Tanzania

National Panel Survey
Report - Wave 2

2010 -2011

United Republic of Tanzania

Tanzania National Panel Survey Report - Wave 2, 2010 - 2011

National Bureau of Statistics

Ministry of Finance

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Foreword

This report presents results from Wave II of the Tanzania National Panel Survey (NPS) that was conducted from October 2010 to September 2011. The first wave of this national level longitudinal survey was conducted between October 2008 and September 2009. This survey is being implemented by National Bureau of Statistics (NBS) under the auspices of MKUKUTA Monitoring System. The main objectives of the NPS are to track MKUKUTA progress, to understand poverty dynamics and to evaluate policy impacts in the country.

The preparations for the second round of the NPS started in July 2010 with training of supervisors and a pilot test for tracking households and individuals that shifted from their year 1 locations. Training of enumerators took place in August 2010 followed by data collection for MCA-T water sector cluster in Morogoro, Pwani and Dar es Salaam regions. The proper NPS 2 data collection and processing in the field took place between October 2010 and September 2011.

While the first wave of the NPS had a sample of 3,280 households, the sample for the second wave increased to 3,846 households. The increase in the sample was due to the fact that split households are followed and if tracked they are interviewed and eventually they become part of the sample. One good aspect of the second wave of the NPS is that about 97 percent of year 1 households were successfully found in their original locations and interviewed hence giving attrition rate of 3 percent, which is exceptionally low.

The successful completion of wave II of the NPS has made it possible to analyse evolution of some key MKUKUTA and other non- MKUKUTA indicators treating wave I results as a baseline. The panel feature of the survey allows for information on the poverty status of households to be available at different points in time, thus permitting the study of poverty dynamics at the household level. This is the key advantage of the NPS that differentiates it from other usual cross-sectional household surveys, which allow the monitoring of poverty at the aggregate level, such as by region, but not at the household level given that they do not follow the same households over time.

It should be noted that although poverty analysis based on the NPS uses the same methodology as the Household Budget Surveys (HBS), the findings in the NPS are not directly comparable to those of the HBS. This is largely attributed to the different technique of collecting consumption data in the two surveys. Therefore, this report does not attempt to show poverty trends that are consistent

between the NPS and Household Budget Surveys (HBS). Instead, the report shows poverty trends across the two rounds of the NPS. Furthermore, an attempt to reconcile poverty numbers from NPS and HBS is underway; therefore HBS will remain to be the official source of the incidence of poverty in the country.

Also, the assessment of impacts of specific public policy initiatives is not covered in this report. Therefore, we wish to encourage respective Government ministries and other non-governmental institutions that are leading these initiatives to make use of the available two NPS data sets to conduct impact evaluation analysis.

The NBS wishes to extend its sincere gratitude to the Poverty Eradication Division, Ministry of Finance, The European Commission (EC), World Bank / Gates Foundation, UNICEF and Millenium Challenge Account for financing both local and international costs of NPS Wave 2.

The NBS appreciates technical contributions by World Bank staff Waly Wane, Kathleen Beegle, Gero Carletto, Nagraj Rao and Kristen Himelein in implementing the survey. We also wish to thank Edith Mbatia (UNICEF), Emily Posket and Philip Cockerill (DFID); the Poverty Monitoring Group; and the NPS Technical Committee as a whole for their valuable contributions to the survey.

Furthermore, I wish to convey my appreciation to all NBS permanent and temporary staff for their tireless efforts in designing and implementing the survey. My sincere appreciations also go to their families for being patient during the long absence of their beloved ones.

Lastly, but not the least, I am even more grateful to the survey respondents who generously contributed part of their time to enable the NPS Wave 2 teams gather crucial information for our country's development.

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Introduction

The National Panel Survey (NPS)

The National Panel Survey (NPS) is a nationally representative household survey that collects information on the living standards of the population including socioeconomic characteristics, consumption, agricultural production, and non-farm income generating activities. The term "panel" means that the survey will follow the original sampled population over time to track the evolution of its living conditions. The NPS is scheduled to have several rounds; the first round of the survey (NPS 2008/09) was conducted from October 2008 to September 2009, and the second round (NPS 2010/11) was conducted from October 2010 to September 2011.

Objectives

The NPS was designed to fulfil three main objectives, all of which benefit from the fact that the NPS 2008/09 can be considered as the baseline and future rounds can be compared against it. The first objective is to track implementation progress across the three clusters of the National Strategy for Growth and Reduction of Poverty (commonly known by its Swahili acronym as MKUKUTA) which includes: Growth, reduction of poverty, improvement of quality of life and social wellbeing and governance and accountability. Assessing progress across the three clusters is possible because the NPS allows the estimation of many of these MKUKUTA indicators.[1] The second objective is to provide a better understanding of the determinants of poverty reduction.

The panel feature of the survey implies that information on the poverty status of households are to be available at different points in time, thus permitting the study of poverty dynamics at the household level. This is a key advantage with respect to the usual cross-sectional household surveys, which allow the monitoring of poverty at the aggregate level, say, by district or by region, but not at the household level given that they do not follow the same households over time. The third objective of the NPS is to assess the impact of public policy initiatives. The NPS can be a powerful tool to evaluate the impact of development policies and programs implemented by the government or nongovernmental institutions. If a person, household or community has been affected by a particular policy and has been sampled in the NPS, the survey may allow the estimation of indicators that capture that effect. Hence coordination with those who implemented these policies is crucial in order to determine both how the impact evaluation can be done and if complementary data are required.

Moreover, the NPS need not be limited to these three clusters of MKUKUTA. The Millennium Development Goals (MDG), can also be estimated as an integral part of

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[1] See *MKUKUTA Monitoring Master Plan and Indicator Information* for a detailed list of all indicators.

MKUKUTA, simply by comprehensively exploring the different modules of the NPS. The panel feature of the survey is suitable for investigating the dynamics of many topics such as the educational progression of children, the labour mobility of the adult population, or the evolution of agricultural yields.

Sample Design

The NPS is based on a stratified, multi-stage cluster sample design. The sampling frame is the 2002 Population and Housing Census, more specifically, the National Master Sample Frame, which is a list of all populated enumeration areas in the country.

The sample design of the NPS recognizes explicitly four analytical strata: Dar es Salaam, other urban areas in Mainland, rural areas in Mainland, and Zanzibar. Within each stratum, clusters were randomly selected as the primary sampling units, with the probability of selection proportional to their population size. In urban areas, clusters match census enumeration areas, while in rural areas, clusters match villages. In the last stage, 8 households were randomly chosen in each cluster.

The first round of the NPS was also designed to have a panel component with the 2007 Household Budget Survey (HBS). The panel is only possible in Mainland Tanzania, where 200 of the 350 clusters were drawn from the HBS sample and hence a panel of 1,600 households was expected between the NPS and the HBS.

Altogether the NPS sample comprises 409 clusters and 3,265 households. Table 1 shows the allocation of clusters and households across strata. A slight mismatch occurs in some strata between the expected and the actual number of clusters and/or households. The missing rural cluster in Mainland, which accounts for 8 of the 15 missing households, was dropped from the final sample because of the poor quality of the data. The additional 7 missing households refer mostly to panel households between the NPS and the HBS that could not be located and for which no replacement could be found.

Table 1: Clusters and Households by Stratum, NPS 2008/09

Area	Clusters		Households	
	Expected	Actual	Expected	Actual
Tanzania	410	409	3,280	3,265
Mainland	350	349	2,800	2,786
Dar es Salaam	70	70	560	555
Other urban	60	60	480	480
Rural	220	219	1,760	1,751
Zanzibar	60	60	480	479

Fieldwork

The NPS 2008/09 was carried out from October 2008 to September 2009. The fieldwork was planned over a 12-month period to address concerns about intra-year seasonality since seasonal fluctuations can affect the living standards of the population considerably. Table 2 indicates that the distribution of the sample within each stratum is fairly spread across the year.

Table 2: Distribution of the NPS 2008/09 Sample by Stratum and Quarter of Interview

Area	2008	2009			
	October-December	January-March	April-June	July-September	Total
Tanzania	879	742	642	1,002	3,265
D'Salaam	166	112	135	142	555
Other urban	93	147	96	144	480
Rural	494	369	316	572	1,751
Zanzibar	126	114	95	144	479

Another equally important consideration of the fieldwork would have been to spread evenly the urban and rural sample within Dar es Salaam and Zanzibar. This is not a concern in other urban areas and rural areas in Mainland given that these two strata are entirely urban and rural respectively. (Appendix C, Table C1) shows the proportion of rural households by stratum and by quarter of the interview. The share of rural households in Dar es Salaam varies considerably across quarters, but the fact that rural households represent a relatively small proportion of that stratum suggests that this might not be a critical issue. In Zanzibar, however, the first 6 months of the fieldwork were devoted only to rural households and the last 6 months were devoted only to urban households. This oversight could affect not only the precision of the estimations in Zanzibar but also the comparisons with the Mainland strata. The same fieldwork pattern in Zanzibar was kept during the NPS 2010/11, that is, comparability over time in that stratum was considered a preferred alternative than correcting the uneven spread of urban and rural household over the year.

Tracking and Attrition

The second round of the NPS began two years after the first round. The fieldwork for the NPS 2010/11 started in October 2010 and finished in November 2011. Enumerators visited again all households, following the same schedule of the NPS 2008/09. The objective was to track all people present in the first round of the survey, that is, the NPS is in practice an individual panel survey. Three scenarios are possible: the person stayed in the same location, the person moved to a close location, or the person moved to a distant location. Enumerators were able to keep the NPS 2008/09 schedule for those that stayed in the same location and for those that moved to a close location. For those that moved to a distant location, first their new contact details were obtained and later they were mostly interviewed between October and November 2011.

The NPS 2010/11 tracked all individuals present in the NPS 2008/09 regardless of their household membership status. A person is considered a household member if that person lived in the household at least 3 months during the last 12 months. A few exceptions are allowed such as new-borns, new household members, and boarding school students. If a person is not considered a household member, that person will be listed in the household roster but the enumerator will not ask him or her any questions regarding education, health, employment, etc.

The protocol of following all individuals listed in the household roster of the NPS 2008/09 meant that some individuals tracked

in the NPS 2010/11 had not been considered household members in the NPS 2008/09. The problem arises when these people are the only persons that link the household in both rounds. This could happen if they split from their original household and none of those considered household members moved out with them, or if none of those considered household members were contacted again. The analysis in this report excludes these cases because they are not deemed to be panel households.

Although the NPS tracks individuals, it is relatively common in panel surveys to report tracking and attrition rates in terms of households. A household will be considered successfully tracked if at least one person considered a household member in the first round is present in the second round and considered a household member in this round too. The second round of the NPS tracked 97 percent of the original households. The attrition rate of 3 percent of households is exceptionally low and relatively similar across strata (see Table 3). The most likely reason for household attrition is the inability to find any person of that household rather than the refusal to participate in the second round of the survey.

Table 3: Evolution of the NPS Sample

Area	NPS 2008/09 (A)=(B)+(C)	Attritted (B)	Tracked (C)	NPS 2010/11
Tanzania	3,265	99	3,166	3,846
D' Salaam	555	38	517	614
Other urban	480	18	462	568
Rural	1,751	31	1,720	2,121
Zanzibar	479	12	467	543

The NPS sample grew to 3,846 households in the second round (see also Table 3). Household members leaving their original households in order to start new households of their own or move with other households explains the increase. Marriage and migration are the most common reasons for households splitting over time. On average, 18 percent of households split between these two rounds of the NPS. The proportion is relatively stable across strata: 14 percent in Zanzibar, 15 percent in Dar es Salaam and 19 percent in the two remaining Mainland strata.

One of the most interesting features of the NPS is the ability to provide a sense of the movement of individuals and households within the country. Different measures of mobility can be estimated because relocation can happen within the same city or village, to a new district within the same region or to a new region. In addition mobility will depend also on whether or not split households are included. The mobility across strata of the entire NPS sample is shown in Table 4. The proportion of households that stayed in the same stratum stands at 91 percent. Households in other urban areas in Mainland are more likely to migrate across strata, while the opposite happens in Zanzibar. Figures in Dar es Salaam and rural areas in Mainland are similar to the national average.

Table 4: Mobility of the NPS Sample Across Strata

NPS 2008/09	NPS 2010/11				
	Dar es Salaam	Other urban	Rural	Zanzibar	Tanzania
Tanzania	626	634	2,053	533	3,846
D'Salaam	577	19	18	0	614
Other urban	11	461	96	0	568
Rural	32	153	1,936	0	2,121
Zanzibar	6	1	3	533	543

Outline of the Report

This report is organised around the NPS objectives, particularly tracking progress of the MKUKUTA 1 indicators and improving the understanding on poverty dynamics. The former benefits from the NPS being representative at the national level and across strata in each of its rounds, while the latter takes additional advantage of the panel features of the survey. Assessing the impact of specific public policy initiatives, however, is not covered in this analysis, mostly because the respective Government ministries or non-governmental institutions that implemented those programs should lead that type of efforts. Data is therefore available for conducting the analysis and allowing the necessary policy/program adjustments. Preference has been given to indicators that can be calculated in both rounds of the survey in order to emphasize the temporal trend.

Finally, the discussion about indicators implicitly takes into account the sampling errors of the NPS. Differences over time or across strata in any round of the survey might appear to be important enough, but they could be not statistically significant and hence it would be misleading to make inferences without considering the sampling error.

The majority of indicators display temporal changes that are not significant but strong differences across strata. The lack of substantial changes over time need not be interpreted as a sign that progress has not been made but as an indication that there is only a two-year gap between the first two rounds of the NPS and for significant changes to occur a longer period of time might be required.

The structure of the report is as follows. Section 1 examines the evolution of the MKUKUTA 1 indicators between the first two rounds of the NPS. The presentation follows the organization of the MKUKUTA in terms of clusters, goals and indicators. Section 2 focuses on the poverty dynamics of households. It estimates first the possible poverty paths experienced by the panel households and then analyses the factors associated with improvements in standards of living over time and with movements into and out of poverty. Section 3 discusses food security. It draws on a module introduced in the NPS 2010/11 and offers an initial overview of the access and availability of food by the population in the country. Appendix A explains in detail the methodology for poverty analysis. Appendix B provides the standard errors and confidence intervals of all MKUKUTA 1 indicators presented in this report in order to address any concerns about sampling errors and the robustness of the comparisons. Last, Appendix C provides additional selected detailed results tables.

Cluster 1: Growth and Poverty Reduction

Cluster-wide Indicators: Poverty and Inequality

> ***Main Message:*** Poverty and inequality remained stable in Tanzania between 2008/09 and 2010/11. During this period, the Gini coefficient which measures inequality went from 0.36 to 0.37 whereas the poverty headcount inched up from 15 percent to 18 percent. Inequality in the country has remained significantly unchanged (with Gini coefficient at 0.36 in 2008/09 and 0.37 in 2010/11) implying that the gap between the poor and the rich has remained stagnated.

Gini Coefficient

Income inequality refers to the distribution of income among the population. Consumption will be used as a proxy for income, thus low inequality implies that consumption is similarly allocated among the population, whereas high inequality indicates that consumption is concentrated in a relatively small group of the population.

The Gini coefficient is the most commonly used single measure of inequality of a population. It ranges from 0, which means that every person has the same consumption, to 1, which indicates that one person has all of the consumption in the country.

The Gini coefficient stands at 0.36 in the NPS 2008/09 and at 0.37 in the NPS 2010/11 (see Table 5), which suggests that the level of consumption inequality has remained constant across rounds of the NPS. The national pattern is similar across urban and rural areas, across Mainland and Zanzibar and across strata. Visible patterns of inequality hold across both rounds though. Inequality is higher in urban areas compared to rural areas.

Zanzibar shows lower inequality than Mainland. Across strata, differences in inequality are not significant among Dar es Salaam, other urban areas in Mainland and Zanzibar. Inequality in rural areas in Mainland is only substantially lower than in other urban areas in Mainland.

Table 5: Gini Coefficient

Area	NPS 2008/09	NPS 2010/11
Tanzania	0.36	0.37
Rural	0.31	0.31
Urban	0.37	0.37
Mainland	0.36	0.37
Dar es Salaam	0.34	0.32
Other urban areas	0.35	0.35
Rural areas	0.31	0.31
Zanzibar	0.32	0.31

Note: None of the changes over time is significant at 5% level.

The Gini coefficient is based on the Lorenz curve, which is a graphical manner of assessing inequality for the same population over time or across different groups of the population at one point in time. The Lorenz curve plots the cumulative percentage of the population in the horizontal axis (ranked in ascending order of consumption) against the cumulative percentage of consumption in the vertical axis. The closer the Lorenz curve is to

a 45-degree line, the lower the level of inequality is, while the closer the Lorenz curve is to the horizontal axis, the higher the level of inequality is. Figure 1 shows the Lorenz curves for the NPS 2008/09 and the NPS 2010/11. The two curves overlap each other almost perfectly, that is, inequality has not changed across both rounds of the NPS. This finding reinforces the results obtained so far. While the Gini coefficient is a summary indicator based on the Lorenz curve and it would be possible to obtain similar Gini coefficients with different consumption distributions, by plotting both Lorenz curves it is immediately evident that no changes have occurred along the entire distribution of consumption. Lorenz curves drawn for urban and rural areas, for Mainland and Zanzibar, and for all four strata display similar patterns.

Figure 1: Lorenz Curves of Consumption
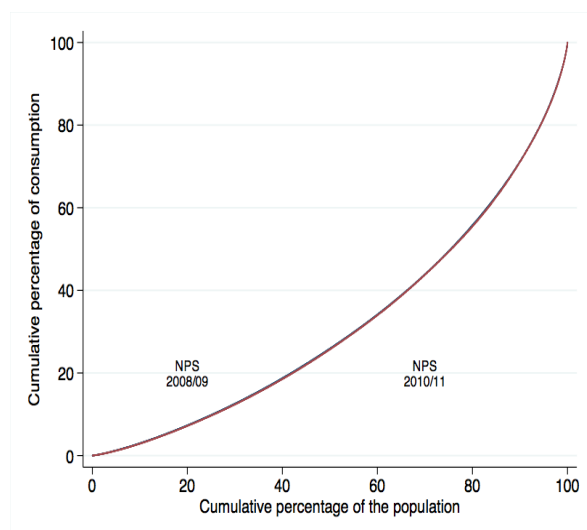
Basic Needs Poverty Headcount

Providing reliable and consistent monetary poverty estimates is one of the principal objectives of the NPS. The sample design, the organization of the fieldwork to take into account seasonality concerns, and the layout of the questionnaire of the NPS are devised to capture as accurately as possible the living standards of the population. The estimation of the consumption aggregate is of particular importance because it is the base for measuring poverty.

Household Budget Surveys (HBS) are the official source of the incidence of poverty in the country. The poverty analysis based on the NPS uses the same methodology as the HBS, but a major caveat is that the findings from the NPS are not directly comparable to those of the HBS (See Box 1 for a summary of the methodology for aggregates between the HBS and the NPS). An attempt to reconcile figures between both surveys is currently being planned, however, for the purposes of this report no efforts have been made to show a poverty trend that is consistent between the HBS and the NPS. Although the comparison between these two surveys is indeed an issue, the NPS does provide reliable and consistent poverty estimates on its own over time. In other words, while the level of poverty is not comparable between the HBS and the NPS, the poverty trend across the different rounds of the NPS is representative for the country and across strata.

The incidence of poverty grew from 15 percent of the population in the NPS 2008/09 to 18 percent in the NPS 2010/11 (see Table 6). Even though the share of poor in the population shows large variations in some geographical domains, none of the changes is statistically significant over time. Rural areas appear to have worsened across rounds, a finding that is driven by the increase in poverty in rural areas in Mainland. Urban areas display a modest fall, a result that can be mostly associated with a decrease in other urban areas in Mainland. The incidence of poverty in Mainland seems to have increased, whereas the opposite happened in Zanzibar.

A few patterns hold in both rounds of the NPS. Rural areas have higher poverty incidence than urban areas, but the differences between Mainland and Zanzibar are not significant. Unambiguous statements across strata are more difficult to make. In Mainland the ranking is robust over time: rural areas is the stratum with the highest proportion of poor, followed by other urban areas, and Dar es Salaam is the stratum with the lowest poverty incidence. Zanzibar displays higher poverty than Dar es Salaam but its relationship with the other two strata has changed over time. In the NPS 2008/09, Zanzibar is poorer than urban areas in Mainland, but the difference with rural areas in Mainland is not significant. In the NPS 2010/11 the difference in poverty incidence between Zanzibar and other urban areas in Mainland is not significant, but rural areas in Mainland display considerably higher poverty than Zanzibar.

Table 6: Basic Needs Poverty Incidence

Area	NPS 2008/09	NPS 2010/11
Tanzania	14.8	17.9
Rural	17.3	22.4
Urban	5.9	5.2
Mainland	14.6	18.1
Dar es Salaam	1.0	1.4
Other urban	7.7	6.7
Rural	17.2	22.7
Zanzibar	20.4	12.4

Note: None of the changes over time is significant at 5% level.

A natural concern that arises is to evaluate the sensitivity of the poverty incidence with respect to the level of the poverty line. Yet considerable effort has been put in deriving a poverty line following a previously implemented methodology and trying to be as transparent and objective as possible, an unavoidable degree of arbitrariness is involved in the process. Many explicit and implicit assumptions have been made along the way and not everybody may agree with them. Other poverty lines might be equally appealing and justified.

Assessing the degree to which the incidence of poverty will change when the poverty line is shifted upwards or downwards and how robust the poverty comparison is between the first two rounds of the NPS can be observed in Table 7. The incidence of poverty at the national level appears to be quite sensitive to the choice of the poverty line because the percentage change in the poverty incidence is typically more than double the percentage change in the poverty line. The temporal trend however remains in place: poverty is higher in the second round of the NPS and for none of the alternative scenarios the change in poverty is statistically significant.

Table 7: Sensitivity of the Basic Needs Poverty Incidence to Changes in the Poverty Line

Change in Poverty Line	Poverty line (TSh.)	Poverty Incidence			
		NPS 2008/09	% Change	NPS 2010/11	% Change
Poverty line - 20 percent	19,147	7.6	-48.7	9.2	-48.6
Poverty line - 15 percent	20,343	9.2	-38.0	11.2	-37.7
Poverty line - 10 percent	21,540	11.1	-24.8	13.3	-25.6
Poverty line - 5 percent	22,737	12.9	-13.0	16.0	-10.8
Poverty line	23,933	14.8	0.0	17.9	0.0
Poverty line + 5 percent	25,130	17.2	16.1	21.0	17.2
Poverty line + 10 percent	26,327	19.6	32.8	23.2	29.7
Poverty line + 15 percent	27,523	22.2	50.0	26.2	46.5
Poverty line + 20 percent	28,720	25.1	69.5	28.7	60.3

Note: None of the changes over time is significant at 5% level.

A more general extension to the previous robustness check is to plot the cumulative distribution functions of consumption (Figure 2). For a given consumption level on the horizontal axis, the curves indicate on the vertical axis the percentage of the population with a lesser or equal level of consumption in each round of the NPS. If one thinks of the chosen consumption level as the poverty line, the curves will show the associated poverty incidence and thus they can be seen as poverty incidence curves. The conclusion is unambiguous: no matter what the poverty line is, the poverty incidence in the NPS 2010/11 is always higher than in the NPS 2008/09. The small gap between both curves suggests that the increase in poverty incidence is likely to be not statistically significant for almost any reasonable poverty line.

Figure 2: Basic Needs Poverty Incidence Curves
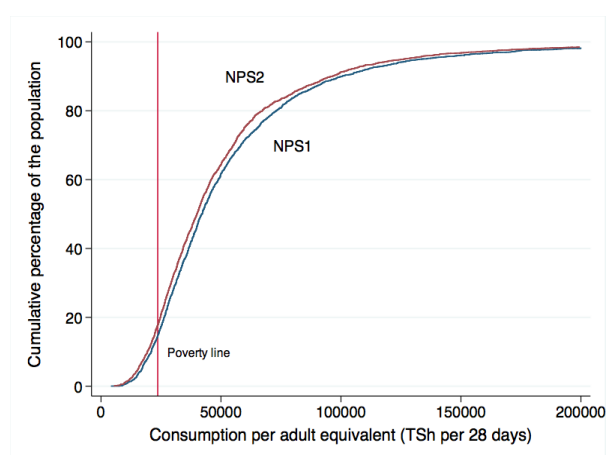
Box 1. Poverty According to the NPS and the HBS

Household Budget Surveys (HBS) provide the official poverty figures in Tanzania. The NPS however was designed to be able to produce poverty estimates on its own. Accordingly, the poverty analysis in this NPS report employs the same methodology as the HBS. Unfortunately the findings between both surveys are not directly comparable mainly because of the methodological differences in the collection of consumption data in the NPS and the HBS. The purpose of this box is to succinctly review the methodology to calculate poverty and to explain some of the aforementioned differences between the two surveys.

The methodology for poverty analysis is discussed in detail in Appendix A and a brief discussion though to review the main elements of the approach will be useful. First, per adult equivalent real consumption is the measure of welfare of the population. Consumption is the total value of food and non-food goods and services consumed. It includes imputed values for non-purchased items, that is, goods self-produced by the households or received in kind as gifts or transfers. Nominal consumption in each round of the NPS was adjusted for temporal and spatial price differences, thus real consumption is expressed in Tanzanian prices. Second, a single national poverty line is estimated using the Cost of Basic Needs Approach. The food poverty line is anchored at a daily intake of 2,200 kilocalories per adult equivalent. The food bundle consumed by the bottom 50% of the population in the country ranked in terms of real consumption is scaled to provide the required energy intake. The food poverty line is the value of this food bundle valued at median prices paid by the same reference group. The non-food poverty line is based on the food share of the bottom 25% of the population in the country ranked in terms of real consumption. The total poverty line is the value of the food poverty line after scaling it up with the food share of the non-food reference group. Finally, a household will be considered poor if it's per adult equivalent real consumption is lower than the total poverty line.

The HBS and the NPS differ significantly in many ways, but given that the estimation of the consumption of the household is the first key component of the poverty analysis, it is worth mentioning some of the main differences that will directly affect the consumption aggregate. First, food consumption is collected in the HBS through a diary that is left with the household for a month, while it is gathered in the NPS by using a recall period of the last seven days. Second, food eaten outside the household is captured in the HBS through an additional diary filled in only by adult household members, while it is collected in the NPS by way of a recall period of the last seven days asked to all household members. Third, the value of non-purchased food that is consumed is provided in the HBS directly by the same households, whereas in the NPS households do not need to offer such subjective assessment. The valuation of non-purchased food in the NPS is based on the prices paid by households that purchased similar food items in the same month and in the same region or stratum. Fourth, the list of food and non-food items for which consumption is collected is more extensive in the HBS than in the NPS. Last, information on clothing expenditures and rent (actual or imputed) is collected in the HBS, whereas it is not gathered at all in the NPS.

The total poverty line per adult equivalent per 28 days stands at TSh. 23,933 at NPS2 prices, that is, prices from October 2010 to September 2011. The food poverty line is TSh. 18,719 and the non-food poverty line is TSh. 5,215. Food accounts for 78% of the total poverty line and non-food for the remaining 22%. It should be kept in mind that the poverty line from the NPS is not directly comparable with the poverty line from the HBS because the poverty line reflects implicitly the composition of the consumption aggregate. For instance, the NPS poverty line does not include allowances for clothing and for rent of the dwelling simply because these two consumption components are not collected in the survey and thus they are excluded from the consumption aggregate.

Goal 1: Ensuring sound economic management:

Main Message: Despite the food and fuel crises in the country and abroad, Tanzania has been able to limit inflation to 21 percent between 2008/09 and 2010/11. However, inflation was much higher for rural population whose cost of living increased by 24 percent compared to 18 percent for urban dwellers.

Annual Rate of Inflation

Inflation measures the percentage change in the cost of a bundle of goods and services consumed by the population. Given that the bundle is fixed over time, inflation is generally interpreted as the percentage change in prices over a certain period of time. Maintaining a low and stable inflation is an essential objective of the economic management of the country, partly because a high inflation discourages investments and erodes the real value of wages, profits, and consumption.

The official reference to track inflation in Tanzania is the consumer price index (CPI) but an alternative measure of inflation can be estimated from the NPS. Both sets of figures are not directly comparable and inferences should be done with caution. It is worth however using the NPS to calculate changes in the cost of living because it could complement the information provided by the CPI and could be used as a crucial input for the welfare comparison across rounds of the NPS.

Before commenting on the similarities and differences between the CPI and the NPS inflation, it will be helpful to review how inflation is estimated. Inflation figures are derived from price indices, which simply represent the relative cost of the bundle being analysed in each period of time.

A price index is a combination of prices and budget shares in a base and a comparison period. The budget shares are the weights that each commodity has in the index and are equivalent to their share in the cost of the bundle being analysed. It follows that differences in inflation could be driven by differences in prices and/or by differences in budget shares.

Using the NPS inflation rather than the official CPI for the purposes of this analysis presents advantages and disadvantages. The first advantage of using the NPS is that it is possible to produce price indices by stratum, across urban and rural areas, and across Mainland and Zanzibar. By contrast, the CPI is mainly an urban price index that is produced separately for Mainland and for Zanzibar. A second advantage is that with the NPS, the weights of the price indices are updated in each round, a feature that might reflect the consumption pattern of the population more accurately than the CPI weights which currently uses weight from 2007. The third advantage is particularly relevant for welfare comparisons, and it refers to the fact that the NPS allows the construction of price indices that take into account temporal and spatial price differences, whereas the CPI reflects only temporal price differences.

On the other hand, the differences and disadvantages are related to data collection issues. The first difference is that the NPS

interviews households in urban and rural areas, while the CPI visits the same outlets only in urban areas in each region. Another difference is that the CPI collects price data only. For all food items the NPS gathers information from the households on the amount spent and on the quantity purchased. A measure of unit values, rather than a measure of prices, is obtained by dividing the expenditure by the quantity. A major disadvantage is that unit values can only be calculated for food items because the survey does not collect information on quantities for non-food items. Last, the other major disadvantage is that unit values, unlike CPI prices, reflect also the mixture of varieties within each commodity. The NPS asks information for 59 food items, and even though the list could be considered detailed, many of these goods are not completely homogeneous. By contrast, the CPI bundle could be fairly specific, and it is not unusual for some items to even refer to a particular brand.

Food price indices based on the NPS are shown in Table 8. The left panel of the table displays the spatial price differences in each round of the NPS. If the cost of a food bundle in Tanzania stands at 100, how does the cost change across the country? Rural areas are less expensive than the national average, while urban areas are more expensive. When comparing Mainland with Zanzibar, prices in the former are similar to those for the entire country, whereas in the latter, prices are slightly more expensive than the national average. Across strata, Dar es Salaam is the most expensive stratum. Other urban areas in Mainland and Zanzibar are fairly similar in terms of the cost of living, while rural areas in Mainland is the least expensive stratum.

Overall, spatial price differences have remained approximately constant in each round of the NPS.

The right panel of the table shows the inflation between both rounds of the NPS. If the cost of a food bundle stood at 100 during the NPS 2008/09 (October 2008 to September 2009), what is the percentage change in the cost of that bundle compared to the NPS 2010/11 (October 2010 to September 2011)? Food prices have increased 22 percent between the NPS 2008/09 and the NPS 2010/11. Rural areas experienced higher inflation than urban areas, whereas the inflation in Zanzibar is barely higher than in Mainland. Across strata, differences in inflation are minor, with Dar es Salaam displaying the lowest inflation and Zanzibar the highest increase in prices.

Table 8: Spatial and Temporal Food Price Indices

Area	Differences in the cost of living in each round (Spatial price indices)		Increase in the cost of living between rounds
	NPS 2008/09	NPS 2010/11	Inflation between NPS 2008/09 and the NPS 2010/11
Tanzania	100	100	22
Rural	93	93	24
Urban	112	109	17
Mainland	100	100	22
Dar es Salaam	116	114	20
Other urban	102	102	19
Rural	93	93	22
Zanzibar	105	103	23

Goal 2: Promoting sustainable, broad-based growth

Main Message: Between 2008/09 and 2010/11 around 2 million more people participated in the labor force which resulted in an increase in the labor force participation from 78 percent to 83 percent. At the same time, several hundred thousands more people could not find jobs leading to a modest increase in the unemployment rate from 2.5 percent to 3.3 percent. Unemployment is especially high in Dar es Salaam, and among the educated youth.

Unemployment Rate

Participation in the labour force and unemployment are based on the standard approach set by the International Labor Organization (ILO). The reference period is the last seven days prior to the interview and all population 15 years and older is considered. The labour force comprises all economically active people, that is, people that are employed or unemployed. The employed comprise people that for at least one hour in the last seven days did any work for wages, profits, barter, or in the family business for free. In addition it includes those that did not work at all during the last seven days but have a job to which they will definitely return for work.

The unemployed comprise people that fulfil three conditions: (a) did not work in the last seven days and did not have a job to which they will return to, (b) were available to work, and (c) were looking for a job. The ILO's recommendations allow the relaxation of the condition (c), i.e., looking for a job, especially in countries where a large proportion of the population is engaged in subsistence agriculture and informal activities

and has generally little knowledge of labour market developments in the rest of the economy. Tanzania is characterised by these conditions, and therefore uses a relaxed standard definition of unemployment. This approach will be used in the estimation of labour market indicators based on the NPS.

Usual labour market figures in the country, however, are based on a third approach, which unfortunately cannot be estimated with the NPS. The Tanzanian definition of unemployment was formulated because some people classified as employed under the standard definition might be actually unemployed for most of their time, depending on the degree of attachment to their jobs. The national definition considers unemployed those who satisfy conditions (a) and (b) plus those with extreme marginal attachment to employment.

The labour force participation rate and the unemployment rate are shown in Table 9. Although only the unemployment rate is a MKUKUTA indicator, the labour force participation rate is presented too in order to provide a more complete overview of the labour market[2]. The labour force participation

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[2] Unpaid family workers appear to be underrepresented in the NPS. While both wage employees and self-

rate increased significantly from 78 percent to 83 percent between the first two rounds of the NPS. Participation in the labour force rose throughout the country, though not always significantly. Strong trends are observed in both urban and rural areas. Tanzania Mainland experienced a considerable increase, but Zanzibar did not. Across strata, rural areas in Mainland is the sole stratum where the rise was statistically significant. Both female and male populations saw remarkable increases in their labour force participation. Across age cohorts, only those 65 years and older did not experience a notable rise in labour force participation.

The unemployment rate increased from 2.5 percent in the NPS 2008/09 to 3.5 percent in the NPS 2010/11. Unemployment rose across urban and rural areas and in both Mainland and Zanzibar. Dar es Salaam is the only stratum where unemployment did not increase. Significant changes over time however happened merely in rural areas and in Zanzibar. Unemployment rose for both women and men, but considerably only for the former. All age cohorts experienced higher unemployment but in none of them the increase was large enough to be considered statistically significant.

employed have been properly captured as part of the labour force, a significant proportion of unpaid workers could be excluded from the labour force, particularly in the first round of the NPS. Thus the labour force participation and unemployment rates presented in this report should be taken with caution because adjusted figures taking into account unpaid family workers might display neither the same direction of the temporal trend nor the same magnitude of the change.

Strong patterns appear in each round of the NPS. Unemployment in urban areas is always higher than in rural areas. Similarly, Zanzibar displays more unemployment than mainland in both rounds of the NPS. Unambiguous statements across strata are harder to make but generally unemployment is higher in Dar es Salaam and Zanzibar, while it is lowest in rural areas in mainland. An interesting trend is observed among men and women. While the difference in their unemployment rates was not significant in the NPS 2008/09, unemployment is certainly higher among women than among men in the NPS 2010/11. Across age cohorts, unemployment decreases notably with age, although the difference among those 35 to 64 years and those 65 years and older is not significant.

Table 9: Labour Force Participation and Unemployment Rate

Area	Labour force participation rate		Unemployment	
	NPS 2008/09	NPS 2010/11	NPS 2008/09	NPS 2010/11
Tanzania	77.6	82.6*	2.5	3.5
Rural	81.2	86.2*	0.7	2.0*
Urban	67.1	73.9*	8.5	7.7
Mainland	78.0	83.1*	2.3	3.1
Dar es Salaam	68.0	72.1	16.0	13.7
Other urban	68.3	75.0	4.1	5.0
Rural	81.4	87.0*	0.6	1.5*
Zanzibar	64.1	65.2	7.9	17.8*
Female	75.3	81.4*	2.7	4.2*
Male	80.1	84.0*	2.2	2.7
15-24	57.7	66.1*	5.3	7.1
25-34	89.2	93.4*	2.8	3.5
35-64	92.1	95.8*	0.8	1.2
65+	67.0	72.0	0.3	1.4

*   *Significant change over time at 5% level.*

Goal 4: Reducing Income Poverty of both Men and Women in Rural Areas

Main Message: About 97 percent of households are still using hand hoe as a tool for cultivation and most of these farm households lack access to modernized tools.

In 2010/11 more than 38 percent of farm households for both rural and urban areas cultivated more than 6 crops compared with 32 percent in 2008/09.

Households Involved in the Agricultural Sector

Agriculture is the foundation of the Tanzanian economy, accounting for 45 percent of the GDP in 2005 and employing 63 percent of the labor force (World Bank, 2007). It represents a source of livelihood for three quarters of the population: 76.3 percent of the households are cultivating some land (whether owned or rented in), and 74.1 percent of the households have some livestock. Moreover, cultivation of land appears to be a rather static status over short periods of time, with less than 10 percent of the population moving in or out of farming between the two rounds of NPS. Indeed, three fourths of the households were engaged in farming in both rounds (see Table 10).

While agriculture is the major sector of the economy, rural areas continue to bear the brunt of poverty: with 93.3 percent of poor households living in rural areas, 6.4 million rural individuals need to find a way to survive each day. Poverty rates among land cultivators are 6 times higher (18.4 percent) than for the rest of the population (3.3 percent). Agricultural growth of 4.8 percent

Table 10: Percentage of Agricultural Households Across Rounds of the NPS

Whole sample		NPS 2010/2011	
		Non agricultural households	Agricultural households
NPS 2008/2009	Non-agricultural households	16.3	2.2
	Agricultural households	7.4	74.1

annually between 2000 and 2005 remained moderately high by regional standards (World Bank, 2007), but is not sufficient to make a significant dent in poverty rates in rural areas, which remain the locus of food insecurity and hunger, both of which are accentuated by widespread lack of access to (largely inadequate) resource endowments.

Poverty and agricultural production and practices are thus closely linked in a country where being poor is both a symptom and a cause of low agricultural production and limited use of modern agro-technologies. Despite the abundance of unutilized land, small-scale subsistence farmers dominate the agricultural sector in Tanzania. Farmers cultivate farm plots of 2.6 hectares on average, and 85 percent of the farmers own less than 4 hectares of land. The vast majority is engaged in sole subsistence farming with

just one third of the farmer selling at least some of their production.

Tanzania is endowed with vast untapped agricultural land. With a total area of 95 million hectares of land, it contains approximately 40 million hectares that are classified as suitable for agriculture. However, part of this arable land may be only marginally suited for agricultural production for a variety of reasons including soil leaching, drought proneness, and tsetse infestation. According to aerial surveys done in the 1990s by the FAO and the World Bank, 7 million hectares of land were suitable for cropping but unused, and 23 million were grassland and bushland unsuitable for cropping, but that could be used for grazing. Tanzania is also well endowed with water, both on the surface and below ground, but suffers from water shortages due to insufficient capacity to store and access it.

As is the case in much of Africa, Tanzania has seen over the past 20 years only modest increases in labor productivity (World Bank, 2007). One of the main limitations on the size of landholding and land utilization is the reliance on hand hoes as the main cultivating tool, which sets limitations on the area that can be grown using family labor. Similarly, adoption of modern farming technologies is very limited and most cultivated areas are in rainfed zones. The absence of drastic changes between the two rounds of NPS may be explained by two different factors: climatic variations that balance out in such a way that production and yield figures do not vary much over time, or the absence of changes in

farmers' cultivating techniques. While the NPS contains little information on the former[3], it has extensive information on the latter. With no serious land expansion constraints in most regions, factors that may increase smallholders' agricultural production include the use of labor and the use of inputs: technologies to maintain or expand utilized land area (erosion control), and intensification of the existing cultivated area (irrigation, fertilizers, improved seeds, mechanization).

Changes in Production and Major Crop Yields Over Time

Due to the different agro-climatic areas and socio-economic conditions, there are significant differences in cropping patterns and farming systems. However, Tanzanian agriculture sector remains dominated by a few main staple crops produced by farming households: maize, paddy, beans, cassava, potatoes, sweet potatoes, and sorghum. Grown vegetables (horticultural production) are most frequently tomatoes. The cash crops most frequently grown by households are cashew nuts, pigeon peas, coconut, coffee, and sugar cane. The planting of fruit trees is an important complement to the production of staple and cash crops, even though these are largely retained for home consumption, as is the case with bananas. Trees of importance are banana, mango, pawpaw and orange trees. The total area under cultivation during the long rainy season (Masika) is estimated to be

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[3] Respectively 3 and 5 percent of the fields that were not planted on their total area were subject to drought in 2008/2009 and 2010/2011.

7 million hectares, of which 3.1 million are planted with maize and 0.7 million are planted with paddy.[4] During the short rainy season (Vuli), 1.3 million hectares are planted with maize, and 100,000 hectares with paddy.

Due to the sampling framework of NPS, this chapter will only report statistics on maize and paddy. Between the NPS 2008/09 and the NPS 2010/11, total production[5] during the full year (Masika and Vuli) has increased for maize and paddy, from 2.2 to 3.4 million tons and from 0.5 to 0.9 million tons respectively (see Figure 3).

Figure 3: Full Year (Masika and Vuli) Total Crop Production (Million Metric Tons)

Yields[6] of the major cultivated crops remained quite stable over time (see Table 11 and Table 12). In 2010/11, average maize yields range between 801 (farmer-reported plot area) and 939 (GPS-based plot area) kg per hectare, as compared to 782 kg per hectare in 2008/09. Average paddy yields range from 1,354 (farmer reported plot area) to 1,725 (GPS-based plot area) kg per hectare, as compared to 1,313 kg in 2008/09. The stability of yields over time is in line with the existing literature on the evolution of yields in Tanzania (see World Bank, 2007).

Table 11: Average Yield of Maize (kg / area planted in hectare)

	Using Farmer Reported Plot Areas (Mean)		Using GPS-Based Plot Areas (Mean)
	NPS 2008/09	**NPS 2010/11**	**NPS 2010/11**
All Plots	782	801	939
Pure stand Plots	906	885	1,058
Intercropped Plots	715	748	867
Plots w/ Organic Fertilizer	1,012	920	1,012
Plots w/Inorganic Fertilizer	1,160	1,178	1,351
Plots w/ Any Fertilizer	1,066	1,054	1,170

Yields are quite sensitive to cultivation methods. Intercropped maize plots record maize yields 15 to 20 percent lower than pure stand plots, while intercropped paddy plots record yields 50 percent lower than pure stand paddy plots. Similarly, maize plots where fertilizers were used, whether organic or

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[4] In 2008/2009, the areas under maize and paddy cultivation during Masika were respectively 3 and 0.5 million hectares. These numbers need to be taken with caution as only 20 percent of the fields were measured with GPS and the rest rely on farmers' estimations.

[5] Trimming was done by dropping the top 1 percent of the plot observations in the distribution for total agricultural production (metric tons).

[6] Trimming was done by dropping the top and bottom 1 percent of the plot observations in the distribution for crop yield (kg per hectare cultivated).

inorganic, achieved yields 25 to 30 percent higher than average. That increase is driven by inorganic fertilizers, which raise yields by 20 to 25 percent compared to plots using organic fertilizers only.

Table 12: Average Yields of Paddy (kg / area planted in hectare)

	Using Farmer Reported Plot Areas (Mean)		Using GPS-Based Plot Areas (Mean)
	NPS 2008/09	NPS 2010/11	NPS 2010/11
All Plots	1,313	1,354	1,725
Pure stand Plots	1,438	1,455	1,876
Intercropped Plots	805	744	940
Plots w/ Organic Fertilizer	1,967	2,412	2,733
Plots w/Inorganic Fertilizer	1,803	1,881	1,873
Plots w/ Any Fertilizer	1,793	1,899	1,893

Percentage of Households Using Irrigation

Tanzania has large surface and belowground water, which is matched by ample land suitable for irrigation. The estimated irrigation potential is up to 2 million hectares (World Bank, 2001). However, Tanzanian agriculture remains largely rainfed, and therefore unfavorable weather results in poor agricultural performance. Irrigation helps to diversify income and reduce risk as it mitigates vulnerability from unpredictable rainfall. However, irrigation is underused in Tanzania; only 4 percent of farmers are using irrigation in at least one of their fields, which corresponds to less than 2 percent of cultivated fields (see Table 13). If we assume that fields planted with the two major crops, maize and paddy, are slightly more likely to

be irrigated (respectively 2.3 and 3.2 percent), it is clear that the average incidence of irrigation remains very low.

Table 13: Percentage of Households using Irrigation

	NPS 2008/09	NPS 2010/11
Share of households using irrigation	4.8	3.8
Share of fields using irrigation (surface)	1.8	1.8
-> share of maize fields using irrigation (surface)	2.2	2.3
-> share of paddy fields using irrigation (surface)	3.8	3.2

Note: only farmers cultivating their field are included in the computations (rented out, given out, and fallow fields are not considered in the computations).

Low incidence of irrigation is combined with traditional techniques of irrigation for those who are watering their plots; a majority of farmers use traditional and non-mechanized irrigation methods. For example, over 70 percent of the farmers are using furrow irrigation (flooding) and 18 percent use watering buckets. More modern methods such as sprinklers, drip irrigation, and water hoses are used by less than 10 percent of farmers in the NPS.[7]

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[7] Because farmers are asked which kind of irrigation they were using for each plot, a farmer may be listing more than one type of spraying water on his fields. In addition, only 111 and 101 plots were using some type of irrigation in 2008/9 and 2010/11 respectively, so comparing the type of irrigation across the two rounds should be done with caution.

Table 14: Proportion of Households Using Irrigation by Method

Method of Irrigation	NPS 2008/09	NPS 2010/11
- Flooding	0.66	0.70
- Sprinkler	0.05	0.02
- Drip irrigation	0.02	0.03
- Bucket/watering can	0.24	0.18
- Water hose	0.05	0.06

Note: only farmers cultivating their field are included in the computations (rented out, given out, and fallow fields are not considered in the computations).

Table 15: Proportion of Households Using Various Sources of Water

Source of Water	NPS 2008/09	NPS 2010/11
Well	0.15	0.18
Borehole	0.02	0.02
Pond/tank	0.02	0.03
River/stream	0.77	0.74

Note: only farmers cultivating their field are included in the computations (rented out, given out, and fallow fields are not considered in the computations).

Very little irrigation is at present based on the abstraction of ground water, which provides a promising area for future development with direct and affordable benefits to the poor. The vast majority of those using irrigation rely on large bodies of water, including streams, rivers, lakes and ponds (75 percent). Since the surface water available varies with rainfall, open wells and boreholes or tube-wells would spread the availability of water throughout the growing season. Currently, wells are used by 18 percent of the farmers irrigating their fields, and boreholes by less than 2 percent (see Table 15). Such groundwater irrigation systems are less capital-intensive than large surface irrigation schemes and could reduce the reliance on large bodies of water, including rivers and lakes, and promote more sustainable use of locally sourced and managed irrigation systems. Integrating groundwater abstraction with rainwater harvesting and watershed management, along with efficient water distribution systems, could greatly improve the irrigation system.

Irrigation is at present constrained by the high cost of investments required and by the limited profitability of its use. Equipment is relatively expensive in Tanzania, even the relatively modest implements needed for localized access to ground water. To compound the adverse impact of high initial costs, producers face difficulties accessing high yielding varieties and moving products to market. Irrigation and agricultural productivity are intimately linked, and neither can advance substantially independently from the other.

Households Using Fertilizers and Improved Seeds

Fertilizer use was in decline in Tanzania since the phasing out of fertilizer subsidies (1991-1994), but with the recent return of limited fertilizer subsidies, use of fertilizers has increased. Regions with the highest incidence of fertilizers among households are located in the South of the country (Ruvuma and Mbeya). The proportion of farmers using fertilizers is highest for crops such as tobacco, carrots, onions, and tomatoes (Tanzania Agricultural Sample Census, 2002/3).

Use of fertilizers is and remains low, whether using organic or non-organic fertilizers; three quarters of the fields do not have any fertilizer (see Table 16 and 17). The introduction of the National Agricultural Input Voucher Scheme in 2008 did not appear to have a significant impact on the use of inorganic fertilizers, as it remained at about 15-20 percent of the fields.

Table 16: Proportion of Households Using Fertilizer, Seeds and Pesticides

Proportion of households using at least:	NPS 2008/09	NPS 2010/11
Any fertilizer	30.1	32.1
Using organic fertilizers	22.0	21.4
Using non-organic fertilizers	12.8	16.5
Using vouchers for non-organic fertilizers[8]		50.0
Using pesticides/insecticides	14.7	13.0
Improved Seeds	16.9	16.8

In addition, seeds purchase has dropped between the NPS 2008/09 and the NPS 2010/11. Between the two rounds, the proportion of farmers who have purchased seeds has dropped from 35 percent to 28 percent (statistically significant at a 95 percent confidence interval). This is primarily due to a drop in the use of traditional seeds from 27 to 20 percent of all fields. The large majority of seeds hence come from the farms themselves, harvested from last year's growth. The farmers then use their own, more

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[8] It is important to note here that for the Southern highlands (Ruvuma, Mbeya, and Iringa) which is the major focus for the National Agricultural Input Voucher Scheme, 51% of farmers used chemical fertilizers and 65.3% of those using chemical fertilizers used a voucher to purchase their inputs.

diverse, gene pool, distinct from other gene pools at other farms, ensuring larger diversity of gene pools within each crop.

Figure 4. Use of Seeds (Field-level)

2008/9
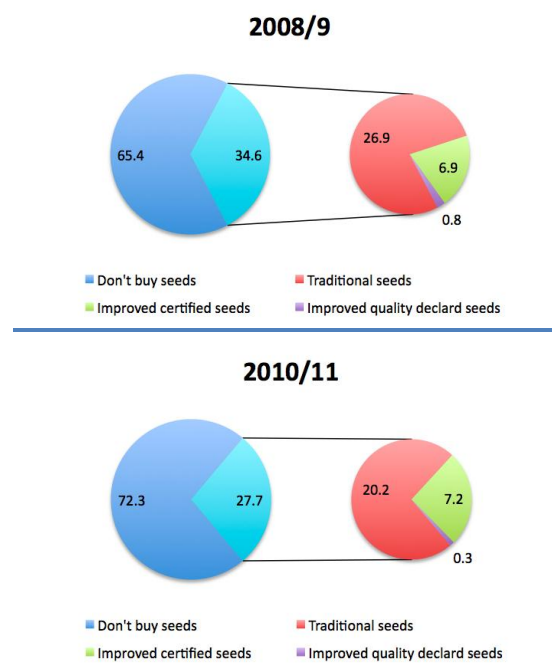
2010/11

Table 17: Proportion of Households Using Fertilizer, Seeds, and Pesticides (Field-level)

Proportion of households using at least:	Use of fertilizers for all fields production		Use of fertilizers for Maize production	
	NPS 2008/09	NPS 2010/11	NPS 2008/09	NPS 2010/11
No fertilizer	0.80	0.76	0.73	0.69
Any fertilizer	0.20	0.22	0.27	0.30
Organic fertilizers only	0.08	0.10	0.12	0.15
Inorganic fertilizers only	0.10	0.09	0.12	0.11
Using vouchers for non-organic fertilizers		0.49		0.57
Using pesticides/insecticides	0.11	0.09	0.11	0.09
HH received seeds/fertilizers/pesticides/herbicides	0.01	0.01	0.01	0.01

Note: only farmers cultivating their field are included in the computations (rented out, given out, and fallow fields are not considered in the computations).

Households Experiencing Erosion

Erosion appears to be one of the major impediments to maintenance of the same amount of utilized land: one out of every four Tanzanian farmers experiences erosion in at least one of their fields.[9] The statistics are consistent with those obtained during the first round, and the sources of erosion remain the same, primarily erosion from rain (see Table 18).

Table 18: Proportion of Households Experiencing Erosion

	NPS 2008/09	**NPS 2010/11**
Proportion of households with at least one field subject to erosion	0.25	0.24
Cause of erosion		
Wind	0.02	0.02
Rain	0.94	0.97
Animals	0.04	0.01
Cultivation that does not comply with soil conservation	0.01	0.00

Of particular concern is the decline of erosion control. The consequences of erosion may be more dramatic in 2010/11 as the proportion of households adopting erosion control techniques has nearly halved, dropping from 27 to 16 percent. The mix of techniques used to prevent erosion remains simple, with over two thirds of farmers using terraces or control bunds. Techniques that require more heavy construction work, such as dams, are essentially nonexistent (see Table 19).

Table 19: Proportion of Households Using Erosion Control Methods

	NPS 2008/09	**NPS 2010/11**
Households using erosion control	0.27	0.16
Type of erosion control		
Terraces	0.44	0.63
Erosion Control Bunds	0.29	0.02
Gabions/sandbags	0.01	0.01
Vetiver grass	0.04	0.02
Tree belts	0.08	0.06
Water harvest bunds	0.10	0.14
Drainage ditch	0.16	0.19
Dam	0.00	0.00

These differences should however be taken with caution, as the significant drop in erosion control may be explained by methodological differences in the implementation of the questionnaire. In the NPS 2010/11, farmers were asked whether they were using erosion control and were shown drawings of the different techniques used to prevent erosion, which could explain why farmers were less likely to report an erosion control if there was in fact none.

Households Using Mechanization and Labor-saving Technologies

The low level of mechanization among Tanzanian smallholder farmers is both a cause and a symptom of rural poverty. Given the generally abundant land supply, households' capacity to maintain and increase their production through land expansion depends on the extent to which they can hire labor or use labor-saving technologies (e.g., animal traction, tractors, minimum cultivation techniques), and the extent to which land markets exist and function properly.

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[9] Farmer's own assessment.

One of the major limitations on farmers' production and average yield presented earlier is the heavy reliance on hand hoes as the main cultivating tool (over 95 percent of the households are using hand hoes), which sets obvious limitations on the area of crops that can be grown using family labor. The use of animal traction is also limited, but while many farmers do not own an ox, many can afford to rent an ox plough (18 percent) or an ox seed planter (18 percent) when they need to use them. The use of mechanized traction and processing engines (e.g., tractors, shellers/threshers) is very limited with less than 10 percent using tractors, and no one using threshers. In addition, poorer farmers have lower access to, or use of, each listed item than the overall population, although the differences were not significant in most cases.

Table 20: Percentage of Households Using Farming Technology

	2008/9		2010/11	
	Own item	**Used item**	**Own item**	**Used item**
Hand hoe	98.18	95.76	96.68	91.98
Hand powered sprayer	7.00	12.84	5.74	8.34
Ox plough	8.69	18.17	9.27	17.61
Ox seed planter	9.95	19.37	10.46	18.49
Ox cart	0.11	0.38	0.02	0.05
Tractor	2.44	7.66	2.31	5.03
Tractor plough	0.14	2.81	0.20	2.82
Tractor harrow	0.27	1.42	0.12	2.25
Sheller/thresher	0.05	0.11	0.02	0.01
Hand mill	0.48	1.09	0.12	0.11
Watering can	1.97	1.81	1.23	1.12
Farm buildings	7.51	7.21	6.74	6.50
Geri cans/drums	12.73	10.80	3.83	2.34
Other	-	-	10.44	9.82

Households Implementing Crop Diversification

The majority of Tanzanian farmers cultivate 4 crops or more. Between the two rounds of the NPS, there has been a shift towards more diversification of crops: a smaller proportion of farmers harvest 4 to 5 crops, and larger proportions of farmers cultivate 6 to 10 crops, (see Figure 5).

Figure 5: Crop Diversity (Number of Different Crops Cultivated During the Year)
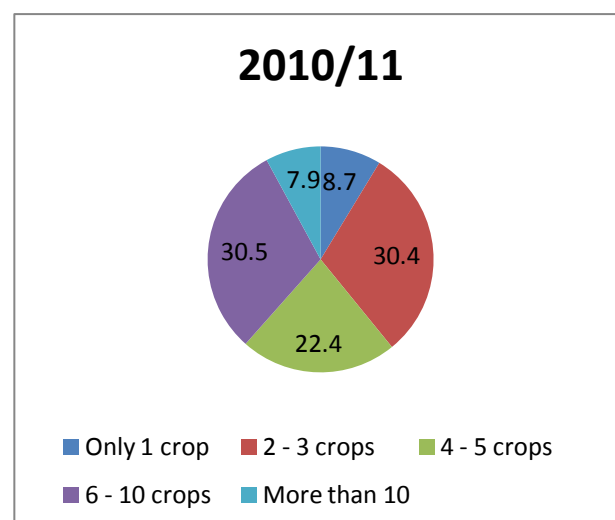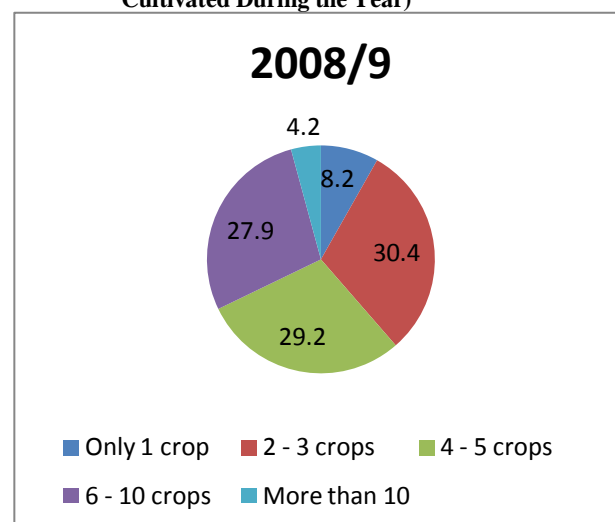
Indeed, over the past 30 years, there has been evidence that crop diversification is acting as a risk-coping mechanism: in 1983, only 9.6 percent of the rural households were cultivating more than 4 crops, and 8.2 in 1991 (Ferreira, 1993). Today, the numbers have increased to include more than half of the farmers. Poor farmers record a similar degree of diversification compared to non-poor farmers, but this may hide issues of quality

and quantity of the production. Alternatively, poorer farmers, despite growing a variety of different crops, may need to sell part of their food crops immediately after harvest time when prices are low.

Smallholder Farmers who have Off-farm Income Generating Activities

Diversifying income sources by generating income from activities off the farm either through a wage job or creating a household enterprise may increase productivity of the farm and helps reduce farmers' vulnerability to exogenous weather or price shocks. Off-farm rural incomes therefore play a key role in both fostering rural development and the alleviating food insecurity risks. Separating rural and urban farm-households (Table 21) shows that in 2010/11 around 65 percent of farm households in rural areas earned income outside their farms. This represents a sizeable 10 percentage points increase from 2 years earlier.

Table 21: Percentage of Farm Households Earning Income from Off-farm Activities[10]

Percentage of households earning Income from:	2008/9			2010/11		
	Wage	*Self-employment*	*Either*	*Wage*	*Self-employment*	*Either*
Rural	34.2	34.5	55	43.7	38.3	65
Urban	46.9	55.2	78	54.5	61.6	87.4
All	35.7	36.9	58	45.5	42.2	68.7

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[10] Note that this indicator shows the percentage of households with at least one member earning income outside of the farm. This is different from the percentage of rural individuals earning off-farm income.

Households Selling Production and/or Experiencing Losses

The majority of farmers are engaged in sole subsistence farming; only a third of the farmers are selling some of their crops (see Table 22). The crop most sold by farmers is maize, with one third of the farmers selling some amount of maize. A large proportion of farmers who are cultivating paddy sell their production, with 40 to 50 percent of the farmers producing paddy selling part of their production.

Post-production storage techniques did not change significantly over time: one third of the households store part of their production. Storage methods remain unchanged, with two thirds of the farmers using sacks or open drums, and 17 percent using traditional methods of storage. Methods that would decrease post-harvest losses, such as improved local structures, modern storages, and airtight drums, are used by only 6 percent of the farmers. However, and despite farmers' use of traditional methods, post-harvest losses have decreased significantly between the NPS 2008/09 and the NPS 2010/11, with only 9 percent (as compared to 14 percent) of the stored production lost in the most recent round.

Smallholder Farmers Participating in Contract Farming or Out-grower Scheme

Participation in contract farming or out-grower scheme is considered as a reliable measure to help increase farmers' income by providing them with direct access to market, inputs, credit and long value chains.

It is argued that contract farming also increases farmers' productivity and hence overall production. Contract farming is still a nascent phenomenon in Tanzania. In 2008/09, with the first round of the NPS, only one percent of farmers stated they had a contract (sometimes informal) whereby they agreed to sell their production to an external farm or firm. A slight progress is noted in the year 2010/11 during which 1.4 percent of smallholder farmers say they participated in a contract farming or out-grower scheme.

Table 22: Proportion of Households that Sold their Harvest, Experienced Losses and Stored Crops

	NPS 2008/09	NPS 2010/11
Proportion of households who sell at least part of their harvest	0.29	0.34
Proportion of households selling maize[a]	0.28	0.34
Proportion of households selling paddy[b]	0.46	0.42
Proportion of households who experienced loss of crops	0.14	0.09
Proportion of households who stored at least part of harvest	0.30	0.24

[a]: conditional on producing maize, [b]: conditional on producing paddy.

Smallholder Farmers who Obtained Formal Credit for Agricultural Purposes

Access to formal credit from commercial banks, SACCOs or other formal lenders is still very restricted in Tanzania's agricultural sector. In 2010/11, only 2.2 percent of the farmers said they received credit for the purchase of their inputs such as improved seeds, fertilizers, or fungicides. This is a negligible improvement over the 2.1 percent of farmers who declared they used credit for their inputs in 2008/09.

Goal 6: Provision of reliable and affordable energy to consumers

Main Message: Access to electricity has increased from 13 percent to 16 percent between 2008/09 and 2010/11. However, the increase is not sufficient especially in rural areas whose access is less than 5 percent.

More than 96 percent of the households both in Mainland and Zanzibar are still relying on wood and charcoal for cooking rather than alternative sources such as electricity, gas and biogas.

Households Connected to the National Grid and Off-grid Sources of Electricity

Access to electricity could be a key enabler for sustainable economic and social development, health, and gender and environmental quality. It enables communities to operate schools and hospitals, and to provide communication services, safe water supplies and sanitation.

Figure 6: Percentage of Households with Access to Electricity
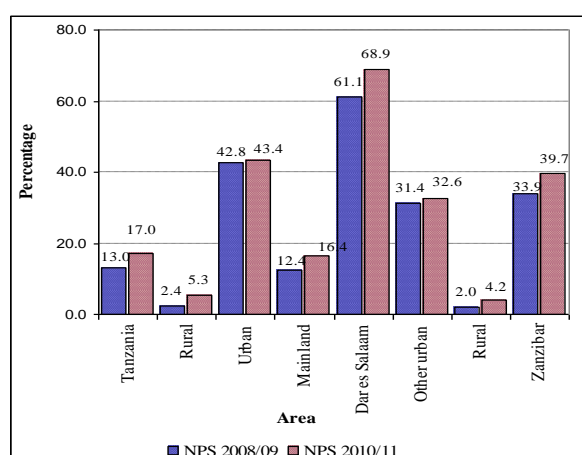
Note: Significant change over time at 5% level in Tanzania (17.0) and rural Tanzania (5.3)

Electricity helps households to improve their living conditions by enhancing opportunities for education and employment. The percentage of households with access to electricity will be used as a proxy for this indicator.

The source of electricity could be the Tanzania Electric Supply Company Limited (Tanesco), community generators, personal generators, car batteries, motorcycle batteries or solar panels. A caveat is in order because this indicator does not capture the reliability of the source of electricity.

The percentage of households with access to electricity increased from 13 percent in the NPS 2008/09 to 17 percent in the NPS 2010/11 (see Figure 6). The improvement in electrification happened across the country: in urban and rural areas, in Mainland and in Zanzibar, and across all strata. The proportion of households with access to electricity at the national level improved significantly over time, a result driven by the substantially higher access to electricity experienced by rural areas.

Same patterns of electricity appear in both rounds of the NPS, urban areas have higher access to electricity than rural areas. A lower proportion of households have access to electricity in Mainland compared to Zanzibar. Across strata, Dar es Salaam is the stratum with the highest access to electricity, Zanzibar and other urban areas in Mainland have about similar numbers, and rural areas in the Mainland is the stratum with the lowest percentage of households with access to electricity. The access has remained stable at 2 percent across both rounds of the NPS (see Figure 6).

Figure 7: Percentage of Households Using Alternative Sources Other than Wood Fuel for Cooking
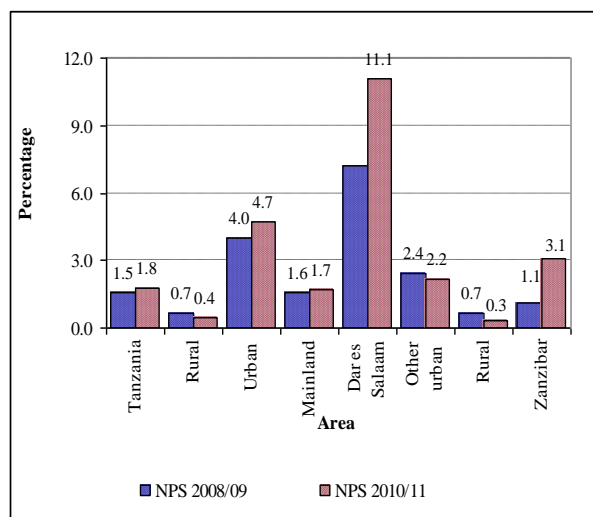
Note: None of the changes over time is significant at 5% level

Households in Rural and Urban Areas Using Alternative Sources of Energy to Wood Fuel as their Main Source of Energy for Cooking

Using electricity and gas as sources of energy for cooking reduces environmental degradation, improves the health status of the population and contributes to gender equality. Environmental degradation might happen in areas where clearing bush is done for obtaining charcoal. A high incidence of respiratory diseases is typical in households using wood or charcoal because of intense indoor air pollution. Women and children traditionally collect wood and spend many hours per day doing it, limiting their participation in other activities such as working or attending school.

The list of potential sources of energy for cooking in the NPS comprises firewood, electricity, paraffin, gas, biogas, charcoal and animal residuals. Electricity, gas and biogas will be considered alternative sources of energy.

The majority of households in the country rely on wood and charcoal for cooking, around 96%, while the remaining households use paraffin and animal residuals, around 2%. Minor improvements appear to have happened in urban areas, particularly in Dar es Salaam, where the use of alternative sources of energy increased slightly. In general, however, none of the changes over time are significant.

By contrast, some trends are significant in both rounds of the NPS. Urban areas have a higher proportion of households relying on alternative sources of energy for cooking compared to rural areas. Differences between Mainland and Zanzibar are not significant. Dar es Salaam is the stratum where the use of alternative sources of energy for cooking is the highest. While in the NPS 2008/09, differences among rural areas in Mainland, other urban areas in Mainland and Zanzibar were not significantly different, in the NPS 2010/11, rural areas in Mainland ranks last among all strata.

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Special Section 1: Poverty Dynamics

Improving the understanding of poverty dynamics is one of the three main objectives of the NPS. While each round of the survey can provide poverty indices at the national level, in rural and urban areas, in Mainland and in Zanzibar and across all four analytical strata, another substantial contribution of the NPS is the possibility of analyzing the poverty paths followed by households in the country. This chapter will provide an initial examination of the patterns of poverty dynamics. First, a poverty profile will be presented to introduce the discussion about poverty. Later, a classification of all panel households into the different poverty transition states will be shown. A descriptive analysis of the household characteristics across the different transitions will follow. A more thorough econometric analysis is implemented afterward.

A basic poverty profile is shown in Table 23. The left panel displays the poverty incidence, the central panel shows the distribution of the population, and the right panel shows the distribution of the poor. The poor live disproportionately in rural areas because while almost three out of four people live in rural areas, more than nine out of ten poor people live in rural areas. The poor are not overrepresented in Mainland or Zanzibar: in both cases the distribution of the poor is broadly similar to the distribution of the population. Across strata, the poor are more

likely to live in rural areas in Mainland and less likely to live in Dar es Salaam.

Table 23: Poverty Profile

Area	Poverty incidence		Population (%)		Poor (%)	
	NPS 2008/09	NPS 2010/11	NPS 2008/09	NPS 2010/11	NPS 2008/09	NPS 2010/11
Tanzania	14.8	17.9	100	100	100	100
Rural	17.3	22.4	78	74	91	92
Urban	5.9	5.2	22	26	9	8
Mainland	14.6	18.1	97	97	96	98
D' Salaam	1	1.4	7	7	0	1
Other urban	7.7	6.7	15	18	8	7
Rural	17.2	22.7	75	71	88	90
Zanzibar	20.4	12.4	3	3	4	2

Poverty dynamics requires following the same households or people over time to compare their poverty status in each round of the survey. This analysis will focus on the main household over time, that is, split households will be disregarded. The NPS 2010/11 tracked 3,166 households from the NPS 2008/09. Some of these households split between rounds and the sample increased to 3,846 households. If a household split in the second round, one household among the split households must be chosen as the main household for comparison with the original. Several sequential criteria were used to determine the main household in the NPS 2010/11. If the household did not split (2,607 cases), the single household in the second round would be the main household. Among the households that split (559 cases), the

household that has the same household head from the first round would be the main household (511 cases). Second, if the household split and the household head changed over time, the household where the household head from the NPS 2008/09 lives would be considered the main household (34 cases). Last, if the household split and the original household head is no longer around, the split household with more tracked members would be considered the main household (14 cases). Two households are excluded because they did not report properly consumption in the second round, thus the poverty dynamics analysis will be based on 3,164 households.

Four types of poverty transitions between the NPS 2008/09 and the NPS 2010/11 are possible: households that were never poor, households that moved out of poverty, households that moved into poverty and households that were always poor (see Table 24). Notice that the geographical location of the households in this table refers to the location in the NPS 2008/09. Households might have moved between rural and urban areas, across strata or between Mainland and Zanzibar, but that information is not reflected in the table because it would have been too difficult to combine with the poverty transitions.

The panels display the percentage distribution of the population. The top panel displays the percentage of the population by poverty transition in each geographical domain. At the national level, 74 percent of the population were never poor, 7 percent moved out of

poverty, 12 percent moved into poverty, and 6 percent were always poor. Although the majority of the population remained either never poor or chronically poor, around one out of five people moved between poverty states, that is, around one out of five people were transitorily poor. More movement into and out of poverty is observed in rural areas than in urban areas (24 percent and 7 percent respectively). Similar proportions of the population in Mainland and Zanzibar moved into or out of poverty, yet this finding conceals dissimilar patterns across strata. Rural areas in Mainland and Zanzibar have figures close to the national pattern, but transitions into or out of poverty barely stand at 9 percent in urban areas in Mainland and 3 percent in Dar es Salaam.

The bottom panel shows the percentage of the population in each poverty transition state by geographical location. Compared to the distribution of the population shown in the last column of the table, urban dwellers are slightly overrepresented among those that have never been poor. By contrast, rural citizens are disproportionately represented among those moving into and out of poverty and among those chronically poor. For instance, rural dwellers account for 75 percent of the panel population in the country but represent 94 percent of the chronically poor. The composition of the never poor and the always poor with regards to Mainland and Zanzibar have similar patterns to the shares of these two domains among the population. Mainland is modestly more represented among those that moved into poverty, whereas the same happens for Zanzibar

among those that moved out of poverty, reflecting the fact that the poverty incidence increased in Mainland and dropped in Zanzibar.

An interesting finding that underlines the importance of using panel data to understand poverty dynamics is the difference between the modest increase of the poverty rate at the national level with the proportion of population falling into or escaping poverty. The findings in Table 23 indicate that the poverty incidence grew from 15 percent to 18 percent. However, that result does not tell anything about the movements into and out of poverty between both rounds of the NPS. Do the poor in the first round continue to be poor in the second round and an additional 3 percent of the population fell into poverty? Or did all the poor from the first round escape poverty and a separate 18 percent of the population become poor? Household panel data shows that 6 percent of the population remained poor in both periods, 12 percent fell into poverty and that 7 percent escaped poverty. Considerable movement across the poverty line existed between the first two rounds of the NPS. Half of the original poor escaped poverty and two thirds of the current poor were not poor in the first round.

After quantifying the number of households experiencing each of the possible four poverty transitions, the next step is to assess what characteristics are associated with households experiencing different patterns of poverty dynamics. An initial descriptive analysis is shown in Appendix C, Table C4 which displays a comparison of the

demographic composition of households and attributes of the household head by poverty transition state. The comparison focuses on the level of the household characteristics during the first round and on the changes that occurred between rounds.

Table 24: Poverty Transition Matrices by NPS 2008/09 Location

Area	Never poor	Move out of poverty	Move into poverty	Always poor	Total
Population (weighted) Row percentages					
Tanzania	74	7	12	6	100
Rural	69	9	15	8	100
Urban	91	4	3	2	100
Mainland	74	7	12	6	100
Dar es Salaam	98	1	2	0	100
Other urban	89	5	4	2	100
Rural	69	8	15	8	100
Zanzibar	75	13	4	8	100
Population (weighted) Column percentages					
Tanzania	100	100	100	100	100
Rural	70	87	94	94	75
Urban	30	14	6	6	25
Mainland	97	95	99	96	97
Dar es Salaam	9	1	1	0	7
Other urban	20	12	5	5	16
Rural	68	83	93	91	73
Zanzibar	3	5	1	4	3

Note: The number of households successfully tracked differs from that used in the poverty dynamics analysis because two households with incomplete consumption in the second round are excluded.

With regard to the demographic composition of households, a few findings are worth mentioning. The average household size of chronically poor families is greater than households moving into or out of poverty and noticeably larger than households that never experienced poverty. Among the five age cohorts examined, the only age cohort where

differences appear to be substantial is that of children 10 to 14 years. The proportion of children and elders with respect to the total number of members in the household varies considerably across poverty transition states. The dependency rate among households that have never been poor is rather low compared to that among chronically poor households. Households moving into poverty experienced markedly large increases in household size across rounds, whereas the opposite happens among households moving out of poverty. Last, across all poverty transitions, increases in the number of adults appear to be driving increases in the overall household size.

A second group of characteristics refers to the household head. Interestingly, no major differences were found in terms of age or sex of the household head. Education seems strongly associated with poverty dynamics. For instance, one fifth of household heads among households that were never poor had no education compared to one third of household heads among chronically poor households. By contrast, almost one tenth of households that never experienced poverty have household heads that attained at least some secondary or university education, whereas almost none of the household heads among the chronically poor has that level of education.

Strong patterns also appear when looking at the economic activity of the household heads. Those heading households that were never poor are significantly less likely to work in agriculture, livestock or fishery and considerably more likely to work in non-agricultural jobs. A similar share of household heads that are not working (either unemployed or out of the labour force) is observed across all poverty transition states.

Finally, changes in the economic activity of the household head between rounds do not show any noticeable finding. The majority of household heads remained working in agriculture, working in non-agricultural jobs, unemployed, or out of the labour force. A relatively low proportion of household heads moved between agricultural and non-agricultural jobs or between being employed and not being employed.

Investigating the determinants of changes in the standard of living and what influences poverty dynamics can be examined more rigorously with multivariate methods. Two complementary econometric approaches will be employed. The first method focuses on analysing changes in the standard of living, which requires using the consumption aggregate (the continuous and underlying variable that is the proxy for welfare) to model the growth rate of consumption between both rounds of the NPS. The second method focuses on assessing poverty dynamics, which requires using the poverty status (the discrete variable denoting whether or not a household is poor) to model the factors that are correlated with the likelihood of being poor.

Modelling the growth rate of consumption has a couple of advantages over modelling poverty dynamics. Analysing the growth rate of consumption implies no loss of information about the underlying welfare

variable. If a household increases its consumption between rounds, everybody will agree that the household has improved its standard of living over time. Yet it could be the case that the household has remained poor in both rounds. The increase in consumption will be properly captured if the analysis focuses on the growth rate of consumption, but that information will be lost if the analysis focuses on poverty dynamics because the household simply continues to be poor. A second advantage is that concerns might exist about the level of the poverty line and its potential effects over movements into and out of poverty. If the poverty line is thought to be either too low or too high, fewer households will be falling into or escaping poverty, resulting in a lower degree of poverty dynamics than a more realistic poverty line would have implied. Finally, the small number of households in some poverty transitions observed in Table 24 will not affect at all examining the growth rate in consumption while it might be an issue when modelling poverty dynamics.

Assessing the household characteristics associated with changes in consumption over time is implemented with a regression of the growth rate of consumption on the previously discussed household characteristics, that is, the demographic composition of the household, the characteristics of the household head, the location of the household and the initial level of consumption (see Appendix C, Table C5).[12] Household size is

strongly and negatively associated with the growth rate of consumption, which means that the larger the household was in the first round, the lower the consumption grew in the second round. The proportion of children and elders, which can be interpreted as a proxy for dependency, has also a significant and negative correlation with growth rates. Increases in the total number of members in the household have a strong negative influence in growth rates. Interestingly, the presence of more elders in the household has a significant and negative effect on growth rates, whereas increases in children of various age cohorts are negatively associated with growth rates but not significantly.

Being a female household head does not have any strong impact on the consumption growth rates. Younger household heads are significantly associated with higher growth rates compared to older household heads. Growth rates are highly correlated with the level of education of the household head. Lower growth rates are observed for those with no education, while higher growth rates are seen for those with secondary or university education. Household heads working in non-agricultural jobs display significantly higher growth rates. Changes in the economic activity of the household head

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[12] The growth rate of consumption is defined as the logarithm of the ratio between the per adult equivalent

consumption in the NPS 2010/11 and the per adult equivalent consumption in the NPS 2008/09. The initial level of consumption is defined as the logarithm of the per adult equivalent consumption in the first round. All the econometric analysis presented in this chapter explicitly takes into account the survey design of the NPS, that is, the analytical strata, the clusters and the sampling weights.

have the expected correlations with growth rates but generally the association is not significant: moving from a non-agricultural sector to agriculture decreases growth rates, while moving the other way round or moving from being not employed to being employed increases growth rates. Only household heads previously employed and currently unemployed or out of the labour force show significant lower growth rates.

Regional effects have positive influences on growth rates, but their correlation is not always significant. Living in Dar es Salaam is strongly associated with higher growth rates, living in other urban areas in Mainland is weakly associated with higher growth rates, and living in Zanzibar is not significantly correlated with higher growth rates. The initial level of consumption has a strong and negative relationship with growth rates, that is, households with lower levels of consumption in the NPS 2008/09 grew faster than households with higher levels of consumption in the NPS 2008/09.

The second complementary approach to investigate changes in welfare over time is to focus on movements into and out of poverty with a series of sequential probit regressions. A probit regression evaluates the degree of correlation between a set of variables and the probability of a certain event happening. In the case of poverty dynamics, each probit regression will assess how the household characteristics are associated with the poverty status of the household. Three different probit regressions will be implemented. The first stage refers to the likelihood of a household

being poor in the first round of the NPS, and the second stage estimates the likelihood of a household being poor in the second round of the NPS separately for those being poor in the first round and for those being not poor in the first round. The rationale behind this approach is to differentiate the factors associated with being poor at one point in time with the factors associated with falling into or escaping poverty. The first stage will inform on what household characteristics influence the probability of a household being poor. The second stage will provide information on the factors that might help households that are poor to escape poverty and the factors that might be correlated with households that fall into poverty.

The results of all three probit regressions are shown in Appendix C, Table C6. The likelihood of a household being poor in the NPS 2008/09 is strongly and positively associated with the size of the household and the share of children and elders. The larger the household is, the higher its probability of being poor. Equally, the higher the proportion of children and elders in a household with respect to the total number of members, the more likely the household is of being poor. Being a female household head is weakly and positively correlated with poverty. Older household heads appear to be more likely to be poor but this finding is not significant. The education level of the household head shows the expected associations with the likelihood of being poor but the results are seldom significant. Having no education increases the chances of being poor but the finding is not significant. Having at least some secondary or

university education decreases the probability of being poor, but the result is barely significant. Having a household head working in a non-agricultural job reduces strongly the chances of a household of being poor. Living in Dar es Salaam or in other urban areas in Mainland decreases the probability of being poor, although only significantly in the former.

Fewer variables are significantly associated with the likelihood of being poor in the second round of the NPS conditional upon being poor in the first round. The share of children and elders has a weakly positive impact on the probability of remaining poor. The number of household members and the increases in family size are positively associated with the household continuing to be poor but both associations are not significant. Interestingly, increases in children aged 10 to 14 years are strongly and negatively correlated with being poor. Neither sex nor age of household head affects significantly the chances of being poor. In terms of the education level of the household head, only having some secondary or university education reduces considerably the probability of being poor. Working in a non-agricultural job or being unemployed or out of the labour force reduces the likelihood of being poor, but not substantially. Becoming unemployed or moving out of the labour force increases markedly the chances of being poor. Regional effects are not significant, although living in Dar es Salaam and other urban areas has a negative association with being poor, while the opposite happens in Zanzibar.

Noticeably, more variables are strongly associated with the likelihood of being poor

in the second round of the NPS conditional upon being not poor in the first round. Both household size and the dependency rate are positively correlated with falling into poverty, but only the latter has a significant association. Increases in the number of household members have a weak positive effect on becoming poor. Across age cohorts, more elders in the household increase substantially the chances of being poor, but none of the various cohorts of children has the effect. Being a female head is not strongly correlated with falling into poverty. Older household heads are considerably more likely to be poor compared to younger household heads. Having a household head with no education increases significantly the probability of being poor, but having secondary or university education only has a weakly significant and negative association with descending into poverty. Holding a non-agricultural job decreases strongly the chances of poverty. However, changes in the economic activity of the household head do not have any significant impact on the likelihood of being poor. Finally, all regional effects are significant. Fewer chances of being poor are observed for those originally in Dar es Salaam, other urban areas in Mainland, and Zanzibar.

Special Section 2: Food Security

Food security is defined as the state at which all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life.[13] A comprehensive food security analysis is beyond the scope of this report, but this chapter will introduce a few food security indicators to provide a sense of the situation in Tanzania. The information will refer to the NPS 2010/11 only because the food security module was not available in the NPS 2008/09.

Three food security indicators that focus on the past seven days to the interview will first be presented: the percentage of the population that worried about not having enough food, the percentage of the population whose diet was affected negatively, and the percentage of the population who reduced their food intake. A negative change in the diet could refer to households having to rely on less preferred foods or to limit the variety of foods eaten. The change in food intake or the disruption of eating patterns could refer to households limiting the portion size at mealtimes, reducing the number of meals eaten in a day, restricting the consumption of adults so that children can eat, borrowing food or relying on help from a friend or a relative, having no

food of any kind, or going an entire day and night without eating anything.

These food security indicators are shown in Table 25. The proportion of the population that worried in the last seven days about not having enough is 36 percent. Rural areas appear more concerned than urban areas but the difference is not significant. Noticeable differences are observed between Mainland and Zanzibar, with the former having more food insecurity than the latter. Across strata, it is difficult to make any conclusive statement because the differences among strata are generally not significant. Zanzibar, however, shows lower food insecurity than Dar es Salaam and rural areas in Mainland.

The percentage of the population whose diet became less desirable or less varied stands at 34 percent. Urban dwellers seem to be less affected than their rural counterparts but the difference is not significant. By contrast, the proportion of the population that experienced a negative change in their diet in Zanzibar is significantly lower than in Mainland. Comparisons across strata are not definite because the differences among strata are typically not significant. Dar es Salaam and rural areas in Mainland though have a considerably higher proportion of their population having to rely on less preferred foods or to limit the variety of foods eaten compared to Zanzibar.

The percentage of the population who reduced their food intake is 32 percent.

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[13] Comprehensive Food Security & Vulnerability Analysis Guidelines, January 2009, World Food Programme.

Unlike the previous two indicators, this proportion is relatively similar across the country. Differences are significant neither across rural and urban areas nor across Mainland and Zanzibar. Across strata, other urban areas in Mainland and Zanzibar have a lower share of their population reducing their food intake than Dar es Salaam and rural areas in Mainland, but the only significant differences is Zanzibar having a lower proportion of its population reducing their food intake compared to rural areas in Mainland.

Table 25: Food Security During the Last Seven Days, NPS 2010/11

Area	Worried about not having enough food (%)	Negative changes in diet (%)	Reduced food intake (%)
Tanzania	36	34	32
Rural	37	35	33
Urban	33	32	30
Mainland	36	34	32
Dar es Salaam	38	35	35
Other urban	31	31	29
Rural	37	35	33
Zanzibar	25	22	24

One way of summarising the previous three indicators is shown in Figure 8. Notice that Table 25 has been estimated independently from the others. Some households might have worried about having enough food but the variety and quality of their diet were not affected. Other families might have limited the variety of their diet and reduced their food intake.

The proportion of the population that did not experience any food insecurity incident in the past seven days stands at 54 percent, while the percentage of the population that worried about not having enough food, whose diet was affected negatively and that reduced their food intake is 20 percent. A higher proportion of urban dwellers did not experience any aspect of food insecurity compared to rural dwellers, but the difference is not significant. By contrast, a considerably higher share of the population in Zanzibar never experienced any concern about food insecurity compared to Mainland. With regards to the percentage of the population that experienced all three dimensions of food insecurity, figures are similar in urban and rural areas. Differences are not significant between Mainland and Zanzibar. Interestingly, across strata, Dar es Salaam is the stratum with the highest share of the population experiencing all three food insecurity facets, while differences are not significant among the other three strata.

Figure 8. Combining the Three Basic Food Security Indicators, NPS 2010/11
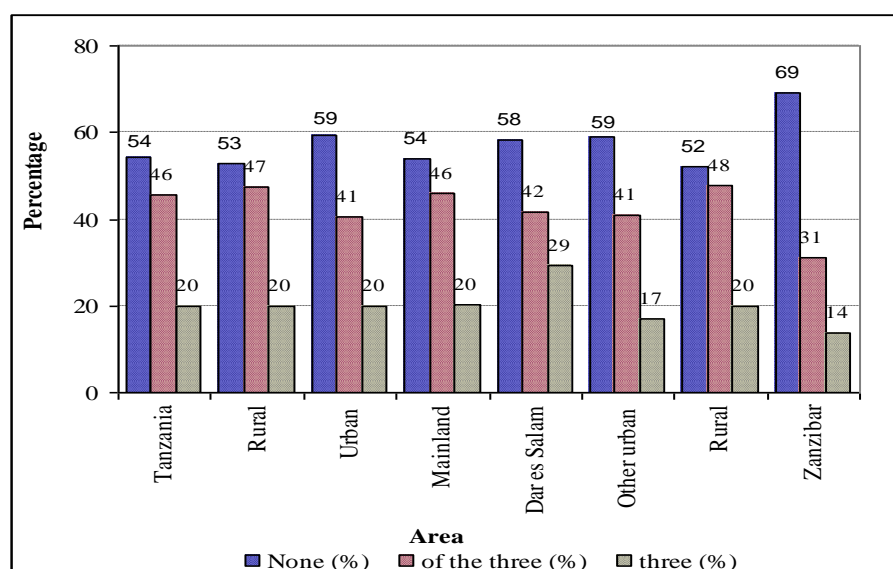
A second group of food security indicators refers to the number of meals taken per day. Table 26 shows the distribution of households by the number of meals taken by adults and by the number of meals taken by children aged 6 to 59 months. The proportion of households in which adults took one meal per day stands at only one percent, two meals at 34 percent and three or more meals at 65 percent. Food insecurity in terms of the number of daily meals taken by adults is quite low and similar across the country. Urban areas display a significantly larger proportion of households in which adults take at least three daily meals compared to rural areas. Across strata, a clear pattern appears: the number of meals taken by adults in Dar es Salaam and other urban areas in Mainland is higher than in rural areas in Mainland and Zanzibar.

Among households with children aged 6 to 59 months, 85 percent of households have their children taking at least three meals, 13 percent two meals and barely 2 percent one meal. Some patterns for the number of meals taken by children are similar to those by adults, but two clear differences are apparent: on average children take a considerably higher number of meals compared to adults, and less disparity is observed across the different geographical domains in the case of children than in the case of adults.

The last set of food security indicators focuses on food shortages in the last 12 months. Food shortages refer to a situation where there was not enough food to feed the household members.

Table 26: Meals per Day, NPS 2010/11

Area	Adults				Children 6-59 months			
	One	Two	Three or more	Total	One	Two	Three or more	Total
Tanzania	1	34	65	100	2	13	85	100
Rural	1	41	57	100	1	16	83	100
Urban	1	18	81	100	2	6	92	100
Mainland	1	34	65	100	1	13	85	100
Dar es Salaam	0	12	88	100	3	5	92	100
Other urban	1	20	79	100	1	6	93	100
Rural	1	41	57	100	1	16	83	100
Zanzibar	2	40	59	100	3	22	75	100

Table 27 shows the proportion of the population that experienced food shortages, the number of months with food shortages and the causes of these food shortages. The percentage of the population that suffered food shortages at least once in the last 12 months stands at 21 percent. The proportion in rural areas is similar to that in urban areas, but those living in Mainland are considerably more likely to have experienced food shortages than those living in Zanzibar. While the difference between the three Mainland strata is minor, the proportion of dwellers in these three strata suffering food shortages is significantly higher than in Zanzibar.

Among the population that experienced food shortages in the last 12 months, the average number of months with food shortages is 3.4. Differences are significant neither between urban and rural areas nor between Mainland and Zanzibar. Other urban areas in Mainland, rural areas in Mainland and Zanzibar display similar average number of months with food shortages. Dar es Salaam appears to experience more months with food shortages

than the other three strata, but the difference is significant only with respect to rural areas in Mainland and Zanzibar.

What are the main causes of food shortages in the last 12 months? Among the population that experienced at least once not having enough food to feed the members of the household in the last 12 months, the most common cause of food shortages is having inadequate food stocks because of adverse weather (40%), followed by food in the market being expensive (12%), no money (11%), lack of farm inputs (11%), small land size (8%), crop pests (5%) and other reasons (13%). Reasons for food shortages are very different across rural and urban areas. In the countryside 45 percent of those that suffered food shortages mentioned adverse weather as the main cause, whereas in cities and towns that proportion is 21 percent. On the other hand, 25 percent of the urban population that suffered food shortages said that having no money was the main reason and 22 percent

referred to food in the market being very expensive compared to 8 percent and 9 percent respectively in rural areas. Adverse weather is the main response in both Mainland and Zanzibar, but in the latter an overwhelming 65 percent of the population

stated that as the reason for food shortages. Having no money is particularly acute in the capital where 44 percent of the population that suffered food shortages mentioned that as the cause of the food shortage.

Table 27: Food Shortages in the Last 12 Months, NPS 2010/11

Area	Not enough food to eat (% population)	Months with food shortages	Among those that experienced food shortages							
			Causes of food shortages							
			Drought, poor rains	Crop Pest	Small land size	Lack of farm inputs	Expensive Food	No money	Other	Total
Tanzania	21	3.4	40	5	8	11	12	11	13	100
Rural	21	3.3	45	5	9	12	9	8	11	100
Urban	18	3.7	21	2	4	6	22	25	19	100
Mainland	21	3.4	40	4	8	11	12	11	13	100
Dar es Salaam	19	4.6	3	0	1	2	26	44	24	100
Other urban	19	3.4	27	3	6	8	20	18	18	100
Rural	22	3.2	45	5	9	12	10	7	11	100
Zanzibar	8	2.9	65	7	10	2	0	12	3	100

The pattern of food shortages along the year is depicted in Figure 9. The population is more likely to experience food shortages at the end and at the beginning of the year, whereas food shortages are less common during the middle of the year. The trend is more pronounced and smoother in rural areas, where food shortages are probably highly

associated with the rainy seasons, which in turn determine the lean and harvest seasons. In urban areas the overall pattern is broadly the same than in rural areas but there is less variability during the year, perhaps reflecting less reliance on agricultural activities and better access to food from other sources.

Figure 9: Population Affected by Food Shortages by Month of Food Shortage
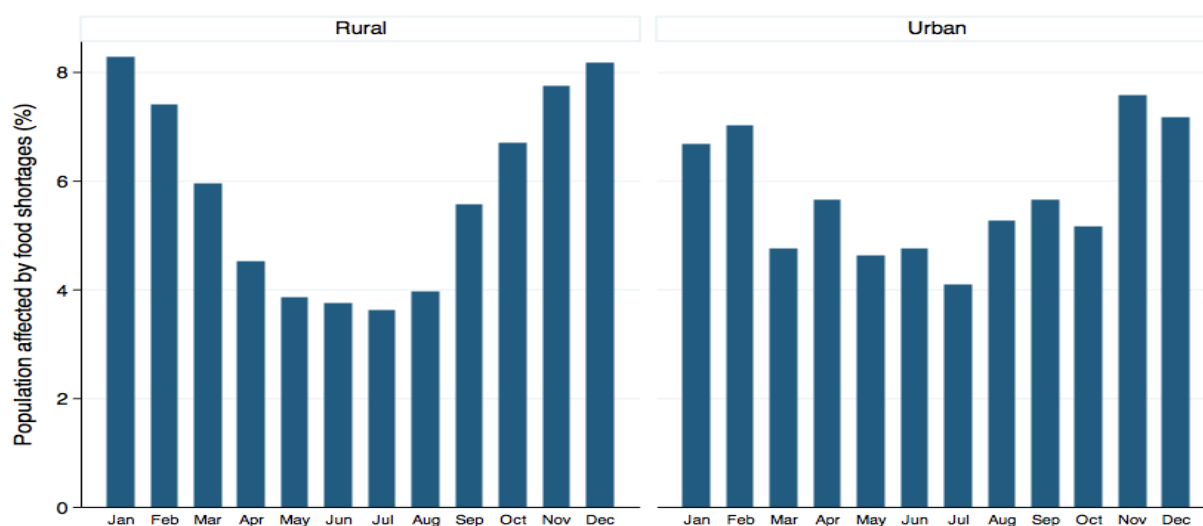
Cluster 2: Improvement of Quality of Life and Social Well-being

Goal 1: Ensure equitable access to quality primary and secondary education for boys and girls, universal literacy and expansion of higher, technical and vocational education

Main message: Enrolment in pre-primary education increased from 20 percent to 26 percent while that of primary education decreased from 83 percent to 80 percent between 2008/09 and 2010/11. Overall, rural children are less likely to be enrolled in pre-primary education than their urban counterparts.

Secondary and higher education enrolment has risen between 2008/09 and 2010/11 from 23 percent to 27 percent and from 3 percent to 4 percent respectively. However, both indicators still reveal low levels of enrolment.

Net Enrolment Rate (NER) at Pre-primary School

The net enrolment rate (NER) in pre-primary education is the proportion of children aged 5 to 6 years enrolled in pre-primary school. Figure 10 shows the NER in pre-primary education in both rounds of the NPS.

The NER in pre-primary education increased from 20 percent to 26 percent between the NPS 2008/09 and the NPS 2010/11. Improvements in enrolment seem to have happened almost across all partitions of the country and for both boys and girls. Better enrolment in rural areas appears to be driving the national NER because enrolment in urban areas has remained constant. The only stratum where enrolment worsened across rounds is other urban areas in Mainland. Although none of the changes are significant over time, some patterns hold within each round of the NPS. Urban areas display higher NER than rural

areas. Mainland shows similar enrolment in pre-primary education than Zanzibar. The ranking across strata is ambiguous because of changes in other urban areas in Mainland and Zanzibar. However, Dar es Salaam continues to display the highest NER, while rural areas in Mainland and Zanzibar have the lowest. Lastly, boys and girls are equally likely to be enrolled in pre-primary schools.

Figure 10. Net Enrolment Rates in Pre-primary Education
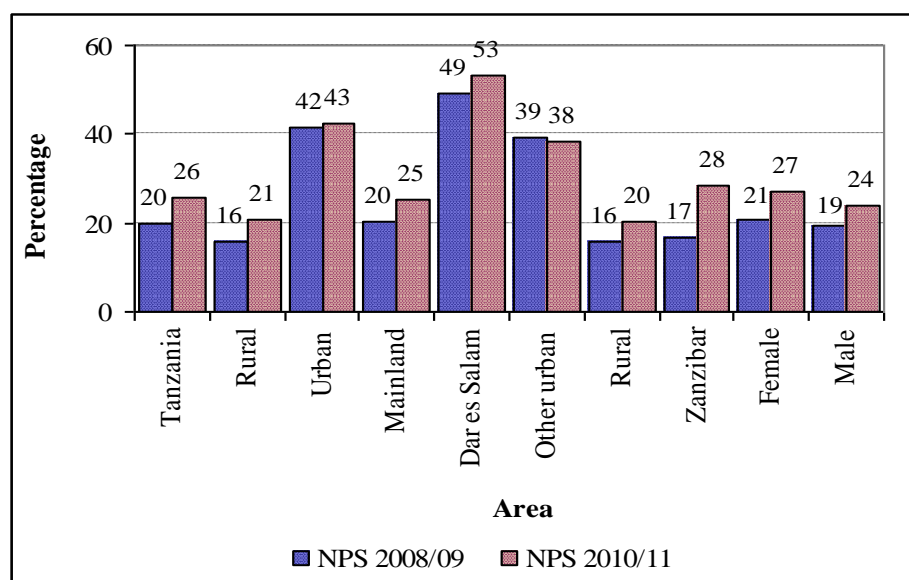
Note: None of the changes over time is significant at 5% level.

Net Primary School Enrolment Rate

Net enrollment ratio (NER) is the proportion of children aged 7-13 years who are enrolled in primary school to the population of 7-13 years. Figure 10 shows the NER in primary education in both rounds of the NPS.

The primary NER in Tanzania fell from 83 percent to 80 percent between the NPS 2008/09 and the NPS 2010/11. Slight reductions in enrolment can be found in urban and rural areas, in most of the Mainland strata, and for boys and girls. Only in Zanzibar and in Dar es Salaam the NER in primary education decline: in the former it increased, and in the latter it stayed the same. Even though changes are not significant over time, clear patterns can be found within each round of the NPS. Urban areas display higher NER than rural areas.

Mainland shows similar enrolment in primary education than Zanzibar. Changes in the NER in primary education in almost all strata cause the ranking among them to be ambiguous. In the NPS 2008/09, other urban areas in Mainland had better enrolment in primary education than rural areas in Mainland and Zanzibar. In the NPS 2010/11, however, other urban areas in Mainland, Dar es Salaam and Zanzibar are indistinguishable from each other and all of these three strata display higher NER in primary education than rural areas in Mainland. Last, an interesting change happened when looking at the NER by sex. Girls displayed better NER than boys in the NPS 2008/09, yet this is no longer the case in the NPS 2010/11 because enrolment in primary education is similar for boys and girls.

Figure 11: Net Enrolment Rates in Primary Education
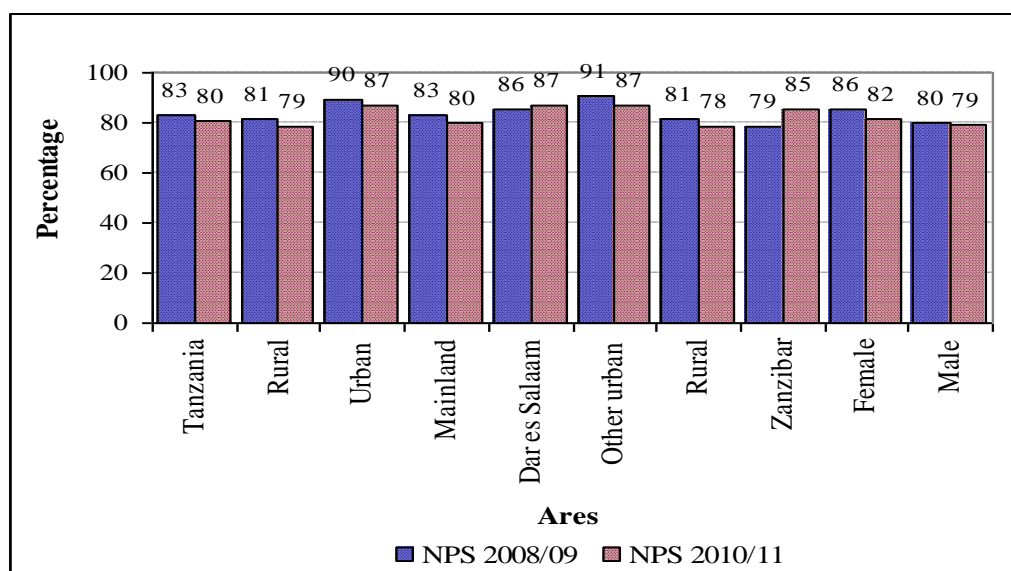
Note: None of the changes over time is significant at 5% level.

Secondary School Net Enrolment

The NER in secondary education is the proportion of children aged 14 to 17 years enrolled in forms 1 to 4 in secondary school. Figure 12 shows the NER in secondary education in both rounds of the NPS.

The NER in secondary education rose from 23 percent to 28 percent between the NPS 2008/09 and the NPS 2010/11. Enrolment improved, although not significantly, across urban and rural areas, in all Mainland strata and for boys and girls. Only in Zanzibar secondary enrolment declined, though not significantly either. Patterns appear within each round of the NPS. Urban areas display

higher NER than rural areas in both rounds of the NPS.

Zanzibar shows better enrolment in secondary education than Mainland in the first round, but their NER were no longer statistically different in the second round. Across strata, other urban areas in Mainland and Dar es Salaam are the two strata with the highest NER, while rural areas in Mainland always displayed the lowest NER. Zanzibar was similar to the top two strata in the first round, but it has a lower NER in the second round. Enrolment in secondary education for boys and girls is similar in both rounds of the NPS.

Figure 12: Net Enrolment Rates in Secondary School
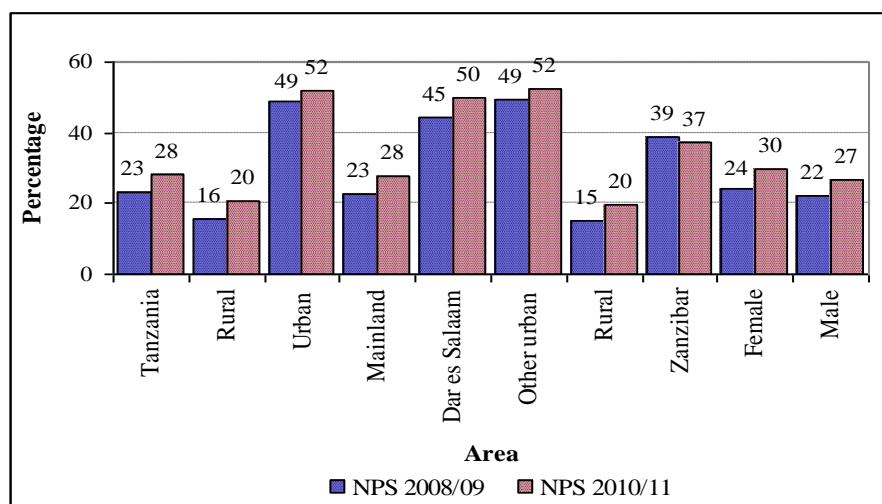
Note: None of the changes over time is significant at 5% level.

Gross Enrolment Rate in Higher Education Institutions

The gross enrolment rate (GER) in higher education institutions is the ratio between those enrolled in higher education institutions with respect to those aged 20 to 24 years.

The GER in higher education institutions is quite low in the country: 3 percent in the NPS 2008/09 and 4 percent in the NPS 2010/11 (see Figure 13). Despite none of the changes

over time being significant, some strong patterns hold in both rounds of the NPS. Enrolment in

higher learning institutions is higher in urban areas compared to rural areas. Mainland and Zanzibar display similar enrolment rates. Across strata, Dar es Salaam and other urban areas in Mainland show the highest GER and rural areas in Mainland the lowest GER. Last, both females and males are equally likely to be enrolled in higher learning institutions.

Figure 13: Gross Enrolment Rates in Higher Education Institutions
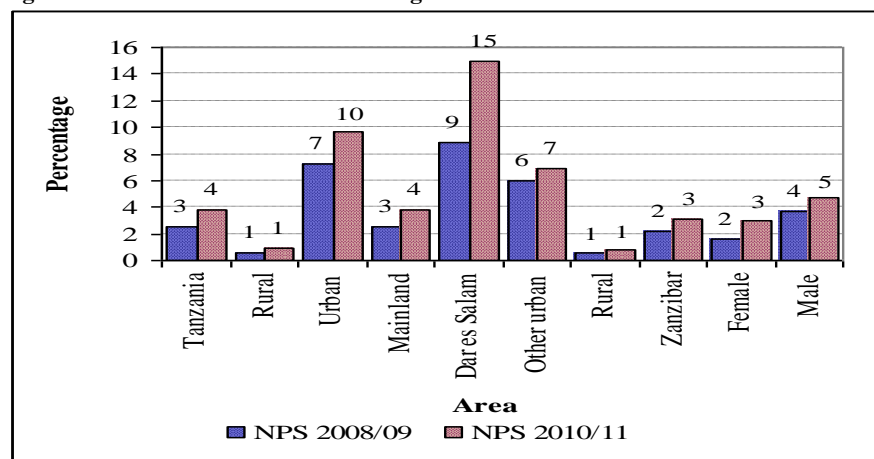
Note: None of the changes over time is significant at 5% level

Goal 2: Improved survival, health and well-being of all children and women and especially vulnerable groups

Main Message: Stunting has fallen across the board from 43 percent in 2008/09 to 35 percent in 2010/11. The proportion of stunted children in rural areas is always higher than in urban areas.

Underweight among children less than 5 years decreased marginally from 16 percent in 2008/09 to 14 percent in 2010/11.

Wasting among children less than 5 years increased significantly from 3 percent in 2008/09 to 7 percent in 2010/11.

Under-fives Moderately or Severely Stunted (height for age)

Stunting is a measure of chronic malnutrition characterized by a slowing in the growth of a child resulting in a failure to achieve the expected length or height when compared to a healthy, well-nourished child of the same age.[14] Stunting is associated with a number of long-term factors such as deficiencies in nutrition (chronically inadequate levels of protein and energy and/or intake micronutrient deficiencies), frequent infections, and inappropriate feeding practices over a sustained period. It is not an accurate measurement of short-term changes in nutritional status.

Information on stunting will be complemented with two other indicators of malnutrition: wasting and underweight. Wasting (low weight for height) is a measurement of acute malnutrition characterized by considerable weight loss or failure to gain weight, resulting in a child having a weight substantially below what would be expected of a healthy child of the same length or height. Wasting indicates current malnutrition and can change quickly over time; even showing marked seasonal patterns associated with changes in food availability and disease prevalence.

Underweight (low weight for age) is a composite measurement of stunting and wasting as it is influenced by both – age and weight. Underweight is a good indicator for assessing changes in malnutrition over time, but care must be taken in interpreting this indicator because it reflects both chronic and acute malnutrition.

Stunting, wasting and underweight figures for children less than 5 years are reported in

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[14] Comprehensive Food Security & Vulnerability Analysis Guidelines, January 2009, World Food Programme.

Table 28.[15] Stunting has fallen from 43 percent in the NPS 2008/09 to 35 percent in the NPS 2010/11. In fact, stunting declined across the board: in urban and rural areas, in Mainland and in Zanzibar, across strata, for boys and girls, and by age groups. Significant falls in Dar es Salaam and in rural areas in Mainland are driving significant declines in rural areas, in Mainland and for the entire country. The two strata where the fall in stunting has been not significant are other urban areas in Mainland and Zanzibar. Stunting declined for both female and male children, although only significantly for the latter.

Equally important are a few significant findings that occur within each round of the NPS. The proportion of stunted children in rural areas is always higher than in urban areas. Stunting in Mainland was higher than in Zanzibar in the first round, but the improvements in Mainland have closed the gap and the difference is no longer significant in the second round. It is difficult to make unambiguous statements when looking across strata. Despite notable strides over time, rural areas in Mainland remain the stratum with the highest levels of stunting. It should be mentioned though that stunting in rural areas in Mainland is not significantly different from Dar es Salaam in the first round and is not significantly different from Zanzibar in the second round. Last, stunting among female children is similar to stunting among male children in both rounds of the NPS. Wasting among children less than 5 years increased significantly from 3 percent in the NPS

2008/09 to 7 percent in the NPS 2010/11. The proportion of wasted children rose across the country, with significant changes in urban and rural areas. Substantial increases in the three Mainland strata cause a considerable increase in Mainland. Zanzibar is the only stratum that experienced changes that were not significant over time. Both male and female children saw substantial increased across rounds of the NPS, but none of the changes by age cohort were significant. Interestingly, wasting seems to affect children in a relatively similar manner across all variables of interest because differences in wasting are not significant between urban and rural areas or between Mainland and Zanzibar, across strata, or between female and male children.

Underweight experienced modest declines across both rounds of the NPS: from 16 percent in the NPS 2008/09 to 14 percent in the NPS 2010/11. Similar patterns occurred across the country. The slight fall over time is not significant across any geographical location, by sex or by age groups. A few robust findings are found when looking at each round of the NPS. The proportion of underweight children is higher in rural areas compared to urban areas. However, differences are significant neither between Mainland and Zanzibar nor between male and female children. Across strata, Dar es Salaam and other urban areas in Mainland display lower underweight figures than the other two strata, although the differences are not always significant.

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[15] All indicators were estimated using the WHO Anthro 2005 software, World Health Organization.

Table 28: Stunting, Wasting and Underweight among Children under 5 years

| Area | Stunting (height for age) | | | Wasting (weight for height) | | | Underweight (weight for age) | |
	NPS 2008/09	NPS 2010/11		NPS 2008/09	NPS 2010/11		NPS 2008/09	NPS 2010/11
Tanzania	43.0	34.8	*	2.7	6.6	*	15.9	13.6
Rural	45.6	37.2	*	2.9	6.8	*	17.1	14.6
Urban	30.2	24.1		1.5	5.9	*	9.8	9.2
Mainland	43.2	34.8	*	2.6	6.5	*	15.9	13.5
Dar es Salaam	36.5	21.1	*	0.9	5.4	*	9.1	10.0
Other urban	27.9	24.9		1.3	6.0	*	9.4	8.7
Rural	45.8	37.4	*	2.9	6.7	*	17.2	14.5
Zanzibar	30.5	30.4		7.0	9.8		18.8	18.5
Female	40.7	34.2		2.7	6.8	*	15.1	12.9
Male	45.6	35.3	*	2.7	6.3	*	16.8	14.2
0-5 months	27.9	12.9	*	3.3	12.7		6.5	4.7
6-11	31.2	19.9		5.9	11.9		15.1	13.4
12-23	48.3	41.8		2.5	7.7		14.7	15.0
24-35	52.9	46.5		1.6	4.1		16.2	14.6
36-47	40.9	36.0		2.7	3.6		19.1	15.3
48-59 months	38.8	33.0		2.5	4.9		16.4	14.0

* Significant change over time at 5% level.

Births Attended by a Skilled Health Worker

The proportion of births attended by a skilled health worker can be used as a proxy for access to reproductive health care. Deliveries attended by skilled personnel increase the chances of managing successfully potential complications during childbirth and thus reducing both maternal and infant mortality.

Skilled personnel are those trained to provide the necessary supervision, care and advice to women during pregnancy, labour and the post-delivery period. Doctors, nurses and midwives are considered skilled personnel.

Traditional birth attendants are not considered skilled personnel.

In the NPS, all women aged 12 to 49 years who gave birth in the last 24 months are asked who delivered their last child born in that period. This information will be used as a proxy for the proportion of births attended by a skilled health worker. Notice that women might have given birth to more than one child in the last 24 months, hence even though the information refers only to their last delivery during that period, for simplicity those deliveries will be referred to as the total number of deliveries in the last 24 months.

The proportion of births attended by skilled personnel in the last 24 months increased from 59 percent in the NPS 2008/09 to 62 percent in the NPS 2010/11 (see Figure 14). Different trends appear across urban and rural areas and across strata, but none of the changes are significant over time. The modest increase in the country appears to be driven by better access to reproductive health care in rural areas. By contrast, the proportion of births attended by skilled personnel declined in urban areas. In both Mainland and Zanzibar, access to reproductive health care seems to have improved. In Dar es Salaam this indicator has stayed almost constant. Across the other strata, in other urban areas in Mainland the proportion of births attended by skilled personnel worsened over time, whereas in rural areas in Mainland and in Zanzibar, it improved.

Significant patterns appear in both rounds of the NPS. Urban areas have better access to reproductive health care than rural areas, while figures for Mainland and Zanzibar are similar. Across strata, the proportion of births attended by skilled personnel in Dar es Salaam and in other urban areas in Mainland is higher than in rural areas in Mainland and in Zanzibar.

Figure 14: Births Attended by Skilled Personnel in the Last 24 Months
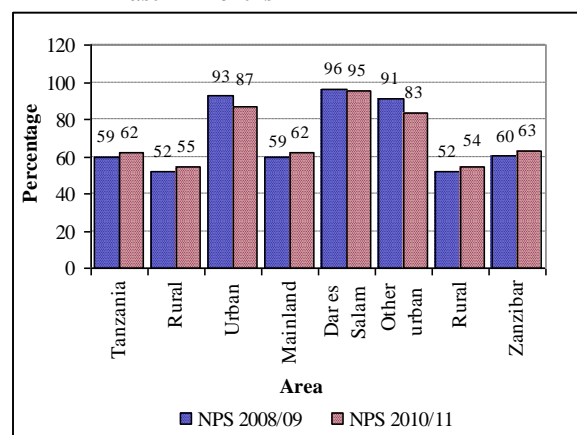
Note: None of the changes over time is significant at 5% level.

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> ## Goal 3: Increased access to clean, affordable and safe water, sanitation, decent shelter and a safe and sustainable environment
>
> *Main Message:* Access to safe drinking water in Tanzania is more of an urban phenomenon. About 74 percent of urban households have access to safe drinking water as compared to about 40 percent of their rural counterparts.

Households with Access to Piped or Protected Water as their Main Drinking Water Source

Unsafe water is one of the principal causes of preventable illnesses and deaths. Households without access to safe water are more likely to have their members suffering from water-borne and water-washed diseases, showing higher levels of malnutrition and spending more time fetching water from distant sources. Impaired health negatively affects educational outcomes and labour productivity both in the short and long term.

The sources of drinking water considered safe are piped water inside the dwelling, private or public standpipe or tap, and protected wells. The list of potential sources of drinking water was slightly expanded for the second round, thus raising a small comparability issue. Two of the sources in the NPS 2008/09 are wells with pumps and well without pumps, whereas in the NPS 2010/11 they were further divided into protected wells with pumps, unprotected wells with pumps, protected wells without pumps and unprotected wells without pumps. The NPS 2010/11 shows that 90 percent of the wells with pumps are protected and that

83 percent of the wells without pumps are unprotected.

Hence, it was assumed that in the NPS 2008/09, all wells with pumps are safe sources of drinking water and that all wells without pumps are not safe sources of drinking water.

Table 29 shows the proportion of households with access to safe drinking water. The NPS collects information for this indicator separately for the rainy season and the dry season. Access to safe drinking water during the rainy season stayed constant at 43 percent of households. All changes over time are too small to be considered statistically significant. A decline occurred in rural and urban areas, but access to safe drinking water barely changed in rural areas. Opposite patterns are observed between Mainland and Zanzibar: all three strata in Mainland saw this indicator fell across rounds, while the contrary happened in Zanzibar.

Table 29:Percentage of Households with Access to Safe Drinking Water

Area	Rainy season		Dry season	
	NPS 2008/09	NPS 2010/11	NPS 2008/09	NPS 2010/11
Tanzania	43	43	44	50
Rural	33	32	33	40
Urban	73	66	73	74
Mainland	42	42	43	49
D' Salaam	78	75	81	78
Other urban	67	62	67	71
Rural	32	30	32	38
Zanzibar	81	86	80	84

Note: None of the changes over time is significant at 5% level.

Access to safe drinking water during the dry season improved from 44 percent to 50 percent of households. The trend is almost the opposite of what is observed during the rainy season, although still none of the changes is significant over time. Better access to safe drinking water in rural areas drives the national figures. Improved access is observed also in urban areas, in Mainland, and in Zanzibar. Dar es Salaam is the only stratum where access has fallen between both rounds of the NPS.

Regardless of whether it is the rainy or dry season, urban areas have better access to safe drinking water than rural areas and Zanzibar displays better access to safe drinking water than Mainland. Across strata, in general the differences among Dar es Salaam, Zanzibar and other urban areas in Mainland are not statistically different. Rural areas in Mainland is the stratum with the worst access to safe drinking water in both rounds.

Households with Basic Sanitation Facilities

Poor sanitation is another major cause of preventable diseases such as diarrhoea, dysentery and cholera. Improvements in hygiene are generally associated with better health, which in turn positively affects almost all the other activities of the household.

The sources of basic sanitation facilities are flush or pour toilet, ventilated pit latrines, and simple pit latrines. The proportion of households with basic sanitation facilities fell from 90 percent in the NPS 2008/09 to 87percent in the NPS 2010/11. Reductions in basic sanitation facilities occurred in urban and rural areas, in Mainland and in Zanzibar and across all strata. Significant changes occurred only in other urban areas in Mainland, which probably drove the significant fall in urban areas.

Urban areas display better access to basic sanitation facilities than rural areas in both rounds of the NPS. The difference between Mainland and Zanzibar is not statistically significant in any of the two rounds. Across strata, Dar es Salaam and other urban areas in Mainland are the two strata with the highest access to basic sanitation facilities whereas rural areas in Mainland and Zanzibar display the lowest access to basic sanitation facilities.

Table 30: Percentage of Households with Basic Sanitation Facilities

Area	NPS 2008/09	NPS 2010/11	
Tanzania	90	87	
Rural	87	83	
Urban	99	96	*
Mainland	90	87	
Dar es Salaam	99	99	
Other urban	99	94	*
Rural	87	83	
Zanzibar	81	78	

* Significant change over time at 5% level.

NOTE: A household has access to basic sanitation if it has flush or pour toilet, ventilated pit latrines, and simple pit latrines.

Goal 4: Adequate social protection and rights of the vulnerable and needy groups with basic needs and services

Main Message: Labor force participation rate among children age 5-14 years has increased from 14 percent to 25 percent between 2008/09 and 2010/11. This increase has almost doubled between the two rounds of the NPS.

Pre-primary and secondary enrolment ratios among orphaned children are higher than that of non orphaned children (30 percent orphans and 20 percent non orphans for pre-primary, 31 percent for orphans and 26 percent non orphans for secondary). This is a positive sign for this vulnerable group in the population.

Children in Child Labour

The International Labor Organization (ILO) refers to child labour as work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development.[16] A distinction should be made between children working on activities that contribute to their development and to the welfare of their families, that provide them with skills and experiences, and that help them to prepare to be productive members of society during their adult life with children working on activities that affect their health and personal development or that interfere with their schooling. The former include helping with household chores, assisting in a family business or earning pocket money outside school hours and during school holidays. The latter include

working full-time or too many hours so that their schooling is affected, being exposed to serious hazards and illnesses, and working and living on the streets.

A caveat to keep in mind is that the estimates from the NPS refer to children working rather than child labour. No attempt has been done to exclude activities that are neither exploitative nor harmful because of the lack of information to do so.

Children are considered employed if they worked for at least one hour during the previous seven days to the interview. The same definitions used for determining the labour force status of the adult population are employed for children. Readers are referred to the discussion about labour force participation rates in Cluster 1, Goal 2, unemployment rate.

The labour force participation rate of children aged 5 to 14 years is shown in Table 31. The labour force participation rate of children increased from 14 percent to 25 percent

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[16] ILO's International Programme on the Elimination of Child Labour (IPEC), What is child labour, available at http://www.ilo.org/ipec/facts/lang--en/index.htm.

Table 31: Labour Force Participation Rate of Children

Area	Single question	
	NPS 2008/09	NPS 2010/11
Tanzania	13.9	25.3
Rural	15.6	28.8
Urban	6.1	13.1
Mainland	14.3	26.1
Dar es Salaam	1.5	7.7
Other urban	8.1	15.2
Rural	16.1	29.8
Zanzibar	1.3	0.7
Female	13.1	24.1
Male	14.7	26.6

Orphan Children Attending Primary School

Orphan children are among the most vulnerable members of society. Losing one or both parents could put children in a disadvantaged position with respect to children who still have both of their parents.

The net enrolment rate in primary education will be used as a proxy for this indicator. The NER is the proportion of children aged 7 to 13 years attending primary school. To complement this indicator, the NER in pre-primary school (children aged 5 to 6 years attending pre-primary school) and in secondary school forms 1 to 4 (children aged 14 to 17 years attending secondary school) will also be provided.

The NER of pre-primary, primary and secondary school are shown in Figure 15. First, the difference in the NER in any of the three levels of education between orphan and non-orphan children is not significant. That

is, orphan children do not appear disadvantaged with respect to children who have both of their parents alive. Second, the direction of the changes over time is similar whether or not children are orphans. The NER in pre-primary and secondary school increased for all children, while the NER in primary school declined for all children. Last, whether the children are orphan or not, none of the changes over time are significant.

Ideally, the analysis should differentiate between single and double orphan children. The former are children that have lost either their mother or father, while the latter are children that have lost both of their parents. The number of orphan children in the sample, particularly double orphan children, is very small, resulting in estimates that are extremely imprecise. Thus it was considered that it would be better not to present those findings.

Figure 15: Net Enrolment Rates by Orphanhood Status
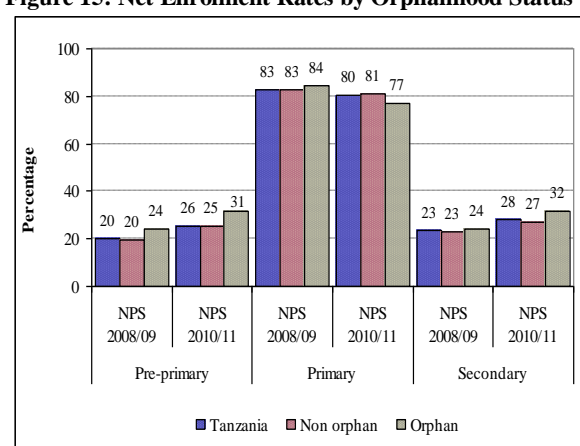
Note: None of the changes over time is significant at 5% level.

Cluster 3: Governance and Accountability

Goal 1: Structure and systems of governance as well as the rule of law are democratic, participatory, representative, accountable and inclusive.

Main Message: Land in Tanzania is disproportionately owned by men who control close to 80 percent solely or jointly as compared to only 20 percent of sole ownership by women. However, between 2008/09 and 2010/11 a moderate shift in favour of mixed land ownership is observed.

Population with Birth Certificates

Birth registration is an important objective for the country. The government can use this information for updating statistics on population and for planning purposes. Knowing the number of people by area could improve the services provided, for instance, to determine if schools or health facilities might be needed. In addition, the population will benefit from birth registration to prove parentage, family relationships, settlement of property rights and citizenship.

In the NPS 2010/11 a question about possessing a birth certificate was introduced and asked to all household members. If the initial answer was that they did not have a birth certificate, enumerators would probe further by asking whether or not the birth was ever registered with the civil authority. Four possible answers were allowed: the birth was registered and the person has the birth certificate, the birth was registered but the person does not have the birth certificate, the birth was not registered, and the last option refers to the person not knowing if the birth was registered.

Birth registration among all the population in the second round of the NPS is shown in Table 32. The percentage of Tanzanians whose birth was registered stands at 37 percent, those that did not have their births registered account for 61 percent and barely 2 percent did not know whether their birth was registered or not. Among those that had their births registered, 15 percent were able to show their birth certificate while the remaining 22 percent did not have their birth certificate at the moment of the interview.

Strong patterns are observed when looking at birth registration figures across the different partitions of the country and the population. Urban citizens are significantly more likely to have their birth registered than their rural counterparts. Mainland lags noticeably behind Zanzibar in terms of birth registration. The ranking among strata is very clear and robust: rural areas in mainland is the stratum with the worst rates of birth registration, followed by other urban areas in Mainland, Dar es Salaam is the second best stratum, while Zanzibar shows the highest percentage of the population whose births were registered.

Gender does not appear to be associated with birth registration because both male and female citizens show almost identical birth registration rates. An interesting pattern is noticed across age cohorts: younger people have more chances of registering their births than older cohorts. Birth registration among those aged 0 to 2 years and among those aged 3 to 5 years is significantly higher than among those 6 to 17 years, which in turn display registration rates that are almost double those of people 18 years and more. The findings by age cohort suggest that over the past years a strong effort has been carried out to increase the rate of birth registration in the country.

Table 32: Birth Registration among All Population, NPS 20010/11

	Birth was registered and birth certificate was…		Birth was not registered	Do not know	Total
	Shown	Not shown			
Tanzania	15	22	61	2	100
Rural	10	23	65	3	100
Urban	29	20	49		
Mainland	14	22	62	2	100
D'Salaam	44	16	38	3	100
Other urban	22	22	54	3	100
Rural	8	23	67	2	100
Zanzibar	64	16	19	1	100
Female	14	22	62	2	100
Male	16	22	60	2	100
0-2 years	16	42	42	42	100
5-Mar	18	36	45	45	100
17-Jun	17	29	53	53	100
18 +	13	11	73	73	100

Female Small Landholders with Land Ownership

Tanzania's agricultural sector is made up of small owners, whose productivity and land utilization are hindered by limited access to

and use of modern farming techniques and tools. Land ownership dominates the rural landscape in Tanzania, with over 80 percent of the fields being owned by farmers (see Table 33).

However, only approximately 10 percent of the households owned a title, most of them being customary right of occupancy,

Government - witnessed purchase, inheritance letter, and/or letter from the village

Ownership status	2008/9	2010/11
Owned	84.7%	87.7%
Used free of charge	7.8%	7.5%
Rented in	7.0%	4.3%
Shared	0.5%	0.4%

government (see Table 34).[17].

Table 33: Distribution of Plot Ownership Category

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[17] Ownership statuses are defined the following way: a plot is either owned by one person only (either a man or a woman) or collectively (mixed ownership, which could take any of the following forms: two men, two women, or a man and a woman).

Table 34: Percentage of Households with Land Titles

	Male	Female	Mixed	Total	Male	Female	Mixed	Total
		NPS	2008/09			NPS	2010/11	
Land Title	8.6	6.3	9.0	8.2	12.9	11.7	12.4	12.4
Type of Land Title								
Granted right of occupancy	11.3	23.0	14.5	14.3	7.5	4.7	8.0	7.1
Certificate of customary right of occupancy	15.7	6.5	4.6	10.6	25.4	19.9	22.8	23.3
Residential license	1.2	0.7	0.0	0.7	0.4	1.4	0.7	0.7
Village-government-witnessed purchase a	22.8	14.1	12.9	18.2	10.0	3.7	19.2	12.0
Local-court-certified purchase agreement	1.5	4.1	1.3	1.9	3.0	0.4	1.3	1.8
Inheritance letter	9.2	23.6	0.0	8.7	21.5	37.3	25.0	26.1
Letter of allocation from village government	35.7	26.5	41.7	36.1	28.9	22.5	19.8	24.2
Other government document	0.0	0.0	7.4	2.3	0.1	0.0	0.6	0.3
Official correspondence	0.9	0.0	0.0	0.5	0.4	0.5	0.7	0.5
Utility or other bill	1.9	0.0	17.8	6.6	2.9	9.6	2.1	4.0

In addition, men not only own more plots than women, they also own larger plots: the gender difference in terms of surface owned is even larger. Within households, men own about 47 percent of the land, and mixed ownership reaches almost 37 percent, but women own only slightly over 15 percent of the family land. (See Table 35).

Table 35: Proportions of Plot Ownership Disaggregated by Gender

	% Plots		Size (# Acres)		% Total Land Size	
	2008/9	*2010/11*	*2008/9*	*2010/11*	*2008/9*	*2010/11*
Male	49.1	41.4	3.2	3	57	47.3
Female	21.9	22.2	1.7	1.8	13.9	15.3
Mixed	29	36.5	2.7	2.7	28.3	37.4
Total			2.7	2.6		

Table 36: Proportion of Days Disaggregated by Gender Status

	Proportion of days worked by:		
	Men	Women	Children (up to 14 yrs)
Any kind of labor	46.7	53.3	4.1
Land preparation	46.7	53.3	4.0
Weeding	36.0	64.0	11.9
Ridging/Fertilizers	72.3	27.7	0.0
Harvesting	60.3	39.7	0.0

In addition, farmers' low levels of education are likely to pose a major obstacle to agricultural transformation as evidence in developing countries suggests a positive correlation between literacy among farmers and improvements in farm productivity. A quarter of the household heads in families

cultivating land have no education or pre-primary education and over 60 percent have only a primary education level.

The social division of labor in agriculture involves the whole family. There is moderate use of labor from outside the household, with one fourth of the plots using hired labor force, and less than 40 percent of the households

using external labor to some extent. The different steps of the cultivation process are divided up between men and women, with both sexes participating almost equally in the preparation of the land (Table 36). As in other sub-Saharan African countries, weeding remains mostly a female task; 64 percent of this work is accomplished by women. Ridging, fertilizing and harvesting remain mostly male activities, with about two thirds of the work carried out by men. Children help with plot preparation (4 percent of the labor force) and weeding (12 percent).

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Appendix A. Methodology for Consumption - Poverty Analysis

Poverty analysis in Tanzania has been based on the Household Budget Survey (HBS). A comprehensive welfare assessment of the population should include monetary and non-monetary indicators. Average food consumption per person or median income per person are examples of the former, while literacy rates, deliveries attended by skilled personnel and population with access to proper sanitation are examples of the latter. The HBS and the NPS have their own objectives but both could be employed to evaluate welfare levels and trends. This note describes the derivation of monetary poverty indices, in particular, consumption poverty.

Poverty analysis requires three main elements. The first component is a welfare indicator to rank all the population accordingly. The second element is an appropriate poverty line to be compared against the chosen indicator in order to classify individuals into poor and non-poor. The final component is a set of measures that combine individual welfare indicators into an aggregate poverty figure.

This appendix explains the steps involved in the construction of the consumption measure, the derivation of the poverty line, and the poverty measures. Section 1 reviews the arguments to choose consumption as the preferred welfare indicator and describes the estimation of the nominal household

consumption. Subsection 2 is concerned with the spatial and temporal price adjustment and Subsection 3 deals with the household composition adjustment. Section 2 clarifies the derivation of the poverty line. Finally, Section 3 presents the poverty measures used in this report.

1   The Welfare Indicator

Research on poverty over the last years has reached some consensus on using economic measures of living standards, and these are regularly employed in poverty analysis. Although they do not cover all aspects of human welfare, they do capture a central component of any assessment of living standards. The main decision is to make the choice between income and consumption as the welfare indicator. Consumption is the preferred measure because it is likely to be a more useful and accurate measure of living standards.[18]

Consumption is more stable than income. For example, in agricultural economies, income is more volatile and affected by the growing and harvest seasons, hence relying on that indicator might significantly overestimate or underestimate living standards. Consumption is also generally an easier concept than income for the respondents to grasp, especially if the latter is from self-employment or own-business activities. For instance, workers in formal sectors of the

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[18] See Deaton and Zaidi (2002), Haughton and Khandker (2009) and Hentschel and Lanjouw (1996).

economy will have no problem in reporting accurately their main source of income, i.e., their wage or salary. But people working as self-employed, in informal sectors or in agriculture will have a harder time coming up with a precise measure of their income. Consumption therefore can be more reliable than income. Households are probably less reluctant to share information on consumption than on income. They may be afraid that income information will be used for different purposes such as taxes, or they may consider income questions to be too intrusive.

1.1 The Construction of the Consumption Aggregate

Creating the consumption aggregate is guided by theoretical and practical considerations. First, it must be as comprehensive as possible given the available information. Omitting some components assumes that they do not contribute to people's welfare or that they do not affect the ranking of the population. Second, market and non-market transactions are to be included, which means that purchases are not the sole component of the indicator. Third, expenditure is not consumption. For perishable goods, mostly food, it is usual to assume that all purchases are consumed. However, for other goods and services, such as housing or durable goods, corrections have to be made. Fourth, a common reference period should be chosen. Typically each consumption module in a survey has a different reference period, for instance, education could refer to the last 12 months, food could refer to the last week, and health could refer to the last month.

Following common practice in Tanzania, consumption will be reported per 28 days.

1.1.1 Food Component

A few general principles are applied in the construction of this component. First, all possible sources of consumption are included. This means that the food component comprises not only consumption from purchases in the market or from meals eaten away from home but also food that was produced by the household or received as a gift. Second, only food that was actually consumed, as opposed to total food purchases or total home-produced food, enters into the consumption aggregate. Third, non-purchased consumed food needs to be valued and included in the welfare measure. The NPS gathers information on the amount spent on purchases and on the quantity purchased for all food items. A measure of prices, or rather a measure of unit values, can be obtained by dividing the expenditure by the quantity and can be used to value own-consumption or food received as a gift.

1.1.2 Non-food Component

Data on an extensive range of non-food items are usually available: utilities such as water, kerosene, electricity, health, transportation, communications, recreation, education, furnishings, personal care, etc. Unlike food, the NPS only collects data on purchases of non-food items, that is, the survey assumes that the consumption of non-food goods and services coming from own-production, from gifts or from other sources is negligible and can be ignored. In addition, the NPS does not gather information on quantities purchased

because most non-food items are too heterogeneous to try to calculate prices.

Each non-food component is associated with a particular reference period, which reflects the frequency of that purchase or consumption. For instance, expenses on public transportation are collected for the last seven days, expenses on mobile phones and personal care are collected for the last month, and expenses on furnishings and small appliances for the last twelve months.

The information about some non-food goods and services needs to be excluded from the consumption aggregate because those items are not consumption. Payments of mortgages or debts are financial transactions and not consumption. Losses to theft are neither expenditure nor consumption. Remittances to other households are expenditures but not consumption. Expenditures on marriages, dowries, births and funerals are consumption but given their sporadic nature and the fact that the reported amounts are typically rather large, this consumption is left out to avoid overestimating the true level of welfare of the household.

1.1.3 Durable Goods

Ownership of durable goods could be an important component of the welfare of the households. Given that these goods last for many years, the expenditure on purchases is not the proper indicator to consider. The right measure to estimate, for consumption purposes, is the stream of services that households derive from all durable goods in their possession over the relevant reference period. This flow of utility is unobservable

but it can be assumed to be proportional to the value of the good. Information on the number of durable goods owned, their age, and their value (current or original) is required to estimate this component of consumption. Unfortunately, the NPS only provides data on the number of durable goods owned by the household. Calculating this consumption component would have involved making assumptions about their age, their current value and their lifespan. This might have resulted in an extremely imprecise estimation, thus it was decided to exclude this component from the consumption aggregate.

1.1.4 Housing

Housing conditions are considered to be an essential part of people's living standards. Nonetheless, in most developing countries limited or nonexistent housing rental markets pose a difficult challenge for the estimation and inclusion of this component in the consumption aggregate. As in the case of durable goods, the objective is to measure the flow of services received by the household from occupying its dwelling. When a household lives in a rented dwelling, and provided rental markets function well, that value would be the actual rent paid. If enough families rent dwellings, imputations can be made for those families that own their dwelling. It is common to include a question for homeowners asking them to provide the hypothetical rent they would pay for renting their dwelling. These self-reported rents can in principle be used to value the consumption the household gets from occupying its dwelling, but these amounts are not always credible or usable, particularly in rural areas

where very few households rent. If imputed rents cannot be estimated, actual rents must be excluded from the consumption aggregate for the sake of consistency. The NPS does not collect information on imputed rents and given that the number of households living in rented dwellings is fairly small, this component was excluded from the consumption aggregate.

1.2 Price Adjustment

Nominal consumption of the household must be adjusted for cost-of-living differences. Temporal and spatial price adjustments are required to adjust consumption to real terms. Temporal differences are associated with the duration of the fieldwork (TSh 1,000 in October 2010 may not have the same value as in August 2011) as well as with the different recall periods (TSh 1,000 spent in the last month may not have the same value as in the last quarter or in the last year). Spatial differences are associated with the location of households interviewed in the survey (TSh 1,000 in Dar es Salaam may not have the same value as in Ruvuma).

The price index required to adjust nominal consumption could come partly or fully from the NPS. A price index is a combination of prices and budget shares in a base and a comparison period. The budget shares are the weights that each commodity has in the index and are equivalent to their share in the cost of the bundle being analysed. The NPS can provide information on budget shares for all items, but information on prices (unit values) only for food items. Two possible price indices could be constructed: a price index

based only on food items (the assumption would be that non-food items show the same temporal and spatial differences than food items) or a price index that takes into account both food and non-food by combining information from the survey (food prices and weights for food and non-food items) and the official consumer price index (non-food prices).

Fisher price indices based only on food items were employed to adjust the nominal consumption aggregate for spatial and temporal price differences. Fisher price indices do a better job than Laspeyres or Paasche price indices at capturing differences in consumption patterns across domains as a consequence of differences in relative prices. They also avoid overstating or understating the true inflation (as would be the case with Laspeyres and Paasche respectively).[19] Price indices were estimated by stratum and quarter (a period of three consecutive months) and the base period comprises the entire period of each round of the NPS – that is, price indices were calculated separately for each round. A price index by stratum and month would have been ideal, but complications arose with the sample size because in some combinations of stratum and month few households were interviewed. Price indices by stratum and quarter might not be as precise as price indices by stratum and month but they provide more robust results. Fisher price indices by stratum and quarter were constructed using the following formula:

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[19] See Deaton and Tarozzi (2000).

$$F_i = \sqrt{L_i P_i}$$

where i is a combination of stratum and quarter, L refers to a Laspeyres price index and P refers to a Paasche price index. The Laspeyres and Paasche price indices are defined as

$$L_i = \sum_{k=1}^{n} w_{0k}\left(\frac{p_{ik}}{p_{0k}}\right), P_i = \left[\sum_{k=1}^{n} w_{ik}\left(\frac{p_{ik}}{p_{0k}}\right)^{-1}\right]^{-1}$$

where w_{0k} is the average household budget share of item k in the country, w_{ik} is the average household budget share of item k in stratum and quarter i, p_{0k} is the national median price of item k and p_{ik} is the median price of item k in stratum and quarter i.

Food items that had been purchased by at least 10 households by stratum and quarter were included in the construction of the price indices. Residual or catch-all food categories were also excluded because their unit values effectively mix several items. The share of the bundle considered for the price indices with respect to total food consumption is similar in both rounds of the NPS: it stands at around 67% at the national level and goes from 63% in rural Mainland to more than 80% in Dar es Salaam and Zanzibar. Median unit values were estimated for the price indices because the median is less sensitive to outliers than the mean.

Table A1 shows the Fisher food price indices for each round of the NPS. Spatial price differences across strata remain fairly constant over time. The most expensive

stratum is Dar es Salaam whereas the cheapest is rural areas in Mainland. The cost of living in other urban areas in Mainland and Zanzibar is relatively similar. Temporal price differences across quarters are noticeably larger during the NPS 2010/11, thus reflecting a higher inflation in the second round compared to the first round.

Table A1: Fisher Food Price Indices by Stratum and Quarter, NPS 2008/09 and NPS 2010/11

NPS 2008/09	Oct-Dec 2008	Jan-Mar 2009	Apr-Jun 2009	Jul-Sep 2009
Dar es Salaam	1.08	1.18	1.20	1.15
Other urban	1.00	1.04	1.04	1.04
Rural	0.92	0.86	0.92	0.96
Zanzibar	1.03	1.06	1.07	1.07

NPS 2010/11	Oct-Dec 2010	Jan-Mar 2011	Apr-Jun 2011	Jul-Sep 2011
Dar es Salaam	1.05	1.11	1.17	1.18
Other urban	0.90	0.97	1.06	1.08
Rural	0.87	0.86	0.98	1.02
Zanzibar	0.89	0.98	1.06	1.07

Note: The base period for the NPS 2008/09 is Tanzania October 2008 - September 2009 and for the NPS 2010/11 is Tanzania October 2010 – September 2011.

Updating Monetary Figures across Rounds of the NPS

Price indices will also be required to update monetary figures across both rounds of the NPS. The price indices from Table 1 are used to adjust nominal consumption for cost of living differences within each round of the NPS. Yet it would not be correct to compare real consumption at NPS 2008/09 prices with real consumption at NPS 2010/11 prices. Either NPS 2008/09 figures should be adjusted to NPS 2010/11 prices or NPS 2010/11 figures should be adjusted to NPS 2008/09 prices.

Fisher price indices based only on food items were employed to adjust consumption for spatial and temporal price differences across rounds of the NPS. It was assumed that non-food goods and services show the same temporal and spatial price differences across rounds than food items. Price indices were estimated for the entire country and for the full extent of each round: the base period was the 12 months of the NPS 2008/09 and the comparison period was the 12 months of the NPS 2010/11.

Food items that had been purchased by at least 50 households in the country were included in the construction of the price indices. As with the previous price indices, residual food categories were also excluded and median rather than mean unit values were used. The share of the bundle considered for the price indices with respect to total food consumption is similar in both rounds of the NPS: it stands at around 98 percent. The Fisher food price index across the NPS 2008/09 and the NPS 2010/11 was estimated at 1.21, that is, the cost of an average food bundle consumed in the country increased by 21% between rounds of the NPS. This inflation will be employed to adjust the consumption aggregate and the poverty lines across the NPS 2008/09 and the NPS 2010/11.

1.3 Household Composition Adjustment

The final step in constructing the welfare indicator involves going from a measure of standard of living defined at the household level to another at the individual level. Ultimately, the concern is to make comparisons across individuals and not across households. Two types of adjustments have to be made to correct for differences in composition and size. The first relates to demographic composition. Household members have different needs based mainly on their age and gender, although other characteristics can also be considered. Equivalence scales are the factors that reflect those differences and are used to convert all household members into "equivalent adults". For instance, children are thought to need a fraction of what adults require, thus if a comparison is made between two households with the same total consumption and equal number of members, but one of them has children while the other comprises only adults, it could be expected that the former will have a higher individual welfare than the latter. Unfortunately there is no agreement on a consistent methodology to calculate these scales. Some are based on nutritional grounds, but while a child may need only 50 percent of the food requirements of an adult, it is not clear why the same scale should be carried over non-food items. It may very well be the case that the same child requires a larger proportion than the adult in education or clothing.[20]

The second adjustment focuses on the economies of scale in consumption within the household. The motivation for this is the fact that some of the goods and services consumed

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[20] See Deaton and Muellbauer (1986) or Deaton (1997).

by the household have characteristics of "public goods". A good is said to be public when its consumption by a member of the household does not necessarily prevent another member from consuming it as well. Examples of these goods could be housing and durable goods. For example, one member watching television does not preclude another from watching too. Larger households may need to spend less to be as well-off as smaller ones. Hence, the bigger the share of public goods in total consumption, the larger the scope for economies of scale. On the other hand, private goods cannot be shared among members – once one household member has consumed them, no other member can. Food is the classic example of a private good and, for instance, in poor economies, where food represents a sizeable share of the household budget, little room exists for economies of scale.

Poverty analysis in Tanzania employs an adult-equivalent scale to implement these two adjustments (see Table A2). In general, children are thought to consume less than adults and women less than men. An alternative and common practice would have been to use a per capita adjustment for household composition. This is a special case of both adjustments and implies that children consume as much as adults and there is no room for economies of scale. In other words, all members within the household consume equal shares of the total consumption and costs increase in proportion to the number of people in the household. In general, per capita measures will underestimate the welfare of households with children with respect to

families with no children, and the welfare of large households with respect to families with a small number of members.

Table A2: Adult-equivalent Scale by Gender and Age

Age (years)	Male	Female
0-2	0.40	0.40
3-4	0.48	0.48
5-6	0.56	0.56
7-8	0.64	0.64
9-10	0.76	0.76
11-12	0.80	0.88
13-14	1.00	1.00
15-18	1.20	1.00
19-59	1.00	0.88
60 and more	0.80	0.72

2   The Poverty Line

The poverty line can be defined as the monetary cost to a given person, at a given place and time, of a reference level of welfare.[21] If a person does not attain that minimum level of standard of living, he or she will be considered poor. Implementing this definition is not straightforward, however, because considerable disagreement can be encountered in determining both the minimum level of welfare and the estimated cost of achieving that level. In addition, setting poverty lines can be a very controversial issue because of its potential effects on monitoring poverty and policy-making decisions.

It will be assumed that the level of welfare implied by the poverty line should enable the individual to achieve certain capabilities, which include a healthy and active life and full participation in society. The poverty line

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[21] Ravallion (1998) and Ravallion (1996).

will be absolute because it fixes this given welfare level, or standard of living, in the country and over both rounds of the NPS. This guarantees that comparisons across individuals will be consistent – that is, two people with the same welfare level will be treated the same way regardless of the location where they live. Second, the reference utility level is anchored to certain attainments, in this particular case to obtain the necessary energy requirements to have a healthy and active life. Third, the poverty line will be set as the minimum cost of achieving those energy needs. Finally, poverty analysis over time requires a constant real poverty line. Estimating poverty lines in each round of the NPS does not guarantee that the standard of living implied by these poverty lines is the same over time. This analysis uses poverty lines from the NPS 2010/11 for determining the poverty status in both rounds of the NPS. While for the NPS 2010/11, a direct comparison between the real consumption aggregate and the poverty line suffices to classify a household as poor or not poor, for the NPS 2008/09 the real consumption aggregate at NPS 2008/09 prices was further adjusted to NPS 2010/11 prices with a Fisher food price index that captures the changes in cost of living differences across rounds.[22]

The Cost of Basic Needs method was employed to estimate the nutrition-based poverty line. This approach calculates the cost of obtaining a consumption bundle believed to be adequate for basic consumption needs. If a person cannot afford the cost of the basket, this person will be considered poor. First, it shall be kept in mind that the poverty status focuses on whether the person has the means to acquire the consumption bundle and not on whether its actual consumption met those requirements. Second, nutritional references are used to set the utility level, but nutritional status is not the welfare indicator. Otherwise, it will suffice to calculate calorific intakes and compare them against the nutritional threshold. Third, the consumption basket can be set normatively or to reflect prevailing consumption patterns. The latter alternative is considered a better approach and fortunately the use of a household survey allows its implementation. Last, the poverty line comprises two main components: food and non-food.

2.1 Food Component

The first step in setting this component is to determine the nutritional requirements deemed to be appropriate for being healthy and able to participate in society. It is rather difficult to arrive at a consensus on what could be considered as a healthy and active life, and hence to assign calorific requirements. Aside from these considerations, requirements vary by person, by his or her level of activity, the climate, etc.[23] In Tanzania, the reference for energy intake is set at 2,200 kilocalories per adult equivalent per day. Second, the food bundle is chosen taking into consideration the existing

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[22] See subsection 1.2 for details about the price adjustment across rounds of the NPS.

[23] Food and Agriculture Organization of the United Nations (2001, 2003).

food consumption patterns of a reference group in the country. The food bundle is obtained as the average food consumption of the bottom 50% of the population, ranked in terms of real per adult equivalent consumption. It is better to try to capture the consumption pattern of the population located at the bottom of the welfare distribution because it will probably better reflect the preferences of the poor. More precisely, using the consumption pattern of the bottom 50% of the population to calculate the food bundle assumes that the composition of that consumption, i.e., the proportion of various items in total food consumption, is not significantly different from the consumption pattern of the poor. Third, calorific conversion factors were used to transform the food bundle into kilocalories. Fourth, median prices were derived in order to value the food bundle. Prices were computed using only transactions from the same reference group. Again, this will capture more accurately the prices faced by the poor. Fifth, the average calorific intake of the food bundle was estimated, so the value of the food bundle could be scaled proportionately to achieve 2,200 kilocalories per adult equivalent per day. For example, the bottom 50% of the population in the NPS 2010/11 consumes on average 2,220 kilocalories per adult equivalent per day at a cost of TSh 667, thus the food poverty line would be TSh 661 (= TSh 667 x 2,200 kilocalories / 2,220 kilocalories) per adult equivalent per day.

2.2 Non-food Component

Setting this component of the poverty line is far from being a straightforward procedure.

Considerable disagreement exists on the type of items that should be included in the non-food share of the poverty line. However, it is possible to link this component with the normative judgment involved when choosing the food component. Being healthy and able to participate in society requires spending on shelter, education, health care, recreation, etc. The advantage of using household surveys is that the non-food allowance can also be based on prevailing consumption patterns of a reference group and no pre-determined non-food bundle is required.

The initial step is to choose a reference group that will represent the poor and calculate how much they spend on non-food goods and services. The reference group is set to be the bottom 25% of the population ranked in terms of real consumption. The share of food on total consumption is estimated for this group and then the total poverty line is obtained by dividing the food poverty line by that share. For instance, the food poverty line is TSh 661 per adult equivalent per day and the food share of the bottom 25% of the population is 78%, thus the total poverty line would be TSh 844 per adult equivalent per day (= TSh 661/0.78).

3 Poverty Measures

The literature on poverty measurement is extensive, but this analysis focuses on the class of poverty measures proposed by Foster, Greer and Thorbecke. This family of measures can be summarized by the following equation:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z - y_i}{z} \right)^{\alpha}$$

where α is some non-negative parameter, z is the poverty line, y denotes consumption, i represents individuals, n is the total number of individuals in the population, and q is the number of individuals with consumption below the poverty line.

The headcount index ($\alpha=0$) gives the share of the poor in the total population, i.e., it measures the percentage of population whose consumption is below the poverty line. This is the most widely used poverty measure mainly because it is very simple to understand and easy to interpret. However, it has some limitations, in that it takes into account neither the gap of the consumption of the poor with respect to the poverty line, nor the consumption distribution among the poor. The poverty gap ($\alpha=1$) is the average consumption shortfall of the population relative to the poverty line. Since the greater the shortfall, the higher the gap, this measure overcomes the first limitation of the headcount. Finally, the severity of poverty ($\alpha=2$) is sensitive to the distribution of consumption among the poor: a transfer from a poor person to somebody less poor may leave the headcount or the poverty gap unaffected but will increase this measure. The larger the poverty gap is, the higher the weight it carries.

These measures satisfy some convenient properties. First, they are able to combine individual indicators of welfare into aggregate measures of poverty. Second, they are additive in the sense that the aggregate poverty level is equal to the population-weighted sum of the poverty levels of all subgroups of the population. Third, the poverty gap and the severity of poverty satisfy the monotonicity axiom, which states that even if the number of the poor is the same, but there is a welfare reduction in a poor household, the measure of poverty should increase. Lastly, the severity of poverty will also comply with the transfer axiom: it is not only the average welfare of the poor that influences the level of poverty, but also its distribution. In particular, if there is a transfer from one poor household to a richer household, the degree of poverty should increase.[24]

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[24] Sen (1976) formulated the monotonicity and the transfer axioms.

Table A3: Food bundle per adult equivalent per day, NPS2

	Kilocalories per kg.	Quantity per kg.	Kilocalories provided	Price per kg.	Value per day
Total per adult equivalent per day			2,200		668.5
1 Rice (paddy)	3,610	0.0067	24	578	3.9
2 Rice (husked)	3,640	0.0380	138	1,228	46.7
3 Maize (green, cob)	1,650	0.0193	32	512	9.9
4 Maize (grain)	3,680	0.0620	228	379	23.5
5 Maize (flour)	3,680	0.2090	769	646	135.1
6 Millet and sorghum (grain)	3,450	0.0082	28	583	4.8
7 Millet and sorghum (flour)	3,450	0.0178	61	530	9.4
8 Wheat, barley grain and other cereals	3,400	0.0002	1	1,157	0.3
9 Bread	2,610	0.0017	4	1,405	2.4
10 Buns, cakes and biscuits	4,500	0.0055	25	1,616	9.0
11 Macaroni, spaghetti	3,420	0.0001	0	1,386	0.1
12 Other cereal products	3,700	0.0007	2	1,167	0.8
13 Cassava fresh	1,490	0.0301	45	393	11.9
14 Cassava dry/flour	3,440	0.0639	220	436	27.9
15 Sweet potatoes	1,050	0.0408	43	426	17.4
16 Yams/cocoyams	1,180	0.0061	7	584	3.6
17 Irish potatoes	790	0.0067	5	747	5.0
18 Cooking bananas, plantains	1,350	0.0358	48	578	20.7
19 Sugar	4,000	0.0136	54	1,939	26.3
20 Sweets	3,750	0.0000	0	16,160	0.3
21 Honey, syrups, jams, marmalade, jellies, canned fruits	4,000	0.0004	2	1,462	0.7
22 Peas, beans, lentils and other pulses	3,330	0.0395	132	1,311	51.8
23 Groundnuts in shell/shelled	5,670	0.0073	41	1,735	12.7
24 Coconuts (mature/immature)	3,760	0.0065	24	786	5.1
25 Cashew, almonds and other nuts	5,740	0.0008	5	1,542	1.2
26 Seeds and products from nuts/seeds (excl. cooking oil)	5,920	0.0001	0	2,333	0.1
27 Onions, tomatoes, carrots and green pepper, other	240	0.0331	8	881	29.2
28 Spinach, cabbage and other green vegetables	170	0.0441	7	623	27.4
29 Canned, dried and wild vegetables	130	0.0084	1	578	4.9
30 Ripe bananas	920	0.0056	5	578	3.2
31 Citrus fruits (oranges, lemon, tangerines, etc.)	390	0.0053	2	568	3.0
32 Mangoes, avocadoes and other fruits	550	0.0175	10	578	10.1
33 Sugarcane	4,000	0.0147	59	227	3.3
34 Goat meat	1,220	0.0039	5	3,471	13.6
35 Beef including minced sausage	1,150	0.0060	7	3,471	20.9
36 Pork including sausages and bacon	1,140	0.0015	2	2,909	4.5
37 Chicken and other poultry	1,390	0.0042	6	3,411	14.5
38 Wild birds and insects	1,390	0.0004	1	2,892	1.1
39 Other domestic/wild meat products	1,370	0.0003	0	4,093	1.1
40 Eggs	1,580	0.0005	1	4,040	2.2
41 Fresh fish and seafood (including dagaa)	820	0.0112	9	2,000	22.5
42 Dried/salted/canned fish and seafood (incl. dagaa)	2,250	0.0050	11	2,586	12.9
43 Package fish	2,380	0.0000	0	4,545	0.1
44 Fresh milk	610	0.0243	15	530	12.9
45 Milk products (like cream, cheese, yoghurt etc)	2,170	0.0117	25	727	8.5
46 Canned milk/milk powder	3,440	0.0000	0	2,500	0.0
47 Cooking oil	8,840	0.0089	79	3,144	28.0
48 Butter, margarine, ghee and other fat products	7,190	0.0004	3	4,093	1.8
49 Salt	0	0.0078	0	700	5.5
50 Tea dry	2,970	0.0004	1	10,233	3.7
51 Coffee and cocoa	3,370	0.0000	0	1,869	0.0
52 Bottled/canned soft drinks (soda, juice, water)	450	0.0019	1	1,579	2.9
53 Prepared tea, coffee	20	0.0000	0	1,869	0.0

Appendix B. Standard Errors and Confidence Intervals of MKUKUTA Indicators

GINI COEFFICIENT, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	0.364	0.005	0.353	0.374	3265
Rural	0.307	0.006	0.295	0.318	2063
Urban	0.373	0.009	0.356	0.390	1202
Mainland	0.365	0.005	0.354	0.375	2786
Dar es Salam	0.342	0.012	0.320	0.365	555
Other urban	0.353	0.012	0.329	0.378	480
Rural	0.306	0.006	0.294	0.318	1751
Zanzibar	0.320	0.010	0.301	0.339	479
NPS2					
Tanzania	0.367	0.005	0.357	0.377	3844
Rural	0.314	0.006	0.303	0.326	2583
Urban	0.367	0.008	0.351	0.383	1261
Mainland	0.368	0.005	0.358	0.378	3311
Dar es Salam	0.322	0.011	0.301	0.343	624
Other urban	0.350	0.011	0.328	0.371	634
Rural	0.313	0.006	0.301	0.325	2053
Zanzibar	0.310	0.011	0.289	0.332	533

POVERTY INCIDENCE, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	14.80	1.16	12.51	17.09	3265
Rural	17.34	1.44	14.50	20.18	2063
Urban	5.90	1.16	3.61	8.18	1202
Mainland	14.63	1.20	12.27	16.98	2786
Dar es Salam	0.99	0.57	-0.14	2.11	555
Other urban	7.70	1.75	4.26	11.14	480
Rural	17.23	1.48	14.31	20.15	1751
Zanzibar	20.39	3.34	13.81	26.96	479
NPS2					
Tanzania	17.91	1.09	15.78	20.05	3844
Rural	22.35	1.39	19.62	25.08	2583
Urban	5.25	0.92	3.45	7.05	1261
Mainland	18.08	1.12	15.89	20.27	3311
Dar es Salam	1.35	0.61	0.15	2.56	624
Other urban	6.75	1.25	4.29	9.21	634
Rural	22.71	1.43	19.90	25.53	2053
Zanzibar	12.41	3.48	5.57	19.25	533

PERCENTAGE OF HOUSEHOLDS WITH ACCESS TO ELECTRICITY, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	13.00	0.94	11.16	14.85	3265
Rural	2.35	0.54	1.28	3.42	2063
Urban	42.80	2.83	37.23	48.36	1202
Mainland	12.42	0.96	10.53	14.31	2786
Dar es Salam	61.06	3.23	54.71	67.40	555
Other urban	31.39	4.06	23.40	39.37	480
Rural	2.03	0.55	0.94	3.11	1751
Zanzibar	33.89	4.01	26.00	41.79	479
NPS2					
Tanzania	17.02	1.06	14.94	19.11	3846
Rural	5.34	0.80	3.77	6.91	2583
Urban	43.36	2.66	38.12	48.59	1263
Mainland	16.39	1.09	14.25	18.53	3313
Dar es Salam	68.90	2.71	63.57	74.23	626
Other urban	32.57	3.41	25.87	39.27	634
Rural	4.19	0.81	2.60	5.79	2053
Zanzibar	39.74	3.99	31.90	47.59	533

PERCENTAGE OF HOUSEHOLDS USING ALTERNATIVE SOURCES OF ENERGY FOR COOKING, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	1.55	0.26	1.04	2.05	3265
Rural	0.66	0.23	0.22	1.11	2063
Urban	4.02	0.74	2.55	5.48	1202
Mainland	1.56	0.26	1.04	2.08	2786
Dar es Salam	7.23	1.55	4.19	10.27	555
Other urban	2.40	0.84	0.75	4.04	480
Rural	0.69	0.23	0.23	1.14	1751
Zanzibar	1.09	0.48	0.14	2.03	479
NPS2					
Tanzania	1.76	0.25	1.27	2.24	3844
Rural	0.44	0.14	0.17	0.72	2583
Urban	4.73	0.73	3.29	6.17	1261
Mainland	1.72	0.25	1.23	2.21	3311
Dar es Salam	11.11	1.88	7.43	14.80	625
Other urban	2.17	0.67	0.86	3.48	633
Rural	0.33	0.14	0.07	0.60	2053
Zanzibar	3.07	1.22	0.68	5.46	533

NER PRE-PRIMARY EDUCATION, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	20.04	1.59	16.91	23.18	982
Rural	15.81	1.68	12.51	19.12	725
Urban	41.62	4.39	33.00	50.25	257
Mainland	20.13	1.64	16.92	23.35	828
Dar es Salam	49.01	5.23	38.74	59.29	100
Other urban	39.24	5.93	27.58	50.89	105
Rural	15.81	1.73	12.42	19.21	623
Zanzibar	16.89	4.00	9.04	24.75	154
Female	20.58	2.31	16.03	25.13	497
Male	19.48	2.00	15.55	23.42	485
NPS2					
Tanzania	25.54	1.78	22.04	29.05	1203
Rural	20.56	1.95	16.73	24.38	895
Urban	42.59	4.10	34.53	50.64	308
Mainland	25.47	1.83	21.88	29.06	1040
Dar es Salam	53.28	4.57	44.30	62.26	152
Other urban	38.48	5.43	27.81	49.15	148
Rural	20.35	2.00	16.41	24.29	740
Zanzibar	28.28	4.38	19.68	36.88	163
Female	27.18	2.48	22.31	32.05	607
Male	23.85	2.23	19.46	28.24	596

NER PRIMARY EDUCATION, CONFIDENCE INTERVALS

	Estimate	Std. Err.	[95% confidence interval]		Obs.
NPS1					
Tanzania	82.92	0.98	81.00	84.84	3138
Rural	81.30	1.17	79.00	83.61	2208
Urban	89.60	1.24	87.15	92.04	930
Mainland	83.05	1.00	81.08	85.03	2594
Dar es Salam	85.62	1.81	82.05	89.19	344
Other urban	91.07	1.61	87.90	94.24	393
Rural	81.44	1.20	79.08	83.81	1857
Zanzibar	78.78	3.20	72.49	85.07	544
Female	85.52	1.14	83.28	87.76	1599
Male	80.13	1.31	77.56	82.71	1539
NPS2					
Tanzania	80.47	0.97	78.55	82.38	3665
Rural	78.66	1.16	76.37	80.95	2756
Urban	86.69	1.47	83.79	89.58	909
Mainland	80.33	1.00	78.35	82.30	3109
Dar es Salam	86.95	1.73	83.56	90.34	408
Other urban	86.65	1.89	82.94	90.36	495
Rural	78.42	1.20	76.06	80.79	2206
Zanzibar	85.01	1.93	81.21	88.81	556
Female	81.88	1.26	79.40	84.35	1860
Male	78.96	1.19	76.62	81.30	1805

NER SECONDARY EDUCATION, CONFIDENCE INTERVALS

	Estimate	Std. Err.	[95% confidence interval]		Obs.
NPS1					
Tanzania	23.29	1.42	20.50	26.07	1631
Rural	15.58	1.39	12.85	18.31	1084
Urban	48.95	3.27	42.53	55.37	547
Mainland	22.80	1.46	19.93	25.66	1351
Dar es Salam	44.53	4.04	36.58	52.48	207
Other urban	49.33	4.32	40.83	57.83	236
Rural	15.15	1.43	12.35	17.96	908
Zanzibar	39.01	3.80	31.54	46.49	280
Female	24.25	1.96	20.40	28.09	802
Male	22.42	1.72	19.05	25.79	829
NPS2					
Tanzania	28.26	1.55	25.22	31.30	1980
Rural	20.44	1.64	17.21	23.66	1449
Urban	52.00	2.81	46.48	57.53	531
Mainland	27.98	1.59	24.85	31.11	1665
Dar es Salam	50.08	4.52	41.19	58.97	223
Other urban	52.47	3.50	45.58	59.36	304
Rural	19.86	1.70	16.52	23.20	1138
Zanzibar	37.20	4.20	28.94	45.46	315
Female	29.77	2.06	25.71	33.83	989
Male	26.69	1.94	22.87	30.51	991

GER UNIVERSITY EDUCATION, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	2.52	0.49	1.55	3.49	16217
Rural	0.61	0.31	0.00	1.21	10781
Urban	7.30	1.49	4.36	10.23	5436
Mainland	2.53	0.51	1.53	3.53	13545
Dar es Salam	8.81	2.19	4.50	13.13	2336
Other urban	6.04	2.10	1.90	10.17	2061
Rural	0.63	0.32	0.00	1.25	9148
Zanzibar	2.15	0.95	0.28	4.03	2672
Female	1.57	0.47	0.64	2.50	8451
Male	3.68	0.85	2.02	5.35	7766
NPS2					
Tanzania	3.83	0.57	2.70	4.95	20062
Rural	0.92	0.33	0.28	1.56	14309
Urban	9.64	1.53	6.65	12.64	5753
Mainland	3.86	0.59	2.69	5.02	17067
Dar es Salam	14.95	3.14	8.79	21.12	2821
Other urban	6.86	1.67	3.58	10.14	2869
Rural	0.86	0.34	0.20	1.53	11377
Zanzibar	3.05	1.08	0.92	5.19	2995
Female	2.97	0.64	1.70	4.24	10344
Male	4.71	0.85	3.05	6.38	9718

% OF CHILDREN UNDER 5 YEARS WITH LOW HEIGHT-FOR-AGE (STUNTED), CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	43.02	1.57	39.93	46.11	1994
Rural	45.59	1.82	42.02	49.16	1482
Urban	30.16	2.55	25.15	35.18	512
Mainland	43.24	1.60	40.09	46.38	1782
Dar es Salam	36.46	3.47	29.64	43.27	229
Other urban	27.90	3.28	21.45	34.35	225
Rural	45.85	1.85	42.21	49.49	1328
Zanzibar	30.55	3.67	23.33	37.76	212
Female	40.72	1.88	37.02	44.41	1036
Male	45.56	2.02	41.59	49.52	958
0-5 months	27.86	4.97	18.09	37.62	100
6-11	31.17	4.10	23.11	39.23	194
12-23	48.27	3.08	42.22	54.32	411
24-35	52.86	2.91	47.14	58.59	431
36-47	40.86	2.90	35.16	46.56	448
48-59 months	38.85	2.88	33.18	44.52	410
NPS2					
Tanzania	34.76	1.38	32.04	37.47	2583
Rural	37.25	1.58	34.13	40.36	2011
Urban	24.11	2.63	18.93	29.29	572
Mainland	34.85	1.41	32.08	37.62	2294
Dar es Salam	21.07	2.98	15.21	26.93	262
Other urban	24.90	3.42	18.17	31.62	306
Rural	37.45	1.62	34.26	40.64	1726
Zanzibar	30.36	3.34	23.80	36.92	289
Female	34.21	1.78	30.72	37.70	1299
Male	35.32	1.68	32.01	38.62	1284
0-5 months	12.92	2.41	8.18	17.66	260
6-11	19.91	2.84	14.32	25.50	289
12-23	41.85	2.73	36.48	47.22	547
24-35	46.53	2.53	41.55	51.51	521
36-47	35.99	2.76	30.55	41.42	487
48-59 months	33.02	2.67	27.77	38.28	479

% OF CHILDREN UNDER 5 YEARS WITH LOW WEIGHT-FOR-HEIGHT (WASTED), CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	2.70	0.42	1.86	3.54	1992
Rural	2.95	0.50	1.97	3.93	1480
Urban	1.46	0.58	0.32	2.61	512
Mainland	2.63	0.43	1.78	3.47	1780
Dar es Salam	0.91	0.64	-0.35	2.17	229
Other urban	1.32	0.77	-0.18	2.83	225
Rural	2.92	0.51	1.92	3.91	1326
Zanzibar	6.96	2.41	2.22	11.70	212
Female	2.72	0.55	1.64	3.79	1035
Male	2.68	0.59	1.53	3.83	957
0-5 months	3.29	2.73	-2.08	8.65	98
6-11	5.88	2.03	1.90	9.87	194
12-23	2.52	1.03	0.50	4.54	411
24-35	1.62	0.64	0.36	2.87	431
36-47	2.65	0.81	1.06	4.24	448
48-59 months	2.51	0.80	0.94	4.08	410
NPS2					
Tanzania	6.59	0.65	5.31	7.86	2579
Rural	6.76	0.74	5.30	8.22	2007
Urban	5.87	1.20	3.52	8.22	572
Mainland	6.52	0.66	5.22	7.82	2290
Dar es Salam	5.38	1.55	2.33	8.42	262
Other urban	6.00	1.52	3.01	8.99	306
Rural	6.68	0.76	5.19	8.17	1722
Zanzibar	9.84	1.98	5.95	13.73	289
Female	6.83	0.88	5.10	8.56	1297
Male	6.34	0.83	4.72	7.96	1282
0-5 months	12.71	2.43	7.93	17.48	257
6-11	11.92	2.50	7.00	16.84	288
12-23	7.67	1.69	4.35	10.99	547
24-35	4.14	0.96	2.25	6.03	521
36-47	3.63	0.89	1.87	5.38	487
48-59 months	4.92	1.18	2.60	7.23	479

% OF CHILDREN UNDER 5 YEARS WITH LOW WEIGHT-FOR AGE (UNDERWEIGHT), CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	15.92	1.06	13.83	18.01	1999
Rural	17.13	1.23	14.71	19.56	1485
Urban	9.82	1.69	6.50	13.15	514
Mainland	15.87	1.08	13.74	17.99	1786
Dar es Salam	9.08	2.17	4.81	13.35	230
Other urban	9.44	2.22	5.07	13.82	225
Rural	17.19	1.26	14.72	19.66	1331
Zanzibar	18.80	2.85	13.20	24.40	213
Female	15.08	1.32	12.48	17.68	1037
Male	16.84	1.45	13.98	19.69	962
0-5 months	6.49	3.17	0.26	12.73	101
6-11	15.15	3.08	9.08	21.21	194
12-23	14.70	2.24	10.29	19.11	414
24-35	16.24	2.22	11.87	20.60	432
36-47	19.08	2.14	14.88	23.28	448
48-59 months	16.36	2.16	12.12	20.60	410
NPS2					
Tanzania	13.56	0.90	11.78	15.34	2602
Rural	14.59	1.04	12.53	16.64	2026
Urban	9.19	1.58	6.09	12.30	576
Mainland	13.46	0.92	11.65	15.27	2307
Dar es Salam	10.04	2.41	5.29	14.78	265
Other urban	8.73	1.98	4.83	12.63	307
Rural	14.51	1.07	12.41	16.61	1735
Zanzibar	18.50	2.34	13.90	23.10	295
Female	12.94	1.16	10.66	15.21	1311
Male	14.20	1.20	11.84	16.55	1291
0-5 months	4.68	1.53	1.68	7.68	271
6-11	13.36	2.48	8.49	18.22	291
12-23	14.99	2.01	11.03	18.94	549
24-35	14.63	1.70	11.29	17.98	521
36-47	15.32	1.91	11.56	19.07	491
48-59 months	14.04	1.73	10.63	17.45	479

% OF BIRTHS ATTENDED BY SKILLED PERSONNEL IN THE LAST 24 MONTHS, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	59.33	2.09	55.23	63.43	1119
Rural	52.28	2.35	47.67	56.90	807
Urban	92.63	1.92	88.85	96.42	312
Mainland	59.30	2.14	55.10	63.50	955
Dar es Salam	95.85	1.75	92.42	99.28	136
Other urban	91.38	2.76	85.96	96.81	120
Rural	52.17	2.41	47.44	56.90	699
Zanzibar	60.42	4.65	51.29	69.55	164
NPS2					
Tanzania	62.17	1.95	58.35	66.00	1342
Rural	54.73	2.24	50.33	59.12	990
Urban	86.66	2.30	82.14	91.19	352
Mainland	62.16	1.99	58.25	66.08	1171
Dar es Salam	95.00	1.71	91.64	98.37	198
Other urban	83.01	3.16	76.78	89.23	163
Rural	54.48	2.30	49.95	59.00	810
Zanzibar	62.59	4.68	53.38	71.80	171

% OF HOUSEHOLDS WITH ACCESS TO SAFE DRINKING WATER DURING THE RAINY SEASON, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Tanzania	43.26	1.88	39.56	46.96	3265
Rural	32.80	2.26	28.36	37.24	2063
Urban	72.54	3.11	66.43	78.66	1202
Mainland	42.20	1.93	38.41	46.00	2786
Dar es Salam	77.79	3.33	71.24	84.34	555
Other urban	67.14	4.42	58.46	75.83	480
Rural	31.89	2.32	27.33	36.45	1751
Zanzibar	81.27	4.37	72.69	89.85	479
NPS2					
Tanzania	42.74	1.71	39.38	46.09	3843
Rural	32.25	1.91	28.49	36.02	2583
Urban	66.42	3.11	60.31	72.53	1260
Mainland	41.54	1.75	38.10	44.98	3310
Dar es Salam	74.64	2.68	69.37	79.91	624
Other urban	62.25	4.16	54.07	70.44	633
Rural	30.46	1.98	26.57	34.35	2053
Zanzibar	85.58	3.36	78.98	92.18	533

% OF HOUSEHOLDS WITH ACCESS TO SAFE DRINKING WATER DURING THE DRY SEASON, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]		Obs.
NPS1						
Tanzania	43.53	1.87	39.85		47.21	3265
Rural	32.89	2.23	28.50		37.27	2063
Urban	73.31	3.14	67.14		79.48	1202
Mainland	42.51	1.92	38.74		46.28	2786
Dar es Salam	81.11	2.99	75.24		86.99	555
Other urban	67.03	4.54	58.11		75.95	480
Rural	31.93	2.29	27.43		36.44	1751
Zanzibar	80.26	4.42	71.56		88.95	479
NPS2						
Tanzania	50.19	1.81	46.63		53.74	3842
Rural	39.84	2.12	35.68		44.01	2582
Urban	73.54	2.76	68.11		78.98	1260
Mainland	49.23	1.85	45.59		52.88	3310
Dar es Salam	77.71	2.40	73.00		82.42	624
Other urban	71.16	3.73	63.83		78.49	633
Rural	38.36	2.19	34.05		42.68	2053
Zanzibar	84.30	3.46	77.50		91.11	532

% OF HOUSEHOLDS WITH BASIC SANITATION FACILITIES, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]		Obs.
NPS1						
Tanzania	89.93	1.02	87.92		91.94	3265
Rural	86.57	1.38	83.87		89.28	2063
Urban	99.33	0.30	98.73		99.92	1202
Mainland	90.19	1.04	88.14		92.24	2786
Dar es Salam	99.20	0.38	98.45		99.95	555
Other urban	99.14	0.45	98.26		100.02	480
Rural	86.93	1.41	84.16		89.71	1751
Zanzibar	80.59	4.00	72.73		88.45	479
NPS2						
Tanzania	87.06	0.98	85.14		88.98	3844
Rural	83.27	1.33	80.67		85.88	2583
Urban	95.62	0.90	93.85		97.39	1261
Mainland	87.30	1.00	85.34		89.26	3311
Dar es Salam	98.93	0.45	98.05		99.82	625
Other urban	94.40	1.23	91.99		96.82	633
Rural	83.47	1.37	80.77		86.16	2053
Zanzibar	78.45	3.80	70.98		85.91	533

NER BY ORPHANHOOD STATUS, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
NPS1					
Pre-primary	20.04	1.59	16.91	23.18	982
Non orphan	19.73	1.62	16.55	22.91	914
Orphan	24.01	5.44	13.31	34.71	68
Primary	82.92	0.98	81.00	84.84	3138
Non orphan	82.69	1.05	80.63	84.74	2746
Orphan	84.42	2.32	79.85	88.99	392
Secondary	23.29	1.42	20.50	26.07	1631
Non orphan	23.03	1.58	19.92	26.15	1266
Orphan	24.13	2.77	18.69	29.57	365
NPS2					
Pre-primary	25.54	1.78	22.04	29.05	1203
Non orphan	25.17	1.82	21.59	28.76	1133
Orphan	31.38	6.40	18.80	43.95	70
Primary	80.47	0.97	78.55	82.38	3665
Non orphan	80.96	1.00	79.00	82.92	3214
Orphan	77.09	2.54	72.08	82.09	451
Secondary	28.26	1.55	25.22	31.30	1980
Non orphan	27.28	1.65	24.03	30.52	1539
Orphan	31.60	3.14	25.43	37.77	441

FOOD SECURITY DURING THE LAST SEVEN DAYS, NPS2, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
Worried about not having enough food					
Tanzania	35.97	1.50	33.03	38.90	3844
Rural	37.12	1.80	33.58	40.66	2583
Urban	32.66	2.22	28.29	37.02	1261
Mainland	36.30	1.54	33.28	39.32	3311
Dar es Salam	37.99	3.19	31.73	44.26	625
Other urban	31.35	2.84	25.76	36.93	633
Rural	37.41	1.86	33.74	41.07	2053
Zanzibar	24.81	3.04	18.83	30.79	533
Negative changes in diet					
Tanzania	34.01	1.35	31.35	36.67	3843
Rural	34.73	1.60	31.58	37.88	2583
Urban	31.94	2.08	27.85	36.04	1260
Mainland	34.36	1.39	31.63	37.09	3310
Dar es Salam	35.48	2.84	29.90	41.06	624
Other urban	31.25	2.65	26.04	36.45	633
Rural	35.05	1.66	31.79	38.31	2053
Zanzibar	22.31	2.60	17.20	27.43	533
Reduced food intake					
Tanzania	32.23	1.35	29.57	34.88	3844
Rural	33.06	1.62	29.86	36.25	2583
Urban	29.85	1.96	25.99	33.71	1261
Mainland	32.47	1.39	29.75	35.20	3311
Dar es Salam	34.76	2.88	29.09	40.43	625
Other urban	28.69	2.51	23.75	33.63	633
Rural	33.21	1.68	29.91	36.52	2053
Zanzibar	24.09	2.95	18.28	29.89	533

FOOD SHORTAGES IN THE LAST 12 MONTHS, NPS2, CONFIDENCE INTERVALS

	Estimate	Std. Err.		[95% confidence interval]	Obs.
Not enough food to eat (% population)					
Tanzania	20.57	0.81	18.99	22.16	3846
Rural	21.36	0.98	19.44	23.28	2583
Urban	18.32	1.49	15.39	21.25	1263
Mainland	20.94	0.83	19.31	22.57	3313
Dar es Salam	18.64	1.90	14.91	22.37	626
Other urban	18.77	1.92	14.99	22.55	634
Rural	21.73	1.01	19.75	23.72	2053
Zanzibar	8.48	1.56	5.42	11.55	533
Months with food shortages (among those suffering from food shortages)					
Tanzania	3.37	0.10	3.16	3.57	710
Rural	3.25	0.11	3.04	3.47	499
Urban	3.74	0.23	3.27	4.20	211
Mainland	3.37	0.10	3.17	3.58	675
Dar es Salam	4.57	0.36	3.87	5.28	118
Other urban	3.44	0.28	2.89	3.99	116
Rural	3.25	0.11	3.03	3.47	441
Zanzibar	2.94	0.23	2.48	3.40	35

Appendix C. ADDITIONAL TABLES

Table C1: Proportion of Rural Households by Stratum According to Quarter of Interview

	October- December 2008	January- March 2009	April- June 2009	July- September 2009	Total
Tanzania	71	69	53	59	63
Dar es Salaam	0	29	18	11	13
Other urban	0	0	0	0	0
Rural	100	100	100	100	100
Zanzibar	100	100	0	0	50

Table C2: Average Yield of Maize (kg / area planted in hectare)

	2008/2009 *Using Farmer Reported Plot Areas*				
	Obs	Mean	Std. Dev.	Min	Max
All Plots	1817	782	779	25	5,272
Purestand Plots	601	906	842	25	5,189
Intercropped Plots	1216	715	734	25	5,272
Plots w/ Organic Fertilizer	256	1,012	944	33	5,272
Plots w/Inorganic Fertilizer	283	1,160	906	33	4,942
Plots w/ Any Fertilizer	476	1,066	930	33	5,272
	2010/2011 *Using Farmer Reported Plot Areas*				
	Obs	Mean	Std. Dev.	Min	Max
All Plots	2237	801	761	40	4,942
Purestand Plots	792	885	799	49	4,942
Intercropped Plots	1445	748	731	40	4,942
Plots w/ Organic Fertilizer	295	920	789	49	4,744
Plots w/Inorganic Fertilizer	418	1,178	944	44	4,744
Plots w/ Any Fertilizer	640	1,054	868	44	4,744
	2010/2011 *Using GPS-Based Plot Areas*				
	Obs	Mean	Std. Dev.	Min	Max
All Plots	1914	939	947	30	5,719
Purestand Plots	676	1,058	993	30	5,719
Intercropped Plots	1238	867	911	30	5,491
Plots w/ Organic Fertilizer	278	1,012	960	31	5,295
Plots w/Inorganic Fertilizer	368	1,351	1,121	30	4,942
Plots w/ Any Fertilizer	578	1,170	1,047	30	5,295

Table C3: Average Yields of Paddy (kg / area planted in hectare)

	Obs	Mean	Std. Dev.	Min	Max
2008/09					
Using Farmer Reported Plot Areas					
All Plots	490	1,313	1,275	28	9,973
Pure stand Plots	409	1,438	1,334	37	9,973
Intercropped Plots	81	805	830	28	6,795
Plots w/ Organic Fertilizer	23	1,967	1,179	395	4,567
Plots w/Inorganic Fertilizer	59	1,803	1,423	31	5,560
Plots w/ Any Fertilizer	70	1,793	1,301	31	5,560
2010/11					
Using Farmer Reported Plot Areas					
All Plots	632	1,354	1,194	49	7,611
Pure stand Plots	538	1,455	1,219	49	7,611
Intercropped Plots	94	744	799	49	4,448
Plots w/ Organic Fertilizer	33	2,412	1,935	282	5,560
Plots w/Inorganic Fertilizer	73	1,881	1,549	49	5,272
Plots w/ Any Fertilizer	98	1,899	1,555	49	5,560
2010/11					
Using GPS-Based Plot Areas					
All Plots	464	1,725	2,225	73	24,711
Pure stand Plots	388	1,876	2,356	88	24,711
Intercropped Plots	76	940	1,069	73	6,076
Plots w/ Organic Fertilizer	24	2,733	1,810	380	5,668
Plots w/Inorganic Fertilizer	51	1,873	1,562	97	5,668
Plots w/ Any Fertilizer	68	1,893	1,518	97	5,668
Note: Dropping top 1% of the plot observations in the distribution for total agricultural production (metric tons).					

Table C4. Descriptive Statistics by Poverty Transition

Household Profile by Poverty Transition Between Rounds 1 and 2 of the NPS

	Never poor	Move out of poverty	Move into poverty	Always poor	Total
Demographic composition NPS1					
Household size	4.9	5.9	5.3	6.8	5.1
Children 0 to 5 years	0.9	1.2	1.2	1.4	1.0
Children 6 to 9 years	0.6	0.8	0.7	0.9	0.6
Children 10 to 14 years	0.6	0.9	0.7	1.3	0.7
Adults (15 to 64 years)	2.5	2.8	2.4	2.8	2.6
Elders (65 and more)	0.2	0.2	0.3	0.3	0.2
Share of children and elders (%)	43.7	51.2	53.6	57.7	46.0
Household head NPS1					
Age (years)	45.3	46.5	48.4	48.7	45.9
Female (%)	25.4	30.5	31.7	26.7	26.5
Education (%)					
None	19.7	29.7	39.7	33.4	23.3
Primary	63.8	63.9	55.6	63.4	62.9
Secondary or more	9.2	3.6	1.5	0.4	7.5
Other education	7.3	2.9	3.2	2.9	6.3
Economic activity (%)					
Agriculture	62.9	83.7	89.6	89.7	68.7
Non agriculture	32.7	11.4	6.3	6.7	27.0
Not working	4.4	4.9	4.2	3.5	4.3
Changes in demographic composition					
Household size	0.4	0.1	0.8	0.5	0.4
Children 0 to 5 years	0.0	-0.1	0.1	0.1	0.0
Children 6 to 9 years	0.0	0.0	0.1	0.0	0.0
Children 10 to 14 years	0.1	0.0	0.1	-0.2	0.0
Adults (15 to 64 years)	0.2	0.1	0.4	0.5	0.3
Elders (65 and more)	0.0	0.0	0.1	0.1	0.0
Changes in economic activity of the household head (%)					
No change	85.5	88.5	90.0	88.4	86.4
From agriculture to non agriculture	4.4	3.6	3.3	1.0	4.0
From non agriculture to agriculture	5.2	3.3	3.0	3.8	4.7
From working to not working	2.1	0.7	1.1	3.8	2.0
From not working to working	2.9	3.9	2.6	3.0	2.9

Table C5: Regression on the Growth Rate of Consumption

	A1		A2		A3	
Demographic composition NPS1						
Household size	0.0130	**	-0.0163	***	-0.0221	***
Share of children and elders	-0.0004		-0.0027	***	-0.0028	***
Household head NPS1						
Female	-0.0238		-0.0295		-0.0299	
Age	-0.0036		-0.0108	**	-0.0113	***
Age squared	0.0000		0.0001	***	0.0001	***
Education						
None	-0.0528		-0.1196	***	-0.1179	***
Secondary or more	-0.0603		0.1873	***	0.1883	***
Other education	-0.0829	*	0.1352	***	0.1315	***
Economic activity						
Non agriculture	0.0674	*	0.2238	***	0.2429	***
Not working	0.0518		0.0868		0.0636	
Strata NPS1						
Dar es Salaam	-0.0458		0.2834	***	0.2658	***
Other urban	-0.0088		0.0805	**	0.0679	*
Zanzibar	0.1484	***	0.0382		0.0284	
Consumption NPS1			-0.6007	***	-0.6049	***
Changes in demographic composition						
Household size					-0.0496	***
Children 0 to 5 years					-0.0039	
Children 6 to 9 years					-0.0007	
Children 10 to 14 years					-0.0032	
Elders (65 and more)					-0.0772	**
Changes in economic activity of the household head						
From agriculture to non agriculture					0.0318	
From non agriculture to agriculture					-0.0616	
From working to not working					-0.1559	**
From not working to working					0.0343	
Constant	-0.0541		6.7526	***	6.8635	***
Sample size	3161		3161		3161	
R2	0.0101		0.3087		0.3365	
Prob > F	0.0001		0.0000		0.0000	

*Significant at 10% level, **Significant at 5% level, ***Significant at 1% level.

Reference categories: primary education, working in agriculture, living in rural areas in mainland

during the NPS1, changes in the number of adults, no change in economic activity.

Table C6: Probit Regressions on Being Poor –

	Poor/Not poor in the NPS1		Poor/Not poor in the NPS2 conditional upon			
			Being poor in the NPS1		Being not poor in the NPS1	
Demographic composition NPS1						
Household size	0.0726	***	0.0475		0.0089	
Share of children and elders	0.0042	**	0.0085	*	0.0064	***
Household head NPS1						
Female	0.1460	*	-0.1190		0.0579	
Age	0.0021		0.0043		0.0500	***
Age squared	0.0000		0.0000		-0.0005	***
Education						
None	0.1048		0.0027		0.4023	***
Secondary or more	-0.4084	*	-1.3148	***	-0.3699	*
Other education	-0.2641		-0.6119		-0.0072	
Economic activity						
Non agriculture	-0.4243	***	-0.5976		-0.6796	***
Not working	-0.0328		-0.7307		0.2735	
Strata NPS1						
Dar es Salaam	-1.0180	***	-0.7600		-0.6707	***
Other urban	-0.0832		-0.1266		-0.3875	***
Zanzibar	0.3398	**	0.1798		-0.4563	***
Changes in demographic composition						
Household size			0.1277		0.0688	*
Children 0 to 5 years			0.0586		-0.0304	
Children 6 to 9 years			-0.1356		0.0028	
Children 10 to 14 years			-0.3062	***	-0.0130	
Elders (65 and more)			0.4014		0.2892	***
Changes in economic activity of the household head						
From agriculture to non agriculture			-0.8021		-0.0921	
From non agriculture to agriculture			0.6491		0.2827	
From working to not working			1.2751	**	-0.1182	
From not working to working			0.5188		-0.5268	
Constant	-1.6913	***	-1.0472		-2.5339	***
Sample size	3161		361		2800	

*Significant at 10% level, **Significant at 5% level, ***Significant at 1% level.

Reference categories: primary education, working in agriculture, living in rural areas in mainland

during the NPS1, changes in the number of adults, no change in economic activity.

Table C7: Moderate and severe stunting, wasting and underweight among children under 5 years

	Stunting (height for age)				Wasting (weight for height)				Underweight (weight for age)			
	NPS 2008/09		NPS 2010/11		NPS 2008/09		NPS 2010/11		NPS 2008/09		NPS 2010/11	
	Severe	Moderate	Severe	Moderate	Severe	Moderate	Severe	Moderate	Severe	Moderate	Severe	Moderate
Tanzania	17.2	25.8	11.8	23.0	0.7	2.0	1.8	4.8	3.1	12.8	3.1	10.5
Rural	19.1	26.4	13.0	24.3	0.8	2.1	1.9	4.9	3.5	13.6	3.3	11.3
Urban	7.5	22.7	6.8	17.3	0.4	1.1	1.4	4.5	1.0	8.8	2.4	6.8
Mainland	17.3	25.9	11.8	23.0	0.7	1.9	1.8	4.7	3.1	12.8	3.1	10.4
Dsm	11.3	25.2	5.1	15.9	0.4	0.5	1.2	4.2	0.7	8.4	1.3	8.8
Other urban	5.9	22.0	7.3	17.6	0.3	1.1	1.4	4.6	1.0	8.4	2.8	6.0
Rural	19.3	26.5	13.1	24.4	0.8	2.2	1.9	4.8	3.6	13.6	3.3	11.2
Zanzibar	10.8	19.8	9.5	20.9	3.9	3.1	2.5	7.3	2.6	16.2	3.4	15.1
Female	15.7	25.0	10.0	24.2	0.7	2.0	1.5	5.3	2.6	12.5	3.2	9.7
Male	18.8	26.7	13.6	21.7	0.8	1.9	2.1	4.2	3.7	13.1	3.0	11.2
0-5 months	15.6	12.3	5.0	7.9	1.9	1.4	5.1	7.6	3.2	3.3	0.0	4.7
6-11	14.7	16.5	4.0	15.9	2.2	3.7	3.3	8.6	3.5	11.6	4.7	8.6
12-23	20.1	28.2	16.0	25.9	1.0	1.5	2.6	5.1	3.4	11.3	3.6	11.3
24-35	20.5	32.4	16.6	29.9	0.1	1.5	1.1	3.1	2.3	13.9	3.4	11.3
36-47	17.7	23.1	10.7	25.2	0.4	2.2	0.9	2.7	3.5	15.6	2.8	12.6
48-59 months	11.8	27.1	11.0	22.0	0.5	2.0	0.1	4.8	3.0	13.3	3.4	10.7

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Supervisor	Albert Kapala	Reginald Kessy
Enumerators	Peter Idana	Augustino Mathew
	Jamila Maumba	Emmanuel Getorare
	August Elias	Baraka Pearson
	Mahmoud Kigoda	Amina Zidiheri
	Getruda E. Antony	
Data Entrant	Manfred Mlimanyika	Mary Sheka
Driver	Jailos Tinda	Rajab Kinanda

	Zanzibar	Tracking
Supervisor		
Enumerators	Saleh M. Saleh	Mariam Edmund
	Omari Kitambo	Hiba Hiba
	Abdilhamid M. Ramadhan	Hamdan Mosha
	Said S. Masoud	Mary Nyinda
	Juma Mzee	Samwel Mande
Data Entrant	Ramadhan Ali Hassan	Erasto Mavika
Driver	Juma Gwao	William Sanga

AVAILABLE MKUKUTA INDICATORS

Goal	Indicator	Value - NPS 2008/09	Value - NPS 2010/11
Cluster I: Growth and Poverty Reduction			
Cluster wide indicators	Gini coefficient	0.36	0.37
	Headcount ratio, basic needs poverty line	15%	18%
Goal 1: Ensuring sound economic management	Annual rate of inflation	-	21
Goal 2: Promoting sustainable and broad-based growth	Unemployment Rate	2.5	3.5
Goal 4: Reducing income poverty of both men and women in rural areas	Percentage change in food crop production	-	Maize – 56.0%
		-	Rice – 77.4%
	Proportion of households who take no more than one meal per day	-	7.00%
	Percentage of small holders participating in contracting production and out-grower schemes	1%	1.40%
	Percentage of small holders using modern methods of farming (irrigation, fertilizers and hybrid seeds)	Irrigation – 4.8%	Irrigation – 3.8%
		Fertilizer – 30.1%	Fertilizer – 32.1%
		Hybrid seeds – 16.9%	Hybrid seeds – 16.8%
	Percentage of small holders who accessed formal credit formal credits for agricultural purposes	2.10%	2.20%
	Percentage of small holder households who have one or more off-farm income generating activities	58%	68.7
	Percentage of households whose main income is derived from the harvesting, processing and marketing of natural resource products	-	-
Goal 6: Provision of reliable and affordable energy to consumers	Percentage increase in number of customers connected to the national grid and off-grid sources of electricity	13%	17.00%
	Percentage of households in rural and urban areas using alternative sources of energy to wood fuel (including charcoal) as their main source of energy for cooking	Rural – 0.7%	Rural – 0.4%
		Urban – 4.0%	Urban – 4.7%
Cluster II: Improvement of Quality of Life and Social Well-being			
Goal 1: Ensure equitable access to quality primary and secondary education for boys and girls, universal literacy and expansion of higher, technical and vocational education	Literacy rate of population aged 15+	-	72%
	Net enrolment at pre-primary level	20	26
	Net primary school enrolment rate	83	80
	Percentage of cohort completing Standard VII	-	-
	Percentage of students passing the Primary School Leavers' Examination	-	-
	Transition rate from Standard VII to Form 1	-	-
	Net secondary enrolment	23	28
	Percentage of students passing the form four examination	-	-
	Enrolment in higher education Institutions	3	4
Goal 2: Improved survival, health and well-being of all children and women and especially vulnerable groups	Proportion of under-fives moderately or severely stunted (height for age)	Moderately stunted –25.8%	Moderately stunted –23%
		Severely stunted – 17.2%	Severely stunted – 11.8%
	Proportion of births attended by a skilled health worker	59%	62%
Goal 3: Increased access to clean, affordable and safe water, sanitation, decent shelter and a safe and sustainable environment	Proportion of population with access to piped or protected water as their main drinking water source	Rainy season – 43%	Rainy season – 43%
		Dry season – 44%	Dry season – 50%
	Percentage of households with basic sanitation facilities	90%	87%
Goal 4: Adequate social protection and rights of the vulnerable and needy groups with basic needs and services	Proportion of children in child labour	13.90%	25.30%
	Proportion of children with disability attending primary school	-	-
	Proportion of orphaned children attending primary school	84	77
	Proportion of elderly accessing medical exemptions at public health facilities	-	-
Cluster III: Governance and Accountability			
Goal 1: Structure and systems of governance as well as the rule of law are democratic, participatory, representative, accountable and inclusive	Percentage of the population with birth certificates	-	15
	Percentage of female from small holder households with land ownership or customary land rights	6.30%	11.70%