



United Republic of Tanzania

Tanzania

National Panel Survey Wave 3, 2012 – 2013



National Bureau of Statistics

Ministry of Finance

Dar es Salaam

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The Third Wave of the Tanzania National Panel Survey (NPS) was implemented by the National Bureau of Statistics (NBS) from October 2012 to November 2013. The main financiers of the third wave of the NPS include: Poverty Eradication Division, Ministry of Finance, European Commission (EC), World Bank / Gates Foundation and UNICEF.

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National Bureau of Statistics
Dar es Salaam, Tanzania

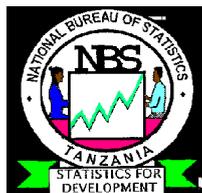


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Foreword

This report presents selected findings from Wave III of the Tanzania National Panel Survey (NPS) that was implemented from October 2012 to November 2013. The NPS is a national level longitudinal survey designed to provide data from the same households over time in an attempt to better track MKUKUTA progress, understand poverty dynamics and to evaluate policy impacts in the country. The third wave of the NPS follows up the previous two waves: the first wave took place between October 2008 and October 2009 and the second wave was conducted between October 2010 and November 2011. The National Bureau of Statistics (NBS), under the auspices of the MKUKUTA Monitoring System, implements the NPS.

While the first and second waves of the NPS had samples of 3,265 households and 3,924 households respectively, the sample for the third wave grew to 5,010 households. The increase in the sample is due to tracking and interviewing household members from split households. About 96 percent of year two households were successfully found and then interviewed during the third wave; hence the attrition rate is 4 percent, which is still exceptionally low. The attrition rate for wave two was 3 percent.

This report is organized around the NPS objectives, particularly tracking progress of the MKUKUTA I and II indicators and improving the understanding on poverty dynamics. The results herein show the evolution of some key MKUKUTA and other non-MKUKUTA indicators by treating wave one 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 over the 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 the 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 different techniques of collecting consumption data between the two surveys. Therefore, this report does not attempt to show poverty trends that are consistent between the NPS and the HBS. Instead, the report shows poverty trends across the three rounds of the NPS. Thus the HBS will remain as the official source of poverty in the country.

The assessment of impacts of specific public policy initiatives is not covered in this report. The Government ministries and other non-governmental institutions that are leading these initiatives are encouraged to make use of the available three 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 and UNICEF for financing both local and international costs of NPS Wave 3.

The NBS appreciates technical contributions by World Bank staff, Kathleen Beegle, Gero Carletto, Hyong Nguyen, Jon Kastelic and Kristen Himelein in implementing the survey. We also wish to thank Martin Cumpa, who reviewed the analysis files and the report; 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 local / community leaders and the survey respondents who generously contributed part of their time to enable the NPS Wave 3 teams gather crucial information for our country's development.



Dr. Albina Chuwa

Director General

National Bureau of Statistics

1.0 INTRODUCTION

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 *ōpanelō* means that the survey follows 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, the second round (NPS 2010/11) was carried out from October 2010 to September 2011 and the third round (NPS 2012/13) took place from October 2012 to September 2013.

1.1 Objectives

The NPS is 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 II 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 is 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 II. The Millennium Development Goals (MDG) can also be estimated as an integral part of 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.

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

1.2 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 are 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 are 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.

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

Area	Clusters		Households	
	Expected	Actual	Expected	Actual
Tanzania	410	409	3,280	3,265
Tanzania 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
Tanzania Zanzibar	60	60	480	479

Altogether the NPS baseline 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.

1.3 Fieldwork

The NPS 2008/09, the baseline for the NPS, 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 considerably the living standards of the population. 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			Total
	October-December	January-March	April-June	July-September	
Tanzania	879	742	642	1,002	3,265
Tanzania Mainland	753	628	547	858	2,786
Dar es Salaam	166	112	135	142	555
Other Urban	93	147	96	144	480
Rural	494	369	316	572	1,751
Tanzania 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 in the NPS 2008/09 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 households over the year. However, this was corrected for the NPS 2012/13 as both rural and urban households were spread over the 12 months of the fieldwork. Subsequent rounds of the NPS will now follow this approach.

1.4 Tracking and Attrition

The third round of the NPS began four years after the first round. The fieldwork for the NPS 2012/13 started in October 2012 and finished in November 2013. Enumerators visited again all households, following the same schedule of the NPS 2008/09 and the NPS 2010/2011. The objective was to track all people present in the first and second 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 previous schedules for households that either stayed in the same location or moved to a close location. For households that moved to a distant location, first their new contact details were obtained and later they were mostly interviewed between October and November 2013.

The NPS 2012/13 tracked all individuals present in the NPS 2008/09 and the NPS 2010/2011 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 2010/11 meant that some individuals tracked in the NPS 2012/13 had not been considered household members in the NPS 2010/11. A 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. The NPS 2012/13 also tracked individuals who were members in the NPS 2008/09 but were not found in NPS 2010/11. These individuals that were not tracked in the NPS 2010/2011 but were successfully tracked in the NPS 2012/13 comprise of 81 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 across two consecutive rounds at least one person considered a household member in the previous round is considered a household member in the current round too. While the second round of the NPS tracked 97 percent of the original households, the third round tracked 96 percent of second round households (Table 3). The attrition rate remains low at 3.9 percent though slightly higher than that between the first and second round of the NPS (3 percent). The attrition rate is highest in Dar es Salaam (10 percent) and lowest in other urban in the Mainland and rural areas (2 percent). 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 or third round of the survey.

Table 3: Evolution of the NPS Sample between the NPS 2010/11 and the NPS 2012/13

Area	NPS 2009/09 (A)	NPS 2010/11 (B)=(C)+(D)	Attritted (C)	Tracked (D)	NPS 2012/13 (E)
Tanzania	3,265	3,924	152	3,772	5,010
Tanzania Mainland	2,786	3,388	125	3,263	4,416
Dar es Salaam	555	644	67	577	770
Other Urban	480	651	14	637	883
Rural	1,751	2,093	44	2,049	2,763
Tanzania Zanzibar	479	536	27	509	594

The NPS sample grew to 3,924 households in the second round and 5,010 in the third round (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.

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 between the second and the third rounds is shown in Table 4. The proportion of households that stayed in the same stratum between the NPS 2010/11 and the NPS 2012/13 has increased to 94 percent compared with 91 percent between the NPS 2008/09 and the NPS 2010/11. Similarly to what occurred between the NPS 2008/09 and the NPS 2010/11, households in other urban areas in Mainland are more likely to migrate across strata, while the opposite happens in rural areas and Zanzibar. Figures in Dar es Salaam shows 91 percent of household stayed in Dar es Salaam between 2010/11 and 2012/13.

Table 4: Mobility of the NPS sample across strata

NPS 2010/11	NPS 2012/13				
	Dar es Salaam	Other urban	Rural	Zanzibar	Tanzania
Tanzania	743	849	2,709	589	4,890
Dar es Salaam	677	27	29	1	734
Other Urban	16	720	76	0	812
Rural	44	102	2,602	0	2,748
Zanzibar	6	0	2	588	596

1.5 Outline of the Report

This report is organised around the NPS objectives, particularly tracking progress of the MKUKUTA I and II indicators and improving the understanding on poverty dynamics. The former benefits from the NPS being representative at the national level and by stratum 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 are therefore available for conducting the analysis and allowing the necessary policy/program adjustments. Preference has been given to indicators that can be calculated in all three 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 are found 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 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. Part 1 examines the evolution of the MKUKUTA I and II indicators between the first three rounds of the NPS. The presentation follows the organization of the MKUKUTA in terms of clusters, goals and indicators. Part 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. Part 3 discusses food security. It draws on a module introduced in the NPS 2010/11 and then kept in the NPS 2012/13 to offer an 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 selected MKUKUTA 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.

2.0 CLUSTER I: GROWTH FOR REDUCTION OF INCOME POVERTY

Goal 1: Pursuing Sound Macroeconomic Management:

Main Message: Between 2010/11 and 2012/13 the cost of living increased by 34 percent compared to 22 percent between 2008/09 and 2010/11. Inflation is considerably higher for the rural population whose cost of living increased by 36 percent compared to 23 percent for Dar es Salaam 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 weights from 2007. The third advantage, which is particularly relevant for welfare comparisons, 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 third 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 5. 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 in the third round are lower than the national average. Across strata, Dar es Salaam is the most expensive stratum followed by other urban areas in Mainland. Zanzibar and rural areas in Mainland are the two the least expensive strata. Overall, spatial price differences have remained approximately constant in each round of the NPS with the exception of Zanzibar.

Table 5: 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	NPS 2012/13	Inflation between NPS 2008/09 and the NPS 2010/11	Inflation between NPS 2010/11 and the NPS 2012/13
Tanzania	100	100	100	22	34
Rural	93	93	92	24	34
Urban	112	109	108	17	30
Tanzania Mainland	100	100	100	22	34
Dar es Salaam	116	114	109	20	23
Other Urban	102	102	102	19	33
Rural	93	93	93	22	36
Tanzania Zanzibar	105	103	90	23	12

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 2010/11 (October 2010 to September 2011), what is the percentage change in the cost of that bundle compared to the NPS 2012/13 (October 2012 to September 2013)? Food prices have increased 34 percent between the NPS 2010/11 and the NPS 2012/13 compared with a 22 percent increase between the NPS 2009/10 and the NPS 2010/11. As between the NPS 2008/10 and the NPS 2010/11, rural areas continue to experience higher inflation than urban areas, whereas the inflation in Zanzibar is lower than in Mainland. Across strata, differences in inflation are considerable, with rural areas and other urban areas in Mainland recording the highest inflations and Zanzibar having the lowest increase in price.

Goal 2: Reducing Income Poverty through Promoting Inclusive, Sustainable, and Employment-Enhancing Growth

Main Message: Both poverty and inequality have increased since the NPS 2010/11. While poverty has increased at the national level, the results indicate that this increase is in all domains except in Dar es Salaam. Poverty in Dar es Salaam declined from 1.4 percent in the NPS 2010/11 to 0.6 percent in the NPS 2012/13. During that period, the Gini, which measures inequality, also rose slightly from 0.37 to 0.39.

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, at 0.37 in the NPS 2010/11 and 0.39 in the NPS 2012/13 (Table 6), which suggests that consumption inequality has kept rising since the first round of the NPS. The increase at the national level in the third round seems to have been fuelled by the increase in inequality in rural areas (from 0.31 in the previous two rounds of the NPS to 0.34 in the 2012/13 NPS). Since 2010/11, inequality in Dar es Salaam and other urban areas in Mainland remained constant, while it increased in rural areas in Mainland and Zanzibar. A relatively low level of consumption inequality is observed in Dar es Salaam (0.32) followed by Zanzibar (0.33) and rural areas (0.34).

Table 6: Gini Coefficient

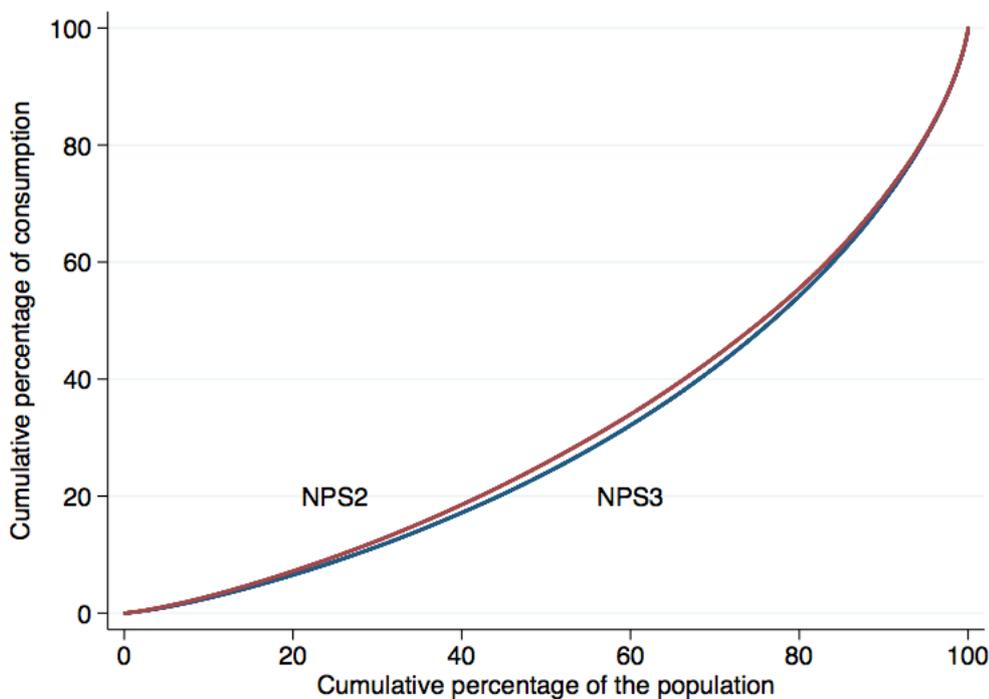
Area	NPS 2008/09	NPS 2010/11	NPS 2012/13
Tanzania	0.36	0.37	0.39
Rural	0.31	0.31	0.34
Urban	0.37	0.37	0.36
Tanzania Mainland	0.36	0.37	0.39
Dar es Salaam	0.34	0.32	0.32
Other Urban areas	0.35	0.35	0.35
Rural areas	0.31	0.31	0.34
Tanzania Zanzibar	0.32	0.31	0.33

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 2010/11 and the NPS 2012/13.

Figure 1: Lorenz Curves of Consumption



The curves suggest a similar pattern to the findings of the Gini coefficients. While the curve for the NPS 2010/11 is closer to the 45-degree line, the NPS 2012/13 is relatively closer to the horizontal axis, which suggests that inequality has risen over time.

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 mainly because of methodological differences between both surveys (A summary of the poverty methodology between the HBS and the NPS is provided in Box 1). However, 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 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 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 the NPS uses a recall period of the last seven days. Second, in the HBS, households provide a self-reported value for the non-purchased food that is consumed, whereas in the NPS, households do not need to provide 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. Third, the HBS uses a more extensive list of food and non-food items for which consumption is collected than the NPS. Fourth, the NPS does not collect information about rent (actual or imputed), whereas the HBS does and thus correctly includes that as part of the consumption aggregate. Last, clothing expenses are not included in the NPS consumption aggregate, while they are in the HBS estimates. The reason for that exclusion is comparability over time across the NPS rounds: the third round asks for those expenses but the first two rounds do not.

The methodology for poverty analysis is discussed in detail in Appendix A. 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 is adjusted for temporal and spatial price differences, thus real consumption is expressed at Tanzanian prices. Second, a single national poverty line is estimated using the Cost of Basic Needs Approach. The food poverty line is anchored to a daily intake of 2,200 kilocalories per adult equivalent. The food bundle consumed by the bottom 50 percent 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 percent 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 its per adult equivalent real consumption is lower than the total poverty line.

The incidence of poverty increased from 18 percent of the population in the NPS 2010/11 to 21 percent in the NPS 2012/13 (Table 7). With the exception of Dar es Salaam, the incidence of poverty has increased since the NPS 2010/11 in the rest of the strata in the Mainland as well as in Zanzibar.

Table 7: Basic Needs Poverty Incidence

Area	NPS 2008/09	NPS 2010/11	NPS 2012/13
Tanzania	14.8	17.9	21.0
Rural	17.3	22.4	26.5
Urban	5.9	5.2	5.7
Tanzania Mainland	14.6	18.1	21.2
Dar es Salaam	1.0	1.4	0.6
Other Urban	7.7	6.7	8.5
Rural	17.2	22.7	26.7
Tanzania Zanzibar	20.4	12.4	14.2

A few patterns hold in all rounds of the NPS. Rural areas have a considerably higher poverty incidence than urban areas. Unambiguous statements across strata are more difficult to make. Zanzibar always displays higher poverty than Dar es Salaam but its relationship with other strata has changed across the three rounds of the NPS. In the NPS 2008/09 poverty in Zanzibar was higher than in the Mainland; however the opposite happens in the NPS 2010/11 and in the NPS 2012/13. On the other hand, in the NPS 2008/09 poverty in Zanzibar was higher than in rural areas in the Mainland, while the reverse is true in both the NPS 2010/11 and the NPS 2012/13.

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 changes when the poverty line is shifted upwards or downwards and how robust the poverty comparison is between the three rounds of the NPS can be observed in Table 8. 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 generally higher in the third round of the NPS than the poverty in both the second and first rounds of the NPS.

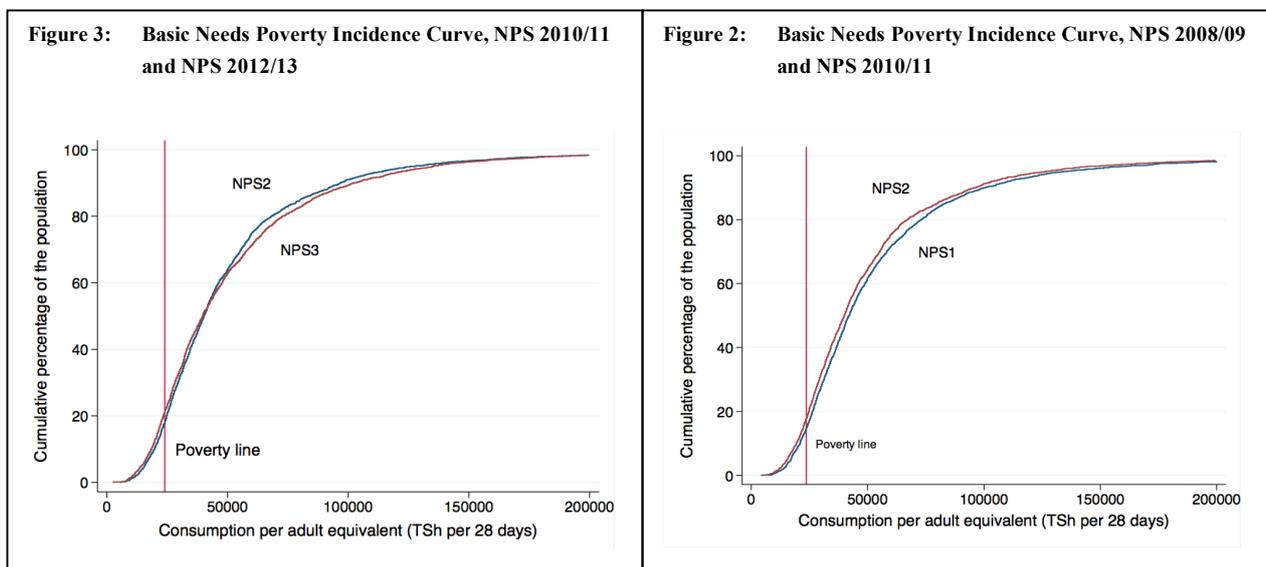
Table 8: Sensitivity of the Basic Needs Poverty Incidence to Changes in the Poverty Line

Change in Poverty Line	Poverty line (TSh.)	Poverty Incidence					
		NPS 2008/09			NPS 2012/12		
		NPS 2008/09	% Change	NPS 2012/12	% Change	NPS 2012/12	% Change
Poverty line - 20 percent	19,147	7.6	-48.7	9.2	-48.6	11.2	-46.4
Poverty line - 15 percent	20,343	9.2	-38.0	11.2	-37.7	13.2	-37.0
Poverty line - 10 percent	21,540	11.1	-24.8	13.3	-25.6	16.1	-23.4
Poverty line - 5 percent	22,737	12.9	-13.0	16.0	-10.8	18.8	-10.3
Poverty line	23,933	14.8	0.0	17.9	0.0	21.0	0.0
Poverty line + 5 percent	25,130	17.2	16.1	21.0	17.2	23.5	12.0
Poverty line + 10 percent	26,327	19.6	32.8	23.2	29.7	25.7	22.5
Poverty line + 15 percent	27,523	22.2	50.0	26.2	46.5	28.8	37.3
Poverty line + 20 percent	28,720	25.1	69.5	28.7	60.3	31.3	49.1

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 (Figures 2 and 3). 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. For the NPS 2008/09 and the NPS 2010/11, 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.

However, for the NPS 2010/11 and NPS 2012/13 the situation is different; for poverty lines up to TZS 42,500, the poverty incidence in the NPS3 is higher than in the NPS2, whereas for poverty lines above that level poverty in the NPS3 is lower than in the NPS2. The gap between the two distributions is however very small suggesting that the change is not statistically significant.



Box 1. Poverty According to the NPS and the HBS

The Household Budget Surveys (HBS) provide the official poverty figures in Tanzania. The NPS however was designed 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 but 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 its 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. Fifth, the NPS does not collect information about rent (actual or imputed), whereas the HBS does and thus correctly includes that as part of the consumption aggregate. Last, clothing expenses are not included in the NPS consumption aggregate, while they are in the HBS estimates. The reason for that exclusion is comparability over time across the NPS rounds: the third round asks for those expenses but the first two rounds do not.

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.

Unemployment Rate:

Main Message: Labour force participation in Tanzania for 2012/13 was roughly the same as its level in 2008/09. About three quarters of Tanzanians are actively working, with a small fraction reporting not working but being available for work. For most Tanzanians, work does not come with a paycheck from an employer. Farming is the dominating category of work, three times larger than wage work or work in a small household enterprise.

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 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 most of the time if a larger reference period than the last seven days is used. 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 market².

² Unpaid family workers appear to be underrepresented in the NPS. While both wage employees and self-employed have been properly captured as part of the labour force, a significant proportion of unpaid workers might be excluded

Table 9: Labour Force Participation and Unemployment Rate

Area	Labour force participation rate			Unemployment		
	NPS 2008/09	NPS 2010/11	NPS 2012/13	NPS 2008/09	NPS 2010/11	NPS 2012/13
Tanzania	77.6	82.6	78.2	2.5	3.5	2.9
Rural	81.2	86.2	81.0	0.7	2.0	1.0
Urban	67.1	73.9	71.7	8.5	7.7	7.9
Tanzania Mainland	78.0	83.1	78.7	2.3	3.1	2.6
Dar es Salaam	68.0	72.1	72.4	16.0	13.7	12.9
Other Urban	68.3	75.0	72.0	4.1	5.0	4.1
Rural	81.4	87.0	81.4	0.6	1.5	0.7
Tanzania Zanzibar	64.1	65.2	62.5	7.9	17.8	16.5
Female	75.3	81.3	74.1	2.7	4.2	3.7
Male	80.1	84.0	82.6	2.2	2.7	2.1
15-24	57.7	66.1	65.1	5.3	7.1	5.7
25-34	89.2	93.4	87.0	2.8	3.5	3.5
35-64	92.1	95.8	90.0	0.8	1.2	0.8
65+	67.0	72.0	61.6	0.3	1.4	0.8

The labour force participation rate is at the same level nationally than in the NPS 2008/09. The higher rate in the NPS 2010/11, which was observed for all the different demographic groups and locations, was not sustained. Rural areas have the highest rate of labour participation, where about four of five adults are working. Labour force participation rates are highest among prime-age adults (25-64 years). Men are more likely to be in the labor force than women (83 percent compared to 74 percent, respectively). Across the different demographic groups and locations (except for Dar es Salaam), labour force participation rates decreased significantly between the NPS 2010/11 and the NPS 2012/13.

With regard to the unemployment rate, only a very small fraction of the labor force is unemployed (3 percent). That is, the vast majority of the labor force is actively working. While this is almost the same rate as in the NPS 2008/09, the distribution of the unemployed has shifted across locations. A few findings are found compared to the NPS 2008/09: an increase in unemployment among people in Zanzibar, a decrease in rates in Dar es Salaam, and no change in other mainland urban areas. In the NPS 2012/13, unemployment in Zanzibar was 17 percent compared to less than 3 percent in the Mainland. As in earlier NPS rounds, unemployment is much higher in urban than in rural areas, where it is very rare. As noted above, the relaxed definition of unemployment is used, otherwise the international definition would lower further the unemployment rate since it also requires that those without work and available to work must have sought work in the last four weeks.

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.

Percentage of Population with Access to Electricity (Grid/Off Grid)

Access to electricity is an important component of sustainable economic and social development as well as proper health practices and environmental quality. Electricity enables the operation of hospitals and schools, offers communication services, and provides safe water supplies, sanitation facilities and other socio-economic services. Furthermore, it allows households to improve their living conditions through these improved education, health and employment opportunities.

Access to electricity referred to households under MKUKUTA I but refers to population under MKUKUTA II. For completeness both indicators will be shown.

Electricity in Tanzania may be sourced from the Tanzania Electric Supply Company Limited (Tanesco), community or personal generators, car batteries, motorcycle batteries, or solar panels.

Table 10: Percentage of Population with Access to Electricity

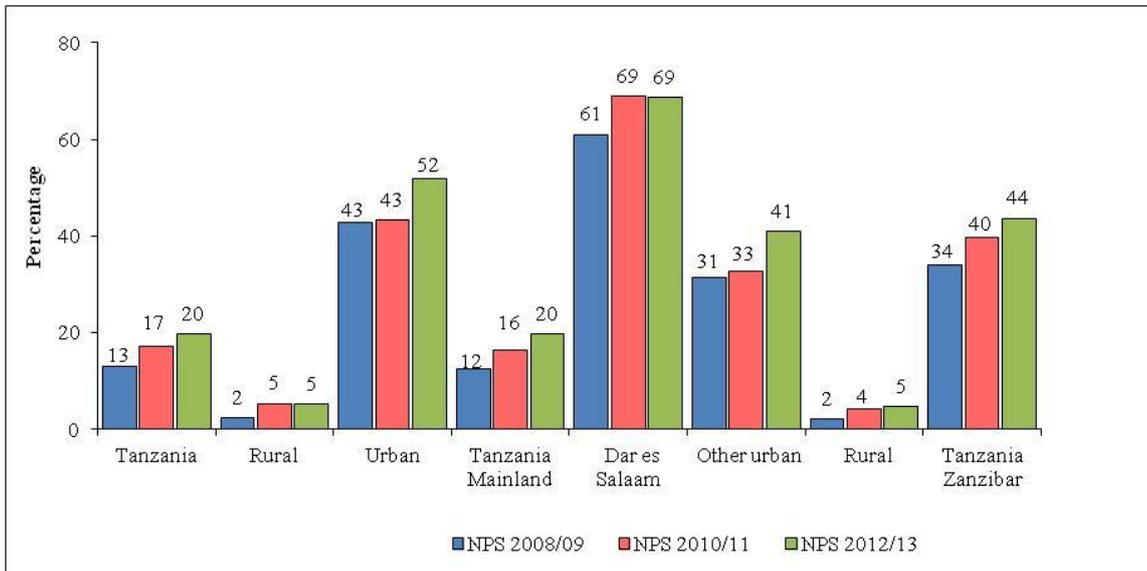
Area	Population with electricity		
	NPS 2008/09	NPS 2010/11	NPS 2012/13
Tanzania	11.2	14.2	16.4
Rural	2.0	4.1	4.2
Urban	43.5	42.9	50.3
Tanzania Mainland	10.5	13.3	15.7
Dar es Salaam	58.1	67.0	68.7
Other Urban	33.5	32.7	39.2
Rural	1.6	2.9	3.5
Tanzania Zanzibar	35.4	41.2	41.7

The population with access to electricity in the NPS 2012/13 is 16.4 percent (Table 10). It has increased from 11.2 percent in the NPS 2008/09 and from 14.2 percent in the NPS 2010/11. Overall, the increase of population with electricity has happened across the country over time. The rural population in both Mainland and Tanzania has still the lowest percentage of population connected to electricity compared to other strata. In the Mainland, Dar es Salaam is the stratum with highest percentage of population with access to electricity (69 percent). Zanzibar had a greater percentage of population (41.7 percent) with electricity than the Mainland (15.7 percent).

At household level the trend is the same, showing that access to electricity has steadily increased over time. In the NPS 2012/13, nearly 20 percent of households have access to electricity, a statistically significant improvement from the 17 percent of households in the NPS 2010/11 and the 13 percent of households reported in the NPS 2008/09. However, marginal gains between the NPS 2008/09 and the NPS 2010/11 were higher than those between the NPS 2010/11 and the NPS 2012/13. Improvements were seen across the country, in Mainland and Zanzibar, and across almost all strata. Statistically significant increases were observed in rural areas between the NPS 2008/09

and the NPS 2010/11. However, access to electricity in these areas remained relatively unchanged in the NPS 2012/13, while urban areas made considerable improvements.

Figure 4: Percentage of Households with Access to Electricity



Zanzibar has seen statistically significant improvements in access between the NPS 2008/09 and the NPS 2012/13, and has a higher proportion of households with access to electricity than the Mainland in each round of the NPS. Urban areas likewise have consistently maintained better access to electricity than rural areas (Figure 4). Rural areas in the Mainland are the stratum with the lowest percentage of households with access to electricity in each round, and in the NPS 2012/13 was still less than 5 percent.

HOUSEHOLD INVOLVED IN THE AGRICULTURAL SECTOR

Agriculture is the foundation of the Tanzanian economy, accounting for 26 percent of the GDP in 2006 based on the Tanzania revised GDP for 2007 benchmark and employing 77 percent of the labor force (World Bank, 2007). Agriculture is a source of livelihood for three quarters of the population: 74.4 percent of the households in the NPS 2012/13 are cultivating some land (whether owned or rented) compared to 74.2 in the NPS 2010/11. Moreover, cultivation of land appears to be static over short periods of time, with less than 8 percent of the population moving in or out of farming between NPS 2010/11 and NPS 2012/13. Seven in ten households were engaged in farming in both rounds (Table 11).

While agriculture is the major sector of the economy, rural areas continue to bear the brunt of poverty: with 96 percent of the poor living in rural areas (NPS 2012/13). Poverty rates among land cultivators are 6 times higher (18.4 percent) than for the rest of the population (3.3 percent).

Table 11: Percentage of Agricultural Households across the NPS 2010/11 and the NPS 2012/13

Whole sample		NPS 2012/2013	
		Non agricultural households	Agricultural households
NPS 2010/2011	Non-agricultural households	21.9	3.9
	Agricultural households	3.7	70.5

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.

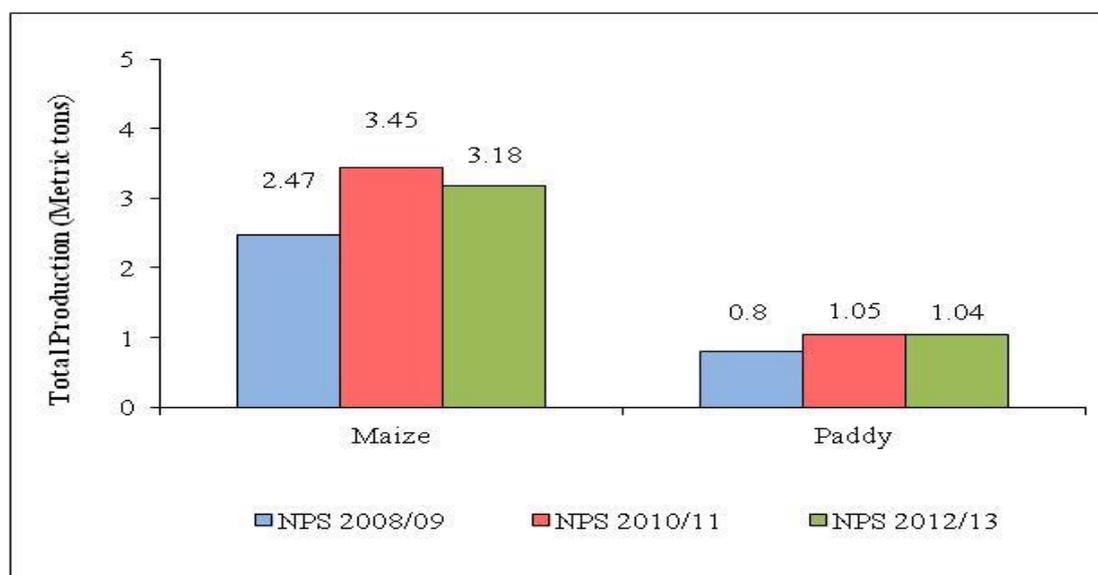
This chapter will only present findings of the NPS that are related to agricultural indicators as indicated in the MKUKUTA Monitoring Master Plan (MMMP).

Changes in Production and Major Crop Yields Over Time

Due to different agro-climatic areas and socio-economic conditions, there are significant differences in cropping patterns and farming systems. However, the 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 mostly tomatoes. The cash crops most frequently grown by households are cashew nuts, pigeon peas, coconut, coffee and sugar cane. 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.

In the NPS 2012/13, the total area under cultivation is estimated to be 8 million hectares, of which 6 million are planted with maize and 0.9 million are planted with paddy.³

Figure 5: Full Year (Masika and Vuli) Total Crop Production (Metric Tons)



This section reports only statistics on maize and paddy because they are the two crops mentioned in the MMMP. Between the NPS 2010/11 and the NPS 2012/13, total production of maize during the full year (Masika and Vuli) decreased from 3.5 to 3.2 million metric tons. In the same period, total production of paddy remained the same at 1 million metric tons (Figure 5). This is opposite to what happened in the production of the same crops between the NPS 2008/09 and the NPS 2010/11. Further investigation is needed as other sources of agriculture data show that the production of these crops has been increasing during the three rounds of the NPS.

Table 12: Average Yields of Maize (kg / area planted in hectares)

	<i>Using Farmer Reported Plot Areas (Mean)</i>			<i>Using GPS-Based Plot Areas (Mean)</i>	
	NPS 2008/09	NPS 2010/11	NPS 2012/13	NPS 2010/11	NPS 2012/13
All Plots	782	794	779	930	858
Pure stand Plots	907	878	893	1,048	962
Intercropped Plots	715	742	711	858	800
Plots w/ Organic Fertilizer	1,012	927	785	1,014	955
Plots w/Inorganic Fertilizer	1,160	1,179	1,181	1,349	1,309
Plots w/ Any Fertilizer	1,066	1,058	982	1,170	1,101

³ 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.

Yields⁴ of the two major cultivated crops remained quite stable over time (Table 12 and Table 13). In the NPS 2012/2013, average maize yields ranged between 779 (farmer-reported plot area) and 858 (GPS-based plot area) kilogram per hectare. This is similar to the average maize yields in 2010/2011 ranging between 794 (farmer-reported plot area) and 930 (GPS-based plot area) kilogram per hectare, and 782 kilogram per hectare in 2008/09. The average paddy yields in NPS 2010/12 ranged from 1,340 (farmer reported plot area) to 1,594 (GPS-based plot area) kilogram per hectare, as compared to 1,313 kg in 2008/09. Average paddy yield in 2012/13 ranged between 1,277 (farmer reported plot area) and 1,379 (GPS-based plot area) kilogram per hectare.

Table 13: Average Yields of Paddy (kilogram / area planted in hectares)

	<i>Using Farmer Reported Plot Areas (Mean)</i>			<i>Using GPS-Based Plot Areas (Mean)</i>	
	NPS 2008/09	NPS 2010/11	NPS 2012/13	NPS 2010/11	NPS 2012/13
All Plots	1,313	1,340	1,277	1,594	1,379
Pure stand Plots	1,438	1,431	1,381	1,721	1,527
Intercropped Plots	805	773	684	944	648
Plots w/ Organic Fertilizer	1,967	2,412	2,229	2,733	1,951
Plots w/Inorganic Fertilizer	1,803	1,894	1,706	1,873	2,093
Plots w/ Any Fertilizer	1,793	1,908	1,763	1,893	1,843

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 are applied, whether organic or 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.

Percentage of Households Using Irrigation

Tanzania has large surface and underground water, which is matched by ample land suitable for irrigation. The estimated irrigation potential is up to 2 million hectares (World Bank, 2001). Note that according to the National Irrigation Master Plan (NIMP), the irrigation potential in Tanzania is 29.4 million hectares out of which 2.3 million hectares are high potential, 4.8 million hectares are medium potential and 22.3 million hectares are low potential. Despite this potential, Tanzanian agriculture remains largely rain fed, 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 still underused in Tanzania; only around 3 percent of farming households are using irrigation in at least one of their fields, which is about the same that was reported in the NPS 2010/11. This corresponds to less than 2 percent of cultivated fields (Table 14). Assuming that, fields planted with the two major crops, maize and paddy, are slightly more

⁴ 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).

likely to be irrigated (respectively between 1.7 to 5.6 percent), it is clear that the average incidence of irrigation remains very low.

Table 14: Percentage of Households using Irrigation

	NPS 2008/09	NPS 2010/11	NPS 2012/13
Share of households using irrigation	4.2	3.4	3.4
Share of fields using irrigation (surface)	2.0	1.7	1.7
-> share of maize fields using irrigation (surface)	1.7	1.5	1.7
-> share of paddy fields using irrigation (surface)	4.3	3.6	5.6

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

Low incidence of irrigation is coupled 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, as reported in the NPS 2012/13, 59 percent of the farmers now are using furrow irrigation (flooding) compared to 69 percent in NPS 2010/11, and the number of farmers using watering buckets has increased to 23 percent from 16 in the NPS 2010/11 (Table 15). The use of more modern methods such as sprinklers, drip irrigation, and water hoses is still not common in all rounds of the NPS.⁵

Table 15: Proportion of Households Using Irrigation by Method

Method of Irrigation	NPS 2008/09	NPS 2010/11	NPS 2012/13
Flooding	0.66	0.69	0.59
Sprinkler	0.05	0.04	0.03
Drip irrigation	0.03	0.04	0
Bucket/watering can	0.25	0.16	0.23
Water hose	0.04	0.04	0.09
Other	-	0.03	0.07

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

Very little irrigation currently depends on the extraction of ground water, which provides a promising area for future development with direct and affordable benefits to the poor. The majority of farmers using irrigation rely on large bodies of water, including streams, rivers, and lakes (76 percent), in the NPS 2010/11 and the NPS 2012/13. Since the available surface water varies with the amount of rainfall, open wells and boreholes or tube-wells would spread the availability of water throughout the growing season. Currently, wells are used by only 11 percent of the farmers for irrigating their fields, and boreholes by only one percent (Table 16). The groundwater irrigation systems are less capital-intensive than large surface irrigation schemes and this could reduce the

⁵ Because farmers are asked which kind of irrigation they used for each plot, a farmer may be listing more than one type of spraying water on his fields. In addition, only 114, 105 and 118 plots were using some type of irrigation in 2008/9, 2010/11 and 2012/13 respectively, so comparing the type of irrigation across the two rounds should be done with caution.

reliance on large bodies of water, including rivers and lakes, and promote more sustainable use of locally sourced and managed irrigation systems.

Table 16: Proportion of Households Using Various Sources of Water for irrigation

Source of Water	NPS 2008/09	NPS 2010/11	NPS 2012/13
Well	0.12	0.16	0.11
Borehole	0.02	0.05	0.01
Pond/tank	0.01	0.02	0.09
River/stream	0.79	0.76	0.76
Other source	0.06	0.04	0.04

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

Households Using Fertilizers and Improved Seeds

The use of fertilizer in Tanzania has been declining since the phasing out of subsidies on fertilizer in the years 1991 to 1994. However, with the recent resumed provision of limited subsidies, the use of fertilizers has increased. Regions with the highest use of fertilizers among their households are located in the Southern part of the country (Ruvuma and Mbeya). According to the Tanzania Agricultural Sample Census, 2002/3, the proportion of farmers using fertilizers is highest for crops such as tobacco, carrots, onions, and tomatoes.

Even with an increase in the percentage of households that has applied any type of fertilizer from 33 percent in NPS 2010/11 to 35 percent in NPS 2012/13 (Table 17), the overall use of fertilizer remains low, whether it is organic or inorganic fertilizers. 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 has declined slightly between NPS 2010/11 (17 percent) and NPS 2012/13 (15 percent). Use of fertilizer vouchers appears to be very low, which could have been the case because the program started with a focus on southern highlands. If the analysis is performed only for that zone, then that figure will most likely be higher than the national figure (4.6 percent).

Table 17: Percentage of Households Using Fertilizer, Seeds and Pesticides

Percentage of households using at least:	NPS 2008/09	NPS 2010/11	NPS 2012/13
Any fertilizer	30.1	32.6	35.4
Using organic fertilizers	22.1	21.8	25.3
Using non-organic fertilizers	12.9	16.8	15.3
Using vouchers for non-organic fertilizers	-	49.5	30.1
Using pesticides/insecticides	14.7	13.2	13.7
Improved Seeds	21.4	18.0	43.2

^a*In the NPS 2012/13 and additional seed category of "improved, recycled" was added to the questionnaire. These responses were grouped into the "improved" category for the table. This could explain a part of the large increase in improved seed use compared to the two previous rounds.*

In addition, the use of pesticides/insecticides is still very low (14 percent) and there are no significant changes during the three rounds of the NPS.

Purchase of improved seeds has significantly increased from 14.3 percent in the NPS 2010/11 to 36.7 in the NPS 2012/13. However this should be treated with caution as an additional seed category of ðimproved, recycledö seeds that was grouped with improved seeds could have contributed to the increase compared to the two previous rounds.

Households Experiencing Erosion

Erosion appears to be one of the major impediments to the maintenance of the same amount and soil texture of utilized land: one in four Tanzanian farming households experienced erosion in at least one of their fields.⁶ Compared with previous rounds, the percentage of households with at least one field experiencing erosion has been decreasing from 25 percent in the NPS 2008/09 to 23 percent in the NPS 2010/11 and to 19 percent in the NPS 2012/13. The main source of erosion remains primarily erosion from rain, which accounts for over 96 percent of the erosion sources (Table 18).

Table 18: Percentage of Households Experiencing Erosion

	NPS 2008/09	NPS 2010/11	NPS 2012/13
Proportion of households with at least one field subject to erosion	24.5	22.7	18.8
Cause of erosion			
Wind	2.3	1.3	1.4
Rain	93.7	97.1	96.6
Animals	3.5	1.3	0.7
Cultivation that does not comply with soil conservation	1.1	0.3	0.0
Others	0.3	0.4	0.9

A particular concern is the efforts used to control erosion. There has been a reduction in the proportion of households adopting erosion control techniques between the last two rounds of the NPS: from 0.16 in the NPS 2010/11 to 0.12 in the NPS 2012/13. Techniques that require more heavy construction work, such as dams, are essentially nonexistent (Table 19).

⁶ Farmerø own assessment.

Table 19: Proportion of Households Using Erosion Control Methods

	NPS 2008/09	NPS 2010/11	NPS 2012/13
Households using erosion control	0.26	0.16	0.12
Type of erosion control			
Terraces	0.43	0.60	0.39
Erosion Control Bunds	0.31	0.02	0.30
Gabions/sandbags	0.03	0.02	0.01
Vetiver grass	0.06	0.05	0.03
Tree belts	0.09	0.09	0.05
Water harvest bunds	0.19	0.14	0.13
Drainage ditch	0.30	0.22	0.22
Dam	0.01	0.00	0.00

These differences in the households using erosion control between the NPS 2008/09 and the followed two rounds (the NPS 2010/11 and the NPS 2012/13) 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 and the NPS 2012/13 farmers were asked whether they were using any erosion control while being shown different pictures of the different techniques used to prevent erosion, which could explain why farmers were more likely to report an erosion control when there was in fact none. Aside from the use of erosion control bunds, there has been a general declining trend in the percentage of households using other erosion control techniques between the last two rounds of NPS, and may be in contradiction with MKUKUTA cluster two strategies that insist on the use of modern agriculture practice to improve productivity, employment and profitability and income in rural areas.

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 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.

Table 20: Percentage of Households Using Farming Technology

	NPS 2008/09		NPS 2010/11		NPS 2012/13	
	Own item	Used item	Own item	Used item	Own item	Used item
Hand hoe	98.0	95.8	96.6	91.6	97.9	95.7
Hand powered sprayer	7.0	12.8	5.9	8.5	6.3	9.7
Ox plough	8.7	18.2	9.4	17.8	10.3	22.8
Ox seed planter	9.9	19.4	10.5	18.7	11.1	23.3
Ox cart	0.1	0.4	0.0	0.1	0.0	0.0
Tractor	2.4	7.7	2.4	5.1	2.5	6.3
Tractor plough	0.1	2.8	0.2	2.9	0.1	5.0
Tractor harrow	0.3	1.4	0.1	2.3	0.1	3.9
Sheller/thresher	0.1	0.1	0.0	0.0	0.1	0.2
Hand mill	0.5	1.1	0.1	0.1	0.1	0.2
Watering can	2.0	1.8	1.2	1.1	0.8	0.9
Farm buildings	7.5	7.2	6.8	6.6	5.6	5.1
Gerri cans/drums	12.7	10.8	3.8	2.3	2.4	2.1
Power tiller	-	-	-	-	0.2	0.4
Other	-	-	10.5	10.0	31.7	31.3

One of the major drawback on farmers' production and average yield that was presented earlier is the strong reliance on hand hoes as the main cultivating tool, as evidenced in all rounds with about 98 percent of the households owning hand hoes in the 2008/09 NPS and the 2012/13 NPS, which sets serious limitations on the land area on which crops can be grown using only family labor. The use of hand hoes is also high as about 96 percent of households used hand hoes in their farming activities. The use of animal traction (ox plough, ox seed planter, ox cart) is also limited, though it has generally increased since the previous rounds. In the NPS 2012/13, many farmers do possess ox plough (10 percent) and many can afford to rent an ox plough (23 percent) or an ox seed planter rented (23 percent) when they needed to use them. The use of mechanized machines and processing engines (e.g., tractors) is still very limited with only about 6.3 percent of the households are using tractors (Table 20).

Smallholder Farmers who have Off-farm Income Generating Activities

Diversifying income sources by generating income from non-farm activities either through a wage job or creating a household enterprise may increase productivity of the farm and helps reducing farmers' vulnerability to exogenous weather or price shocks. Non-farm rural incomes therefore play a key role in both fostering rural development and the alleviating food security risks. Separating rural and urban farm-households (Table 21) shows that both in 2010/11 and 2012/13, around 65 percent of farm households in rural areas earned income outside their farms. This represents a sizeable 10 percentage points increase from 2008/2009.

Table 21: Percentage of Farm Households Earning Income from Off-farm Activities⁷

Percentage of households earning income from:	2008/9			2010/11			2012/13		
	<i>Wage</i>	<i>Self-employment</i>	<i>Either</i>	<i>Wage</i>	<i>Self-employment</i>	<i>Either</i>	<i>Wage</i>	<i>Self-employment</i>	<i>Either</i>
Rural	34.1	34.6	55.0	43.8	38.9	65.4	46.4	37.2	65.9
Urban	45.0	54.7	78.1	50.7	60.5	85.6	52.8	55.8	83.3
All	35.4	36.9	57.7	44.8	42.1	68.4	47.2	39.7	68.2

Sixty-one percent of the farming households are selling part of their crops (Table 22). The crop most sold by farmers is paddy, with about half of the farmers that cultivate paddy selling some amount of paddy. Additionally, a large proportion of farmers who are cultivating maize sell their production, with about one-third of maize producing farmers selling part of their production.

Households Selling Production and/or Experiencing Losses

Post-production storage did not change significantly over time: about one third of households store part of their production in all rounds of NPS. On the other hand, post-harvest losses have decreased significantly over time. In the NPS 2012/13, Only 7 percent of households experienced losses compared to 11 percent in the NPS 2010/11 and 20 percent in the 2008/09 NPS.

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

	NPS 2008/09	NPS 2010/11	NPS 2012/13
Proportion of households who sell at least part of their harvest	0.59	0.61	0.61
Proportion of households selling maize ^a	0.27	0.33	0.29
Proportion of households selling paddy ^b	0.51	0.57	0.54
Proportion of households who experienced loss of crops	0.20	0.11	0.07
Proportion of households who stored at least part of harvest	0.40	0.30	0.30

^a: conditional on producing maize, ^b: conditional on producing paddy.

Smallholder Farmers Participating in Contract Farming or Out-grower Scheme

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 very slight increase for the smallholder farmers participating in the contract farming or out-grower scheme has been noted since the first NPS in 2008/09, with 1.4 percent during the 2010/11 NPS and 1.9 percent in the 2012/13 NPS.

⁷ 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.

Goal 4: Ensuring Food and Nutrition Security, Environmental Sustainability and Climate Change Adaption and Mitigation

Main Message: Tanzanian households are moving slowly toward the use of alternative sources of energy for cooking. The percentage of household using alternative energy for cooking has more than doubled between the NPS 2008/09 (1.5%) and the NPS 2012/13 (3.3%).

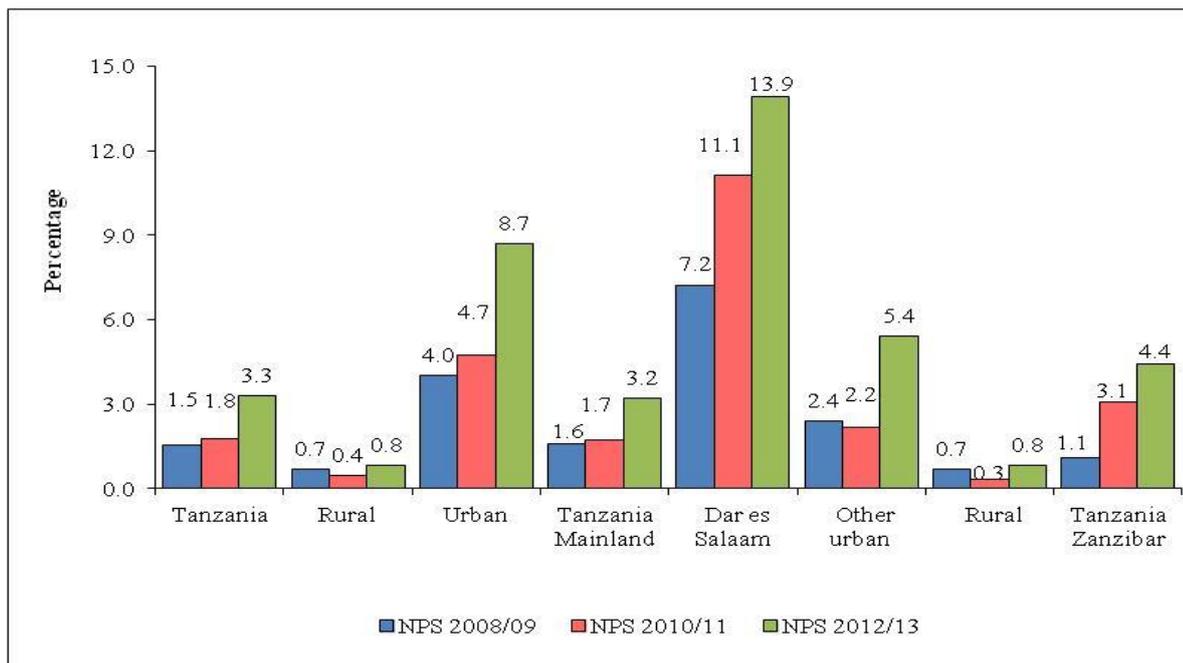
Percentage of Households in Rural and Urban Areas using Alternative Sources of Energy to Wood Fuel (including charcoal) as their Main Source of Energy for Cooking

Using gas or electricity as sources of energy for cooking reduces environmental degradation, improves the health status of the population, and contributes to gender equality. Bush clearing is often done in order to obtain charcoal, and high incidences of respiratory disease are typical in households using wood or charcoal for cooking because of the indoor air pollution. Fetching wood is also typically done by women and children, thus limiting their participation in employment and education opportunities. Electricity, gas, and biogas will be considered alternative sources of energy. In addition to these, the lists of potential sources for cooking fuels reported in the NPS include firewood, paraffin, charcoal and animal residuals.

Despite increasing from 1.5 percent to 3.3 percent of households utilizing alternative fuels between the NPS 2008/09 and the NPS 2012/13 respectively, the overwhelming majority of households in Tanzania still rely on wood and charcoal for cooking, around 95 percent. Statistically significant improvements have occurred in nearly every strata: nationally, in urban areas, the Mainland, Dar es Salaam, and urban areas in the Mainland. Rural areas, in contrast, have more or less leveled off after slight declines in the NPS 2010/11, increasing the gap between urban and rural households. Steady improvements are observed in Zanzibar, but none are significant over time.

Urban areas consistently have higher proportions of households using alternate fuels than in rural areas, and Dar es Salaam is the stratum with the highest use of alternative sources of energy. Rural areas in the Mainland have ranked last amongst all strata in each round, though the gap has increased slightly as almost no improvements have been made in that area. Differences between Mainland and Zanzibar within each round of the NPS are minimal.

Figure 6: Percentage Of Households Using Alternative Sources Other than Wood Fuel for Cooking



3.0 CLUSTER II: IMPROVEMENT OF QUALITY OF LIFE AND SOCIAL WELL BEING

Goal 1: Ensuring Equitable Access to Quality Education at all Levels for Males and Females, and Universal Literacy for Adults, both Men and Women

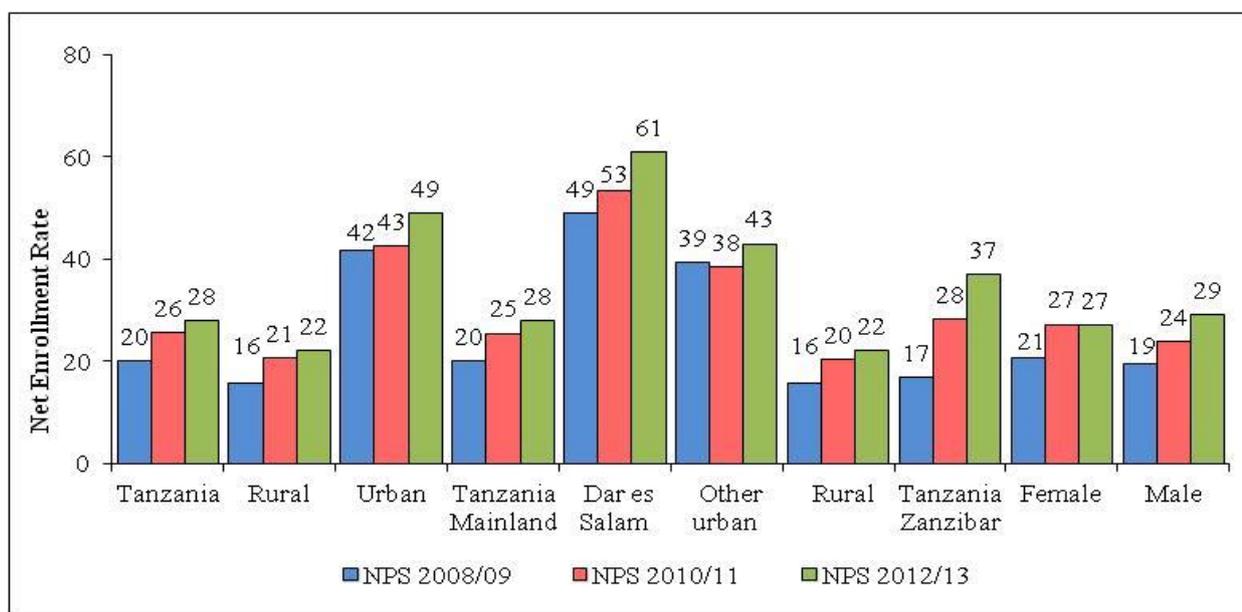
Main message: Enrolment rates in both pre-primary and secondary education have increased between 2008/09, 2010/11, and 2012/13. Enrollment in primary schools has decreased in all areas except Dar es Salaam and Zanzibar.

Overall, rural children are less likely to be enrolled in any level of education than their urban counterparts. Secondary school and higher education gross enrollment rates still reveal low levels of enrollment.

Net Enrollment Rate 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 7 shows the NER in pre-primary education for each round of the NPS.

Figure 7: Net Enrolment Rates in Pre-Primary Education



The NER in pre-primary education increased from 20 percent to 26 percent between the NPS 2008/09 and the NPS 2010/11, and increased again to 28 percent in the NPS 2012/13. Improvements in enrollment across rounds have occurred at the national level, in both urban and rural areas, for males and females, and across all geographic strata. A decrease in the NER was observed in other urban areas of the Mainland between the first and second round only; however,

this stratum as well as overall urban areas and Dar es Salaam have since seen considerable increases in the NPS 2012/13. Zanzibar is the only strata showing statistically significant changes between each of the three rounds, though nearly all of the strata in NPS 2012/13 observed significant changes with respect to the NPS 2008/09. In general, urban areas display a substantially higher NER than rural areas. The Mainland showed relatively similar enrollment rates as Zanzibar for the first two rounds, though a gap developed in the third round as NER in Zanzibar increased significantly. Dar es Salaam continued to display the highest NER, while rural areas in Mainland have the lowest enrollment rates. Males and females displayed nearly identical pre-primary school NER, though enrollment for females was marginally higher in the first two rounds.

Net Primary School Enrollment Rate

Net enrollment rate (NER) in primary education is the proportion of children aged 7-13 years who are enrolled in primary school to the population of children who are 7-13 years of age. Table 23 shows the NER in primary education for each round of the NPS.

Table 23: Net Enrolment Rates in Primary Education

Area	NPS 2008/09	NPS 2010/11	NPS 2012/13
Tanzania	82.9	80.5	76.3
Rural	81.3	78.7	73.2
Urban	89.6	86.7	86.8
Tanzania Mainland	83.1	80.3	76.0
Dar es Salaam	85.6	87.0	87.4
Other Urban	91.1	86.6	86.6
Rural	81.4	78.4	72.9
Tanzania Zanzibar	78.8	85.0	86.0
Female	85.5	81.9	79.0
Male	80.1	79.0	73.4

Statistically significant declines are observed at the national level, as primary school NER fell from 83 percent to 80 percent between the NPS 2008/09 and the NPS 2010/11, and decreased to 76 percent in the NPS 2012/13. While primary school NER is much higher than all other levels of education, reductions in enrollment across rounds are seen in urban and rural areas, in most of the Mainland strata, and for both boys and girls. Only in Zanzibar and in Dar es Salaam the NER in primary education did not decline as they increased slightly in both areas between the last two rounds.

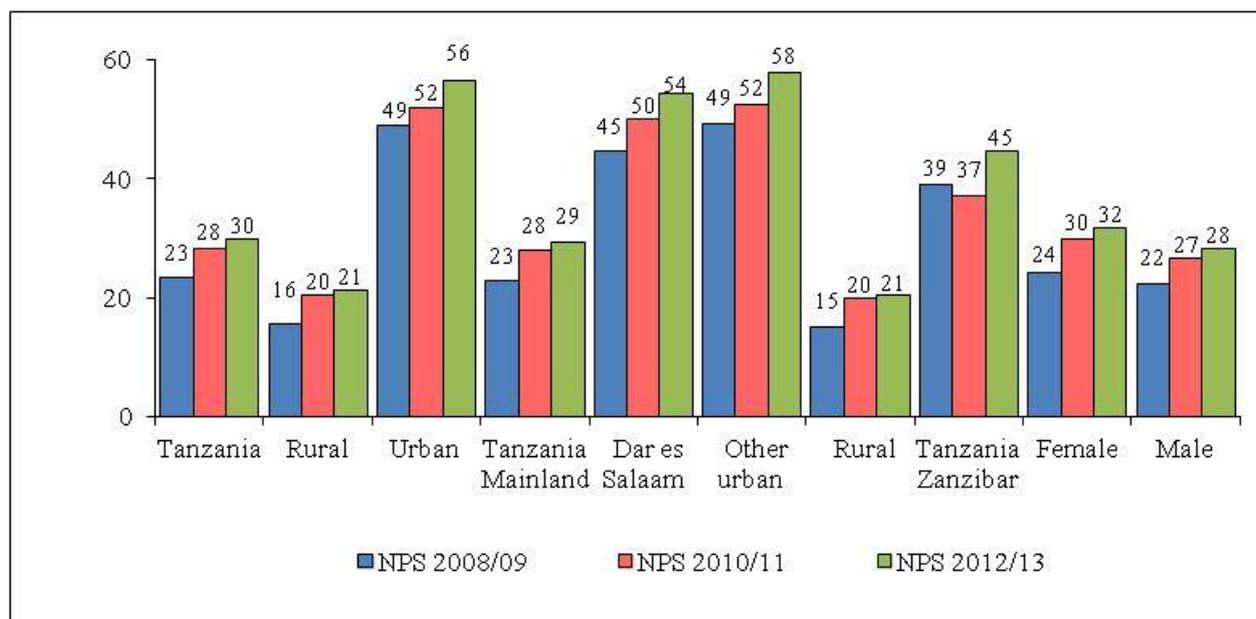
Clear patterns can be seen when looking within rounds. Urban areas consistently display higher NER in primary education than rural areas, and this gap has grown as enrollment rates in rural areas have significantly decreased across rounds. In addition, females have higher enrollment rates than male in each round of the NPS, though this gap is much more pronounced in the NPS 2008/09 and in the NPS 2012/13.

The gap in enrollment rates between Mainland and Zanzibar has grown over time as they have followed opposing trends: the former declining and the latter increasing.

Secondary School Net Enrollment Rates

The net enrollment rate in secondary education is the proportion of children aged 14 to 17 years who are enrolled in forms 1 to 4 in secondary school. Figure 8 shows the NER in secondary education for each round of NPS.

Figure 8: Secondary School Net Enrollment Rate



The NER in secondary education in Tanzania rose from 23 percent to 28 percent between the NPS 2008/09 and the NPS 2010/11, and increased again to 30 percent in the NPS 2012/13. In contrast to primary school, enrollment improved across urban and rural areas, in all Mainland strata and for boys and girls. Only in Zanzibar did secondary enrollment briefly decline between the first two rounds, though not significantly, and this stratum still shows better enrollment in secondary education than the Mainland in each round, despite statistically significant increases over time in the Mainland.

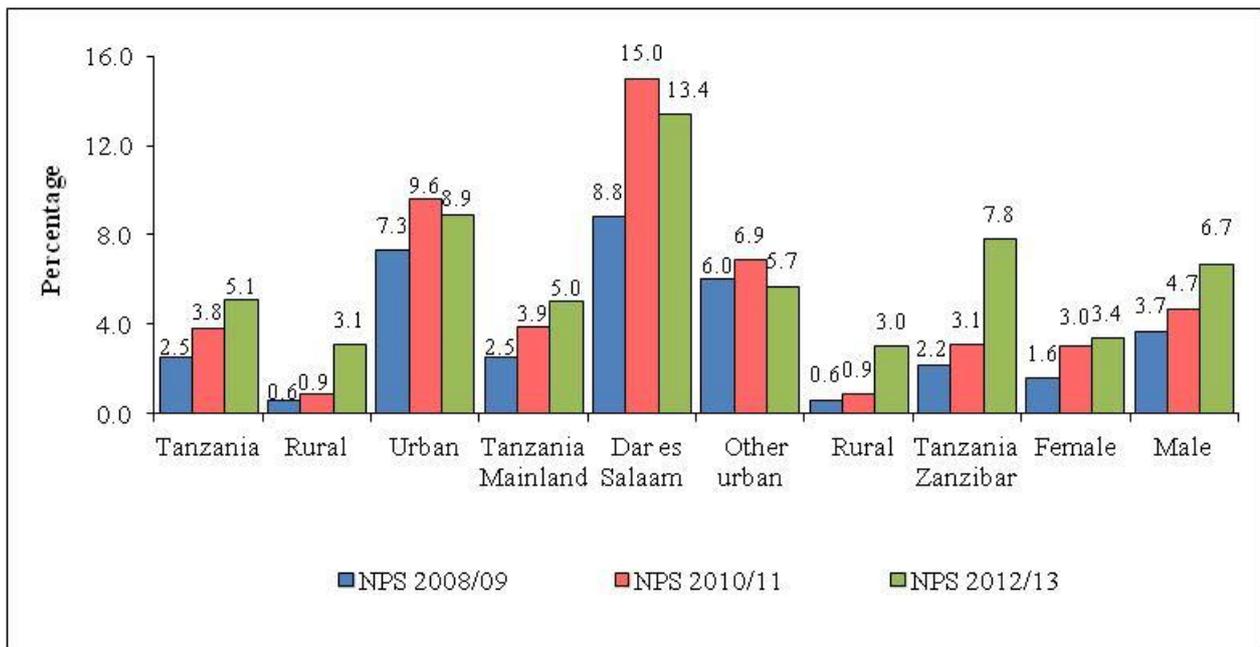
Patterns are again apparent within each round of the NPS. Though the national secondary school NER has increased across all three rounds, the gap between urban and rural areas remains drastic, with enrollment rates in urban areas nearly three times those in rural areas each year. The same happens in the Dar es Salaam and the rest of urban areas in the Mainland strata, which consistently have considerably higher NER in secondary school than other rural areas in the Mainland.

Enrollment in secondary education for boys and girls is quite similar in each round of the NPS, though girls had slightly higher rates each year. Both sexes show statistically significant increases in secondary education NER from enrollment rates in the NPS 2008/09.

Gross Enrollment Rate in Higher Education

The gross enrollment 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 universities will be used as a proxy for the GER in higher education institutions. Note that this definition differs from that of the net enrollment rates used in the preceding sections.

Figure 9: Gross Enrollment Rate in Higher Education



The GER in tertiary institutions is quite low in the country: in the NPS 2008/09 it was just 2.5 percent, and increased to 3.8 percent and 5.1 percent in the NPS 2010/11 and in the 2012/13 respectively. Similar to other levels of education, enrollment in tertiary education was higher in urban areas when compared with rural areas. Mainland and Zanzibar displayed similar rates of enrollment in the first two rounds of the NPS, however tertiary GER increased dramatically in Zanzibar in the NPS 2012/13, while Mainland rates increased only slightly.

Across strata, Dar es Salaam consistently shows the highest GER while other rural areas in the Mainland show the lowest. However, with the incorporation of the NPS 2012/13, a decline in GER was observed in Dar es Salaam, while a noteworthy increase occurred in rural areas of the Mainland. At this level of education, in contrast to lower levels, males have higher enrollment rates than females.

Goal 3: Improving Survival, Health, Nutrition and Well-being, Especially for Children, Women and Vulnerable Groups

Main message: The national prevalence of stunted children declined from 43 percent in the NPS 2008/09 to 35 percent in 2010/11, but rose to 37 percent in the NPS 2012/13. The proportion of stunted children in rural areas is consistently higher than in urban areas.

The proportion of underweight children less than 5 years of age steadily decreased from 16 percent in 2008/09 to 14 percent in the NPS 2010/11 and to 13 percent in the NPS 2012/13.

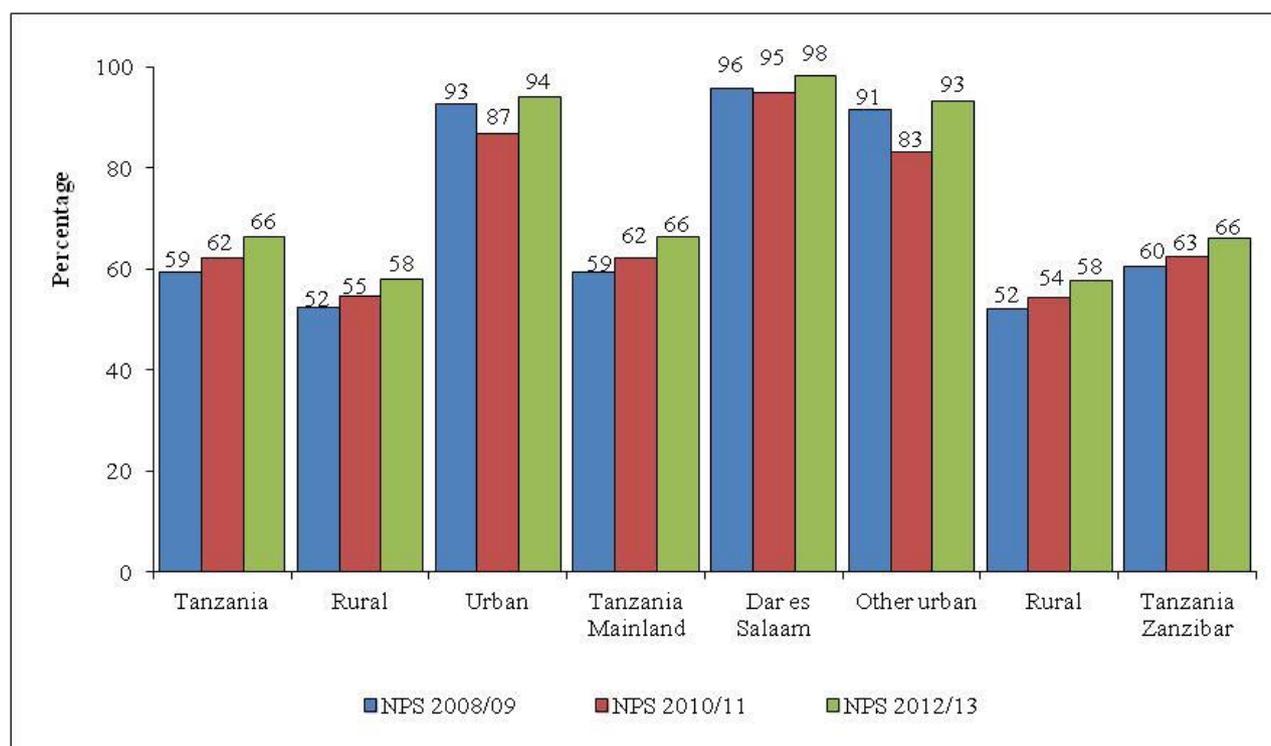
Wasting among children less than 5 years increased significantly from 3 percent in the NPS 2008/09 to 7 percent in the NPS 2010/11, and decreased back to 4 percent in the NPS 2012/13.

Proportion of 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 successfully managing 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. Note that though women may have given birth to more than one child in the last 24 months, the information refers only to their last delivery during that period, and those deliveries will be referred to as the total number of deliveries in the last 24 months for simplicity.

The proportions 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 and again to 66 percent in the NPS 2012/13 (Figure 10). The steady increase in the country appears to be driven by better access to reproductive health care in rural areas.

Figure 10: Births Attended by Skilled Personnel in the last 24 Months

The proportion of births attended by skilled personnel in urban areas (both in the Mainland and overall) bounced back to an slightly higher level than in round 1 after a decline in round 2, perhaps as a result of the rapidly expanding urban areas during that time and the inability to accommodate increased population figures. In both the Mainland and Zanzibar, access to reproductive health care steadily improved, while in Dar es Salaam this indicator has remained relatively unchanged.

Noteworthy patterns again appear within all rounds of the NPS. Urban areas consistently have substantially better access to reproductive health care than rural areas, while figures for Mainland and Zanzibar are very similar. As expected, the proportion of births attended by skilled personnel in Dar es Salaam is the highest among all strata in each round of the NPS.

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 of the child to achieve the expected height when compared to a healthy, well-nourished child of the same age.⁸ Stunting is associated with a number of long-term factors such as deficiencies in nutrition (chronically inadequate levels of proteins, energy and/or micronutrients), frequent infections, and inappropriate feeding practices over a sustained period. It is not an accurate measurement of short-term changes in nutritional status.

⁸ Comprehensive Food Security & Vulnerability Analysis Guidelines, January 2009, World Food Programme.

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 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 height 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 of age are reported in Table 24.⁹ The prevalence of children who are stunted fell from 43 percent in the NPS 2008/09 to 35 percent in the NPS 2010/11, rising slightly to 37 percent in the NPS 2012/13. Stunting declined across the board between the NPS 2008/09 and the NPS 2010/11: in urban and rural areas, in Mainland and in Zanzibar, across strata, for boys and girls, and for all age groups. However, steady declines across all three NPS rounds are observed only in Zanzibar and for children in the oldest age group, though only the latter was statistically significant. Statistically significant declines between the first and third rounds in the Dar es Salaam and rural areas of the Mainland strata are driving the overall declines in rural areas, the Mainland and at the national level. Other urban areas in the Mainland are of particular concern, as stunting in the NPS 2012/13 was greater than in the first and second rounds of the survey, despite a decline between the first two rounds. The prevalence of stunting has declined overall for both female and male children, despite a statistically significant increase for males between round two and three.

Equally important are a few noteworthy trends that occur within each round of the NPS. The proportion of stunted children in rural areas is consistently higher than in urban areas. Stunting in the Mainland was substantially higher than in Zanzibar in the first round, and while improvements in the Mainland closed the gap in the second round, there is again a large difference in the third round. Despite notable strides over time, rural areas in Mainland remain the stratum with the highest levels of stunting. Finally, the prevalence of stunting in male children is consistently higher than females, particularly in the first and third rounds.

⁹ All indicators were estimated using the WHO Anthro 2005 software, World Health Organization.

Underweight

The proportions of underweight children experienced modest declines across all rounds of the NPS at the national level, decreasing from 16 percent in the NPS 2008/09 to 14 percent in the NPS 2010/11 and to 13 percent in NPS 2012/13. Similar patterns occurred across the country with the exception of urban areas, which remained fairly stable. Declines between the first two rounds were significant only at the national level, in rural areas, and in the Mainland; however, each of those strata as well as both genders and the oldest two age groups experienced statistically significant overall declines between round one and round three. Within each round of the NPS, the proportion of underweight children is consistently higher in rural areas than in urban areas, though the gap does decrease with time. The comparison between Mainland and Zanzibar favours the former. Minimal or no differences are found by gender. Across strata, Dar es Salaam and other urban areas in the Mainland display lower underweight figures than the other two strata.

Wasting

Between the NPS 2008/09 and the NPS 2010/11 wasting in children under 5 years of age increased from 2.7 percent to 6.6 percent, followed by a decline to 4.2 percent in the NPS 2012/13. In contrast to the sweeping declines in stunting observed between the first and second rounds, the proportion of wasted children rose across all subsets in the same time frame, with statistically significant differences in nearly every subset. However, subsequent decreases in wasting proportions are then observed for all subsets between the NPS 2010/11 and the NPS 2012/13. Regardless of these declines between the second and third round, the prevalence of wasting in the third round remains higher than those in the first round across all subsets, with the exception of children ages 36-59 months. Zanzibar is the only stratum where changes are not significant over time. Female children saw a substantial increase between the first and the third NPS rounds, while only the younger age cohorts saw significant changes from round one. Interestingly, wasting seems to affect children in a relatively similar manner across all variables of interest, as the prevalence of wasting within rounds is quite similar between urban and rural areas, across strata, and between female and male children.

Table 24: Stunting, Wasting and Underweight among Children under 5 Years

	Stunting (height for age)			Wasting (weight for height)			Underweight (weight for age)		
	NPS 08/09	NPS 10/11	NPS 12/13	NPS 08/09	NPS 10/11	NPS 12/13	NPS 08/09	NPS 10/11	NPS 12/13
Tanzania	43.0	34.8	37.4	2.7	6.6	4.2	15.9	13.6	12.5
<i>Rural</i>	45.6	37.2	39.3	2.9	6.8	4.2	17.1	14.6	13.3
<i>Urban</i>	30.2	24.1	29.5	1.5	5.9	4.3	9.8	9.2	9.3
Tanzania Mainland	43.2	34.8	37.6	2.6	6.5	4.1	15.9	13.5	12.5
<i>Dar es Salaam</i>	36.5	21.1	23.8	0.9	5.4	3.5	9.1	10.0	6.7
<i>Other Urban</i>	27.9	24.9	32.2	1.3	6.0	4.3	9.4	8.7	10.1
<i>Rural</i>	45.8	37.4	39.5	2.9	6.7	4.1	17.2	14.5	13.3
Tanzania Zanzibar	30.5	30.4	26.9	7.0	9.8	7.7	18.8	18.5	14.9
<i>Female</i>	40.7	34.2	34.7	2.7	6.8	4.5	15.1	12.9	12.5
<i>Male</i>	45.6	35.3	40.1	2.7	6.3	3.9	16.8	14.2	12.5
<i>0-5 months</i>	27.9	12.9	13.0	3.3	12.7	11.0	6.5	4.7	5.9
<i>6-11 months</i>	31.2	19.9	27.7	5.9	11.9	11.2	15.1	13.4	11.3
<i>12-23 months</i>	48.3	41.8	47.7	2.5	7.7	4.6	14.7	15.0	14.8
<i>24-35 months</i>	52.9	46.5	47.8	1.6	4.1	2.3	16.2	14.6	16.4
<i>36-47 months</i>	40.9	36.0	38.5	2.7	3.6	1.0	19.1	15.3	10.4
<i>48-59 months</i>	38.8	33.0	30.8	2.5	4.9	2.4	16.4	14.0	11.8

Goal 4: Increasing Access to Affordable Clean and Safe Water; Sanitation and Hygiene.

Main Message: Access to safe drinking water in Tanzania is predominant in urban areas.

78 percent of urban population has access to safe drinking water in the dry season compared to 39 percent of their rural counterparts.

Population with Access to Piped or Protected Water as its Main Drinking Water Source

Unsafe water is an underlying cause of many preventable illnesses and deaths. Households without access to safe drinking water are more likely to have members who suffer from water-borne illnesses, who have more pronounced levels of malnutrition, and who spend considerable time collecting water from distant sources. The resulting impaired health affects educational outcomes and labor productivity as well as other standards of living of the population.

The source of drinking water is an indicator of the suitability of water for drinking. Piped water inside the dwelling, private or public standpipe or tap, and protected wells are the sources of drinking water considered safe. The list of potential sources of drinking water was slightly expanded in the NPS 2010/11 (but maintained in the NPS 2012/13), 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 and the NPS 2012/13 show that the majority of wells with pumps are protected and that the majority of wells without pumps are unprotected. Hence, it was assumed in both of those rounds that all wells with pumps are safe sources of drinking water and that all wells without pumps are not safe sources of drinking water.

Access to safe water in the MKUKUTA 1 was referred to households, under MKUKUTA 2 is indicator is referred to population. Both indicators are presented for comparison purposes. Information for this indicator is collected separately for the rainy season and the dry season.

Rainy Season

Table 25 shows the proportion of population with access to safe drinking water. At the national level, access to safe drinking water during the rainy season has increased only slightly over time, from 41 percent of the population in the NPS 2008/09 to 43 percent in the NPS 2012/13. Improvements occurred in rural and urban areas in the last round, but access to safe drinking water in rural areas is almost half of that in urban areas. All strata in the Mainland decreased between the NPS 2008/09 and the NPS 2010/11, but the trend was reversed in the NPS 2012/13 with the exception of Dar es Salaam, which continue to worsen over time. Only Zanzibar saw steady increases in access to safe water during the rainy season, though none of the changes were statistically significant.

Table 25: Population with Access to Safe Drinking Water

Area	Rainy Season			Dry Season		
	NPS 2008/09	NPS 2010/11	NPS 2012/13	NPS 2008/09	NPS 2010/11	NPS 2012/13
Tanzania	40.7	40.3	42.9	41.5	47.8	49.6
Rural	31.5	31.1	33.6	32.1	38.4	39.4
Urban	72.9	66.7	68.9	74.4	74.6	78.0
Tanzania Mainland	39.5	39.0	41.7	40.3	46.6	48.5
Dar es Salaam	77.5	77.0	74.6	81.0	81.0	80.2
Other Urban	67.2	61.5	64.0	68.1	71.1	75.9
Rural	30.5	29.3	32.4	31.2	36.9	38.3
Tanzania Zanzibar	81.3	85.5	86.1	79.6	84.5	87.0

Dry Season

Access to safe drinking water during the dry season showed statistically significant improvements over time. In NPS 2008/09, around 42 percent of population had access to safe water during the dry season, compared with nearly 50 percent of population in NPS 2012/13 (Table 26). In contrast to the rainy season, every area experienced increases in access over time. Improved access to safe drinking water in rural areas and in the Mainland is driving national figures. Dar es Salaam is the only stratum that experienced a decline between the NPS 2008/09 and the NPS 2012/13.

Regardless of the season, urban areas have considerably better access to safe drinking water than rural areas, and Zanzibar consistently shows much better access than in the Mainland. Rural areas in the Mainland have reported the worst access to safe drinking water in all three rounds.

Households with Basic Sanitation Facilities

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

Table 26: Households with Access to Safe Drinking Water

Area	Rainy Season			Dry Season		
	NPS 2008/09	NPS 2010/11	NPS 2012/13	NPS 2008/09	NPS 2010/11	NPS 2012/13
Tanzania	43.2	42.7	45.9	43.5	50.2	52.9
Rural	32.8	32.3	35.4	32.9	39.8	41.6
Urban	72.5	66.4	69.1	73.3	73.5	77.7
Tanzania Mainland	42.2	41.5	44.8	42.5	49.2	51.9
Dar es Salaam	77.8	74.6	73.2	81.1	77.7	78.5
Other Urban	67.1	62.3	65.2	67.0	71.2	76.4
Rural	31.9	30.5	34.3	31.9	38.4	40.6
Tanzania Zanzibar	81.3	85.6	87.0	80.3	84.3	87.6

Flush or pour toilets, ventilated pit latrines, and simple pit latrines are considered basic sanitation facilities. Access to basic sanitation facilities in Tanzania is quite high. However, the proportion of households with basic sanitation facilities fell from 90 percent in 2008/09 to 87 percent in the NPS 2012/13 (Table 27). Declines over time are observed in urban and rural areas, the Mainland, and across all strata. Zanzibar was the only area with a greater proportion of households with basic sanitation facilities in the NPS 2012/13 than in the NPS 2008/09.

Table 27: Percentage of Households with Basic Sanitation Facilities

Area	NPS 2008/09	NPS 2010/11	NPS 2012/13
Tanzania	89.9	87.1	86.6
Rural	86.6	83.3	81.8
Urban	99.3	95.6	97.2
Tanzania Mainland	90.2	87.3	86.7
Dar es Salaam	99.2	98.9	98.7
Other Urban	99.1	94.4	96.4
Rural	86.9	83.5	81.9
Tanzania Zanzibar	80.6	78.4	83.4

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

Urban households display better access than rural families in all rounds of the NPS, while Mainland and Zanzibar appear to be converging because of opposing trends. By the time of the NPS 2012/13, Zanzibar is no longer the area with the lowest access to sanitation facilities.

Goal 5: Developing Decent Settlements while Sustaining Environmental Quality

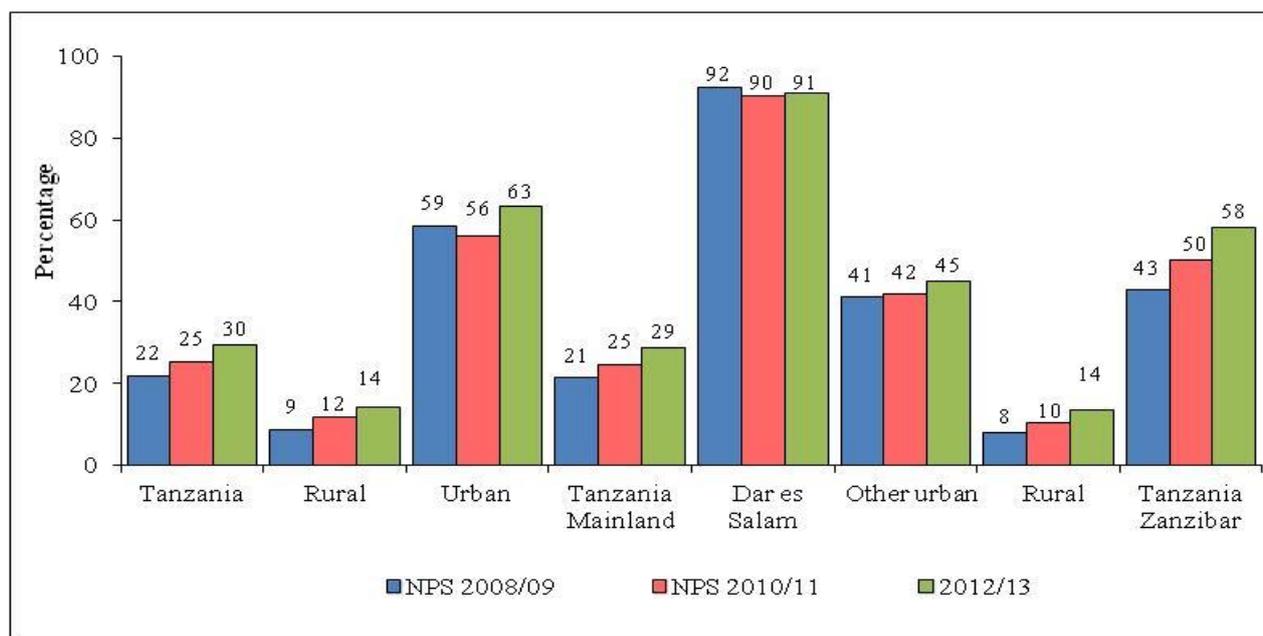
Main Message: The percentage of households living in decent houses increase increased from 22 percent in the NPS 2008/09 to 25 percent and to 30 percent in the NPS 2010/11 and the NPS 2012/13 respectively.

Households with Decent Human Settlement Basic Sanitation Facilities

In the MMMP, decent houses are considered those with walls of brick, floors with a foundation of cement, and roofs with frame of timber, tiles or corrugated iron sheets.

The NPS 2012/13 shows that nearly a third of all households are living in decent houses. This has increased from 22 percent in the NPS 2008/09 and from 25 percent in the NPS 2010/13. While more than 50 percent of urban households live in decent houses in the there rounds of NPS, less than 15 percent of households in rural areas live in decent houses (Figure 11).

Figure 11: Percentage of Households Living in Decent Houses



Also, 58 percent of households in Zanzibar live in decent houses compared with 29 percent in the Mainland. Dar es Salaam is the stratum with highest percentage of decent houses (91 percent), this percentage is about the same in all NPS rounds.

The three rounds of the NPS show that all areas have experienced an increase in the percentage of households living in decent houses, with the exception of Dar es Salaam, where the proportion has remained constant over time.

4.0 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. Poverty dynamics is examined between the NPS 2010/11 and the NPS 2012/13. Also, poverty transition is briefly studied across the three NPS rounds. A descriptive analysis of the household characteristics across the different transitions follows.

A basic poverty profile is shown in Table 28. 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 28: Poverty Profile

Area	Poverty incidence			Population (%)			Poor (%)		
	NPS 2008/09	NPS 2010/11	NPS 2012/13	NPS 2008/09	NPS 2010/11	NPS 2012/13	NPS 2008/09	NPS 2010/11	NPS 2012/13
Tanzania	14.8	17.9	21.0	100	100	100	100	100	100
Rural	17.3	22.4	26.5	78	74	73	91	92	93
Urban	5.9	5.2	5.7	22	26	27	9	8	7
Tanzania Mainland	14.6	18.1	21.2	97	97	97	96	98	98
DøSalaam	1.0	1.4	0.6	7	7	9	0	1	0
Other Urban	7.7	6.7	8.5	15	18	16	8	7	7
Rural	17.2	22.7	26.7	75	71	72	88	90	91
Tanzania Zanzibar	20.4	12.4	14.2	3	3	3	4	2	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. Some of the households tracked from the NPS 2010/11 split between rounds and thus the NPS 2012/13 sample increased significantly (see Table 3). If a household split from the NPS 2010/11, 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 2012/13. If the household did not split, the single household in the latter round would be the main household. Among the households that split, the household that has the same household head from the former round would be the main household. Second, if the household split and the household head changed over time, the household where the former household head currently lives would be considered the main household. 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. In the end the total number of households available for poverty dynamics between the NPS 2010/11 and the NPS 2012/13 is 3,701 households (see Appendix C, Table C2 and C3).

4.1 Poverty Dynamics between the NPS 2010/11 and the NPS 2012/13

Four types of poverty transitions between the NPS 2010/11 and the NPS 2012/13 are possible: households that are never poor, households that move out of poverty, households that move into poverty and households that are always poor (Table 29). Notice that the geographical location of the households in this table refers to the location in the NPS 2010/11. 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, 68 percent of the population were never poor, 10 percent moved out of poverty, 14 percent moved into poverty, and 8 percent were always poor. Although the majority of the population remained either never poor or chronically poor, almost one out of four people moved between poverty states, that is, around one out of four people were transitorily poor. More movement into and out of poverty is observed in rural areas than in urban areas (29 percent and 9 percent respectively). More people in the Mainland (24 percent) moved into or out of poverty than in Zanzibar (18 percent). Rural areas in Mainland has figures close to the national pattern, but transitions into or out of poverty barely stand at 12 percent in urban areas in Mainland and only 1 percent in Dar es Salaam.

Table 29: Poverty Transition Matrices by NPS 2010/11 Location

Area	Never poor	Move out of poverty	Move into poverty	Always poor	Total
<i>Population (weighted) Row percentages</i>					
Tanzania	68	10	14	8	100
Rural	61	12	17	10	100
Urban	90	3	5	1	100
Tanzania Mainland	68	10	14	8	100
Dar es Salaam	98	1	0	0	100
Other Urban	86	4	8	2	100
Rural	60	12	17	11	100
Tanzania Zanzibar	77	8	11	5	100
<i>Population (weighted) Column percentages</i>					
Tanzania	100	100	100	100	100
Rural	65	92	90	96	74
Urban	35	8	10	4	26
Tanzania Mainland	97	98	98	98	97
Dar es Salaam	13	1	0	0	9
Other Urban	20	7	10	4	16
Rural	63	90	88	94	71
Tanzania Zanzibar	3	2	2	2	3

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 74 percent of the panel population in the country but represent 96 percent of the chronically poor. The composition of any of the possible four poverty paths in Mainland and in Zanzibar is similar to the shares of these two domains among the population.

An interesting finding that underlines the importance of using panel data to understand poverty dynamics is the difference between the increase of the poverty rate at the national level with the

proportion of population falling into or escaping poverty. The findings in Table 29 indicate that the poverty incidence grew from 18 percent to 21 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 second round continue to be poor in the third round and an additional 3 percent of the population fell into poverty? Or did all the poor from the second round escape poverty and a separate 21 percent of the population become poor? Household panel data shows that 8 percent of the population remained poor in both periods, 14 percent fell into poverty and that 10 percent escaped poverty. Considerable movement across the poverty line existed between the first two rounds of the NPS. Three out of five people of the original poor escaped poverty and seven out of ten of the current poor were not poor in the second 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 Table 30 that 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 second round and on the changes that occurred between rounds (rounds 2 and 3).

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 0 to 5 years. The proportion of children and elders with respect to the total number of members among households that have never been poor is rather low compared to any of the other three poverty states, which display relatively similar dependency ratios. 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, no particular age cohort seems to be driving increases in the overall household size.

Table 30: 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
<i>Demographic composition NPS2</i>					
Household size	4.9	6.1	5.9	6.3	5.2
Children 0 to 5 years	0.9	1.3	1.3	1.4	1.0
Children 6 to 9 years	0.5	0.8	0.8	0.8	0.6
Children 10 to 14 years	0.6	0.7	0.9	1.0	0.7
Adults (15 to 64 years)	2.6	2.9	2.7	2.9	2.7
Elders (65 and more)	0.2	0.4	0.2	0.2	0.2
Share of children and elders (%)	41.6	51.1	51.2	53.2	44.3
<i>Household head NPS2</i>					
Age (years)	45.3	51.0	46.7	47.8	46.1
Female (%)	25.5	30.5	25.8	29.3	26.2
Education (%)					
None	19.0	42.6	31.0	36.5	23.5
Primary	62.0	55.0	65.6	60.7	61.7
Secondary or more	10.0	1.4	1.8	0.6	7.8
Other education	9.0	1.0	1.5	2.2	7.0
Economic activity (%)					
Agriculture	57.5	86.9	84.0	92.5	65.3
Non agriculture	38.2	7.6	12.5	5.3	30.5
Not working	4.3	5.5	3.5	2.2	4.2
<i>Changes in demographic composition</i>					
Household size	0.1	-0.4	0.5	0.3	0.1
Children 0 to 5 years	0.0	-0.1	0.1	-0.1	0.0
Children 6 to 9 years	0.0	-0.1	0.1	0.1	0.0
Children 10 to 14 years	0.0	0.0	0.1	0.1	0.0
Adults (15 to 64 years)	0.0	-0.2	0.2	0.2	0.0
Elders (65 and more)	0.0	0.0	0.0	0.0	0.0
<i>Changes in economic activity of the household head (%)</i>					
No change	83.8	84.6	85.3	93.9	84.7
From agriculture to non agriculture	6.0	7.8	4.9	0.7	5.7
From non agriculture to agriculture	5.5	3.4	5.5	1.6	5.1
From working to not working	2.2	2.5	1.5	2.5	2.1
From not working to working	2.5	1.7	2.8	1.3	2.4

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 except for the age and gender of those who moved out poverty (slightly older and with a higher proportion of females). Education seems strongly associated with poverty dynamics. For instance, almost one fifth of household heads among households that were never poor had no education compared to more than 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 not even one in a hundred 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. Interestingly, those who have never experienced poverty have more household heads who are not working (either unemployed or out of the labour force) than those who are always poor. There are no differences observed across other 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. It is noticeable that the lowest proportion of household heads that move from agriculture to non-agricultural job is observed among those that are always poor.

4.2 Poverty Dynamics in 2008/09, 2010/11 and 2012/13

This section attempts to briefly study the poverty dynamics across the three NPS rounds. For simplicity, four situations are examined: those that were never poor in the three rounds, those that were poor in one round, those that were poor in two rounds, and those that were poor in the three rounds. The sample of panel households for this analysis is 3,079 households, that is, those are the households successfully interviewed in all the three rounds of the NPS¹⁰. However, given the small number of households in some poverty situations (Table 31), the results should be interpreted with caution.

¹⁰ One household is excluded from the analysis because of missing consumption data.

Table 31: Poverty transitions during the three rounds of the NPS

Area	Never poor	Poor in one round	Poor in two rounds	Always poor	Total
Tanzania	2,192	568	249	69	3,078
Rural	1,230	484	227	61	2,002
Urban	962	84	22	8	1,076
Tanzania Mainland	1,851	503	221	57	2,632
Dar es Salaam	467	7	4	0	478
Other Urban	377	55	15	5	452
Rural	1,007	441	202	52	1,702
Tanzania Zanzibar	341	65	28	12	446

The findings reveal that a majority of 71.2 percent of households is never poor in the three rounds of the NPS, while 2.2 percent of the households are always poor (Table 32). Dar es Salaam has the highest percentage of households who are never poor over time and has no households that have been always poor. On the other hand, rural areas have the highest percentage of households that experienced poverty at least once during the three rounds.

Table 32: Percentage Distribution of Poverty Transitions during the three rounds of the NPS

Area	Never poor	Poor in one round	Poor in two rounds	Always poor	Total
Tanzania	71.2	18.5	8.1	2.2	100.0
Rural	61.4	24.2	11.3	3.1	100.0
Urban	89.4	7.8	2.0	1.0	100.0
Tanzania Mainland	70.3	19.1	8.4	2.2	100.0
Dar es Salaam	97.7	1.5	1.0	-	100.0
Other Urban	83.4	12.2	3.3	1.1	100.0
Rural	59.2	25.9	11.9	3.1	100.0
Tanzania Zanzibar	76.5	14.6	6.3	2.7	100.0

5.0 FOOD SECURITY

Food security is the state at which people, at all times, have both physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. The NPS collects information on a variety of food security indicators that will be introduced in this chapter in order to provide a sense of the food security situation in the country. Only information from the NPS 2010/11 and the NPS 2012/13 is presented because the food security module was not available in the NPS 2008/09.

This chapter first introduces three food security indicators, each in reference to the seven days prior to the interview: the percentage of the population that worried about not having enough food, the percentage whose diet was negatively affected, and the percentage who reduced their actual food intake. Negative changes in diet could be because of the population having to rely on less preferred foods, or limiting the variety of foods eaten, while changes in food intake may refer to limiting 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 other, having no food of any kind, or going an entire day and night without eating anything.

These food security indicators are presented in Table 33. Declines over time at the national level are observed for each of the three indicators. The percentage of the population that worried in the last 7 days about not having enough food saw a statistically significant¹¹ decrease from 36 percent in the NPS 2010/11 to 33 percent in the NPS 2012/13. Rural populations worry more than those residing in urban areas, although the gap decreased in the NPS 2012/13. A considerably lower proportion of households in Zanzibar are worried about food than in the Mainland or any of the Mainland strata. Dar es Salaam is the stratum where people worry the most in both rounds, although that proportion declined slightly. A statistically significant decrease was seen in Zanzibar, as the proportion of households worried about not having enough food fell from 25 percent to just 14 percent in the NPS 2012/13.

¹¹ Reported statistical significance in-text refers to significance levels at the 0.05 level, unless otherwise noted. Tables will alternatively present significant levels of 0.01, 0.05, and 0.1.

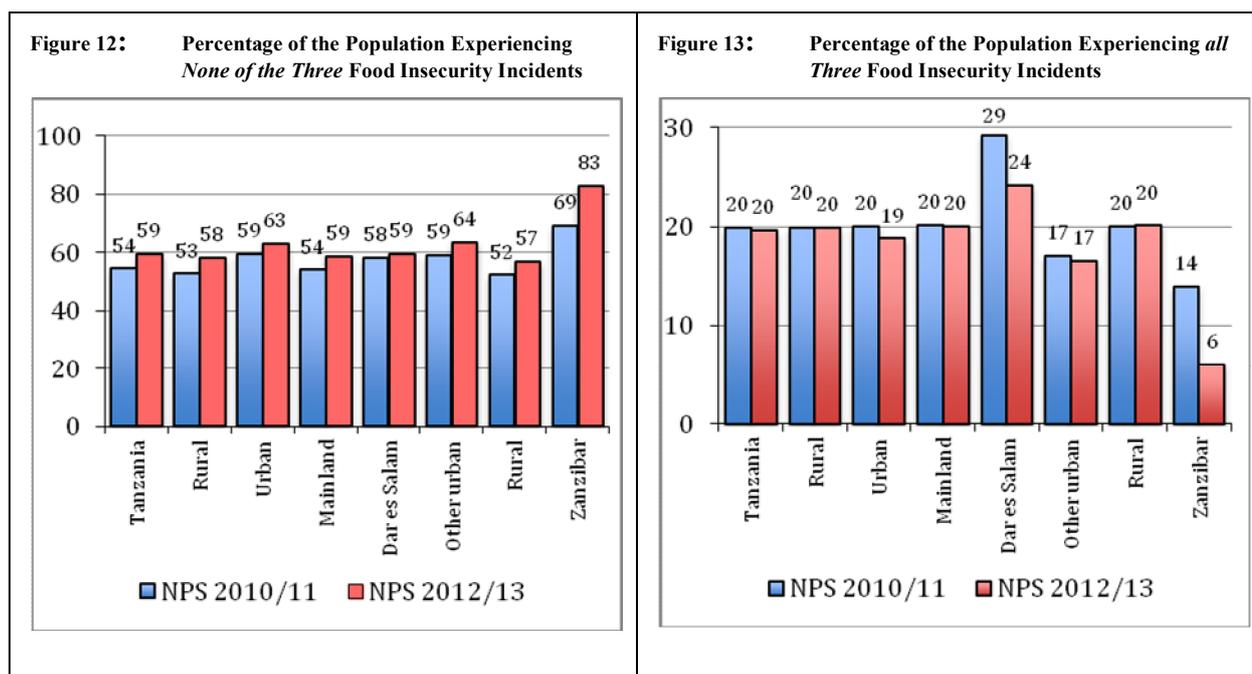
Table 33: Percentage of the Population Experiencing each of the Three Food Security Indicators

Area	Worried about not having enough food		Negative changes in diet		Reduced Food Intake	
	NPS 2010/11	NPS 2012/13	NPS 2010/11	NPS 2012/13	NPS 2010/11	NPS 2012/13
Tanzania	36.0	33.0	34.0	31.1	32.2	28.8
Rural	37.1	33.4	34.7	31.9	33.1	29.6
Urban	32.7	31.7	31.9	28.7	29.9	26.9
Tanzania Mainland	36.3	33.5	34.4	31.7	32.5	29.3
Dar es Salaam	38.0	34.8	35.5	35.6	34.8	30.2
Other Urban	31.3	31.1	31.2	26.0	28.7	26.0
Rural	37.4	33.9	35.0	32.5	33.2	29.9
Tanzania Zanzibar	24.8	14.8	22.3	8.6	24.1	14.5

The proportion of the population who reported negative changes in their diet decreased from 34 percent to 31 percent between the NPS 2010/11 and the NPS 2012/13. Similar decreases were observed in all areas of the country with the exception of Dar es Salaam, which remained stagnant. Zanzibar, in contrast, saw statistically significant declines over time. Regardless of the decline, a considerably lower proportion of households relied on less preferred foods or limited the variety of food eaten in Zanzibar than in the Mainland or any of its individual strata. A smaller percentage of urban dwellers reported negative changes in diet than did their rural counterparts in both rounds.

The proportion of the population in Tanzania that reduced their food intake significantly decreased over time, from 32 percent to 29 percent. Statistically significant decreases are also observed in rural areas, in both the Mainland and Zanzibar, and in the other rural areas in the Mainland strata. However, the most substantial decrease was again seen in Zanzibar. Although less variation across areas exists for this indicator than the previous two, rural areas still tend to report higher proportions of the population reducing food intake than urban areas, and the Dar es Salaam strata still is the most affected stratum in the country.

While Table 33 presents independent estimates of three separate food security indicators, Figure 12 and Figure 13 combine them into two additional indicators: Percentage of the population experiencing none of the three food insecurity incidents and percentage of the population experiencing all three food insecurity incidents. The proportion of the population experiencing none of the three food insecurity incidents previously mentioned increased significantly from 54 percent to 59 percent between the NPS 2010/11 and the NPS 2012/13.



This increase was driven by increases seen in all areas of the country, though significant changes mimic those of the reduced food intake indicator. Figure 13 shows that generally only marginal changes occurred in the proportion of the population experiencing all three food insecurity incidents with the exception of Zanzibar and Dar es Salaam, which remained the stratum most affected in both rounds.

5.1 Number of Meals

An additional indicator of food security can be the number of meals taken in a day by adults and children alike. The average number of daily meals taken by adults was 2.6 in the NPS 2010/11 and barely increased to 2.7 in the NPS 2012/13, while daily meals taken by children increased from 3.3 to 3.5 in the same time frame. Table 34 shows the distribution of households by number of meals taken by adults and children aged 6-59 months. In the NPS 2010/11, the proportion of households with adults taking only one meal was just 1 percent, with two meals was 34 percent and 3 or more meals was 65 percent. The first two decreased over time while the proportion of households with adults eating three or more meals increased significantly to 67 percent.

Table 34: Average Number of Daily Meals

Area	Adults						Children					
	1 Meal		2 Meals		3 or more Meals		1 Meal		2 Meals		3 or more Meals	
	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13
Tanzania	1.3	1.1	34.1	32.0	64.6	66.9	1.5	1.4	13.4	11.5	85.1	87.1
Rural	1.4	1.5	41.4	40.1	57.2	58.5	1.4	1.1	15.8	13.4	82.8	85.5
Urban	1.1	0.4	17.6	14.2	81.3	85.4	1.8	2.4	5.7	5.7	92.5	91.9
Tanzania Mainland	1.3	1.2	34.0	31.8	64.8	67.1	1.5	1.4	13.2	11.3	85.4	87.2
Dar es Salaam	0.4	0.1	12.1	9.5	87.6	90.4	3.2	2.4	5.2	3.5	91.7	94.2
Other Urban	1.4	0.6	19.7	16.4	78.9	83.1	1.3	2.5	6.0	6.8	92.8	90.8
Rural	1.3	1.5	41.5	39.9	57.2	58.6	1.4	1.1	15.6	13.1	83.1	85.8
Tanzania Zanzibar	1.7	0.1	39.6	40.8	58.6	59.1	2.8	0.1	22.1	19.3	75.1	80.6

Within rounds, urban areas have a considerably 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 substantially higher than in rural areas in Mainland and Zanzibar. Among households with children aged 5-69 months in the NPS 2012/13, 87 percent are taking three or more meals a day, while 12 percent and 1 percent are taking two and one meals a day respectively. The proportion of households with children taking three or more meals a day has increased since the NPS 2010/11 in all areas of Tanzania except for national urban areas, and urban areas in the Mainland, though rural areas were the only one to experience statistically significant increases. As far as patterns between adults and children, it is apparent that children are taking a larger number of daily meals than adults, and that far less disparity is observed across geographical domains for children than for adults.

Also, one of the MKUKUTA II indicators on goal 4 (Cluster 1) is the proportion of households who take no more than one meal per day. The NPS though breaks down the number of meals per household into meals eaten by adults and meals eaten by children. Table 34 above shows that the national estimates are fairly low. In the case of meals eaten by adults, the proportion declined from 1.3 in the NPS 2010/11 to 1.1 in the NPS 2012/13, while in the case of children, the proportion was 1.5 and 1.4 respectively. In both rounds Dar es Salaam is the stratum with the lowest proportion of households taking one meal, 0.4 percent and 0.1 percent respectively. Changes are not statistically significant with the exception of Zanzibar where there was a significant decrease from 1.7 percent in the NPS 2010/11 to 0.1 percent in the 2012/13.

5.2 Food Shortages

The final set of food security indicators focuses on food shortages in the last 12 months. Table 35 shows the proportion of the population that experienced food shortages and the number of months with food shortages among those that experienced food shortages.

The proportion of the population experiencing food shortages in the last 12 months increased significantly from 21 percent in the NPS 2010/11 to 43 percent in the NPS 2012/13. In fact, every area of Tanzania except Zanzibar experienced a statistically significant increase over time. Mainland households facing food shortages doubled between the NPS 2010/11 and the NPS 2012/13. Zanzibar reported the lowest percentages in each of the two rounds, while the stratum with the highest percentage of households experiencing food shortages was other rural areas in the Mainland in both rounds.

Table 35: Population with Food Shortages in last 12 Months

Area	Not enough to eat		Number of months with food shortage	
	NPS 2010/11	NPS 2012/13	NPS 2010/11	NPS 2012/13
Tanzania	20.6	42.6	3.4	3.7
Rural	21.4	45.8	3.3	3.6
Urban	18.3	33.8	3.7	4.0
Tanzania Mainland	20.9	43.6	3.4	3.7
Dar es Salaam	18.6	36.3	4.6	4.8
Other Urban	18.8	34.4	3.4	3.4
Rural	21.7	46.7	3.2	3.6
Tanzania Zanzibar	8.5	6.8	2.9	4.5

A statistically significant increase in the number of months the population reported experiencing food shortage was likewise observed between the NPS 2010/11 and the NPS 2012/13, from 3.4 months to 3.7 months. The population in Dar es Salaam reported the highest average number of months with food shortages. In the NPS 2010/11, the average number of months was the lowest in Zanzibar; however that is no longer the case in the NPS 2012/13 because urban areas in the Mainland is the stratum suffering fewer months with food shortage in the NPS 2012/13.

Table 36 illustrates the main causes of food shortages among the population that suffered food shortages. In the NPS 2010/11, droughts and poor rains were the overwhelming cause of food shortages at the national level, with 40 percent naming them as the primary cause. A high proportion of households in the Mainland, Zanzibar, and rural areas likewise reported drought as being detrimental to food supply. In the NPS 2012/13, this cause remains stable at the national level, in rural areas, and in the Mainland; however, a substantial fall is observed in Zanzibar, as just 20 percent of households report droughts as the cause of food shortages compared with 65 percent two years before. The proportion remained constant among the population living in farm

households, with approximately 44 percent reporting drought as the cause of shortage in each round. Table 36 also reveals the considerable increase in the proportions of households reporting limited monetary resources as the cause of food shortages in urban areas, Dar es Salaam, Zanzibar and non-farm households¹².

Table 36: Food Shortages in the Last 12 Months, NPS 2010/11 and NPS 2012/13

	Drought, Poor Rains		Crop Pest		Small Land Size		Lack of Farm Inputs		Expensive Food		No Money		Other	
	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13	NPS 10/11	NPS 12/13
Tanzania	40.2	37.7	4.5	2.1	8.3	5.3	10.9	6.7	12.1	10.5	11.3	28.2	12.7	9.6
Rural	45.4	42.9	5.2	2.5	9.3	6.3	12.1	7.6	9.4	8.0	7.6	23.6	11.0	9.2
Urban	21.0	16.9	2.1	0.6	4.4	1.3	6.5	3.0	21.9	20.6	25.0	46.5	19.2	11.1
Tanzania Mainland	39.9	37.7	4.5	2.1	8.3	5.3	11.0	6.7	12.2	10.6	11.3	28.1	12.9	9.6
Dar es Salaam	2.8	2.4	0.3	0.0	0.5	0.2	1.7	0.1	26.2	24.8	44.5	58.2	24.0	14.4
Other Urban	27.2	26.6	2.7	1.1	5.8	2.0	8.1	4.9	20.3	17.8	18.3	38.6	17.5	9.0
Rural	45.3	42.9	5.1	2.5	9.3	6.3	12.3	7.6	9.5	8.0	7.5	23.4	11.1	9.2
Tanzania Zanzibar	65.4	19.7	7.1	3.0	10.3	1.2	1.7	0.0	0.4	6.5	12.5	63.8	2.6	5.8
Non-farm HH	15.4	8.4	0.0	0.0	2.6	0.8	1.0	0.5	27.2	23.3	27.8	52.3	26.0	14.9
Farm H	44.7	43.4	5.3	2.6	9.3	6.1	12.7	7.9	9.3	8.0	8.3	23.5	10.3	8.5

Figure 14 displays the overlay of households reporting food shortage, by month for each NPS 2010/11 and 2012/13. While the two rounds do illustrate a similar cyclical pattern across months of the year, it is worth mentioning that an overall increase was observed in the proportion of households reporting food shortages for each month of the year, and that discrepancies between the months have also increased. Figure 15 displays the same concept disaggregated by urban and rural areas. While both areas again report higher proportions of the population being affected by food shortages in the NPS 2012/13 than in 2010/11, the discrepancies between months in urban areas have smoothed out.

¹² It should also be noted that in Zanzibar, small sample sizes of n=76 (NPS 2010/12) and n=49 (NPS 2012/13) exist for households reporting food shortage in the last 12 months.

Figure 14: Proportion of Households Affected by Food Shortages, by Month and NPS Round (National)

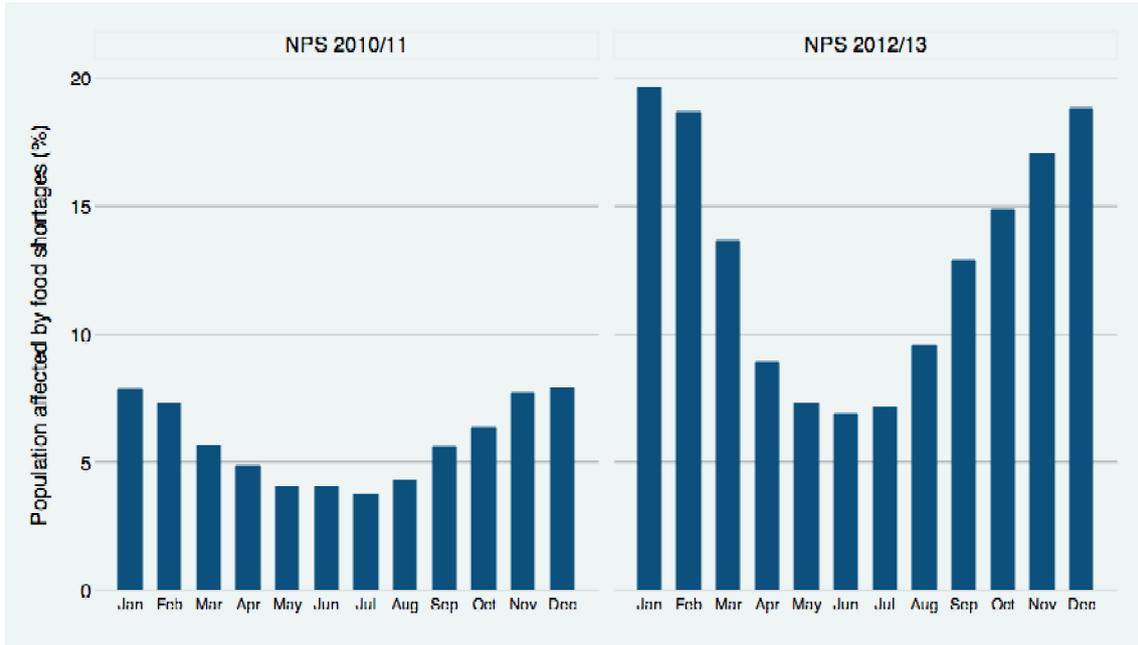
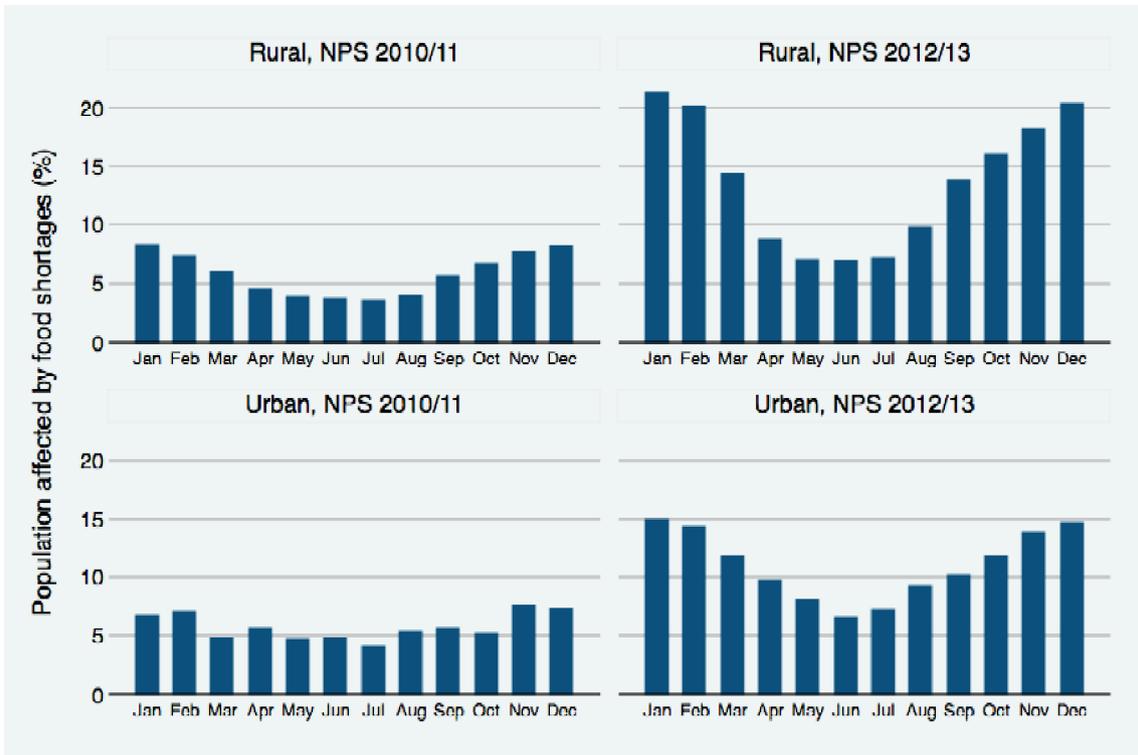


Figure 15: Proportion of Households Affected by Food Shortages in Urban and Rural Areas, by Month



5.3 Food Security and Poverty

Table 37 shows a classification of the population by their food security status and their poverty status. In the NPS 2010/11, 67 percent of the population was neither poor nor food vulnerable, decreasing slightly to 66 percent in 2012/13. Small decreases were also seen in rural areas, while in urban areas a significant increase in the population that is neither poor nor food vulnerable is observed. Zanzibar saw statistically significant increases over time. Urban areas consistently displayed higher proportions of households that were neither poor nor food insecure than rural areas, while rural areas (in Tanzania) had the lowest proportions of these households than any other stratum.

Table 37: Combining Food Security and Poverty Indicators

Area	Not food vulnerable Not poor		Not food vulnerable Poor		Food vulnerable Not poor		Food vulnerable and poor	
	10/11	12/13	10/11	12/13	10/11	12/13	10/11	12/13
Tanzania	66.9	65.8	13.2	14.6	13.3	13.2	6.6	6.4
Rural	65.2	61.6	14.9	18.5	12.2	12.0	7.7	7.9
Urban	71.6	77.4	8.5	3.7	16.7	16.7	3.3	2.0
Tanzania Mainland	67.0	65.2	12.9	14.7	13.5	13.5	6.6	6.5
Dar es Salaam	69.3	75.4	1.6	0.1	28.1	23.6	1.0	0.5
Other Urban	72.2	77.7	10.8	5.7	12.7	13.7	4.4	2.9
Rural	65.5	61.1	14.5	18.6	12.3	12.2	7.7	8.0
Tanzania Zanzibar	61.6	83.2	24.5	10.7	6.8	2.6	7.1	3.5

Conversely, just 6.6 percent of households were both food insecure and poor in the NPS 2010/11, a figure that decreased to 6.4 percent in the NPS 2012/13. Small increases were again seen in rural areas of the country, though none were significant. Zanzibar saw significant decreases in these types of households, falling from 7 percent in the NPS 2010/11 to just 3.5 percent in the NPS 2012/13.

Considering the panel component of the NPS allows for the observation of movement over time of households. Table 38 illustrates that 68 percent of households were food secure in both rounds of the NPS, 12 percent of households who were food secure are now vulnerable, another 12 percent who were food insecure and now secure, and finally 7 percent of panel households have remained food insecure during round two and three of the NPS.

Table 38: Vulnerability Movement over Time

		NPS 2012/13	
		Food Secure	Food Vulnerable
NPS 2010/11	Food Secure	68%	12%
	Food Vulnerable	12%	7%

APPENDICES

APPENDIX A. METHODOLOGY FOR CONSUMPTION - POVERTY ANALYSIS

Poverty analysis in Tanzania is 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 and 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 from the person with the lowest welfare to the person with the highest welfare. 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, subsection 1.1 describes the estimation of the nominal household consumption. Subsection 1.2 is concerned with the spatial and temporal price adjustment and Subsection 1.3 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 past 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 than income.¹³

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-

¹³ See Deaton and Zaidi (2002), Haughton and Khandker (2009) and Hentschel and Lanjouw (1996).

employment or own-business activities. For instance, workers in formal sectors of the 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 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 is 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 2012 may not have the same value as in August 2013) 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, food weights and non-food weights) and the official consumer price index (non-food prices).

Fisher price indices based only on food items are 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).¹⁴ Price indices are 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 are 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 are constructed using the following formula:

¹⁴ 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 purchased by at least 10 households by stratum and quarter are included in the construction of the price indices. Residual or catch-all food categories are 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 are 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 in all three rounds of the NPS is Dar es Salaam whereas the cheapest (in NPS 2008/09 and NPS 2010/11) is rural areas in Mainland. However, in the NPS 2012/13, the cheapest stratum for most of the fieldwork is Zanzibar. 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 and third rounds.

Table A1: Fisher Food Price Indices by Stratum and Quarter, NPS 2008/09, NPS 2010/11 and NPS 2012/13

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

NPS 2010/11	Oct-Dec 2010	Jan-Mar 2011	Apr-Jun 2011	Jul-Sep 2011
Dar es Salaam	1.12	1.17	1.13	1.07
Other urban	0.99	1.04	1.02	0.93
Rural	0.95	0.94	1.00	0.93
Zanzibar	0.88	0.91	0.93	0.99

Note: The base period for the NPS 2008/09 is Tanzania October 2008 - September 2009, for the NPS 2010/11 is Tanzania October 2010 ó September 2011 and for the NPS 2012/13 is Tanzania October 2012 ó September 2013.

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 A1 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 or NPS 2012/13 prices.

Fisher price indices based only on food items are employed to adjust consumption for spatial and temporal price differences across rounds of the NPS. It is assumed that non-food goods and services show the same temporal and spatial price differences across rounds than food items. Price indices are estimated for the entire country and for the full extent of each round: in the case of the NPS 2012/13, the base period is the 12 months of the NPS 2010/11 and the comparison period is the 12 months of the NPS 2012/13.

Food items purchased by at least 50 households in the country are included in the construction of the price indices. As with the previous price indices, residual food categories are also excluded and median rather than mean unit values are 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 between the NPS 2010/11 and the NPS 2012/13 is

estimated at 1.34, that is, the cost of an average food bundle consumed in the country increased by 34% between those two rounds of the NPS. This inflation will be employed to adjust the consumption aggregate and the poverty lines across the NPS 2010/11 and the NPS 2012/13.

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 sex, 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 *œquivalent 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.¹⁵

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 by the household have characteristics of *œpublic 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 is, the larger the scope for economies of scale is. On the other hand, private goods cannot be shared among members *ó* 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.

¹⁵ See Deaton and Muellbauer (1986) or Deaton (1997).

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.¹⁶ 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 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 ó 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

¹⁶ Ravallion (1998) and Ravallion (1996).

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 the three 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 and the NPS 2012/13 the real consumption aggregate at prices of each round 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.¹⁷

The Cost of Basic Needs method is 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.¹⁸ 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 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 are used to transform the food bundle into kilocalories. Fourth, median prices are derived in order to value the food bundle. Prices

¹⁷ See subsection 1.2 for details about the price adjustment across rounds of the NPS.

¹⁸ Food and Agriculture Organization of the United Nations (2001, 2003).

are 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 is 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 estimated based on the NPS 2010/11 would be TSh 847 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 (FGT). 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.¹⁹

¹⁹ 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/cassava	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, lemons, tangerines, etc.)	390	0.0053	2	568	3.0
32 Mangoes, avocados 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 Packaged 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 FOR SELECTED INDICATORS

GINI COEFFICIENT, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations.
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 Salaam	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 Salaam	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
NPS3					
Tanzania	0.388	0.005	0.379	0.398	4883
Rural	0.337	0.006	0.326	0.348	3154
Urban	0.357	0.008	0.341	0.372	1729
Mainland	0.390	0.005	0.380	0.399	4294
Dar es Salaam	0.315	0.011	0.294	0.337	742
Other urban	0.347	0.011	0.326	0.367	850
Rural	0.338	0.006	0.327	0.349	2702
Zanzibar	0.326	0.015	0.296	0.356	589

POVERTY INCIDENCE, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations.
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 Salaam	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 Salaam	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
NPS3					
Tanzania	20.97	1.07	18.86	23.08	4881
Rural	26.47	1.36	23.80	29.13	3152
Urban	5.72	0.99	3.76	7.67	1729
Mainland	21.17	1.10	19.00	23.33	4292
Dar es Salaam	0.60	0.31	-0.01	1.21	742
Other urban	8.54	1.57	5.46	11.63	850
Rural	26.68	1.39	23.95	29.40	2700
Zanzibar	14.16	3.04	8.19	20.13	589

LABOUR FORCE PARTICIPATION RATE, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	77.57	0.79	76.01	79.13	9,184
Rural	81.17	0.92	79.35	82.98	5,728
Urban	67.12	1.42	64.34	69.91	3,456
Mainland	77.99	0.82	76.39	79.60	7,659
Dar es Salaam	67.97	1.35	65.32	70.61	1,567
Rest of urban	68.29	2.10	64.16	72.42	1,249
Rural	81.39	0.95	79.52	83.25	4,843
Zanzibar	64.09	2.16	59.84	68.34	1,525
Female	75.32	0.92	73.51	77.13	4,876
Male	80.06	0.92	78.25	81.88	4,308
15-24	57.67	1.64	54.44	60.89	3,147
25-34	89.24	0.90	87.47	91.01	2,094
35-64	92.08	0.64	90.82	93.35	3,213
65+	67.05	2.25	62.63	71.47	729
NPS 2					
Tanzania	82.61	0.63	81.38	83.84	11,695
Rural	86.21	0.66	84.91	87.51	7,962
Urban	73.92	1.21	71.55	76.29	3,733
Mainland	83.15	0.64	81.88	84.41	9,928
Dar es Salaam	72.11	1.33	69.50	74.71	1,880
Rest of urban	75.02	1.66	71.76	78.27	1,810
Rural	87.00	0.68	85.66	88.34	6,238
Zanzibar	65.23	1.55	62.19	68.28	1,767
Female	81.36	0.78	79.82	82.90	6,139
Male	83.98	0.75	82.51	85.44	5,556
15-24	66.12	1.38	63.40	68.83	4,380
25-34	93.38	0.65	92.10	94.66	2,573
35-64	95.82	0.35	95.13	96.52	3,860
65+	71.98	1.81	68.41	75.54	879
NPS 3					
Tanzania	78.18	0.60	77.00	79.36	14,532
Rural	80.95	0.72	79.54	82.36	9,587
Urban	71.74	1.00	69.78	73.70	4,945
Mainland	78.66	0.61	77.46	79.87	12,555
Dar es Salaam	72.36	1.27	69.85	74.86	2,187
Rest of urban	71.96	1.48	69.06	74.86	2,329
Rural	81.44	0.73	80.00	82.88	8,039
Zanzibar	62.54	1.80	59.01	66.07	1,977
Female	74.13	0.76	72.63	75.62	7,602
Male	82.63	0.70	81.26	84.00	6,930
15-24	65.13	1.11	62.94	67.31	5,534
25-34	87.03	0.78	85.50	88.56	3,241
35-64	90.04	0.60	88.86	91.22	4,694
65+	61.57	2.08	57.48	65.66	1,060

UNEMPLOYMENT RATE, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	2.46	0.22	2.03	2.88	6,729
Rural	0.75	0.16	0.43	1.06	4,552
Urban	8.47	0.75	6.99	9.95	2,177
Mainland	2.32	0.22	1.88	2.75	5,813
Dar es Salaam	16.04	1.30	13.48	18.60	1,069
Rest of urban	4.13	0.92	2.31	5.94	846
Rural	0.61	0.16	0.29	0.92	3,898
Zanzibar	7.89	1.29	5.34	10.43	916
Female	2.74	0.28	2.19	3.29	3,358
Male	2.16	0.30	1.58	2.75	3,371
15-24	5.34	0.60	4.16	6.52	1,615
25-34	2.84	0.41	2.04	3.63	1,784
35-64	0.80	0.15	0.51	1.10	2,849
65+	0.35	0.19	-0.03	0.73	481
NPS 2					
Tanzania	3.49	0.31	2.88	4.11	9,295
Rural	1.99	0.26	1.48	2.50	6,586
Urban	7.73	0.88	5.99	9.47	2,709
Mainland	3.15	0.32	2.52	3.77	8,170
Dar es Salaam	13.65	1.49	10.73	16.58	1,365
Rest of urban	5.01	1.11	2.83	7.19	1,360
Rural	1.54	0.26	1.03	2.05	5,445
Zanzibar	17.79	1.92	14.01	21.57	1,125
Female	4.25	0.45	3.36	5.13	4,734
Male	2.69	0.29	2.12	3.27	4,561
15-24	7.08	0.84	5.43	8.73	2,753
25-34	3.54	0.47	2.61	4.46	2,344
35-64	1.17	0.22	0.74	1.61	3,604
65+	1.43	0.58	0.28	2.57	594
NPS 2					
Tanzania	2.91	0.23	2.45	3.37	10,991
Rural	1.00	0.16	0.67	1.32	7,508
Urban	7.93	0.66	6.63	9.22	3,483
Mainland	2.58	0.23	2.11	3.04	9,763
Dar es Salaam	12.88	1.21	10.51	15.26	1,575
Rest of urban	4.13	0.64	2.88	5.38	1,643
Rural	0.70	0.16	0.38	1.02	6,545
Zanzibar	16.45	1.70	13.12	19.79	1,228
Female	3.75	0.38	3.01	4.49	5,339
Male	2.08	0.21	1.66	2.50	5,652
15-24	5.69	0.53	4.65	6.73	3,475
25-34	3.47	0.49	2.52	4.43	2,751
35-64	0.81	0.14	0.54	1.09	4,152
65+	0.08	0.07	-0.06	0.22	612

PERCENTAGE OF HOUSEHOLDS WITH ACCESS TO ELECTRICITY, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	13	0.94	11.16	14.85	3,265
Rural	2.35	0.54	1.28	3.42	2,063
Urban	42.8	2.83	37.23	48.36	1,202
Mainland	12.42	0.96	10.53	14.31	2,786
Dar es Salam	61.06	3.23	54.71	67.4	555
Other urban	31.39	4.06	23.4	39.37	480
Rural	2.03	0.55	0.94	3.11	1,751
Zanzibar	33.89	4.01	26	41.79	479
NPS 2					
Tanzania	17.02	1.06	14.94	19.11	3,846
Rural	5.34	0.8	3.77	6.91	2,583
Urban	43.36	2.66	38.12	48.59	1,263
Mainland	16.39	1.09	14.25	18.53	3,313
Dar es Salam	68.9	2.71	63.57	74.23	626
Other urban	32.57	3.41	25.87	39.27	634
Rural	4.19	0.81	2.6	5.79	2,053
Zanzibar	39.74	3.99	31.9	47.59	533
NPS 3					
Tanzania	19.82	1.04	17.79	21.86	4,881
Rural	5.23	0.75	3.76	6.71	3,152
Urban	51.92	2.40	47.21	56.64	1,729
Mainland	19.19	1.06	17.11	21.26	4,292
Dar es Salam	68.82	2.61	63.69	73.95	742
Other urban	40.95	3.39	34.29	47.61	850
Rural	4.64	0.76	3.14	6.14	2,700
Zanzibar	43.68	4.49	34.85	52.51	589

PERCENTAGE OF HOUSEHOLDS USING ALTERNATIVE SOURCES OF ENERGY TO WOOD FUEL AS THEIR MAIN SOURCE OF ENERGY FOR COOKING, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	1.55	0.26	1.04	2.05	3,265
Rural	0.66	0.23	0.22	1.11	2,063
Urban	4.02	0.74	2.55	5.48	1,202
Mainland	1.56	0.26	1.04	2.08	2,786
Dar es Salam	7.23	1.55	4.19	10.27	555
Other urban	2.4	0.84	0.75	4.04	480
Rural	0.69	0.23	0.23	1.14	1,751
Zanzibar	1.09	0.48	0.14	2.03	479
NPS 2					
Tanzania	1.76	0.25	1.27	2.24	3,844
Rural	0.44	0.14	0.17	0.72	2,583
Urban	4.73	0.73	3.29	6.17	1,261
Mainland	1.72	0.25	1.23	2.21	3,311
Dar es Salam	11.11	1.88	7.43	14.8	625
Other urban	2.17	0.67	0.86	3.48	633
Rural	0.33	0.14	0.07	0.6	2,053
Zanzibar	3.07	1.22	0.68	5.46	533
NPS 3					
Tanzania	3.28	0.40	2.49	4.07	4,879
Rural	0.83	0.23	0.38	1.29	3,152
Urban	8.67	1.12	6.46	10.88	1,727
Mainland	3.25	0.41	2.45	4.05	4,290
Dar es Salam	13.95	2.16	9.70	18.20	740
Other urban	5.37	1.06	3.29	7.45	850
Rural	0.83	0.24	0.36	1.30	2,700
Zanzibar	4.38	1.93	0.59	8.17	589

NET ENROLLMENT RATE AT PRE-PRIMARY SCHOOL, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
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	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	9.04	24.75	154
Female	20.58	2.31	16.03	25.13	497
Male	19.48	2	15.55	23.42	485
NPS 2					
Tanzania	25.54	1.78	22.04	29.05	1,203
Rural	20.56	1.95	16.73	24.38	895
Urban	42.59	4.1	34.53	50.64	308
Mainland	25.47	1.83	21.88	29.06	1,040
Dar es Salam	53.28	4.57	44.3	62.26	152
Other urban	38.48	5.43	27.81	49.15	148
Rural	20.35	2	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
NPS 3					
Tanzania	27.89	1.72	24.50	31.27	1,329
Rural	22.20	1.81	18.63	25.76	981
Urban	48.95	3.34	42.39	55.51	348
Mainland	27.62	1.77	24.15	31.09	1,161
Dar es Salam	60.77	5.04	50.87	70.67	143
Other urban	43.43	4.66	34.27	52.60	174
Rural	21.87	1.85	18.24	25.51	844
Zanzibar	37.39	5.10	27.36	47.41	168
Female	27.19	2.03	23.20	31.19	679
Male	28.63	2.42	23.87	33.39	650

NET PRIMARY SCHOOL ENROLLMENT RATE, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	82.92	0.98	81	84.84	3,138
Rural	81.3	1.17	79	83.61	2,208
Urban	89.6	1.24	87.15	92.04	930
Mainland	83.05	1	81.08	85.03	2,594
Dar es Salam	85.62	1.81	82.05	89.19	344
Other urban	91.07	1.61	87.9	94.24	393
Rural	81.44	1.2	79.08	83.81	1,857
Zanzibar	78.78	3.2	72.49	85.07	544
Female	85.52	1.14	83.28	87.76	1,599
Male	80.13	1.31	77.56	82.71	1,539
NPS 2					
Tanzania	80.47	0.97	78.55	82.38	3,665
Rural	78.66	1.16	76.37	80.95	2,756
Urban	86.69	1.47	83.79	89.58	909
Mainland	80.33	1	78.35	82.3	3,109
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	1.2	76.06	80.79	2,206
Zanzibar	85.01	1.93	81.21	88.81	556
Female	81.88	1.26	79.4	84.35	1,860
Male	78.96	1.19	76.62	81.3	1,805
NPS 3					
Tanzania	76.31	1.19	73.97	78.65	4,415
Rural	73.22	1.44	70.38	76.06	3,234
Urban	86.84	1.24	84.40	89.27	1,181
Mainland	76.03	1.22	73.62	78.43	3,849
Dar es Salam	87.38	2.16	83.13	91.63	475
Other urban	86.55	1.54	83.53	89.57	586
Rural	72.94	1.47	70.05	75.84	2,788
Zanzibar	86.04	2.19	81.73	90.35	566
Female	79.08	1.34	76.44	81.73	2,242
Male	73.39	1.54	70.37	76.42	2,173

SECONDARY SCHOOL NET ENROLLMENT RATE, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	23.29	1.42	20.5	26.07	1,631
Rural	15.58	1.39	12.85	18.31	1,084
Urban	48.95	3.27	42.53	55.37	547
Mainland	22.8	1.46	19.93	25.66	1,351
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	3.8	31.54	46.49	280
Female	24.25	1.96	20.4	28.09	802
Male	22.42	1.72	19.05	25.79	829
NPS 2					
Tanzania	28.26	1.55	25.22	31.3	1,980
Rural	20.44	1.64	17.21	23.66	1,449
Urban	52	2.81	46.48	57.53	531
Mainland	27.98	1.59	24.85	31.11	1,665
Dar es Salam	50.08	4.52	41.19	58.97	223
Other urban	52.47	3.5	45.58	59.36	304
Rural	19.86	1.7	16.52	23.2	1,138
Zanzibar	37.2	4.2	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
NPS 3					
Tanzania	29.95	1.44	27.11	32.78	2,305
Rural	21.16	1.55	18.11	24.20	1,637
Urban	56.44	2.54	51.44	61.43	668
Mainland	29.46	1.48	26.55	32.38	1,963
Dar es Salam	54.32	4.50	45.47	63.18	251
Other urban	57.82	3.24	51.46	64.18	354
Rural	20.56	1.58	17.45	23.68	1,358
Zanzibar	44.56	4.18	36.34	52.78	342
Female	31.64	1.76	28.19	35.09	1,179
Male	28.18	1.95	24.35	32.02	1,126

GROSS ENROLLMENT RATE IN HIGHER EDUCATION, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	2.52	0.49	1.55	3.49	16,217
Rural	0.61	0.31	0	1.21	10,781
Urban	7.3	1.49	4.36	10.23	5,436
Mainland	2.53	0.51	1.53	3.53	13,545
Dar es Salam	8.81	2.19	4.5	13.13	2,336
Other urban	6.04	2.1	1.9	10.17	2,061
Rural	0.63	0.32	0	1.25	9,148
Zanzibar	2.15	0.95	0.28	4.03	2,672
Female	1.57	0.47	0.64	2.5	8,451
Male	3.68	0.85	2.02	5.35	7,766
NPS 2					
Tanzania	3.83	0.57	2.7	4.95	20,062
Rural	0.92	0.33	0.28	1.56	14,309
Urban	9.64	1.53	6.65	12.64	5,753
Mainland	3.86	0.59	2.69	5.02	17,067
Dar es Salam	14.95	3.14	8.79	21.12	2,821
Other urban	6.86	1.67	3.58	10.14	2,869
Rural	0.86	0.34	0.2	1.53	11,377
Zanzibar	3.05	1.08	0.92	5.19	2,995
Female	2.97	0.64	1.7	4.24	10,344
Male	4.71	0.85	3.05	6.38	9,718
NPS 3					
Tanzania	5.11	0.80	3.54	6.68	24,664
Rural	3.08	0.91	1.30	4.87	17,061
Urban	8.91	1.33	6.29	11.53	7,603
Mainland	5.03	0.82	3.42	6.63	21,425
Dar es Salam	13.43	2.32	8.87	18.00	3,265
Other urban	5.66	1.52	2.67	8.64	3,652
Rural	3.03	0.94	1.19	4.87	14,508
Zanzibar	7.74	3.05	1.75	13.73	3,239
Female	3.43	0.76	1.94	4.92	12,700
Male	6.68	1.08	4.57	8.80	11,964

PROPORTION OF BIRTHS ATTENDED BY SKILLED HEALTH WORKER, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	59.33	2.09	55.23	63.43	1,119
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
NPS 2					
Tanzania	62.17	1.95	58.35	66.00	1,342
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	1,171
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
NPS 3					
Tanzania	66.31	1.86	62.64	69.98	1,782
Rural	57.85	2.21	53.51	62.18	1,282
Urban	93.77	1.30	91.21	96.33	500
Mainland	66.32	1.91	62.57	70.07	1,589
Dar es Salam	98.26	0.78	96.72	99.80	202
Other urban	93.29	1.80	89.76	96.82	250
Rural	57.72	2.24	53.31	62.13	1,137
Zanzibar	65.94	5.49	55.14	76.73	193

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

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	43.02	1.57	39.93	46.11	1,994
Rural	45.59	1.82	42.02	49.16	1,482
Urban	30.16	2.55	25.15	35.18	512
Mainland	43.24	1.6	40.09	46.38	1,782
Dar es Salam	36.46	3.47	29.64	43.27	229
Other urban	27.9	3.28	21.45	34.35	225
Rural	45.85	1.85	42.21	49.49	1,328
Zanzibar	30.55	3.67	23.33	37.76	212
Female	40.72	1.88	37.02	44.41	1,036
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	4.1	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	2.9	35.16	46.56	448
48-59 months	38.85	2.88	33.18	44.52	410
NPS 2					
Tanzania	34.76	1.38	32.04	37.47	2,583
Rural	37.25	1.58	34.13	40.36	2,011
Urban	24.11	2.63	18.93	29.29	572
Mainland	34.85	1.41	32.08	37.62	2,294
Dar es Salam	21.07	2.98	15.21	26.93	262
Other urban	24.9	3.42	18.17	31.62	306
Rural	37.45	1.62	34.26	40.64	1,726
Zanzibar	30.36	3.34	23.8	36.92	289
Female	34.21	1.78	30.72	37.7	1,299
Male	35.32	1.68	32.01	38.62	1,284
0-5 months	12.92	2.41	8.18	17.66	260
6-11	19.91	2.84	14.32	25.5	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
NPS 3					
Tanzania	37.40	1.17	35.09	39.71	3,145
Rural	39.30	1.38	36.60	42.01	2,388
Urban	29.51	2.23	25.13	33.90	757
Mainland	37.60	1.20	35.25	39.95	2,873
Dar es Salam	23.77	3.08	17.72	29.83	290
Other urban	32.20	3.00	26.30	38.10	409
Rural	39.48	1.40	36.74	42.22	2,174
Zanzibar	26.93	3.35	20.34	33.52	272
Female	34.75	1.48	31.85	37.66	1,575
Male	40.08	1.65	36.85	43.31	1,570
0-5 months	12.98	2.51	8.04	17.91	309
6-11	27.73	3.46	20.93	34.53	332
12-23	47.66	2.33	43.07	52.25	631
24-35	47.79	2.48	42.91	52.67	683
36-47	38.56	2.46	33.73	43.39	589
48-59 months	30.81	2.23	26.42	35.19	601

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

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observation
NPS 1					
Tanzania	2.7	0.42	1.86	3.54	1,992
Rural	2.95	0.5	1.97	3.93	1,480
Urban	1.46	0.58	0.32	2.61	512
Mainland	2.63	0.43	1.78	3.47	1,780
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	1,326
Zanzibar	6.96	2.41	2.22	11.7	212
Female	2.72	0.55	1.64	3.79	1,035
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	1.9	9.87	194
12-23	2.52	1.03	0.5	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	0.8	0.94	4.08	410
NPS 2					
Tanzania	6.59	0.65	5.31	7.86	2,579
Rural	6.76	0.74	5.3	8.22	2,007
Urban	5.87	1.2	3.52	8.22	572
Mainland	6.52	0.66	5.22	7.82	2,290
Dar es Salam	5.38	1.55	2.33	8.42	262
Other urban	6	1.52	3.01	8.99	306
Rural	6.68	0.76	5.19	8.17	1,722
Zanzibar	9.84	1.98	5.95	13.73	289
Female	6.83	0.88	5.1	8.56	1,297
Male	6.34	0.83	4.72	7.96	1,282
0-5 months	12.71	2.43	7.93	17.48	257
6-11	11.92	2.5	7	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	2.6	7.23	479
NPS 3					
Tanzania	4.20	0.40	3.42	4.98	3,139
Rural	4.17	0.45	3.28	5.07	2,385
Urban	4.29	0.76	2.80	5.79	754
Mainland	4.13	0.40	3.34	4.92	2,867
Dar es Salam	3.47	1.16	1.19	5.75	288
Other urban	4.28	0.97	2.38	6.18	408
Rural	4.15	0.46	3.25	5.06	2,171
Zanzibar	7.68	2.61	2.55	12.81	272
Female	4.47	0.60	3.29	5.66	1,570
Male	3.92	0.49	2.96	4.87	1,569
0-5 months	10.99	1.92	7.22	14.75	308
6-11	11.26	1.94	7.44	15.07	331
12-23	4.65	0.99	2.70	6.59	628
24-35	2.27	0.70	0.90	3.65	683
36-47	0.99	0.42	0.16	1.81	589
48-59 months	2.44	0.76	0.96	3.93	600

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

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	15.92	1.06	13.83	18.01	1,999
Rural	17.13	1.23	14.71	19.56	1,485
Urban	9.82	1.69	6.5	13.15	514
Mainland	15.87	1.08	13.74	17.99	1,786
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	1,331
Zanzibar	18.8	2.85	13.2	24.4	213
Female	15.08	1.32	12.48	17.68	1,037
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	14.7	2.24	10.29	19.11	414
24-35	16.24	2.22	11.87	20.6	432
36-47	19.08	2.14	14.88	23.28	448
48-59 months	16.36	2.16	12.12	20.6	410
NPS 2					
Tanzania	13.56	0.9	11.78	15.34	2,602
Rural	14.59	1.04	12.53	16.64	2,026
Urban	9.19	1.58	6.09	12.3	576
Mainland	13.46	0.92	11.65	15.27	2,307
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	1,735
Zanzibar	18.5	2.34	13.9	23.1	295
Female	12.94	1.16	10.66	15.21	1,311
Male	14.2	1.2	11.84	16.55	1,291
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	1.7	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
NPS 3					
Tanzania	12.52	0.83	10.89	14.15	3,152
Rural	13.30	0.97	11.40	15.21	2,394
Urban	9.28	1.29	6.74	11.82	758
Mainland	14.94	3.09	8.87	21.02	2,880
Dar es Salam	6.73	1.80	3.19	10.27	292
Other urban	10.11	1.72	6.72	13.49	408
Rural	13.28	0.98	11.35	15.20	2,180
Zanzibar	14.94	3.09	8.87	21.02	272
Female	12.52	1.16	10.23	14.81	1,575
Male	12.52	0.98	10.60	14.44	1,577
0-5 months	5.90	1.67	2.62	9.18	312
6-11	11.37	2.05	7.35	15.39	334
12-23	14.84	1.71	11.48	18.20	629
24-35	16.34	1.84	12.73	19.95	685
36-47	10.37	1.48	7.46	13.28	591
48-59 months	11.79	1.66	8.54	15.05	601

HOUSEHOLDS WITH ACCESS TO SAFE DRINKING WATER – RAINY SEASON, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	43.26	1.88	39.56	46.96	3,265
Rural	32.8	2.26	28.36	37.24	2,063
Urban	72.54	3.11	66.43	78.66	1,202
Mainland	42.2	1.93	38.41	46	2,786
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	1,751
Zanzibar	81.27	4.37	72.69	89.85	479
NPS 2					
Tanzania	42.74	1.71	39.38	46.09	3,843
Rural	32.25	1.91	28.49	36.02	2,583
Urban	66.42	3.11	60.31	72.53	1,260
Mainland	41.54	1.75	38.1	44.98	3,310
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	2,053
Zanzibar	85.58	3.36	78.98	92.18	533
NPS 3					
Tanzania	45.91	1.68	42.61	49.21	4,880
Rural	35.37	2.03	31.38	39.36	3,152
Urban	69.11	2.52	64.16	74.05	1,728
Mainland	44.81	1.72	41.43	48.19	4,291
Dar es Salam	73.20	2.55	68.18	78.22	741
Other urban	65.18	3.83	57.65	72.71	850
Rural	34.31	2.07	30.25	38.37	2,700
Zanzibar	87.02	3.46	80.21	93.82	589

HOUSEHOLDS WITH ACCESS TO SAFE DRINKING WATER – DRY SEASON, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	43.53	1.87	39.85	47.21	3,265
Rural	32.89	2.23	28.5	37.27	2,063
Urban	73.31	3.14	67.14	79.48	1,202
Mainland	42.51	1.92	38.74	46.28	2,786
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	1,751
Zanzibar	80.26	4.42	71.56	88.95	479
NPS 2					
Tanzania	50.19	1.81	46.63	53.74	3,842
Rural	39.84	2.12	35.68	44.01	2,582
Urban	73.54	2.76	68.11	78.98	1,260
Mainland	49.23	1.85	45.59	52.88	3,310
Dar es Salam	77.71	2.4	73	82.42	624
Other urban	71.16	3.73	63.83	78.49	633
Rural	38.36	2.19	34.05	42.68	2,053
Zanzibar	84.3	3.46	77.5	91.11	532
NPS 3					
Tanzania	52.85	1.60	49.71	56.00	4,881
Rural	41.55	1.99	37.64	45.46	3,152
Urban	77.72	1.85	74.09	81.35	1,729
Mainland	51.92	1.64	48.70	55.15	4,292
Dar es Salam	78.46	2.48	73.59	83.34	742
Other urban	76.39	2.71	71.07	81.72	850
Rural	40.60	2.03	36.61	44.58	2,700
Zanzibar	87.65	3.38	81.01	94.28	589

PERCENTAGE OF HOUSEHOLDS WITH BASIC SANITATION FACILITIES, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	89.93	1.02	87.92	91.94	3,265
Rural	86.57	1.38	83.87	89.28	2,063
Urban	99.33	0.3	98.73	99.92	1,202
Mainland	90.19	1.04	88.14	92.24	2,786
Dar es Salam	99.2	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	1,751
Zanzibar	80.59	4	72.73	88.45	479
NPS 2					
Tanzania	87.06	0.98	85.14	88.98	3,844
Rural	83.27	1.33	80.67	85.88	2,583
Urban	95.62	0.9	93.85	97.39	1,261
Mainland	87.3	1	85.34	89.26	3,311
Dar es Salam	98.93	0.45	98.05	99.82	625
Other urban	94.4	1.23	91.99	96.82	633
Rural	83.47	1.37	80.77	86.16	2,053
Zanzibar	78.45	3.8	70.98	85.91	533
NPS 3					
Tanzania	86.59	1.03	84.56	88.62	4,881
Rural	81.79	1.41	79.02	84.56	3,152
Urban	97.16	0.54	96.10	98.22	1,729
Mainland	86.68	1.05	84.60	88.75	4,292
Dar es Salam	98.73	0.46	97.82	99.64	742
Other urban	96.42	0.83	94.79	98.05	850
Rural	81.91	1.44	79.09	84.74	2,700
Zanzibar	83.39	3.52	76.46	90.32	589

PERCENTAGE OF HOUSEHOLDS WITH BASIC SANITATION FACILITIES, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 1					
Tanzania	21.91	1.07	19.79	24.02	3,265
Rural	8.79	0.99	6.85	10.72	2,063
Urban	58.62	2.84	53.03	64.21	1,202
Mainland	21.32	1.10	19.16	23.48	2,786
Dar es Salam	92.29	1.54	89.26	95.32	555
Other urban	41.09	4.01	33.20	48.98	480
Rural	8.10	1.00	6.12	10.07	1,751
Zanzibar	42.84	4.21	34.56	51.12	479
NPS 2					
Tanzania	25.36	1.08	23.24	27.49	3,844
Rural	11.84	1.03	9.81	13.87	2,583
Urban	55.91	2.60	50.81	61.02	1,261
Mainland	24.67	1.10	22.50	26.85	3,311
Dar es Salam	90.38	1.40	87.64	93.12	625
Other urban	41.83	3.17	35.60	48.06	633
Rural	10.45	1.05	8.38	12.52	2,053
Zanzibar	50.06	4.33	41.54	58.58	533
NPS 3					
Tanzania	29.54	1.23	27.13	31.95	4,881
Rural	14.23	1.17	11.94	16.53	3,152
Urban	63.22	2.58	58.14	68.30	1,729
Mainland	28.78	1.25	26.32	31.24	4,292
Dar es Salam	90.83	1.26	88.36	93.30	742
Other urban	45.14	3.60	38.07	52.21	850
Rural	13.59	1.19	11.25	15.92	2,700
Zanzibar	58.18	4.28	49.76	66.59	589

AVERAGE YIELDS OF MAIZE (KG / AREA PLANTED IN HECTARE), CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
FARMER REPORTED PLOT AREA					
All plots	782.46	18.28	746.61	818.30	1,816
Pure stand plots	906.80	34.37	839.31	974.30	600
Intercropped Plots	714.70	21.05	673.40	755.99	1,216
Plots w/ Organic Fertilizer	1,011.61	59.02	895.38	1,127.85	256
Plots w/ Inorganic Fertilizer	1,159.77	53.87	1,053.73	1,265.80	283
Plots w/ Any Fertilizer	1,066.49	42.61	982.76	1,150.22	476
NPS2					
FARMER REPORTED PLOT AREA					
All plots	794.35	15.83	763.32	825.39	2,189
Pure stand plots	877.97	28.04	822.94	933.01	775
Intercropped plots	742.34	17.77	705.31	779.37	1,414
Plots w/ Organic Fertilizer	927.34	46.71	835.39	1,019.29	287
Plots w/ Inorganic Fertilizer	1,178.58	46.57	1,087.03	1,270.13	413
Plots w/ Any Fertilizer	1,058.37	34.74	990.16	1,126.59	627
GPS-BASED PLOT AREA					
All plots	929.94	21.32	888.14	971.75	1,879
Pure stand plots	1,047.66	37.59	973.85	1,121.47	663
Intercropped plots	858.00	25.49	807.00	908.01	1,216
Plots w/ Organic Fertilizer	1,014.26	58.14	899.80	1,128.73	274
Plots w/ Inorganic Fertilizer	1,349.23	58.74	1,233.72	1,464.75	363
Plots w/ Any Fertilizer	1,170.39	43.86	1,084.23	1,256.54	569
NPS3					
FARMER REPORTED PLOT AREA					
All plots	779.10	15.09	749.51	808.69	2,734
Pure stand plots	893.29	27.73	838.87	947.71	955
Intercropped Plots	710.99	17.49	676.69	745.28	1,779
Plots w/ Organic Fertilizer	785.24	38.11	710.33	860.15	426
Plots w/ Inorganic Fertilizer	1,180.97	47.15	1,088.29	1,273.64	448
Plots w/ Any Fertilizer	982.04	32.99	917.28	1,046.79	795
GPS-BASED PLOT AREA					
All plots	858.28	18.92	821.18	895.38	2,276
Pure stand plots	961.50	33.58	895.58	1,027.43	769
Intercropped plots	799.63	22.69	755.12	844.14	1,507
Plots w/ Organic Fertilizer	955.49	50.59	856.03	1,054.94	395
Plots w/ Inorganic Fertilizer	1,308.53	62.10	1,186.44	1,430.63	380
Plots w/ Any Fertilizer	1,101.10	41.81	1,019.01	1,183.20	701

AVERAGE YIELDS OF PADDY (KG / AREA PLANTED IN HECTARE), CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
<i>FARMER REPORTED PLOT AREA</i>					
All plots	1,313.15	57.60	1,199.99	1,426.32	490
Pure stand plots	1,438.07	65.95	1,308.42	1,567.73	409
Intercropped Plots	804.92	92.17	621.49	988.35	81
Plots w/ Organic Fertilizer	1,967.47	245.84	1,457.62	2,477.32	23
Plots w/ Inorganic Fertilizer	1,803.40	185.24	1,432.59	2,174.21	59
Plots w/ Any Fertilizer	1,792.99	155.46	1,482.86	2,103.12	70
NPS2					
<i>FARMER REPORTED PLOT AREA</i>					
All plots	1,339.54	46.14	1,248.94	1,430.15	620
Pure stand plots	1,431.29	50.89	1,331.33	1,531.26	529
Intercropped plots	772.69	84.18	605.44	939.93	91
Plots w/ Organic Fertilizer	2,411.71	336.79	1,725.69	3,097.73	33
Plots w/ Inorganic Fertilizer	1,893.59	182.28	1,530.13	2,257.05	72
Plots w/ Any Fertilizer	1,908.48	157.71	1,595.42	2,221.53	97
<i>GPS-BASED PLOT AREA</i>					
All plots	1,594.01	69.53	1,457.36	1,730.65	457
Pure stand plots	1,720.89	77.97	1,567.59	1,874.20	382
Intercropped plots	944.30	123.56	698.10	1,190.50	75
Plots w/ Organic Fertilizer	2,732.73	369.50	1,968.36	3,497.11	24
Plots w/ Inorganic Fertilizer	1,873.49	218.75	1,434.12	2,312.86	51
Plots w/ Any Fertilizer	1,892.73	184.06	1,525.35	2,260.11	68
NPS3					
<i>FARMER REPORTED PLOT AREA</i>					
All plots	1,276.87	44.96	1,188.60	1,365.14	722
Pure stand plots	1,381.42	50.15	1,282.93	1,479.92	607
Intercropped Plots	684.28	76.41	532.91	835.66	115
Plots w/ Organic Fertilizer	2,228.57	309.96	1,599.33	2,857.82	36
Plots w/ Inorganic Fertilizer	1,706.18	150.76	1,406.96	2,005.41	98
Plots w/ Any Fertilizer	1,762.52	141.52	1,482.42	2,042.62	125
<i>GPS-BASED PLOT AREA</i>					
All plots	1,379.40	67.23	1,247.20	1,511.60	376
Pure stand plots	1,527.24	76.80	1,376.09	1,678.38	294
Intercropped plots	648.28	104.77	439.83	856.73	82
Plots w/ Organic Fertilizer	1,951.37	367.72	1,184.32	2,718.42	21
Plots w/ Inorganic Fertilizer	2,092.90	229.70	1,631.15	2,554.84	49
Plots w/ Any Fertilizer	1,842.95	193.74	1,455.67	2,230.24	63

PERCENTAGE OF HOUSEHOLDS USING IRRIGATION, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
Share of households using irrigation	4.15	0.42	3.33	5.00	2,214
Share of fields using irrigation (surface)	2.03	0.19	1.66	2.40	5,582
-> share of maize fields using irrigation (surface)	1.67	0.26	1.18	2.18	2,535
-> share of paddy fields using irrigation (surface)	4.28	0.84	2.64	5.92	586
NPS2					
Share of households using irrigation	3.43	0.37	2.72	4.15	2,479
Share of fields using irrigation (surface)	1.74	0.17	1.42	2.08	6,133
-> share of maize fields using irrigation (surface)	1.54	0.23	1.10	1.99	2,965
-> share of paddy fields using irrigation (surface)	3.62	0.70	2.25	5.00	710
NPS3					
Share of households using irrigation	3.43	0.33	2.78	4.07	3,090
Share of fields using irrigation (surface)	1.68	0.15	1.39	1.96	7,697
-> share of maize fields using irrigation (surface)	1.70	0.21	1.29	2.12	3,687
-> share of paddy fields using irrigation (surface)	5.61	0.78	4.07	7.15	861

PERCENTAGE OF HOUSEHOLDS USING IRRIGATION BY METHOD, CONFIDENCE INTERVALS

Method of Irrigation	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
Flooding	0.66	0.05	0.56	0.76	89
Sprinkler	0.05	0.02	0.01	0.01	89
Drip irrigation	0.03	0.02	0.00	0.06	89
Bucket/watering can	0.25	0.05	0.16	0.34	89
Water hose	0.04	0.02	0.00	0.08	89
Other	-				
NPS2					
Flooding	0.69	0.05	0.59	0.80	80
Sprinkler	0.04	0.02	0.00	0.09	80
Drip irrigation	0.04	0.02	0.00	0.89	80
Bucket/watering can	0.16	0.04	0.08	0.24	80
Water hose	0.04	0.02	0.00	0.09	80
Other	0.03	0.02	0.00	0.75	80
NPS3					
Flooding	0.59	0.05	0.49	0.69	95
Sprinkler	0.03	0.02	0.00	0.07	95
Drip irrigation	-				
Bucket/watering can	0.23	0.04	0.14	0.31	95
Water hose	0.09	0.03	0.03	0.15	95
Other	0.07	0.03	0.01	0.12	95

PROPORTION OF HOUSEHOLDS USING VARIOUS SOURCES OF WATER FOR IRRIGATION, CONFIDENCE INTERVALS

Source of Water	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
Well	0.12	0.03	0.05	0.19	89
Borehole	0.02	0.01	-0.01	0.04	89
Pond/tank	0.01	0.01	-0.01	0.04	89
River/stream	0.79	0.04	0.71	0.88	89
Other source	0.06	0.02	0.01	0.11	89
NPS2					
Well	0.16	0.04	0.08	0.24	80
Borehole	0.05	0.02	0	0.09	80
Pond/tank	0.02	0.02	-0.01	0.06	80
River/stream	0.76	0.05	0.66	0.85	80
Other source	0.04	0.02	-0.01	0.09	80
NPS3					
Well	0.11	0.03	0.04	0.17	95
Borehole	0.01	0.01	-0.01	0.03	95
Pond/tank	0.09	0.03	0.03	0.14	95
River/stream	0.76	0.04	0.67	0.84	95
Other source	0.04	0.02	0	0.08	95

PROPORTION OF HOUSEHOLDS USING FERTILIZERS, SEEDS AND PESTICIDES, CONFIDENCE INTERVALS

Percentage of households using at least:	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
Any fertilizer	30.06	0.97	28.16	31.98	2,214
Using organic fertilizers	22.11	0.88	20.38	23.84	2,214
Using non-organic fertilizers	12.86	0.71	11.46	14.25	2,214
Using vouchers for non-organic fertilizers	-				304
Using pesticides/insecticides	14.68	0.75	13.21	16.16	2,214
Improved Seeds	21.37	0.89	19.63	23.10	2,137
NPS2					
Any fertilizer	32.58	0.94	30.73	34.42	2,479
Using organic fertilizers	21.75	0.83	20.13	23.38	2,479
Using non-organic fertilizers	16.80	0.75	15.33	18.28	2,479
Using vouchers for non-organic fertilizers	49.51	2.48	44.63	54.38	408
Using pesticides/insecticides	13.16	0.67	11.83	14.50	2,479
Improved Seeds	17.96	0.79	16.41	19.51	2,356
NPS3					
Any fertilizer	35.44	0.86	33.75	37.12	3,090
Using organic fertilizers	25.30	0.78	23.77	26.84	3,090
Using non-organic fertilizers	15.32	0.65	14.05	16.59	3,090
Using vouchers for non-organic fertilizers	30.13	2.13	25.94	34.32	464
Using pesticides/insecticides	13.68	0.62	12.47	14.89	3,090
Improved Seeds	43.25	0.92	41.45	45.05	2,904

PERCENTAGE OF HOUSEHOLDS EXPERIENCING EROSION, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
Proportion of households with at least one field subject to erosion	24.46	0.91	22.66	26.25	2214
Cause of erosion					
Wind	2.34	0.69	0.97	3.70	476
Rain	93.66	1.11	91.46	95.86	476
Animals	3.48	0.84	1.83	5.13	476
Cultivation that does not comply with soil conservation	1.07	0.47	0.14	2.00	476
Others	0.25	0.23	-0.20	0.71	476
NPS2					
Proportion of households with at least one field subject to erosion	22.74	0.84	21.09	24.39	2479
Cause of erosion					
Wind	1.30	0.50	0.31	2.29	509
Rain	97.14	0.74	95.69	98.60	509
Animals	1.28	0.50	0.30	2.26	509
Cultivation that does not comply with soil conservation	0.35	0.26	-0.17	0.86	509
Others	0.39	0.27	-0.15	0.93	509
NPS3					
Proportion of households with at least one field subject to erosion	18.76	0.70	17.38	20.13	3090
Cause of erosion					
Wind	1.39	0.53	0.36	2.42	499
Rain	96.62	0.81	95.04	98.22	499
Animals	0.68	0.37	-0.04	1.41	499
Cultivation that does not comply with soil conservation	-				
Others	0.90	0.43	0.09	1.79	499

PROPORTION OF HOUSEHOLDS USING EROSION CONTROL METHODS, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
Households using erosion control	0.26	0.01	0.24	0.27	2,214
Type of erosion control					
Terraces	0.43	0.02	0.39	0.48	477
Erosion Control Bunds	0.30	0.02	0.26	0.35	477
Gabions/sandbags	0.03	0.01	0.01	0.04	477
Vetiver grass	0.06	0.01	0.04	0.08	477
Tree belts	0.09	0.01	0.06	0.11	477
Water harvest bunds	0.19	0.02	0.15	0.22	477
Drainage ditch	0.30	0.02	0.26	0.35	477
Dam	0.01	0.00	0.00	0.02	477
NPS2					
Households using erosion control	0.16	0.01	0.15	0.18	2,479
Type of erosion control					
Terraces	0.60	0.03	0.55	0.66	351
Erosion Control Bunds	0.02	0.01	0.00	0.03	351
Gabions/sandbags	0.02	0.01	0.01	0.04	351
Vetiver grass	0.05	0.01	0.03	0.08	351
Tree belts	0.09	0.02	0.06	0.12	351
Water harvest bunds	0.14	0.02	0.11	0.18	351
Drainage ditch	0.22	0.02	0.18	0.26	351
Dam	0.00	0.00	0.00	0.01	351
NPS3					
Households using erosion control	0.12	0.01	0.11	0.14	3,090
Type of erosion control					
Terraces	0.39	0.03	0.34	0.45	329
Erosion Control Bunds	0.30	0.03	0.25	0.35	329
Gabions/sandbags	0.01	0.00	0.00	0.01	329
Vetiver grass	0.03	0.01	0.01	0.05	329
Tree belts	0.05	0.01	0.03	0.08	329
Water harvest bunds	0.13	0.02	0.09	0.17	329
Drainage ditch	0.22	0.02	0.18	0.27	329
Dam	0.00	0.00	0.00	0.00	329

PERCENTAGE OF HOUSEHOLDS USING FARMING TECHNOLOGY – OWN ITEM, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
Hand hoe	98.04	0.29	97.48	98.61	2,312
Hand powered sprayer	6.99	0.53	5.94	8.02	2,312
Ox plough	8.68	0.59	7.53	9.83	2,312
Ox seed planter	9.94	0.52	8.72	11.16	2,312
Ox cart	0.11	0.07	-0.03	0.02	2,312
Tractor	2.43	0.32	1.80	3.06	2,312
Tractor plough	0.14	0.08	-0.01	0.29	2,312
Tractor harrow	0.27	0.11	0.06	0.48	2,312
Sheller/thresher	0.05	0.05	-0.04	0.15	2,312
Hand mill	0.48	0.14	0.20	0.76	2,312
Watering can	1.97	0.29	1.40	2.53	2,312
Farm buildings	7.50	0.55	6.42	8.58	2,312
Geri cans/drums	12.71	0.69	11.35	14.07	2,312
Power tiller	-				
Other	-				
NPS2					
Hand hoe	96.61	0.35	95.93	97.29	2,729
Hand powered sprayer	5.88	0.45	5.00	6.76	2,729
Ox plough	9.36	0.56	8.27	10.46	2,729
Ox seed planter	10.50	0.59	9.35	11.66	2,729
Ox cart	0.02	0.03	-0.03	0.07	2,729
Tractor	2.36	0.29	1.79	2.93	2,729
Tractor plough	0.21	0.09	0.03	0.38	2,729
Tractor harrow	0.13	0.07	-0.07	0.26	2,729
Sheller/thresher	0.02	0.03	-0.03	0.07	2,729
Hand mill	0.14	0.07	0.00	0.28	2,729
Watering can	1.21	0.21	0.80	1.62	2,729
Farm buildings	6.85	0.48	4.90	7.79	2,729
Geri cans/drums	3.79	0.37	3.07	4.50	2,729
Power tiller	-				
Other	10.55	0.59	9.39	11.70	2,729
NPS3					
Hand hoe	97.87	0.25	93.38	98.37	3,261
Hand powered sprayer	6.26	0.42	5.42	7.09	3,261
Ox plough	10.26	0.53	9.22	11.31	3,261
Ox seed planter	11.14	0.55	10.06	12.22	3,261
Ox cart	0.03	0.03	-0.03	0.10	3,261
Tractor	2.54	0.28	2.00	3.01	3,261
Tractor plough	0.08	0.05	-0.02	0.17	3,261
Tractor harrow	0.06	0.04	-0.02	0.14	3,261
Sheller/thresher	0.08	0.04	-0.01	0.01	3,261
Hand mill	0.05	0.04	0.00	0.13	3,261
Watering can	0.79	0.15	0.48	1.09	3,261
Farm buildings	5.61	0.40	0.48	0.64	3,261
Geri cans/drums	2.44	0.27	0.19	0.30	3,261
Power tiller	0.21	0.08	0.06	0.37	3,261
Other	31.68	0.81	30.08	33.27	3,261

PERCENTAGE OF HOUSEHOLDS USING FARMING TECHNOLOGY – USED ITEM, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
Hand hoe	95.76	0.42	94.93	96.58	2,312
Hand powered sprayer	12.83	0.70	11.47	14.20	2,312
Ox plough	18.17	0.80	16.59	19.74	2,312
Ox seed planter	19.36	0.82	17.75	20.97	2,312
Ox cart	0.40	0.12	0.13	0.62	2,312
Tractor	7.66	0.66	6.57	8.75	2,312
Tractor plough	2.81	0.34	2.13	3.48	2,312
Tractor harrow	1.40	0.24	0.94	1.90	2,312
Sheller/thresher	0.11	0.07	-0.03	0.24	2,312
Hand mill	1.09	0.22	0.67	1.52	2,312
Watering can	1.81	0.28	1.27	2.36	2,312
Farm buildings	7.21	0.54	6.16	8.27	2,312
Gerri cans/drums	10.80	0.65	9.53	12.07	2,312
Power tiller	-	-	-	-	-
Other	-	-	-	-	-
NPS2					
Hand hoe	91.62	0.53	90.58	92.66	2,729
Hand powered sprayer	8.53	0.53	7.48	9.58	2,729
Ox plough	17.85	0.73	16.41	19.29	2,729
Ox seed planter	18.65	0.75	17.19	20.11	2,729
Ox cart	0.05	0.04	-0.04	0.14	2,729
Tractor	5114	0.42	4.31	5.97	2,729
Tractor plough	2.92	0.32	2.28	3.55	2,729
Tractor harrow	2.32	0.29	1.76	2.89	2,729
Sheller/thresher	0.01	0.02	-0.03	0.05	2,729
Hand mill	0.12	0.07	-0.01	0.25	2,729
Watering can	1.11	0.20	0.71	1.50	2,729
Farm buildings	6.59	0.48	4.55	7.43	2,729
Gerri cans/drums	2.31	0.29	1.75	2.88	2,729
Power tiller	-	-	-	-	-
Other	9.97	0.57	8.85	11.10	2,729
NPS3					
Hand hoe	95.68	0.36	94.98	96.38	3,261
Hand powered sprayer	9.72	0.52	8.70	10.73	3,261
Ox plough	22.78	0.73	21.33	24.22	3,261
Ox seed planter	23.30	0.74	21.85	24.76	3,261
Ox cart	0.03	0.03	-0.02	0.09	3,261
Tractor	6.31	0.43	5.48	7.15	3,261
Tractor plough	5.03	0.38	4.28	5.78	3,261
Tractor harrow	3.90	0.34	0.32	0.46	3,261
Sheller/thresher	0.15	0.07	0.02	0.29	3,261
Hand mill	0.16	0.07	0.02	0.30	3,261
Watering can	0.87	0.16	0.55	1.19	3,261
Farm buildings	5.12	0.39	4.36	5.88	3,261
Gerri cans/drums	2.06	0.25	1.57	2.55	3,261
Power tiller	0.39	0.11	0.17	0.60	3,261
Other	31.30	0.81	29.71	32.89	3,261

PERCENTAGE OF FARM HOUSEHOLDS EARNING INCOME FROM OFF-FARM ACTIVITIES, CONFIDENCE INTERVALS

Percentage of households earning Income from:	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
Rural					
Wage	24.14	1.07	32.05	32.25	1,961
Self-Employment	34.56	1.07	32.46	36.67	1,961
Either	54.99	1.12	52.79	57.19	1,961
Urban					
Wage	45.04	2.65	39.83	50.26	353
Self-Employment	54.73	2.65	49.52	59.95	353
Either	78.09	2.20	73.76	82.43	353
All					
Wage	35.40	0.99	33.45	37.35	2,314
Self-Employment	36.89	1.00	34.92	38.86	2,314
Either	57.66	1.02	55.64	59.67	2,314
NPS2					
Rural					
Wage	43.79	1.07	41.69	45.88	2,157
Self-Employment	38.94	1.05	36.89	41.01	2,157
Either	65.43	1.02	63.42	67.43	2,157
Urban					
Wage	50.74	2.55	45.73	55.76	385
Self-Employment	60.51	2.49	55.61	65.42	385
Either	85.62	1.79	82.09	89.14	385
All					
Wage	44.82	0.99	42.88	46.75	2,542
Self-Employment	42.14	0.98	40.22	44.06	2,542
Either	68.41	0.92	66.61	70.22	2,542
NPS3					
Rural					
Wage	46.37	0.97	44.46	48.27	2,637
Self-Employment	37.20	0.94	35.35	39.04	2,637
Either	65.87	0.92	64.06	67.68	2,537
Urban					
Wage	52.80	2.17	58.53	57.06	530
Self-Employment	55.81	2.16	51.57	60.05	530
Either	83.26	1.62	80.07	86.45	530
All					
Wage	47.24	0.88	45.50	48.98	3,167
Self-Employment	39.72	0.87	38.02	41.43	3,167
Either	68.23	0.83	66.61	69.85	3,167

PROPORTION OF HOUSEHOLDS THAT SOLD THEIR HARVEST, EXPERIENCED LOSSES AND STORED CROPS, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS1					
Proportion of households who sell at least part of their harvest	0.59	0.11	0.57	0.61	2,061
Proportion of households selling maize	0.27	0.01	0.25	0.29	1,536
Proportion of households selling paddy	0.51	0.23	0.46	0.55	459
Proportion of households who experienced loss of crops	0.20	0.01	0.18	0.21	2,061
Proportion of households who stored at least part of harvest	0.40	0.01	0.38	0.42	2,061
NPS2					
Proportion of households who sell at least part of their harvest	0.61	0.01	0.59	0.63	2,350
Proportion of households selling maize	0.33	0.01	0.31	0.35	1,901
Proportion of households selling paddy	0.57	0.02	0.53	0.61	584
Proportion of households who experienced loss of crops	0.11	0.01	0.10	0.12	2,350
Proportion of households who stored at least part of harvest	0.30	0.01	0.28	0.32	2,350
NPS3					
Proportion of households who sell at least part of their harvest	0.61	0.01	0.59	0.63	2,888
Proportion of households selling maize	0.29	0.01	0.27	0.31	2,368
Proportion of households selling paddy	0.54	0.18	0.51	0.58	726
Proportion of households who experienced loss of crops	0.07	0.00	0.06	0.08	2,888
Proportion of households who stored at least part of harvest	0.30	0.01	0.28	0.31	2,888

FOOD SECURITY DURING THE LAST SEVEN DAYS, NPS2 AND NPS 3, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 2					
Worried about not having enough food					
Tanzania	35.97	1.5	33.03	38.9	3,844
Rural	37.12	1.8	33.58	40.66	2,583
Urban	32.66	2.22	28.29	37.02	1,261
Mainland	36.3	1.54	33.28	39.32	3,311
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	2,053
Zanzibar	24.81	3.04	18.83	30.79	533
Negative changes in diet					
Tanzania	34.01	1.35	31.35	36.67	3,843
Rural	34.73	1.6	31.58	37.88	2,583
Urban	31.94	2.08	27.85	36.04	1,260
Mainland	34.36	1.39	31.63	37.09	3,310
Dar es Salam	35.48	2.84	29.9	41.06	624
Other urban	31.25	2.65	26.04	36.45	633
Rural	35.05	1.66	31.79	38.31	2,053
Zanzibar	22.31	2.6	17.2	27.43	533
Reduced food intake					
Tanzania	32.23	1.35	29.57	34.88	3,844
Rural	33.06	1.62	29.86	36.25	2,583
Urban	29.85	1.96	25.99	33.71	1,261
Mainland	32.47	1.39	29.75	35.2	3,311
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	2,053
Zanzibar	24.09	2.95	18.28	29.89	533
NPS 3					
Worried about not having enough food					
Tanzania	33.00608	1.2	30.52	35.49	4,879
Rural	33.46	1.58	30.52	5.49	3,151
Urban	31.74	1.65	28.51	34.98	1,728
Mainland	33.54	1.3	30.99	36.09	4,290
Dar es Salam	34.79	2.66	29.57	40.02	741
Other urban	31.1	2.14	26.89	35.31	850
Rural	33.93	1.61	30.75	37.1	2,699
Zanzibar	14.78	2.77	9.33	20.24	589
Negative changes in diet					
Tanzania	31.09	1.21	28.71	33.47	4,881
Rural	31.96	1.47	29.06	34.86	3,152
Urban	28.69	1.61	25.53	31.85	1,729
Mainland	31.75	1.24	29.31	34.2	4,292
Dar es Salam	35.56	2.66	30.32	40.8	742
Other urban	26	2.07	21.92	30.06	850
Rural	32.54	1.51	29.58	35.5	2,700
Zanzibar	8.63	2.38	3.96	13.3	533
Reduced food intake					
Tanzania	28.88	1.16	26.6	31.16	4,881
Rural	29.61	1.45	26.77	32.46	3,152
Urban	26.86	1.6	23.71	30	1,729
Mainland	29.31	1.19	26.97	31.65	4,292
Dar es Salam	30.2	2.56	25.17	35.24	742
Other urban	26.02	2.13	21.84	30.21	850
Rural	29.92	1.48	27.01	32.83	2,700
Zanzibar	14.48	2.44	9.68	19.27	589

FOOD SHORTAGES IN THE LAST 12 MONTHS, NPS2 AND NPS 3, CONFIDENCE INTERVALS

	Estimate	Std. Error	[95% Confidence Interval]		No. of Observations
NPS 2					
Not enough food to eat (% population)					
Tanzania	20.57	0.81	18.99	22.16	3,846
Rural	21.36	0.98	19.44	23.28	2,583
Urban	18.32	1.49	15.39	21.25	1,263
Mainland	20.94	0.83	19.31	22.57	3,313
Dar es Salam	18.64	1.9	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	2,053
Zanzibar	8.48	1.56	5.42	11.55	533
Months with food shortages (among those suffering from food shortages)					
Tanzania	3.37	0.1	3.16	3.57	710
Rural	3.25	0.11	3.04	3.47	499
Urban	3.74	0.23	3.27	4.2	211
Mainland	3.37	0.1	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	3.4	35
NPS 3					
Not enough food to eat (% population)					
Tanzania	42.59	1.29	40.05	45.13	4,878
Rural	45.76	1.56	42.7	48.82	3,151
Urban	33.81	1.88	30.11	37.5	1,727
Mainland	43.65	1.32	41.05	46.25	4,289
Dar es Salam	36.32	2.49	31.42	31.42	741
Other urban	34.42	2.73	29.06	39.77	849
Rural	46.66	1.58	43.55	49.78	2,699
Zanzibar	6.83	1.57	3.74	9.93	589
Months with food shortages (among those suffering from food shortages)					
Tanzania	3.7	0.08	3.54	3.85	1,744
Rural	3.63	0.94	3.45	3.81	1,197
Urban	3.95	0.14	3.67	4.23	547
Mainland	3.69	0.08	3.54	3.85	1,706
Dar es Salam	4.8	0.24	4.33	5.27	258
Other urban	3.45	0.16	3.13	3.76	283
Rural	3.62	0.94	3.44	3.81	1,165
Zanzibar	4.54	0.83	2.92	6.16	38

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: NPS Sample Size by Round

		NPS1	NPS2	NPS3
Total	(a)	3,265	3,924	5,010
Excess NPS2 with respect to NPS1	(b1)	-	78	89
Excess NPS3 with respect to NPS2	(b2)	-	-	38
Sample for analysis	(c) = (a) - (b1) - (b2)	3,265	3,846	4,883

Note: Excess households refer to households excluded from the analysis because their current members do not include any household member from the previous round, that is, only non-household members were tracked.

Table C3: NPS Sample Size for Poverty Dynamics

Between NPS1 and NPS2	3,166
Between NPS2 and NPS3	3,701
Between NPS1, NPS2 and NPS3	3,079

Table C4: Average Yield of Maize (kg/area planted in hectare)

2008/2009					
<i>Using Farmer Reported Plot Areas</i>					
	Obs	Mean	Std. Dev.	Min	Max
All Plots	1816	782	779	26	5272
Purestand Plots	600	907	842	26	5189
Intercropped Plots	1216	715	734	27	5272
Plots w/ Organic Fertilizer	256	1012	944	33	5272
Plots w/ Inorganic Fertilizer	283	1160	906	33	4942
Plots w/ Any Fertilizer	476	106	930	33	5272
2010/2011					
<i>Using Farmer Reported Plot Areas</i>					
	Obs	Mean	Std. Dev.	Min	Max
All Plots	2189	794	740	41	4744
Purestand Plots	775	878	780	49	4744
Intercropped Plots	1414	742	710	41	4613
Plots w/ Organic Fertilizer	287	927	791	49	4744
Plots w/ Inorganic Fertilizer	413	1179	946	44	4744
Plots w/ Any Fertilizer	627	1058	870	44	4744
2012/2013					
<i>Using Farmer Reported Plot Areas</i>					
	Obs	Mean	Std. Dev.	Min	Max
All Plots	2734	779	789	24	5931
Purestand Plots	955	893	857	30	5931
Intercropped Plots	1779	711	738	25	5766
Plots w/ Organic Fertilizer	426	785	787	45	5931
Plots w/ Inorganic Fertilizer	448	1181	998	39	5766
Plots w/ Any Fertilizer	795	982	930	39	5931
2010/2011					
<i>Using GPS-Based Plot Areas</i>					
	Obs	Mean	Std. Dev.	Min	Max
All Plots	1879	930	924	30	5391
Purestand Plots	663	1048	968	30	5391
Intercropped Plots	1216	858	889	30	5295
Plots w/ Organic Fertilizer	274	1014	962	31	5295
Plots w/ Inorganic Fertilizer	363	1349	1119	30	4942
Plots w/ Any Fertilizer	569	1170	1046	30	5295
2012/2013					
<i>Using GPS-Based Plot Areas</i>					
	Obs	Mean	Std. Dev.	Min	Max
All Plots	2276	858	903	27	6589
Purestand Plots	769	962	931	27	6578
Intercropped Plots	1507	800	881	27	6589
Plots w/ Organic Fertilizer	395	955	1005	35	6425
Plots w/ Inorganic Fertilizer	380	1309	1210	40	6589
Plots w/ Any Fertilizer	701	1101	1107	35	6589

Table C5: Average Yield of Paddy (kg/area planted in hectare)

2008/2009					
<i>Using Farmer Reported Plot Areas</i>					
	Obs	Mean	Std. Dev.	Min	Max
All Plots	490	1313	1275	28	9973
Purestand Plots	409	1438	1334	37	9973
Intercropped Plots	81	805	830	28	6795
Plots w/ Organic Fertilizer	23	1967	1179	395	4567
Plots w/ Inorganic Fertilizer	59	1803	1423	31	5560
Plots w/ Any Fertilizer	70	1793	1301	31	5560
2010/2011					
<i>Using Farmer Reported Plot Areas</i>					
	Obs	Mean	Std. Dev.	Min	Max
All Plots	620	1140	1149	49	5560
Purestand Plots	529	1431	1170	74	5560
Intercropped Plots	91	773	803	49	4448
Plots w/ Organic Fertilizer	33	2412	1935	282	5560
Plots w/ Inorganic Fertilizer	72	1894	1547	124	5272
Plots w/ Any Fertilizer	97	1908	1553	124	5560
2012/2013					
<i>Using Farmer Reported Plot Areas</i>					
	Obs	Mean	Std. Dev.	Min	Max
All Plots	722	1277	1208	49	7117
Purestand Plots	607	1381	1236	49	7117
Intercropped Plots	115	684	819	49	4942
Plots w/ Organic Fertilizer	36	2229	1860	148	5931
Plots w/ Inorganic Fertilizer	98	1706	1492	99	6672
Plots w/ Any Fertilizer	125	1763	1582	99	6672
2010/2011					
<i>Using GPS-Based Plot Areas</i>					
	Obs	Mean	Std. Dev.	Min	Max
All Plots	457	1594	1486	76	12355
Purestand Plots	382	1721	1524	88	12355
Intercropped Plots	75	944	1070	76	6076
Plots w/ Organic Fertilizer	24	2733	1810	380	5668
Plots w/ Inorganic Fertilizer	51	1873	1562	97	5668
Plots w/ Any Fertilizer	68	1893	1518	97	5668
2012/2013					
<i>Using GPS-Based Plot Areas</i>					
	Obs	Mean	Std. Dev.	Min	Max
All Plots	376	1379	1304	27	7413
Purestand Plots	294	1527	1317	27	7413
Intercropped Plots	82	648	949	29	5535
Plots w/ Organic Fertilizer	21	1951	1685	166	4964
Plots w/ Inorganic Fertilizer	49	2093	1608	152	7023
Plots w/ Any Fertilizer	63	1843	1538	152	7023

Persons involved in the 2012/13 National Panel Survey (NPS)

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 Field Coordinator: Mlemba Abassy
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SUMMARY OF MKUKUTA II INDICATORS AVAILABLE IN THE NPS 3

Goal	Indicator	Value - NPS 2008/09	Value - NPS 2010/11	Value - NPS 2012/13
Cluster I: Growth for Reduction of Income Poverty				
Goal 1: Pursuing sound Macroeconomic Management:	Annual rate of inflation	-	22	34
	Goal 2: Reducing Income Poverty through Promoting Inclusive, Sustainable, and Employment-Enhancing Growth	Unemployment rate	2.5	3.5
	Gini coefficient	0.36	0.37	0.39
	Basic needs poverty headcount	15%	18%	21%
	Percentage of Population with Access to Electricity (Grid/Off Grid)	11	14	16
	Percentage of Households Using Irrigation	4.2	3.4	3.4
	Households Using Fertilizers and Improved Seeds	Fertilizer - 30% Improved seeds - 21%	Fertilizer- 33% Improved seeds - 18%	Fertilizer- 35% Improved seeds - 43%
	Smallholder Farmers Participating in Contract Farming or Out-grower Scheme	1%	1%	2%
Goal 4: Ensuring food and nutrition security, environmental sustainability and climate change adaption and mitigation	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	1.5	1.8	3.3
Cluster II: Improvement of Quality Education of Life and Social Well-being				
Goal 1: Ensure equitable access to quality education at all levels for males and females, and universal literacy for adults both men and women	Net Enrollment Rate at Pre-Primary School	20	26	28
	Net Primary School Enrollment Rate	83	80	76
Goal 3: Improving survival, health, nutrition and well-being, especially for children, women and vulnerable groups	Under-fives Moderately or Severely Stunted (Height for Age)	43	35	37
	Proportion of births attended by a skilled health worker	59%	62%	66%
Goal 4: Increasing access to affordable clean and safe water; sanitation and hygiene	Population with Access to Piped or Protected Water as its Main Drinking Water Source	Rainy season - 41% Dry season - 42%	Rainy season - 40% Dry season - 48%	Rainy season - 43% Dry season - 50%
	Households with Basic Sanitation Facilities	90%	87%	87%
Goal 5: Developing decent human settlements while sustaining environmental quality	Households with Decent Human Settlement Basic Sanitation Facilities	22%	25%	30%



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