production. And, although 46 per cent felt there were issues of land insufficiency, this national picture is skewed somewhat by particular regions where there are significant numbers of livestock keepers, namely Arusha (74 per cent), Kilimanjaro (69 per cent) and Mara (61 per cent). Land continues to be held mainly under Customary Law by nearly 78 per cent of farming households despite the new Village and Land Acts. Few females reported land ownership or customary rights to land (19 per cent), mirroring nearly exactly the percentage of female-headed smallholder households. Further research would be needed to confirm whether it is female-headed households, or other females, who have rights of land security.

Most smallholders are using few agricultural inputs to increase their crop yields. Fewer than 20 per cent use any form of inputs other than farmyard manure (used by 26 per cent). Modern inputs such as fertilizers, pesticides, and improved seeds are scarcely used. The inputs smallholders use are mainly locally produced by their own households (e.g. manure, compost) or sourced from the local market/trade store. Few households purchase inputs from cooperatives, farmers' groups, or development projects.

Most smallholder households cultivate by using traditional hand hoes and fewer than 40,000 of the 4.8 million in total own a tractor. Nonetheless, the tractors that do exist are well utilised by about 140,000 households, primarily for ploughing in preparation for maize production during the long rainy season. Oxen are also used for ploughing, although ownership is very uneven geographically, with the vast majority of owners living in Shinyanga.

Figure 29. Sources of agricultural inputs, 2002/03



Source: NBS, Agricultural Sample Census 2002/03 - preliminary report of draft basic tables

Few farmers use any form of irrigation (approximately 8 per cent). Only approximately 125,000 hectares are under irrigation, mainly for maize and paddy production. Those farmers who do use irrigation source their water mainly from rivers and canals using gravity fed methods and hand buckets. Iringa, Mbeya and Kilimanjaro have the highest number of smallholders using irrigation methods to increase yields. Those without access to irrigation are exposed to erratic rainfall and frequently experience harvest losses due to climatic shocks (Danford et al. 2005).[81]

Why are so few smallholders using improved methods of production? The most frequent response was that prices of inputs were too high (33 per cent), or not available (20 per cent) and there was a lack of money for purchasing (18 per cent). Indeed, in most rural areas of Tanzania the source of inputs is a local shop or trader, and they are spread thinly. In many villages there is commonly no agricultural stall, and in most wards there is likely to be only one, if any. Competition and economies of scale are therefore largely absent. With low demand, even those traders who do function, offer few inputs for sale.

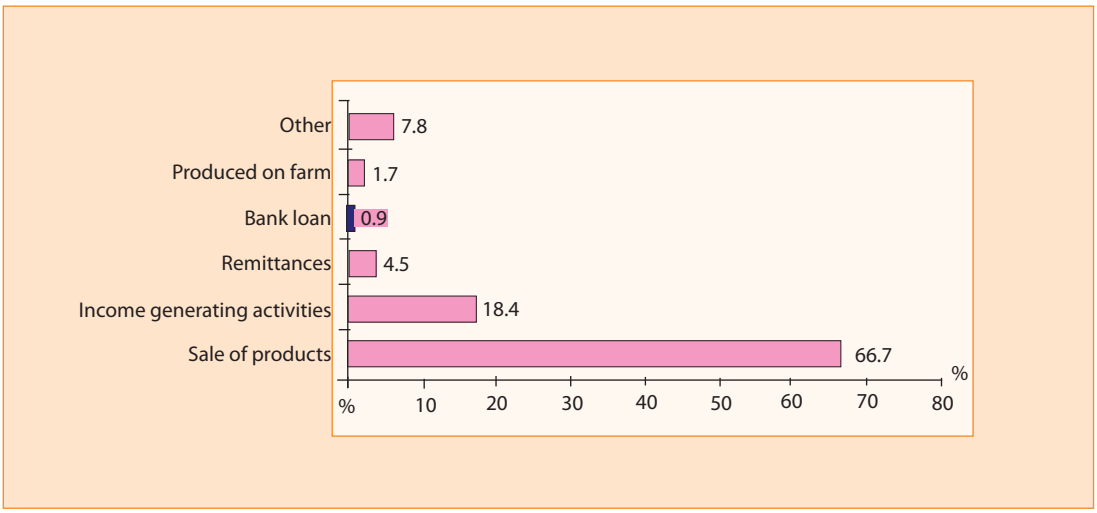
Households are purchasing agricultural inputs mainly from the money they receive from the sale of their own farm products and other income sources, see Figure 29. Few access any credit at all (3.1 per cent), and even fewer female-headed smallholder households access credit (0.53 per cent). This is true of all households, including those who own tractors. Of the few who have borrowed, about a third received finance from cooperatives. A further third of households borrow from family, friends or relatives. Most of this limited borrowing is for fertilizer, agro-chemicals and seeds; very little is for tools, labour or irrigation.

Smallholder households said they did not know how to get credit (38 per cent), or did not know about credit generally (22 per cent) or said it was not available (19 per cent). A further 10 per cent did not want to get into debt. Credit, like agricultural inputs, has been unevenly

[81] Sango Danford, Vivian Hoffmann and Luc Christiaensen. 2005. "Characterizing Households' Risk Environment and Their Coping Strategies." Mimeo.

spread across rural Tanzania, with Lindi, Manyara, Mara and Arusha receiving the lowest number of credits during the agricultural year 2002/03, while Tabora, Ruvuma and Mbeya received the most.

Figure 30. Main sources of finance for buying agricultural inputs, 2002/03



Source: NBS, Agricultural Sample Census 2002/03 - preliminary report of draft basic tables

The processing and storage of crops show similar trends in terms of low levels of activity beyond the household level. Maize milling represents by far the largest amount of processing of any crop and is done mostly for household consumption using neighbours' machines. This is also the case for paddy processing. Storage is mainly short term (less than 6 months) and losses are sometimes substantial, up to a quarter of the crop stored.

The majority of crop-growing households consume most of what they produce. Yet many also sell some portion of their agricultural production (70 per cent). Produce is most often sold to neighbours or in the local market/trade stores, most likely for expenditure smoothing. The exceptions are in Kilimanjaro where crops (mainly coffee) are sold via marketing cooperatives and farmers' associations, and in Mbeya (paddy) where crops are sold to traders.

Saving to invest in assets or new production technologies is made difficult by annual fluctuations in agricultural income which generate low savings; by low access to financial institutions and credit; and by the frequency with which households experience shocks related to health crises or otherwise which require additional unplanned expenditures (Hoogeveen 2005). [82] In addition, institutional constraints to marketing make the expansion of production relatively unattractive. Most smallholders indicate that Government regulatory boards, trade unions, farmers' associations and cooperatives impose obstacles to market access. However, given the fluctuations in production, the limited access to financial intermediation (savings and credit) and the current low levels of production, it is unclear if significantly more sales would be generated if the institutional arrangements for marketing were friendlier to smallholders.

[82] Johannes G. Hoogeveen. 2005. "Risk, Growth and Transfers. Prioritizing Policies in a Low Income Environment with Risk. The Case of Tanzania." Mimeo.

Given the low use of agricultural inputs and the relatively modest marketing of crops, what advice do smallholders receive that might affect their productivity? Extension advice, mainly from Government (93 per cent), reaches very few smallholder households, and even in those it does reach it is not clear whether households link the use of inputs (e.g. improved varieties, agro-chemical use, etc.) with production and marketing. Only about 35 per cent of the 4.8 million smallholders reported receiving extension messages during the 2002/03 season. Although this is the general case, it varies geographically. In 2002/03 thousands of Mbeya farmers received advice on the use of agro-chemicals, organic fertilisers and processing from large scale farmers. Thousands of Kilimanjaro farmers received advice on mechanisation from cooperatives, and NGOs/development projects provided significant numbers with advice on the use of improved seeds and fertiliser. It is therefore a mixed picture and the impact on production levels requires further empirical research.

Services such as crop processing, extension and cultivation advice provided to farmers who are linked to large scale farms are significant in some regions of Tanzania. More than 40 per cent of farmers were provided with such services in Mtwara, Tabora, Kagera, and Lindi in 2002/03. Most received advice from privately owned large scale farms, not from those owned by Government or parastatals.

In summary, smallholders do not practice high-yield farming methods, they produce mainly for subsistence, and the little produce they store is kept for only a short time. Sales take place as income smoothing strategies and are not a reflection of a surplus that can be invested in additional assets or new production technologies. Combined with earlier evidence in this chapter, this illustrates that rural smallholders are caught in a vicious circle of low quality and low quantity production. The following section explores ways of addressing the situation.

Lessons and the way forward

Efforts should be directed towards understanding and eliminating the barriers to smallholders that continue to inhibit the growth of productivity. The objective is to transform the sector into one with high labour productivity and high quality outputs. Specifically, the major aims should be to increase both the quantity of production (through increasing the number of hectares under cultivation and their yields) and the quality of production.

This way forward may require rethinking the current approach of dispersed and unorganised rural smallholder production. Smallholders as individuals find it difficult to respond to the challenges posed by rapid changes in local and global markets. Such changes call for the ability to respond to market information and invest, adjust volumes, values and even the content of production on a continuous basis. This is not to deny the improvements in smallholder production that have been observed, nor the fact that smallholders do increase production in response to higher prices (World Bank 2000). [83] The recent increases in cashew and cotton production reported in Figure 22 are cases in point. Yet the structural problems facing smallholders – limited access to information, to inputs, and to output and financial markets, and high exposure to shocks - justify the consideration of alternative institutional arrangements. Such arrangements would involve smallholders being increasingly better organised - in forms generally referred to as producer associations – and their engagement in integrated approaches to production, extension services, transportation, processing and marketing.

[83] World Bank 2000. Agriculture in Tanzania since 1986. Follower or Leader of Growth?

Producer associations: the cooperative model

Producer associations enable access to required and affordable inputs (technologies, credit) which can improve productivity, reduce costs through supply chain linkages and improve competitiveness. Yet it is not only production gains that are important; producer associations of smallholders that are well organised can also strengthen labour rights and help to ensure that the benefits of increased production are more equitably shared.

Cooperatives are the dominant form of smallholder producer associations. Cooperatives have advantages which accrue when there is genuine participation of members (Davis 2003), as was the experience with the cooperative movement in Tanzania in the 1960s. Through cooperatives, farmers can enhance their access to inputs and to output markets, improve their bargaining power vis-à-vis traders, enforce product standards and gain access to information, extension and credit. On-going efforts to revive cooperatives are, therefore, a move in the right direction.[84] However, these initiatives are being implemented with the legacy of a difficult history of government interventions, embezzlement of funds and mismanagement. Reforms are being made in an environment where the institutional framework for democratic cooperatives has collapsed, where the cooperative movement has lost legitimacy from its members and where cooperatives are financially weak and ill-prepared for global competition.

The recent Cooperative Policy and accompanying legislation aim to ensure that cooperatives function as independent and competent business entities, are democratic, and follow international cooperative principles. Only when this has happened can cooperatives become a development option for smallholders in rural Tanzania. It will take time, especially in areas with no history of democratic cooperative movements, that is, those outside the coffee and cotton growing areas of Kilimanjaro, Kagera and Mwanza. In areas such as Dodoma, Sumbawanga, Tanga, and others, it may take a long time to restore the confidence of smallholders and convince them that the cooperative option is a viable one, because they have no experience of a working cooperative movement. In areas such as Kilimanjaro, the important factor is the assurance that government interference will not return. Here, smallholders from the older generation can still recall the cooperative system as a viable and profitable development option.

Challenges of cooperatives

The first major challenge for the cooperative option is to build the confidence of smallholders that cooperatives are viable and beneficial to them. It is possible to restore confidence with the appropriate political commitment, even though it will take time.

The second challenge is to build the integration of production, transport, processing and marketing into the cooperative system to take advantage of supply and demand value addition, without complicating the institutional arrangements to unmanageable levels. This may require shifting the focus of cooperatives from either production or marketing to a more multi-purpose approach which concurrently encourages investments from members and external agents.

The third challenge is to ensure the introduction of innovations and knowledge into the cooperative system on a continuous basis, without subjecting members to the payment of high

[84] Cooperative Development Policy 2002, URT 2003

consultancy fees or to being used as an experiment. Given most smallholders' low education levels and inexperience in breadth of farming methods, this may be doubly difficult. Nonetheless, all three challenges will need to be addressed if this model is to be used as a development option.

Integrated producer schemes

Integrated producer schemes are designed to develop the capacities of smallholders through extensive provision of extension services and close monitoring of production and quality control. The model links production to investments in agro-industrial activities and markets. It has typically involved technical assistance from foreign or local private companies. Where product chains are not well developed, collection centres provide links between farmers and processors or markets. The centres provide farmers the incentive and mentoring support needed to increase production and quality.

In Tanzania three examples demonstrate that this option is viable and beneficial to smallholders. The production of sugar cane in Mtibwa and Kilombero, tea in Rungwe District through the Wananchi Tea Company, and sisal in Tanga Region through Katani Ltd. Although these examples use crops which require on-site processing, this is not a precondition for integrated producer schemes. Either local or distance processing may be possible, as is evident with schemes in the dairy sector in Tanzania. Determining whether to process locally or at a distance depends mainly on the weight and bulk of the raw materials and therefore on the costs of transportation.

These schemes typically operate an integrated system that links production, extension services, transportation, processing and marketing. Table 19 below provides an overview of the three examples and their activities. The table reveals two main characteristics of the integrated producer schemes. First, in each of the three schemes, all activities from production through to marketing, are integral parts of the scheme. This is important to ensure adequate planning, quantity and quality control and communication/feedback by both the company promoters and smallholders. Second, the organisational structure may vary by scheme. At the production level it ranges from being composed entirely of smallholders, in sisal for example, with no involvement of the promoting company, to one that is largely controlled by company promoters. Sugar cane production is an example of the latter. The table also shows that some activities are sourced outside the companies. The Wakulima Tea Company (WATCO) out-sources both extension services and transportation to other institutions, namely the Tea Research Institute of Tanzania (TRIT) and CASPIAN, a haulage company.

Table 19. Integrated producer schemes: 3 examples

Activity	Tea	Sisal	Sugar cane
	Promoting Company: WATCO	Promoting Company: Katani Ltd.	Promoting Company: Kilombero
1. Production	Mostly smallholders	Entirely Smallholders	Promoting Company & Smallholders
2.Extension Service	Tea Research Institute (TRIT)	Promoting Company	Promoting Company
3. Transportation	CASPIAN (Haulage Company)	Promoting Company	Promoting Company
4. Processing	Promoting Company	Promoting Company	Promoting Company
5. Marketing	Promoting Company	Promoting Company	Promoting Company

It would appear that certain activities are more likely to be out-sourced (such as extension services and transportation) than others (processing and marketing). This raises the potential for opening space for partnerships that take advantage of skills which exist beyond the schemes themselves. For example, the potential may exist to utilise the large pool of agriculture extension staff in government to support integrated producer schemes, or to partner with specialised private transport providers whose costs are comparatively low.

Overall, although integrated producer schemes may vary, the basic framework remains the same: a closely coordinated integrated system of production, extension, transport, processing and marketing.

Ownership and governance in integrated producer schemes

Both ownership and governance are important for ensuring that the interests of all those involved are promoted in a fair and transparent manner and that loyalty is enhanced. In integrated producer schemes, land use rights belong to the farmers. In a few cases farmers also own the promoting company. For example, Rungwe smallholders own 25 per cent of the shares of the promoting company (WATCO) and in Tanga some of the smallholders who were former senior employees of Tanzania Sisal Authority own shares in Katani Ltd. Therefore, in principle, the integrated producer schemes do not preclude smallholders taking part in the ownership of the promoting company. To date, resource constraints have made such common ownership approaches out of reach for the majority of smallholders.

Of the three examples, only WATCO has representatives of smallholders on its Board of Directors, reflecting in part the share ownership structure of the company. However, there are indications that Katani Ltd. plans to allocate space for smallholder representation on its Board regardless of share ownership. This is aimed at enhancing dialogue between the company and smallholders in order to increase mutual learning, transparency and loyalty.

Advantages of integration

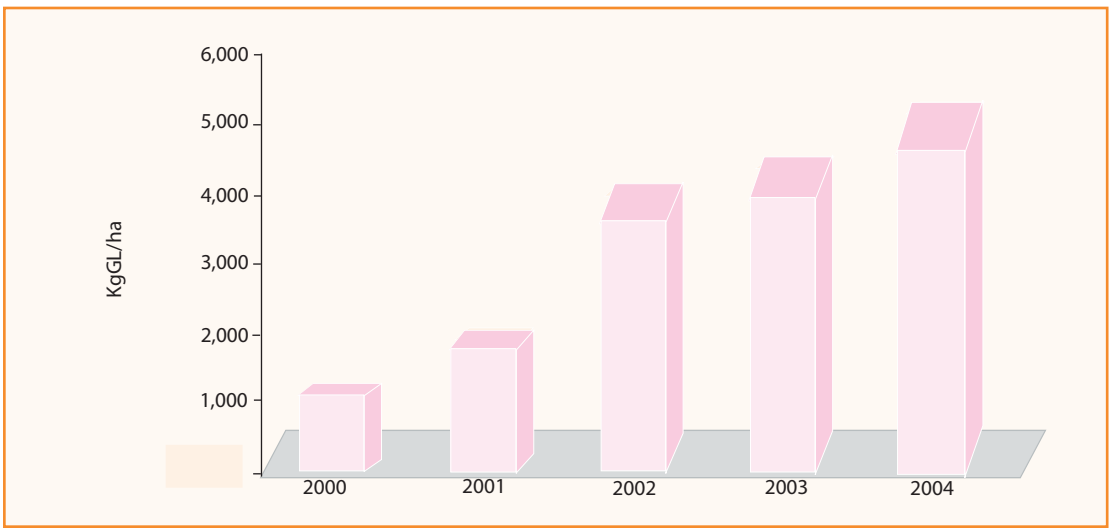
The integrated producer schemes have an inbuilt supply chain system which allows the realisation of value addition for the benefit of all involved. In Tanzania, integrated producer schemes have so far been organised mainly for crops with special specifications, in particular for crops that require processing immediately after harvesting. Such product specifications

tie the investors in processing facilities to the providers of agricultural produce and create an alliance which is of mutual benefit.

Produce that lacks such specifications – as is the case for maize or beans - may also be suitable for an integrated approach, provided that a strong bond between processors and primary producers can be generated. The strength of such a bond depends on the relative strength of smallholders compared to the strength of the processing company in the structure of ownership and governance of the company, the contribution of smallholders in total production, and the size and level of organisation of the smallholders' association.

The integrated producer model has been in operation only for about five years in Tanzania, mainly in the form of out-grower schemes. Nevertheless positive results have been recorded in expanded area cultivated, in increased production and productivity and in improved quality. In Rungwe, annual green leaf production has increased fivefold in the last four years from 3,774,912 kg (2000/01) to 15,285,451 kg (2004/05). The average yields of green leaf from smallholders have increased consistently from around 1,000 kg/hectare (2000) to around 5,000 kg/hectare (2004), while the overall quality of tea from smallholders is reported to be above the standards set by the company [85]

Figure 31: Tea productivity of smallholders in Rungwe



Source: TRIT, 16 November 2005

Productivity performance is best for those smallholders with links to integrated producer schemes. Their average yield increased from 939 kg/hectare (2000/01) to 3,249 kg/hectare (2002/3) before falling to 2,962 kg/hectare.[86] Although there is room for improvement when compared with tea estates' productivity that averaged 9,128 kg/hectare (2000/01 – 2003/4), the yields from smallholders in integrated producer schemes have improved consistently and significantly since 2000.

One advantage of integrated producer schemes is that they allow for increased productivity and quality of agricultural output without making smallholders landless or labourers. In Rungwe the scheme is operating with 15,000 tea-producing smallholders; in sugar cane,

[85] TRIT, Annual Report, 2004.
[86] 2003/4, Economic Survey-2004

there may be fewer. For sisal, the number is growing. Retention of land use rights by smallholders is important in Tanzania, although it may be important to consider possibilities for consolidation in the longer term as changes and performance in other sectors of the economy take place.

The challenges of the integrated producer schemes

Integrated producer schemes are relatively new in Tanzania and their institutional arrangements of structure and their rules of the game are evolving. Although there are signs that integrated producer schemes are spreading into other crops and sectors such as milk and dairy products, questions are being raised about their sustainability and social impact. Some of the challenges which the model is likely to face and which will need to be addressed by its promoters are outlined below. These challenges include how to establish the loyalty of smallholders for such schemes and how to minimise the marginalisation of smallholders by investors in the processing facilities.

The first challenge is that there is great risk that producers might sell produce to buyers outside the model scheme. The incentives for such transactions are two way. Outside buyers who have not invested in the production process are likely to offer higher prices to attract smallholder producers. On the other hand producers may prefer to sell to the "free rider" to avoid possible deductions for credit received from the company promoter. The provision of such credit is a common characteristic of integrated producer schemes, where credit is extended to producers for the purchase of inputs, fertilisers, pesticides and extension advice and other services.

This challenge can be addressed in several ways. First there may be a mutual agreement enforced through a legal contract, which must be binding to all the parties to deliver and to be accountable as per the agreement. Yet contract enforcement is notoriously difficult, and approaches that tie primary producers to processors on a voluntary basis are to be preferred. As long as the benefits of remaining in the scheme outweigh the benefits of operating outside the scheme, such voluntary compliance will occur as a matter of course.

Another challenge is that integrated producer schemes may operate within the framework of a monopolistic model. As such, there may be a danger for the company promoter to marginalise small producers either by offering low prices for the produce or overcharging for inputs (including extension advice). The room for manoeuvre for either party is a function of three factors. First is the relative power of each party in the relationship, which is partly determined by levels of production. The greater the contribution of the produce of small producers to the total volume of production of the scheme, the stronger will be their bargaining power. In the three examples cited above, sisal growers stand a better chance of bargaining for higher prices than sugar cane producers because their contribution to total production is higher. Second is the level of organisation of the producers - the more organised the small producers, the stronger their bargaining power. Of the three cases the sugar cane producers through the Kilombero Sugar Cane Growers Association (KCGA) and Ruembe Out-growers Association (ROA) stand a better chance to bargain for high prices than the poorly organised sisal producers. Third is the structure of governance. In the three cases, Rungwe tea growers are more likely to bargain for higher prices through their representatives on the Board of Directors than their sugar cane or sisal counterparts who have limited representation in overall management of the scheme. However, as noted earlier, ownership of the processing plant may not be a necessary condition for representation on the Board. Overall, these challenges can be addressed by putting in place stronger legislation and regulation to protect smallholders and labourers and prevent the monopolistic model that could develop out of this model.

Conclusion, key messages, and challenges

At the beginning of this chapter, two challenges were identified. High, sustained agricultural growth is needed for rural poverty reduction and this growth has to be broadly shared. In general, the agriculture sector in Tanzania has not performed well. Production has fluctuated around low levels for most food and cash crops. Similarly, productivity has remained low, especially among smallholder farmers who constitute the majority of agricultural producers in Tanzania. The quality of export crops has remained low relative to export crops produced by neighbouring countries. A combination of low production, low productivity, and low quality of agricultural produce has significant limiting effects on rural growth and therefore on poverty reduction.

Major factors contributing to this situation include low levels of education and literacy among smallholder farmers, exposure to variable weather, price shocks, limited private investments and weak institutional arrangements for promoting systems of support for production, extension, transportation, processing and marketing.

It is argued in this chapter that an integrated system of production involving timely access to inputs, modern and appropriate technology, extension, transport, processing and marketing, organised effectively, is able to overcome many of these constraints and will work to reduce rural poverty in the following ways:

- through increased production and productivity
- by raising the price of the produce due to an increase in its quality by taking advantage of the supply chain
- by ensuring greater access to productive activities by the majority of smallholders and labourers

Challenges remain in the implementation of the suggested approach. The major challenge is how to apply the model in small, scattered land holdings in areas of high production of crops that do not require immediate processing such as maize and beans. With adjustments, the framework should work with all crops. The necessary condition is for smallholders to increase production beyond subsistence levels to produce a surplus for the market.

As with other strategies, this integrated approach needs to be supported by the Government through an enabling environment. Three aspects of such an environment need to be addressed. The first relates to the maintenance of macroeconomic stability and the reduction of the cost of doing business. The former requires that prudent macroeconomic and expenditure policies are continued and sustained; the latter demands that actions are taken to reduce red-tape and rent seeking associated with the implementation of rules, regulations and licences. This is important for confidence building and the continued flow of private investment. Second, current Government efforts directed at improving rural infrastructure must be continued and sustained. An integrated producer system will add to the need for reliable rural roads, power and water supply compared with the demands of the current system of production. Third, efforts to enhance the human resource through the provision of basic social services must be continued and sustained. Households and individuals should be enabled to take full advantage of the emerging opportunities. This is only possible if they are appropriately educated and healthy.

CONCLUSION OF PHDR, 2005

This Poverty and Human Development Report, 2005, points to significant achievements of the past few years, especially in primary education and in health outcomes for young children. It is not a coincidence that basic education and health were the main priorities of the Poverty Reduction Strategy and its associated financing. The new strategic framework, MKUKUTA, is broader, with greater focus on growth and on governance. The analysis of this report suggests that growth and governance merit much greater attention to ensure a more rapid reduction of poverty, to generate broad-based growth, and to deliver more equitable access to services and opportunities.

Even though primary education enrolment has achieved national targets and under-five mortality rates have fallen, there are still significant disparities, geographically and socially. Access to teachers, health services, improved water supplies and other essential services and amenities is inequitable. Rural households are disadvantaged compared with their urban peers. And it is in the rural economy where growth has been weakest.

Improved rural growth will depend on increased productivity and quality in agriculture. It will depend on greater private investment in agriculture by private business and by smallholders themselves who need to be more effectively linked into an integrated system of production involving access to improved inputs, extension, transport, processing and marketing. Such integrated systems can be strengthened and made more widely accessible to smallholders to encourage increased production and added quality to their produce.

There is much the Government can do to provide an enabling environment to encourage this development to take place. Macroeconomic stability must be sustained, more investment needs to be directed to improving rural infrastructure, action should be taken to reduce the cost of doing business, regulatory mechanisms must be strengthened. Government's own capacity needs to be enhanced to keep up with global changes to help the economy thrive within the international environment in which it is operating.

Improvements in the rural infrastructure are critical – roads, power, communication, water - and they are given greater priority in MKUKUTA. The more widespread use of cost effective technologies, especially in road improvements and maintenance and the provision of improved water supplies, will be an important part of a strategy to ensure equitable access.

Associations of producers can play a critical role in safeguarding the interests of smallholders, and they can also ensure a steady supply of produce for processing and marketing. Investment in co-operative producers' associations can be encouraged so that vertically integrated enterprises of production, processing and marketing add value to members' produce. The democratic development of such associations needs to be promoted.

The equitable provision of essential services is important for enhancing the capabilities of otherwise disadvantaged poor people to participate in and benefit from social and economic development. Strengthened local authorities' management is necessary, with greater financing through formula-based allocations, and with more equitable deployment of staffing for social services. Stronger co-ordinated efforts to improve economic and social conditions and the provision of essential services would do much to reduce the state of generalised insecurity in which many poor Tanzanians live, and would underpin a strategy for social protection, which is a goal of MKUKUTA.

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APPENDIX A: DATA

Table A.1 Sources of GDP growth

	Average annual growth rate			Average contribution to growth		
Sector	**1990-94**	**1995-99**	**2000-04**	**1990-94**	**1995-99**	**2000-04**
Agriculture	3.1%	3.6%	4.8%	1.5%	1.8%	2.3%
Crops	3.2%	3.9%	4.8%	1.1%	1.4%	1.7%
Livestock	2.5%	2.7%	4.1%	0.2%	0.2%	0.3%
Forestry and Hunting	2.8%	2.4%	3.9%	0.1%	0.1%	0.1%
Fishing	3.4%	3.7%	6.6%	0.1%	0.1%	0.2%
Industry	2.0%	5.4%	8.7%	0.3%	0.9%	1.5%
Mining and Quarrying	11.8%	14.8%	15.2%	0.1%	0.2%	0.4%
Manufacturing	0.4%	4.6%	7.0%	0.0%	0.4%	0.6%
Electricity and Water	4.0%	5.7%	4.3%	0.1%	0.1%	0.1%
Electricity	4.5%	6.3%	4.4%	0.1%	0.1%	0.1%
Water	0.8%	1.9%	3.6%	0.0%	0.0%	0.0%
Construction	2.2%	3.5%	10.0%	0.1%	0.2%	0.5%
Services	1.9%	3.8%	5.9%	0.7%	1.3%	2.0%
Trade, Hotels and Restaurants	2.0%	4.5%	6.9%	0.3%	0.7%	1.1%
Transport and Communication	3.6%	4.8%	6.0%	0.2%	0.2%	0.3%
Financial and Business Services	2.9%	3.6%	4.3%	0.3%	0.4%	0.4%
Finance and Insurance	2.6%	3.5%	3.6%	0.1%	0.1%	0.1%
Real Estate	3.0%	3.7%	4.8%	0.2%	0.2%	0.3%
Business Services	3.6%	4.5%	5.5%	0.0%	0.0%	0.0%
Public Admin. and Other Services	1.9%	1.6%	3.9%	0.2%	0.1%	0.3%
Public Administration	0.6%	-0.2%	2.4%	0.0%	0.0%	0.1%
Education	4.9%	4.2%	6.7%	0.1%	0.0%	0.1%
Health	3.9%	3.6%	5.9%	0.0%	0.0%	0.0%
Other Services	4.7%	6.0%	5.4%	0.1%	0.1%	0.1%
Less Fin. Services (ind.measured)	5.7%	3.4%	3.6%	-0.3%	-0.2%	-0.2%
Total GDP (factor cost)	2.5%	4.0%	5.8%	2.5%	4.0%	5.8%

Source: URT, Economic Survey 2004

Table A.2 Attendance in primary school by age and sex, 2002

Age	All	Boys	Girls
7	42%	40%	44%
8	60%	57%	62%
9	72%	70%	74%
10	76%	75%	77%
11	82%	82%	81%
12	81%	81%	80%
13	79%	80%	77%
14	72%	75%	69%
15	57%	61%	53%
16	41%	47%	36%
17	23%	28%	17%

Source: NBS, Census 2002

Table A.3 Estimated enrolment based on projected census population for 2004

Age	All	Boys	Girls
7	93%	92%	93%
8	104%	105%	103%
9	106%	108%	105%
10	97%	100%	93%
11	83%	84%	82%
12	67%	67%	67%
13	85%	86%	84%
14	49%	50%	48%
15	40%	43%	37%
16	21%	23%	18%
17	10%	12%	8%

Sources: Ministry of Education and Culture, Basic Statistics, 2004; NBS, Census 2002

Table A.4 Cohort retention rates in primary school, girls, 1997-2004.

Girls	1997	1998	1999	2000	2001	2003	2004
Std 1-2	96%	95%	97%	93%	93%	93%	99%
Std 1-3	93%	91%	92%	90%	90%	88%	96%
Std 1-4	90%	87%	87%	86%	90%	84%	94%
Std 1-5	84%	79%	83%	79%	83%	80%	89%
Std 1-6	78%	75%	80%	76%	81%	77%	86%
Std 1-7	75%	68%	76%	70%	76%	72%	81%

Source: Ministry of Education and Culture, Basic Statistics 1997-2004

Table A.5 Percentage cohort retention rates in primary school, boys, 1997-2004.

Boys	1997	1998	1999	2000	2001	2003	2004
Std 1-2	95	93	96	95	94	95	98
Std 1-3	91	89	92	92	91	89	94
Std 1-4	86	84	86	87	88	84	91
Std 1-5	78	74	78	80	79	80	85
Std 1-6	73	69	75	75	76	77	82
Std 1-7	68	63	70	69	71	73	77

Source: Ministry of Education and Culture, Basic Statistics 1997-2004

Table A.6 Distribution of qualified teachers and pupil/qualified teacher ratios, by region, 2001 and 2004

Region	Percent diploma and grade A teachers			Pupil/diploma - grade A teacher ratio		
	2001	2004	% Change	2001	2004	% Change
Arusha	51	64	25	95	97	3
Dar es Salaam	63	78	24	80	67	-16
Dodoma	41	48	17	109	109	0
Iringa	53	64	21	82	81	0
Kagera	52	58	12	90	111	23
Kigoma	40	51	26	141	145	3
Kilimanjaro	51	52	2	67	85	26
Lindi	41	50	22	89	101	14
Mara	46	49	5	98	129	31
Mbeya	50	63	27	93	96	4
Morogoro	48	56	17	88	90	3
Mtwara	46	50	8	76	103	35
Mwanza	53	59	10	99	122	23
Pwani	56	63	13	72	83	14
Rukwa	46	51	9	116	127	10
Ruvuma	52	56	7	73	92	26
Shinyanga	50	64	28	131	111	-15
Singida	50	51	3	97	119	23
Tabora	43	50	16	111	131	18
Tanga	48	53	9	89	112	26
Total	**50**	**58**	**16**	**93**	**102**	**10**

Source: Ministry of Education and Culture, 2001 and 2004

Table A.7 Enrolment in secondary education (public and private) and girl/boy ratios, by form, 2001-04

	Form I		Form II		Form III		Form IV		Form V		Form VI	
Year	Number	Girl/boy ratio	Number	Girl/boy ratio	Number	Girl/boy ratio	Number	Girl/boy ratio	Number	Girl/boy ratio	Number	Girl/boy ratio
2001	83,509	0.96	75,898	0.94	55,535	0.82	49,950	0.85	13,090	0.49	11,717	0.51
2002	97,694	0.88	84,580	0.96	64,529	0.85	49,726	0.78	14,129	0.50	12,660	0.47
2003	99,744	0.93	99,149	0.92	63,291	0.78	57,303	0.80	14,210	0.55	11,744	0.50
2004	147,490	0.98	113,461	0.93	79,786	0.79	60,861	0.77	17,200	0.55	13,801	0.51

Source: Ministry of Education and Culture, 2001-2004

Developing an indicator for the operational target of reducing cholera outbreaks by half by 2010

A study is currently being carried out by WaterAid and the Epidemiology Unit of the Department for Preventive Services, Ministry of Health, to develop an indicator for the operational target 'reduce cholera out–breaks by half by 2010'.

Some of the data which are being analysed are presented in Table A.8 below, which shows the cholera attack rate per 100,000 people by region from 1997 to 2004. Overall, there is wide fluctuation year to year. There is also large regional variation due to the localised nature of cholera's epidemiology. For example, over the last 8 years annual attack rates of cholera have surpassed 100 cases per 100,000 population 7 times; in Mtwara (twice), Lindi (twice), Dar es Salaam (twice) and Rukwa (once). However, events like these are too infrequent to provide useful indicators, and so 10 cases per 100,000 may be a more useful threshold to set.

Over the past 8 years around 40 per cent of regional cholera attack rates reported have been above the level of 10 per 100,000. Given that retrospective data will be needed to assess this indicator, the best proxy indicator may be: reducing by half the number of regions experiencing annual attack rates of over 10 per 100,000.

Table A.8 Cholera attack rate per 100,000 people, by region, 1997-2004

Region	1997	1998	1999	2000	2001	2002	2003	2004
Arusha	0.8	3.1	61.4	34.7	18.0	14.9	14.7	18.7
Dar es Salaam	0.0	0.0	6.9	0.0	9.7	141.1	**150.2**	16.3
Dodoma	10.4	3.0	29.1	3.6	11.5	66.1	47.4	19.6
Iringa	0.0	0.0	0.0	0.0	0.7	0.0	0.2	4.6
Kagera	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.1
Kigoma	48.8	2.9	18.9	10.9	41.0	67.2	19.4	28.4
Kilimanjaro	20.9	8.3	30.3	11.7	2.0	0.0	0.0	6.2
Lindi	0.0	1.2	36.7	126.7	0.0	53.4	125.4	34.8
Manyara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6
Mara	0.0	0.0	0.1	0.0	1.0	0.0	0.5	0.1
Mbeya	12.7	6.2	3.3	0.0	0.0	7.1	14.4	62.9
Morogoro	83.8	47.7	9.8	0.0	1.9	93.0	54.0	46.5
Mtwara	90.6	51.1	1.7	92.3	0.0	6.2	224.6	**155.8**
Mwanza	26.7	18.1	13.5	0.5	1.7	0.0	0.0	0.0
Pwani	50.2	2.2	5.2	0.0	2.0	13.4	22.3	13.2
Rukwa	6.6	3.3	112.0	0.2	11.6	3.2	24.4	19.0
Ruvuma	28.1	1.8	50.9	1.6	0.0	0.0	24.3	10.0
Shinyanga	0.1	1.2	30.2	3.9	20.8	0.5	3.6	0.0
Singida	18.8	55.0	6.5	40.4	1.0	0.0	30.9	6.4
Tabora	0.0	5.7	6.4	0.3	0.6	0.4	0.0	0.2
Tanga	18.7	7.5	88.3	9.4	6.1	68.0	32.8	37.5
MAINLAND	18.1	10.1	24.8	12.0	6.9	28.5	35.0	**20.9**

Note: Attack rates ≥ 10 in 100,000 are shaded. Attack rates ≥ than 100 in 100,000 are in bold and shaded.

Appendix Table A.9

See key for explanation of column entries

	District	A	B	C	D	E	F	G[1]	H	I	J	K	L	M	N	O	P	Q
Tanga	Lushoto	419,970	103	8,051	0.013	16	16	3	32	42	23	8.8	3.1	6.5	76	86	69	100
	Korogwe	261,004	83	4,910	0.017	31	25	8	30	32	23	9.5	4.0	6.8	77	85	70	100
	Muheza	279,423	66	4,419	0.015	33	22	8	30	29	24	8.4	2.8	6.3	71	79	64	100
	Tanga (U)	243,580	409	8,088	0.051	17	71	4	31	33	15	12.2	5.0	8.5	87	91	83	100
	Pangani	44,107	25	2,928	0.008	22	5	5	32	29	21	10.8	4.2	7.9	73	81	66	100
	Handeni	249,572	31	4,604	0.007	32	10	8	28	31	18	6.8	2.3	5.1	63	72	55	86
	Kilindi	144,359	26	-	-	38	10	10	26	30	17	6.9	1.9	5.4	53	63	44	78
Morogoro	Kilosa	489,513	34	10,387	0.003	30	10	8	33	30	17	8.5	3.2	6.2	65	72	58	81
	Morogoro (R)	263,920	20	6,921	0.003	31	6	9	32	32	24	11.8	4.4	8.8	58	72	46	89
	Kilombero	322,779	25	8,934	0.003	29	7	8	33	27	14	9.1	3.4	6.6	75	84	67	86
	Ulanga	194,209	9	5,086	0.002	28	2	8	34	27	17	10.3	3.6	7.6	72	82	63	68
	Morogoro (U)	228,863	426	10,853	0.039	14	60	3	32	31	10	10.8	4.2	8.1	85	90	81	82
	Mvomero	260,525	42	4,803	0.009	26	11	7	31	30	18	9.1	3.6	6.4	68	76	61	81
Pwani	Bagamoyo	230,164	27	6,025	0.004	40	11	11	30	29	21	10.8	4.1	8.1	63	73	54	93
	Kibaha	132,045	72	5,048	0.014	32	23	9	30	28	20	11.5	4.7	8.4	74	83	66	100
	Kisarawe	95,614	20	4,766	0.004	51	10	16	30	27	32	11.8	5.0	8.4	61	71	51	100
	Mkuranga	187,428	69	7,477	0.009	40	27	11	30	27	27	10.5	4.0	7.8	47	58	38	88
	Rufiji	203,102	15	3,673	0.004	34	5	9	30	33	26	9.4	3.2	6.9	51	62	41	86
	Mafia	40,801	68	3,380	0.020	43	29	14	34	28	18	9.9	3.5	7.4	67	77	58	99
DSM	Kinondoni	1,088,867	1,981	5,162	0.384	14	282	4	36	28	7	12.0	5.4	8.3	92	94	89	88
	Ilala MC	637,573	1,895	3,191	0.594	16	299	4	35	26	8	11.0	4.9	7.9	93	96	90	98
	Temeke	771,500	1,027	6,351	0.162	29	295	9	35	29	8	11.0	4.7	7.9	88	92	83	95
Arusha	Monduli	185,237	12	4,393	0.003	24	3	7	33	50	14	8.1	1.1	7.4	43	53	35	71
	Arumeru	516,814	181	7,352	0.025	18	33	4	30	33	16	7.0	1.7	5.8	79	84	74	99
	Arusha (U)	282,712	2,596	4,542	0.572	12	319	3	30	32	6	9.0	3.2	6.8	94	96	93	93
	Karatu	178,434	42	5,932	0.007	39	16	11	29	29	17	7.0	2.1	5.3	71	75	66	100
	Ngorongoro	129,776	8	7,187	0.001	24	2	5	26	51	14	10.5	0.9	9.8	28	38	21	71
Kilimanjaro	Rombo	246,479	181	6,143	0.029	37	67	9	27	35	25	8.1	2.5	6.5	82	87	78	96
	Mwanga	115,620	54	2,678	0.020	27	14	6	29	38	25	10.5	3.1	8.3	91	94	88	100
	Same	212,325	33	3,781	0.009	34	11	9	31	34	23	7.9	2.6	6.0	90	93	87	100
	Moshi (R)	402,431	287	5,424	0.053	28	79	7	29	33	29	9.3	3.1	7.3	89	92	85	99
	Hai	259,958	117	3,596	0.033	22	26	5	29	32	24	8.8	2.9	6.9	86	89	83	96
	Moshi (U)	144,336	2,405	7,568	0.318	18	424	4	32	34	8	8.4	3.1	6.5	96	97	95	100
Manyara	Babati	303,013	60	7,750	0.008	50	30	16	31	31	19	8.0	2.3	6.2	70	76	64	100
	Hanang	205,133	55	7,579	0.007	49	27	15	31	30	15	7.0	1.8	5.6	61	67	54	87
	Mbulu	237,882	62	7,909	0.008	49	30	16	33	28	19	7.2	2.3	5.2	67	71	62	86
	Simanjiro	141,676	7	5,041	0.001	24	2	6	30	41	10	6.8	1.4	5.9	62	71	52	72
	Kiteto	152,757	11	10,153	0.001	28	3	7	30	34	13	8.4	1.8	7.0	42	51	33	76

Notes: [1] expressed as percentage: - indicates that data were not available.

	District	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
Tanga	Lushoto	63	74	5.7	3.6	44	46	3.5	48	0.4	13	1.5	90	83	36	2.8	1.3	91	147
	Korogwe	50	76	9.7	4.6	51	55	6.6	50	2.2	27	7.8	73	67	48	2.6	1.9	115	192
	Muheze	63	77	5.2	4.2	24	32	1.9	50	1.9	31	5.8	80	78	67	2.4	1.7	96	158
	Tanga (U)	51	80	4.5	2.0	66	89	21.0	70	13.1	44	36.6	29	33	33	2.2	1.2	75	118
	Pangani	49	55	7.5	5.4	59	65	8.9	60	1.6	44	10.7	70	70	70	2.0	2.1	105	173
	Handeni	64	82	8.6	7.6	38	41	5.0	45	1.1	37	4.8	85	89	68	2.6	1.5	104	172
	Kilindi	67	76	18.9	17.4	29	29	1.2	41	0.1	35	0.1	94	78	75	3.1	1.8	108	179
	Kilosa	53	13	12.5	9.6	55	62	2.8	45	0.5	37	4.4	84	45	62	2.4	2.3	101	166
Morogoro	Morogoro (R)	59	101	7.4	5.6	41	42	0.5	50	0.4	22	0.9	89	68	66	2.0	3.2	125	209
	Kilombero	59	79	5.7	4.0	45	60	11.0	42	0.7	46	6.1	79	40	55	2.2	2.6	99	160
	Ulanga	44	56	7.0	6.4	56	60	2.2	36	0.3	26	1.0	92	59	78	2.4	3.0	96	156
	Morogoro (U)	35	76	2.7	2.1	21	88	17.1	71	11.1	35	32.7	32	19	8	2.2	1.4	77	123
	Mvomero	49	83	12.8	9.1	51	56	1.5	47	0.8	37	3.4	82	44	56	2.1	2.9	92	148
Pwani	Bagamoyo	59	67	11.5	9.9	22	31	1.5	60	2.5	40	6.0	80	84	64	2.2	2.4	105	174
	Kibaha	44	66	3.1	2.8	28	60	5.0	68	6.2	36	10.2	57	60	34	1.9	2.5	98	160
	Kisarawe	49	52	5.9	3.9	18	25	1.2	59	1.4	31	3.9	86	88	63	1.8	3.8	94	152
	Mkuranga	59	102	7.4	7.1	7	9	0.3	63	0.6	35	0.6	90	92	79	2.0	2.5	105	173
	Rufiji	47	51	8.4	6.5	9	21	0.8	51	1.4	34	2.4	89	90	79	2.1	2.5	97	158
	Mafia	66	60	3.1	2.7	3	17	1.5	71	1.0	29	11.5	73	86	82	2.0	1.6	107	176
DSM	Kinondoni	49	103	1.7	1.2	48	92	15.6	76	22.4	16	45.5	12	8	3	2.2	1.0	86	138
	Ilala MC	47	83	1.9	1.4	21	81	20.4	76	24.1	15	46.3	12	7	3	2.2	1.1	82	130
	Temeke	56	82	2.2	1.8	35	89	11.8	74	14.6	14	34.8	15	8	6	2.2	1.3	84	134
Arusha	Monduli	49	66	26.5	24.4	39	49	1.3	35	1.7	15	3.1	87	84	75	2.2	1.5	35	48
	Arumeru	63	75	6.8	3.9	82	85	5.0	70	6.7	24	11.4	67	50	22	2.4	1.2	41	58
	Arusha (U)	46	87	1.6	1.2	97	99	21.7	79	15.9	19	41.9	33	44	2	2.4	0.7	39	55
	Karatu	64	69	22.5	16.4	61	64	1.2	44	2.3	27	3.5	82	74	55	2.9	2.3	61	93
	Ngorongoro	77	77	28.4	24.4	31	34	1.5	16	1.0	3	2.0	94	96	90	3.3	1.6	31	40
Kilimanjaro	Rombo	53	65	1.8	0.7	93	93	1.7	67	1.9	31	7.7	68	35	3	2.2	1.6	49	73
	Mwanga	38	49	12.0	2.0	82	74	4.3	73	4.0	23	22.1	53	38	14	1.9	1.9	47	68
	Same	44	53	2.6	1.7	52	66	1.8	57	1.8	20	9.8	66	32	28	2.3	1.7	55	84
	Moshi (R)	43	49	3.5	1.5	76	75	3.7	76	3.9	16	10.9	56	44	8	2.2	1.5	40	57
	Hai	42	59	3.9	2.4	66	68	3.5	77	4.4	30	14.8	54	35	10	2.2	1.6	44	65
	Moshi (U)	40	61	1.8	1.0	0	92	36.1	83	15.4	23	46.6	13	6	0	2.1	1.1	44	63
Manyara	Babati	66	71	4.5	3.7	49	56	1.5	43	1.1	37	4.6	82	46	56	2.8	2.3	59	91
	Hanang	71	91	7.9	5.8	40	45	0.8	30	0.7	29	3.3	90	65	76	3.0	2.2	66	103
	Mbulu	63	63	2.8	2.3	17	24	0.6	27	0.6	25	2.2	92	86	79	3.0	2.5	69	107
	Simanjiro	66	92	22.4	20.1	37	36	0.8	50	5.4	22	9.1	65	52	50	2.7	1.2	40	57
	Kiteto	68	89	18.2	17.2	18	23	0.4	39	0.6	31	1.5	93	58	66	3.1	1.9	101	167

	District	A	B	C	D	E	F	G[1]	H	I	J	K	L	M	N	O	P	Q
Tabora	Nzega	417,097	51	10,380	0.005	35	18	10	31	29	23	7.4	3.4	5.0	49	58	41	65
	Igunga	325,547	45	9,003	0.005	48	22	15	30	28	19	6.9	2.5	5.0	49	58	42	67
	Uyui	282,272	25	9,693	0.003	48	12	15	30	26	21	5.5	2.4	3.8	49	58	41	58
	Urambo	370,796	17	10,863	0.002	41	7	12	31	25	18	6.6	2.5	4.7	57	67	48	69
	Sikonge	133,388	5	6,986	0.001	43	2	12	31	32	20	5.7	2.5	4.0	49	57	41	75
	Tabora (U)	188,808	123	4,273	0.029	23	29	6	33	33	17	9.5	4.1	6.5	77	85	71	86
Kigoma	Kibondo	414,764	95	7,013	0.014	39	37	11	30	33	19	6.8	2.1	5.2	59	70	50	63
	Kasulu	628,677	62	10,109	0.006	40	25	12	31	29	20	6.8	2.1	5.2	64	74	57	74
	Kigoma (R)	490,816	35	8,436	0.004	39	14	12	33	31	17	8.6	2.8	6.4	60	72	50	87
	Kigoma (U)	144,852	576	12,021	0.048	27	153	8	38	33	13	10.2	3.4	7.9	79	88	72	100
Shinyanga	Bariadi	605,509	58	14,722	0.004	46	26	14	30	37	18	8.7	2.3	7.1	51	63	42	80
	Maswa	305,473	82	15,220	0.005	44	36	13	30	35	20	7.5	2.8	5.6	60	71	51	91
	Shinyanga (R)	277,518	74	8,916	0.008	43	32	13	31	32	21	7.1	2.8	5.0	57	67	47	87
	Kahama	596,456	68	19,830	0.003	37	25	11	32	29	16	6.6	2.6	4.8	57	67	47	84
	Bukombe	396,423	40	26,353	0.002	48	19	15	30	26	13	6.1	2.2	4.4	53	64	42	81
	Meatu	248,949	27	10,792	0.002	53	14	17	31	36	18	8.2	2.7	6.3	55	65	45	97
	Shinyanga (U)	135,166	243	3,957	0.061	22	53	6	32	33	14	9.6	3.8	7.1	75	82	69	95
	Kishapu	240,086	56	7,478	0.007	46	25	14	30	32	19	7.1	3.0	5.0	61	70	52	97
Kagera	Karagwe	425,476	54	12,479	0.004	27	14	7	32	28	16	11.4	3.3	9.5	67	73	61	87
	Bukoba (R)	395,130	84	7,036	0.012	18	15	4	32	36	25	18.2	6.9	14.8	76	81	72	85
	Muleba	386,328	112	12,840	0.009	27	30	7	32	31	22	14.1	5.0	11.4	68	76	61	86
	Biharamulo	410,794	40	14,621	0.003	48	19	15	32	25	16	8.0	2.5	6.3	58	68	49	82
	Ngara	334,939	96	8,360	0.011	34	33	10	32	30	16	12.2	4.2	9.4	57	68	47	96
	Bukoba (U)	81,221	892	7,352	0.121	11	99	3	33	34	10	16.3	6.7	13.3	92	94	90	96
Mwanza	Ukerewe	261,944	373	13,728	0.027	48	181	16	34	29	21	8.5	2.8	6.5	78	86	72	100
	Magu	416,113	135	9,222	0.015	37	50	11	33	36	20	9.9	3.4	7.6	64	73	56	100
	Nyamagana	210,735	5,638	5,245	1.075	15	854	4	32	30	7	11.2	4.6	8.3	93	96	89	100
	Kwimba	316,180	97	10,159	0.001	40	39	12	31	33	22	6.7	2.7	4.9	57	67	49	97
	Sengerema	501,915	164	9,596	0.017	46	76	15	34	30	17	8.0	2.9	5.9	67	76	58	97
	Geita	712,195	105	15,087	0.007	62	66	24	34	26	15	7.3	2.9	5.2	61	72	51	98
	Misungwi	257,155	98	7,318	0.013	40	39	12	31	30	22	7.6	2.6	5.7	64	73	56	99
	Ilemela	265,911	677	2,303	0.294	26	174	7	34	34	9	9.6	3.4	7.6	84	89	78	75
Mara	Tarime	492,798	126	9,088	0.014	32	40	9	32	42	17	14.9	3.1	13.1	71	82	63	100
	Serengeti	176,609	16	5,502	0.003	61	10	22	33	41	16	15.5	3.0	13.7	67	78	57	-
	Musoma (R)	330,953	87	7,329	0.012	64	55	25	34	36	21	11.2	2.9	9.3	76	85	68	100
	Bunda	260,000	90	8,929	0.010	68	61	28	33	38	20	11.1	3.2	8.9	75	85	68	100
	Musoma (U)	108,242	1,420	4,148	0.342	38	539	12	33	39	12	12.0	4.0	9.6	87	94	81	100
Dodoma	Kondoa	429,824	31	7,381	0.004	21	7	5	28	33	24	8.3	2.9	6.2	69	76	61	88
	Mpwapwa	254,500	34	6,340	0.005	28	10	7	29	34	18	7.0	2.4	5.2	62	71	54	79
	Kongwa	249,760	65	9,209	0.007	40	26	12	30	31	17	7.2	2.6	5.3	58	66	50	72
	Dodoma (R)	440,565	30	6,095	0.005	43	13	13	29	38	21	10.0	2.7	7.9	52	59	45	66
	Dodoma (U)	324,347	125	5,869	0.021	27	33	7	41	33	16	10.8	3.6	8.5	74	81	69	75

	District	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
Tabora	Nzega	57	83	33.0	28.0	21	25	1.2	45	1.3	59	2.5	89	28	82	2.5	1.8	81	129
	Igunga	68	83	23.7	18.8	5	9	0.8	34	0.5	58	1.6	93	14	86	2.9	1.8	84	134
	Uyui	77	84	37.6	32.7	10	11	0.3	41	0.2	62	0.3	94	59	85	3.2	1.4	88	141
	Urambo	79	90	16.5	14.1	11	14	0.9	42	0.3	55	0.3	90	46	84	2.6	1.4	78	124
	Sikonge	79	66	38.6	28.5	4	7	0.3	41	0.2	52	0.2	92	67	84	3.1	1.9	87	139
	Tabora (U)	45	87	6.1	4.7	11	68	9.5	54	6.1	46	23.8	50	43	25	2.4	1.9	78	123
Kigoma	Kibondo	65	67	13.5	7.9	54	56	0.5	31	0.4	27	0.4	95	64	76	2.6	3.6	85	136
	Kasulu	69	100	4.2	3.0	65	67	0.6	46	0.6	46	0.2	93	21	73	2.5	2.2	70	109
	Kigoma (R)	217	123	7.0	5.0	41	40	0.5	48	0.5	27	1.8	90	22	74	2.4	2.1	114	191
	Kigoma (U)	29	102	3.5	2.0	61	89	10.1	61	6.2	15	18.9	49	43	26	2.3	1.7	101	167
Shinyanga	Bariadi	69	92	18.7	15.6	50	53	0.6	37	0.3	56	1.0	93	6	51	3.5	2.1	108	178
	Maswa	63	71	28.5	13.2	32	36	1.3	44	0.8	57	2.8	90	1	78	2.7	2.0	90	146
	Shinyanga (R)	68	-	16.1	12.9	27	27	0.4	47	0.6	67	0.6	94	4	85	2.7	2.0	90	145
	Kahama	72	82	16.1	14.1	33	34	2.5	55	1.8	60	4.2	82	23	70	2.9	1.6	80	127
	Bukombe	92	112	25.3	19.1	27	32	0.8	50	0.3	62	0.3	91	64	68	3.4	2.0	88	141
	Meatu	93	105	12.9	8.9	36	35	0.5	34	0.5	51	1.2	94	3	76	3.5	2.0	104	172
	Shinyanga (U)	52	83	10.7	5.6	61	69	12.1	66	8.2	55	20.8	49	0	36	2.2	1.6	77	113
	Kishapu	64	75	30.4	12.4	10	13	3.6	42	1.2	60	3.8	91	1	87	2.5	1.9	91	147
Kagera	Karagwe	73	87	12.9	5.9	45	45	2.9	41	0.3	25	1.6	90	83	37	2.1	2.5	113	189
	Bukoba (R)	48	64	5.4	2.1	57	58	1.4	49	0.9	40	2.0	85	66	40	1.8	2.4	122	204
	Muleba	65	89	8.2	6.0	34	34	1.0	45	0.6	36	1.1	90	76	45	2.2	1.9	110	182
	Biharamulo	88	90	12.4	9.5	42	45	2.4	48	0.4	44	0.2	88	55	65	3.5	2.4	94	153
	Ngara	67	85	7.7	6.7	49	50	1.4	35	0.6	20	0.4	93	80	63	2.2	3.2	126	212
	Bukoba (U)	37	68	3.5	1.4	48	68	22.5	68	7.2	29	35.1	30	12	4	2.3	1.3	72	113
Mwanza	Ukerewe	83	93	16.5	3.8	50	53	2.1	67	0.7	41	0.4	85	51	47	3.3	3.0	106	176
	Magu	73	74	11.9	6.3	44	46	1.6	61	1.0	55	2.0	82	5	60	2.8	2.0	96	156
	Nyamagana	62	104	1.7	1.1	0	97	24.8	76	15.8	13	27.6	25	0	0	2.6	1.2	65	100
	Kwimba	77	91	15.0	10.8	65	67	0.5	49	0.4	65	1.1	90	4	78	2.7	2.3	77	122
	Sengerema	74	124	11.9	7.7	35	37	0.8	70	1.6	58	1.4	85	19	59	3.0	2.1	80	127
	Geita	71	111	17.5	12.6	29	34	1.3	58	1.1	58	0.8	83	27	57	3.3	1.8	88	142
	Misungwi	65	103	33.0	12.4	54	56	0.8	55	0.5	61	1.3	87	6	78	2.8	1.9	84	133
	Ilemela	62	113	3.5	2.6	63	72	24.6	75	9.1	28	13.4	42	3	15	2.7	1.8	87	140
Mara	Tarime	69	80	8.8	4.6	15	22	1.7	45	0.8	35	2.7	84	74	68	3.3	2.5	123	207
	Serengeti	67	74	5.8	4.1	46	47	2.1	45	0.5	36	0.5	88	73	78	2.8	2.2	109	181
	Musoma (R)	63	100	5.7	4.3	16	17	1.6	52	0.4	44	1.4	87	20	68	3.1	2.5	115	191
	Bunda	56	77	5.5	3.1	41	51	4.7	61	0.6	44	4.7	78	15	58	3.1	2.3	102	166
	Musoma (U)	51	77	1.0	0.7	3	92	23.5	64	8.7	41	32.6	36	1	8	2.6	1.8	84	134
Dodoma	Kondoa	59	72	4.2	3.7	36	39	0.4	45	0.4	31	1.7	89	16	53	2.5	2.2	70	110
	Mpwapwa	51	78	8.7	7.7	62	65	1.7	39	0.6	19	3.5	90	32	73	2.4	2.2	128	217
	Kongwa	51	81	10.2	9.2	72	74	0.6	49	0.2	39	0.9	91	31	46	2.5	2.1	116	195
	Dodoma (R)	50	63	12.3	10.5	51	51	0.4	31	0.3	22	0.2	95	42	86	2.5	2.8	142	239
	Dodoma (U)	48	88	4.3	3.5	38	64	14.0	60	7.2	32	23.0	58	2	32	2.2	1.8	94	153

	District	A	B	C	D	E	F	G[1]	H	I	J	K	L	M	N	O	P	Q
Singida	Iramba	368,131	47	7,647	0.006	43	20	13	31	32	23	7.6	2.9	5.5	63	72	56	82
	Singida (R)	401,850	35	9,100	0.004	56	19	17	29	34	21	9.0	2.2	7.4	70	79	62	85
	Manyoni	205,423	7	5,527	0.001	49	3	16	34	32	20	9.5	3.3	7.0	61	69	54	82
	Singida (U)	115,354	180	6,756	0.027	46	83	14	41	36	16	9.4	2.7	7.7	82	89	77	98
Iringa	Iringa (R)	245,623	11	2,883	0.004	31	4	8	32	40	21	15.0	5.7	11.6	71	82	63	98
	Mufindi	283,032	34	5,641	0.006	32	11	9	35	42	17	15.8	6.3	12.3	76	87	67	100
	Makete	106,061	26	3,526	0.007	24	6	7	43	44	25	24.2	8.1	20.7	65	77	55	100
	Njombe	420,348	34	4,709	0.007	25	9	6	32	41	17	14.3	5.2	11.5	79	87	73	99
	Ludewa	128,520	21	2,786	0.008	24	5	6	36	39	16	14.2	5.0	11.3	82	89	76	100
	Iringa (U)	106,668	724	3,940	0.184	18	132	5	35	39	11	18.7	8.1	14.4	91	96	87	89
	Kilolo	205,081	23	-	-	29	7	7	31	37	19	12.2	4.7	9.4	75	84	67	98
Mbeya	Chunya	206,615	7	6,056	0.001	25	2	7	35	29	15	10.1	4.2	7.4	59	68	49	81
	Mbeya (R)	254,897	90	6,197	0.015	31	28	8	30	38	18	13.2	4.6	10.4	69	81	60	100
	Kyela	174,470	236	6,438	0.037	24	56	7	33	33	23	19.4	6.9	15.8	74	84	66	100
	Rungwe	307,270	146	5,375	0.027	32	46	9	34	33	28	17.4	6.8	13.8	69	78	61	100
	Ileje	110,194	55	4,776	0.011	31	17	9	30	36	22	10.7	3.5	8.7	71	81	63	100
	Mbozi	515,270	57	11,944	0.005	21	12	6	32	35	15	10.2	3.8	7.7	68	78	59	100
	Mbarali	234,908	17	4,877	0.004	13	2	4	31	35	17	11.2	4.4	8.6	64	72	57	86
	Mbeya (U)	266,422	1,051	6,640	0.158	12	130	3	36	37	10	16.2	6.0	13.2	90	95	85	94
Rukwa	Mpanda	412,683	9	10,524	0.001	38	3	11	36	27	15	7.7	2.8	6.0	58	68	49	83
	Sumbawanga (R)	373,080	34	4,374	0.008	34	12	10	30	32	13	7.2	2.4	5.7	61	74	48	100
	Nkansi	208,497	21	6,910	0.003	44	9	13	32	26	12	7.8	3.2	5.6	60	71	50	75
	Sumbawanga (U)	147,483	98	4,895	0.020	27	27	7	32	35	11	10.4	3.9	8.0	77	85	71	90
Lindi	Kilwa	171,850	13	4,276	0.003	35	4	9	28	33	21	8.9	3.0	6.8	52	65	41	76
	Lindi (R)	215,764	33	13,430	0.002	51	17	17	32	32	24	10.5	4.0	7.8	53	64	44	79
	Nachingwea	162,087	27	6,211	0.004	41	11	11	28	31	21	7.9	3.2	5.5	71	78	65	88
	Liwale	75,546	2	3,578	0.001	38	1	12	30	22	17	7.5	3.1	5.1	64	76	55	96
	Rwangwa	124,516	50	6,889	0.007	30	15	7	28	33	23	8.8	3.1	6.4	58	68	50	87
	Lindi (U)	41,549	165	1,141	0.144	18	30	4	29	36	18	11.8	4.6	8.8	71	77	66	100
Mtwara	Mtwara (R)	204,770	52	11,342	0.005	37	19	10	29	29	21	9.5	3.4	6.9	46	60	35	90
	Newala	183,930	88	8,731	0.010	43	38	13	30	31	24	9.5	3.4	6.9	64	73	56	100
	Masasi	442,573	46	8,820	0.005	37	17	11	31	30	20	8.7	3.3	6.1	69	74	64	90
	Tandahimba	204,648	95	8,154	0.012	34	32	10	30	29	22	8.6	2.8	6.5	54	65	45	97
	Mtwara (U)	92,602	471	4,007	0.118	38	181	13	32	34	13	11.7	4.6	8.2	73	80	65	97
Ruvuma	Tunduru	247,976	12	5,615	0.002	39	5	11	30	24	19	7.0	2.9	4.8	59	68	51	100
	Songea (R)	147,924	11	5,411	0.002	41	4	12	30	26	18	9.4	3.5	7.0	83	88	79	97
	Mbinga	404,799	47	6,730	0.007	28	13	7	30	22	14	8.2	2.7	6.3	84	89	80	98
	Songea (U)	131,336	375	4,674	0.080	32	119	10	36	33	11	11.5	4.5	8.7	90	94	87	100
	Namtumbo	185,131	8	6,252	0.001	55	5	18	29	17	17	6.9	2.8	4.7	72	80	64	93

	District	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
Singida	Iramba	58	76	11.0	7.9	30	30	0.3	34	0.3	31	0.8	95	10	82	2.4	2.7	79	125
	Singida (R)	67	105	13.0	9.2	38	39	0.4	31	0.3	26	0.5	95	20	83	2.6	2.8	79	126
	Manyoni	62	76	22.9	16.5	34	36	0.9	44	0.7	28	2.1	86	41	71	2.6	2.5	100	165
	Singida (U)	51	87	2.3	1.5	32	61	7.9	49	6.2	23	25.1	64	4	39	2.6	2.0	69	108
Iringa	Iringa (R)	59	62	5.3	3.6	52	52	2.1	39	0.7	34	2.0	83	14	62	2.1	2.5	114	191
	Mufindi	55	61	9.8	5.4	46	50	2.1	41	1.2	34	4.3	77	20	59	2.0	2.3	98	160
	Makete	44	60	4.3	3.6	52	54	0.5	39	0.4	13	1.0	88	17	58	2.2	3.1	109	180
	Njombe	51	62	5.6	3.6	59	64	4.0	47	1.2	43	6.0	69	9	52	1.8	2.2	101	166
	Ludewa	54	53	2.5	2.1	55	55	0.8	40	0.3	19	0.6	83	11	55	1.9	2.8	98	160
	Iringa (U)	33	13	3.3	0.8	17	85	23.4	64	12.3	23	43.7	18	5	4	2.0	1.1	83	133
	Kilolo	58	61	7.6	4.4	48	51	0.7	40	0.3	27	1.1	86	28	63	2.0	2.3	103	170
Mbeya	Chunya	66	75	7.6	6.4	29	34	0.3	51	0.4	31	2.0	86	21	76	2.8	1.2	101	165
	Mbeya (R)	52	79	6.3	3.7	40	48	0.9	44	0.8	19	2.1	82	4	43	2.5	1.2	-	-
	Kyela	49	121	2.7	1.9	83	85	6.9	38	1.3	47	3.8	78	44	66	2.5	1.6	105	172
	Rungwe	67	90	3.2	2.3	56	59	1.6	38	1.0	15	4.4	81	7	52	2.5	1.7	103	170
	Ileje	54	58	1.8	1.3	48	49	1.1	40	0.3	15	0.9	91	4	69	2.6	1.5	91	146
	Mbozi	74	92	6.9	6.2	35	40	1.2	42	0.4	29	3.3	86	6	53	2.8	1.2	101	165
	Mbarali	75	73	11.5	9.5	63	68	3.0	49	0.7	42	2.0	80	26	72	2.7	1.3	115	192
	Mbeya (U)	48	83	1.5	1.0	83	96	12.8	69	8.2	23	23.3	31	0	3	2.1	0.9	68	106
Rukwa	Mpanda	73	97	20.2	18.0	44	52	2.2	40	0.8	49	3.6	86	22	80	2.8	1.1	100	164
	Sumbawanga (R)	27	73	8.3	7.5	45	45	0.3	29	0.3	24	0.1	93	10	86	3.2	1.3	117	195
	Nkansi	57	645	11.5	8.4	54	61	1.3	30	0.4	17	0.3	90	4	85	2.9	1.0	111	185
	Sumbawanga (U)	127	69	5.0	4.2	54	75	11.3	43	2.5	32	14.2	59	0	44	2.6	0.7	86	138
Lindi	Kilwa	60	58	10.3	8.5	14	22	0.8	42	0.4	30	1.1	91	94	87	2.3	2.4	129	217
	Lindi (R)	46	64	7.7	6.6	18	23	0.3	32	0.2	22	0.4	95	91	87	1.8	2.3	130	220
	Nachingwea	50	65	3.6	3.1	23	25	2.3	44	0.4	47	6.4	89	57	75	2.0	2.9	118	198
	Liwale	48	-	7.9	6.9	8	16	1.0	49	0.2	49	2.6	92	88	68	2.4	2.5	130	221
	Rwangwa	51	69	7.5	6.7	41	47	0.3	36	0.2	33	0.6	96	87	82	1.8	2.2	148	250
	Lindi (U)	40	42	3.8	3.4	35	71	6.0	57	4.1	28	23.3	58	54	44	1.7	1.4	98	159
Mtwara	Mtwara (R)	61	66	4.4	3.9	27	26	0.4	30	0.1	36	0.1	95	95	85	1.8	3.0	136	231
	Newala	43	73	4.2	3.1	56	60	0.7	29	0.6	36	2.3	93	78	71	1.8	2.8	117	197
	Masasi	54	79	8.1	7.3	20	26	0.7	38	0.3	31	1.4	93	53	82	2.2	3.5	134	225
	Tandahimba	54	71	9.0	7.0	20	25	0.3	29	0.1	44	0.7	94	59	69	1.6	2.4	119	200
	Mtwara (U)	41	71	4.1	2.5	79	96	5.0	56	4.7	39	21.2	49	46	32	1.9	2.2	90	146
Ruvuma	Tunduru	53	70	7.7	6.8	46	49	1.6	37	0.5	29	2.3	92	45	83	2.0	2.3	126	212
	Songea (R)	37	49	7.4	3.6	76	77	2.4	54	0.3	39	0.5	83	11	67	1.8	3.7	106	175
	Mbinga	57	61	5.0	2.7	38	42	1.4	42	0.6	21	0.3	82	4	54	1.8	2.2	79	125
	Songea (U)	46	67	1.6	1.1	55	85	22.1	72	4.5	37	24.1	37	3	19	1.8	1.7	99	162
	Namtumbo	56	64	5.3	4.4	79	79	0.6	51	0.4	40	0.2	88	13	73	1.9	2.6	126	213

KEY TO COLUMN ENTRIES

Column	Description
A	Total population, 2002
B	Population, 2002, per km2
C	Population per health facility, 2002
D	Number of health facilities per km2
E	p(0): per cent of the population below the poverty line, 2000/01
F	Number of poor, 2000/01, per km2
G	p(1): poverty gap, 2000/01
H	Gini coefficient, 2000/01
I	Per cent of households which are female-headed, 2002
J	Per cent of households headed by a person 60 or older, 2002
K	Per cent of children under 18 who are orphaned – mother or father has died, or both have died, 2002
L	Per cent of children under 18 whose mother has died, 20002
M	Per cent of children under 18 whose father has died, 2002
N	Per cent of people 15 and older who are literate, 2002
O	Per cent of males 15 and older who are literate, 2002
P	Per cent of females 15 and older who are literate, 2002
Q	Primary education net enrolment rate, 2004
R	Primary education pupil-teacher ratio, 2004
S	Primary education pupil-classroom ratio, 2004
T	Per cent of children aged 7 to 13 who are economically active, 2002
U	Per cent of children aged 7 to 13 who are economically active and not attending school, 2002
V	Per cent of rural households using piped or protected water source, 2002
W	Per cent of households using piped or protected water source, 2002
X	Per cent of households using flush toilet or ventilated improved pit latrine, 2002
Y	Per cent of households owning a radio, 2002
Z	Per cent of households owning a telephone, 2002
AA	Per cent of households owning a bicycle, 2002
AB	Per cent of households having electricity, 2002
AC	Per cent of households having earth floor, 2002
AD	Per cent of households having poor quality material for walls, 2002
AE	Per cent of households having poor quality roofing, 20002
AF	Number of household members per room, 2002
AG	Per cent of population with a disability, 2002
AH	Infant mortality rate (per 1,000 live births), 2002
AI	Under-five mortality rate (per 1,000 live births), 2002

Note: Sources are as noted in the text

Appendix Table A. 10 Estimates of the % of the population below the basic needs poverty line, 2000/01 and the standard errors of the estimates

Region and district	Poverty Headcount		Region and district	Poverty Headcount	
	Estimate	Std Error		Estimate	Std Error
Arusha			**Kigoma**		
Monduli	23.9	2.6	Kibondo	39.4	3.9
Arumeru	18.1	1.7	Kasulu	40.4	3.5
Arusha (U)	12.3	1.8	Kigoma (R)	38.5	3.6
Karatu	39.4	2.7	Kigoma (U)	26.6	2.5
Ngorongoro	23.7	5.5	**Kilimanjaro**		
Dar es Salaam			Rombo	37.2	2.3
Kinondoni	14.3	1.5	Mwanga	26.6	1.9
Ilala	15.8	1.7	Same	34.1	1.9
Temeke	28.7	2.2	Moshi (R)	27.6	2.5
Dodoma			Hai	21.8	1.9
Kondoa	20.9	2.9	Moshi Urban	17.6	2.1
Mpwapwa	27.8	2.9	**Lindi**		
Kongwa	40.2	5.6	Kilwa	34.6	3.0
Dodoma (R)	42.9	4.4	Lindi (R)	51.4	6.2
Dodoma (U)	26.6	2.2	Nachingwea	41.4	3.3
Iringa			Liwale	38.3	4.5
Iringa (R)	31.0	3.0	Rwangwa	29.7	2.8
Mufindi	32.3	1.9	Lindi (U)	18.3	1.8
Makete	24.2	3.3	**Manyara**		
Njombe	25.0	2.1	Babati	50.2	2.5
Ludewa	24.1	2.3	Hanang	49.2	2.6
Iringa (R)	18.2	2.9	Mbulu	49.3	3.7
Kilolo	29.0	2.5	Simanjiro	23.6	3.6
Kagera			Kiteto	28.1	4.7
Karagwe	26.6	2.9	**Mara**		
Bukoba (R)	17.5	2.7	Tarime	31.9	4.5
Muleba	26.9	3.5	Serengeti	60.6	4.3
Biharamulo	47.7	4.3	Musoma (R)	63.7	4.6
Ngara	34.0	4.1	Bunda	67.7	3.6
Bukoba (U)	11.1	1.8	Musoma (U)	37.9	2.9

Region and district	Poverty Headcount		Region and district	Poverty Headcount	
	Estimate	Std Error		Estimate	Std Error
Mbeya			**Pwani**		
Chunya	25.4	3.0	Bagamoyo	40.2	2.9
Mbeya (R)	31.4	3.8	Kibaha	31.6	2.5
Kyela	23.8	3.7	Kisarawe	51.0	3.9
Rungwe	31.8	2.8	Mkuranga	39.9	3.2
Ileje	31.4	3.5	Rufiji	33.7	2.8
Mbozi	21.2	1.5	Mafia	42.6	4.2
Mbarali	13.1	1.6	**Rukwa**		
Mbeya (U)	12.4	1.4	Mpanda	37.6	3.9
Morogoro			Sumbawanga (R)	34.0	2.6
Morogoro (R)	31.2	4.0	Nkansi	44.4	2.9
Kilombero	29.0	4.4	Sumbawanga (U)	27.4	2.5
Ulanga	27.6	4.4	**Ruvuma**		
Morogoro (U)	14.0	1.1	Tunduru	38.7	3.0
Mvomero	26.4	2.6	Songea (R)	40.8	2.8
Mtwara			Mbinga	28.0	3.0
Mtwara (R)	36.8	2.8	Songea (U)	31.6	2.4
Newala	43.4	2.8	Namtumbo	54.8	3.3
Masasi	37.4	2.7	**Shinyanga**		
Tandahimba	34.3	3.5	Bariadi	45.7	4.4
Mtwara (U)	38.3	2.5	Maswa	43.5	4.2
Mwanza			Shinyanga (R)	42.7	4.7
Ukerewe	48.4	3.7	Kahama	37.3	3.3
Magu	37.3	2.7	Bukombe	48.0	4.8
Nyamagana	15.1	2.6	Meatu	52.9	4.5
Kwimba	40.0	3.3	Shinyanga (U)	21.8	3.1
Sengerema	46.3	3.5	Kishapu	45.7	3.8
Geita	62.3	4.6	**Singida**		
Misungwi	39.9	3.9	Iramba	42.9	3.9
Ilemela	25.6	3.3	Singida (R)	55.6	3.9
			Manyoni	48.7	4.2
			Singida (U)	46.1	3.3

Region and district	Poverty Headcount		Region and district	Poverty Headcount	
	Estimate	Std Error		Estimate	Std Error
Tabora			**Tanga**		
Nzega	35.0	3.4	Lushoto	15.6	2.5
Igunga	47.8	4.1	Korogwe	30.5	2.9
Uyui	48.1	4.6	Muheza	32.5	2.7
Urambo	40.6	4.1	Tanga (U)	17.3	1.4
Sikonge	42.5	5.7	Pangani	21.9	3.6
Tabora (U)	23.4	2.3	Handeni	31.9	3.6
			Kilindi	38.2	4.4

APPENDIX B.

Poverty measures and their use in Tanzania

The incidence of poverty is the percentage of the population whose per capita consumption is below the poverty line, that is, the population that cannot afford the basic basket of goods. [87] The poverty gap is a measure of the amount relative to the poverty line that has to be transferred to poor households to bring their incomes up to the poverty threshold. The severity of poverty is the total of the squared income shortfall (expressed in proportion to the poverty line) of families whose incomes are below the poverty threshold, divided by the total number of families. It is a poverty measure which is sensitive to the income distribution among the poor – the worse the distribution, the more severe is poverty. While the incidence of poverty is a key indicator, it is useful to complement it with the depth and severity of poverty to see what happens to the poorest, especially if inequality is great. Previous studies that have analysed the status and trend of poverty have focused on the incidence of poverty measurement. MKUKUTA and the Millennium Development Goals (MDG) have targets to halve the incidence of poverty by 2010 and 2015 respectively. [88]

Is Tanzania's poverty line too low?

Expressed in US dollars and using the December 2000 exchange rate of about TShs 1,000 to the US dollar, Tanzania's poverty line appears low: about $ 0.26 per adult equivalent. Such expressions can be deceptive, however, as the international poverty line is expressed in 1993 PPP dollars. Expressing Tanzania's national poverty line of TShs 7,253 per adult equivalent per 28 days (December 2000 prices) in 1993 prices results in a poverty line of TShs 3,329. Applying the 1993 purchasing power parity exchange rate of 118.3 TShs to the dollar, this is equivalent to $1.00 per adult equivalent per day. At an adult equivalent to population ratio of 1.27, this is equivalent to $ 0.79 per capita per day. This is considerably less than the 1.08 "dollar a day" poverty line often used in international poverty comparisons. If one were to calculate poverty in Tanzania using the international dollar a day poverty line, the poverty line expressed in local currency would be TShs 9,900 and poverty incidence would be around 57.5 per cent of the population.

One can compare Tanzania's poverty line with that used elsewhere in the region. According to Appleton (2001), Uganda's poverty line, for instance, is higher, $ 1.12 per capita per day. Using the PPP exchange rate between Uganda and Tanzania (of 3.12 UShs to the TShs in 1993) to calculate Tanzania's poverty incidence, gives a poverty line of TShs 10,163 and a poverty incidence of 59.8 per cent, considerably more than the estimates of 35.6 per cent included in analyses in Tanzania.

It seems safe to conclude that Tanzania's poverty line is low from an international and a regional perspective.

[87] This comprises all consumption including that which is not bought on the market but produced for own consumption.
[88] see PHDR 2002 and 2003 and URT, 2005.

APPENDIX C

Table C.1 Poverty indicators, baselines and targets

Indicator %	Baseline		Trend				Targets	
	Estimate	Year	2001	2002	2003	2004	PRS 2003	MKUKUTA 2010
INCOME, EMPLOYMENT								
Population below basic needs poverty line	36	2000/01	-	-	-	-	30	19
Population below the food poverty line	19	2000/01	-	-	-	-	15	10
GDP growth rate	4.9	2000	5.7	6.2	5.7	6.7	6	6-8
Agricultural growth rate	3.4	2000	5.5	5.0	4.0	6.0	5	10
Inflation rate	5.9	2000	5.2	4.5	3.5	4.1	4	4
Working age population currently unemployed	13	2000/01	-	-	-	-		7
NUTRITION								
Stunting in under-fives	44	1999	-	-	-	38		20
EDUCATION								
Primary net enrolment rate	59	2000	66	81	89	91	70	
Girls	60		66	79	87	90		99
Boys	59		66	82	90	91		99
Cohort completing standard 7	70	2000	74	-	72	79		90
Pupils passing standard 7 exams							50	
Girls	15	2000	21	20	33			60
Boys	29		36	34	48			60
Secondary net enrolment rate, forms 1-4							7	
Girls	-	-	-	7	7	9		50
Boys	-	-	-	6	6	7		50
Adult literacy rate (15 +)	71	2000	-	69	-	-	100	
Female	64			62				80
Male	80			78				80
HEALTH, SURVIVAL								
Under-five mortality rate (per 1,000 live births)							127	79
DHS	147	1999[86]	-	-	-	112[86]		
Census			-	162[86]	-	-		
1 year-olds immunised against measles	78	1999	-	-	-	80	85	
DPT (3)	81		-	-	-	86	85	
Maternal mortality ratio (per 100,000 live births)	529	1996[86]	-	-	-	578[86]	450	265
Births attended by trained personnel	36	1999	-	-	-	46	80	80
HIV/AIDS								
HIV in pregnant women 15-24 years	-	-	-	-	6.8	-	-	5
WATER AND SANITATION								
Population with access to clean and safe water								
Rural	-	-	-	42	-	-	55	65
Urban	-	-	-	85	-	-	-	90
Population with access to basic sanitation	-	-	-	91	-	-	-	95

Sources: NBS 2002, HBS 2000/01; URT Economic Surveys, various; NBS/Macro International 1999 and 2005; NBS 2003, Population and Housing Census 2002, MoEC Basic Statistics Education, various

[86] Estimates are recorded against the year of data collection, but under-five mortality rates refer to deaths during five-year period prior to survey and three-year period prior to census, maternal mortality to ten-year period prior to survey.

ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
AMMP	Adult Mortality and Morbidity Project
AMO	Assistant Medical Officer
ANC	Ante-natal Care
BSE	Basic Statistics Education
CFR	Case Fatality Rates
DfIF	Department for International Development
DHS	Demographic and Health Survey
DPT	Diphtheria, Pertusis and Tetanus
DSS	Demographic Surveillance Site
EPI	Expanded Programme of Immunisation
ESRF	Economic and Social Research Foundation
GDP	Gross Domestic Product
GoT	Government of Tanzania
HBS	Household Budget Survey
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
IDRC	International Development Research Centre
IDWE	Infectious Diseases Week Ending reports
IHRDC	Ifakara Health and Research Development Centre
ILFS	Integrated Labour Force Survey
IMCI	Integrated Management of Childhood Illnesses
KCGA	Kilombero Sugar Cane Growers Association
MCH	Maternal and Child Health
MDG	Millennium Development Goal
MKUKUTA	Mkakati Kukuza Uchumi na Kupunguza Umasikini Tanzania
MoEC	Ministry of Education and Culture
MoF	Ministry of Finance
MoH	Ministry of Health
NACP	National AIDS Control Programme
NBS	National Bureau of Statistics
NMCP	National Malaria Control programme
NSGRP	National Strategy for Growth and Reduction of Poverty
PEDP	Primary Education Development Programme
PER	Public Expenditure Review
PETS	Public Expenditure Tracking Study
PHDR	Poverty and Human Development Report
PO-RALG	President's Office-Regional Administration and Local Government
PRS	Poverty Reduction Strategy Paper