GHANA POVERTY MAPPING
Report

PREFACE AND ACKNOWLEDGEMENT

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EXECUTIVE SUMMARY

Introduction

This is the second poverty map report to be produced by the Ghana Statistical Service. The first was produced in May 2005 using data from the 2000 Population and Housing Census and 1998/1999 Ghana Living Standards Survey. The poverty indicators in the current report have been computed based on data from the 2010 Population and Housing Census (2010 PHC) and the 2012/2013 Ghana Living Standards Survey (GLSS6). The methodology for the computations, which was developed by C. Elbers, J. Lanjouw and P. Lanjouw (2000), allows accurate estimates of consumption-based poverty and inequality at lower levels of disaggregation by combining information from censuses and household consumption surveys.

The report presents the poverty headcount, depth and inequality for all the 216 districts and 29 sub-districts in the country.

National

Mapping the incidence of poverty in the country shows that there is a high concentration of poverty in the North Western part of Ghana. Though incidence in the districts of the South Western parts is very low, there are however few districts with relatively high incidence.

The concentration of poor persons is mainly observed in the northern than the southern districts of Ghana. Among the districts in Ghana, East Gonja in the Northern Region stands out as the district with most of the poor persons. Districts in the Southern Ghana on the other hand show very low concentration of poor persons, there are few districts with high number of poor persons, but these numbers cannot be compared to what pertains to districts in the northern part of Ghana.

Aside poverty incidence rate and number of poor persons, high depth of poverty is marked in districts in the northern half of the country as well. Across the country, inequality exists but follows no pattern. The poverty mapping exercise has revealed a striking pattern that would not have been apparent.

Western Region

Wassa Amenfi Central (51.9%) has the highest poverty headcount in the Western region followed by Bodi (42.5%) and Mpohor (40.4%) districts. The three districts also have high poverty depth (17.1% for Wassa Amenfi Central, 13.7% for Bodi and 12.1% for Mpohor) compared to the other districts. Suaman (6.0%), Wassa Amenfi West (6.9%) and Aowin (8.9%) districts have the lowest poverty headcounts in the region.

Central Region

Poverty incidence in the Central Region is highest in the Ekumfi District (48.4%) followed by Awutu Senya District (33.6%) and Upper Denkyira East Municipal (30.6%). Cape Coast Metropolis (2.6%), Upper Denkyira West District (3.3%) and Agona West Municipal (4.4%) have the lowest incidence of poverty in the region. Inequality is high in Awutu Senya East

Municipal (42.6), Upper Denkyira East Municipal (41.8), Assin North Municipal (41.8) and Awutu Senya District (41.5).

Greater Accra Region

La Dade Kotopon Municipal (1.3%), Accra Metropolis (2.5%) and La Nkwantanang Madina District (2.8%) have the lowest poverty incidence in the region. The highest incidence of poverty is observed in Shai Osudoku District (55.1%), followed by Ningo Prampram District (31.2%). The two districts also have higher poverty depth (23.2% for Shai Osudoku and 10.1% for Ningo Prampram) compared to the other districts.

Volta Region

Poverty incidence in the Volta region is highest in the Adaklu District (89.7%) followed by Kadjebi (66.8%) and Agotime Ziope (62.1%) districts. The depth of poverty for Adaklu (46.9%) and Agotime Ziope (30.1%) are high compared to the other districts. Akatsi South (10.5%) has the lowest incidence of poverty. Inequality is highest in North Tongu District (46.0) followed by Nkwanta South (45.2), Biakoye (45.0) districts and Kpando Municipal (44.4).

Eastern Region

Kwahu Afram Plains South District (59.7%) has the highest poverty incidence in the Eastern Region followed by Kwahu South (48.0%) and Upper Manya (43.6%) districts. High poverty depth is also observed in the three districts (21.2% for Kwahu Afram Plains South, 16.3% for Kwahu South and 11.2% for Upper Manya). Four districts, New Juaben Municipal (4.6%), Denkyembour (4.6%), Nsawam Adoagyiri Municipal (6.3%) and Suhum Municipal (6.5%) have low incidence of poverty. Inequality, on the other hand, is relatively low in Upper Manya (27.2), Lower Manya (28.3) and Ayensuano (29.3) compared to the other districts in the region.

Ashanti Region

Poverty incidence in the Ashanti region is highest in the Sekyere Afram Plains North (59.6%) followed by Ejura Sekye Dumasi (47.0%) and Ahafo Ano North (46.4%) districts but very low in Asokore Mampong Municipal (3.3%), Afigya Kwabre (4.0%) and Atwima Kwanwoma (4.9%) districts. Poverty depth is high in Sekyere Afram Plains North (24.3%), Ejura Sekye Dumasi (17.0%) and Ahafo Ano North (16.4%) districts. Sekyere Afram Plains North (49.8) is the only district in the region with inequality higher than the regional average of 37.3.

Brong Ahafo Region

Kintampo South District (78.3%) has the highest poverty incidence in the Brong Ahafo region followed by Banda District (78.0%). The lowest incidence of poverty is observed in Dormaa West District (9. 9%). Poverty depth is relatively high in Banda (37.9%) and Kintampo South (35.8%) compared to the other districts in the region. Inequality is highest in Sunyani Municipal (64.0) followed by Asutifi South (53.4), Wenchi Municipal (51.7) and Jaman North District (51.1).

Northern Region

The Northern region has the third highest poverty headcount in Ghana. The incidence of poverty is highest in East Gonja (84.2%), followed by Bole (79.4%) and Kpandai (76.9%) districts. The lowest poverty incidence of 24.6 percent is observed in Tamale Metropolis. Compared to the regional value (15.5%), the poverty depth is high in the East Gonja (40.9%), and Bole (38.1 %) districts.

Upper East Region

The incidence of poverty is quite high among districts in the Upper East Region, with the highest incidence observed in Builsa South District (84.4%) followed by Bawku West (68.1%), Bongo (67.4%) and Nabdam (63.0%). Kassena Nankana West District (13.1%) has the lowest poverty incidence in the region. Poverty depth is highest in Builsa South (51.8%).

Upper West Region

Poverty incidence is highest in Wa West (92.4%) followed by Wa East (83.8%) and Sissala West (81.2%) districts. Poverty depth is relatively high in Wa West (59.0%).

Conclusion

In an effort to reduce poverty in Ghana, households in the most affected districts in the Volta, Brong Ahafo, Northern, Upper West and Upper East regions must be targeted for social intervention programs. Special studies also need to be undertaken to clarify the causes of poverty in the country.

CHAPTER ONE
INTRODUCTION

The paucity of data on welfare indicators at the district level has been a challenge in the design, monitoring and evaluation of economic and social programs in Ghana. Although the 2010 Population and Housing Census (2010 PHC) conducted by the Ghana Statistical Service (GSS) provides comprehensive information on the demographic and socio-economic characteristics of households and individuals, it does not have the required information for constructing consumption or income aggregates.

The sixth round of the Ghana Living Standards Survey (GLSS6), conducted during the period October 2012 to October 2013, produced detailed information on consumption expenditure which makes it possible to construct reliable consumption-based welfare measures at the national and regional levels. The GLSS6 was a nationally representative sample survey of 18,000 households, of which 16,772 households were successfully interviewed.

The design of the survey does not allow the estimation of welfare measures at the district and other lower levels of disaggregation. However, a methodology developed by C. Elbers, J. Lanjouw and P. Lanjouw (2002) allows accurate estimates of consumption-based poverty and inequality at lower levels of disaggregation by combining information from censuses and household consumption surveys.

This methodology involves selecting a set of common and comparable variables in the census and the survey. The selected variables are then used to estimate a regression model of per capita consumption based on the survey data. The set of parameter estimates obtained from the consumption model is applied to similar variables in the census to obtain the predicted per capita consumption for each census household, which are then used to prepare poverty maps.

A poverty map is a spatial representation and analysis of welfare indicators. In 2005, the first poverty map was produced by the Ghana Statistical Service from the 1998/1999 Ghana Living Standards Survey and the 2000 Population and Housing Census. This report is the second in the series of poverty maps produced in Ghana.

The main objective of this second poverty mapping report is to produce welfare estimates for the 216 districts and 29 sub-districts in Ghana to inform policies and programmes. The districts and sub-districts are the lowest levels of administration and decision-making under the decentralised local government system in the country.

Welfare estimates for the regions based on the census are also provided to enable comparisons with those obtained directly from the GLSS6. It must be noted that the estimation was done separately for each region using different sets of common variables. Fitting different models for each region allows a flexible relationship between per capita expenditure (the dependent variable) and the selected variables, which leads to better predictions.

The report consists of four chapters. Chapter one covers the introduction; Chapter two describes in detail the methodology and sources of data; Chapter three presents the results of the poverty and inequality estimates for districts and sub-districts and Chapter four provides some conclusions and recommendations.

CHAPTER TWO
METHODOLOGY

This chapter describes in detail the Small Area Estimation (SAE) methodology and sources of data used for poverty mapping at the district and sub-district levels. This method allows the imputation of consumption expenditure for census households based on a model estimated from the household survey by applying the estimated coefficients of the model to the same variables from the census data. In constructing the consumption model, the explanatory variables (household and individual characteristics) must exist in both the census and the survey data. Poverty and inequality statistics for districts and sub-districts are then calculated with the imputed consumption estimates of census households. The method does not only estimate poverty indices but also their corresponding standard errors.

The SAE methodology involves three major steps. The first step is to select a set of variables that are common to a census and a household expenditure survey. The subset of variables that are found to match (contain the same information) between the census and the survey is used to estimate a regression model of per capita consumption using the survey data.

At the second step, the set of parameter estimates obtained from the regression model is applied to the same set of variables identified in the census data to obtain predicted per capita consumption for each census household.

Finally, based on the estimated level of per capita consumption, estimates of poverty, inequality and other welfare measures, as well as their standard errors, are calculated for any geographical unit with sufficient number of households to obtain reliable estimates.

Data sources

Ghana is divided into 10 administrative regions. There are 216[1] districts, five of which are metropolitan. These five metropolitan districts are further divided into 29 sub metropolitan districts. The country is also divided into three ecological zones namely coastal, forest and savannah. Some regions (Western, Brong Ahafo and Volta) cut across two ecological zones.

This report is based on data from the sixth round of the Ghana Living Standards Survey (GLSS6, 2012-2013) and 2010 Population and Housing Census (2010 PHC).

The GLSS6 is an integrated household survey covering topics such as household consumption and expenditure, education, employment, housing conditions, the operation of non-farm household enterprises, agricultural activities, assets and agricultural production expenditures.

As in all probability sample surveys, it is important that each sampling unit in the target population has a known, non-zero probability of being included in the sample. To achieve this, an appropriate list or sampling frame of the Primary Sampling Unit (PSU) is required. The list of standardized census EAs - together with their respective population and household

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[1] At the time of the 2010 PHC, there were 170 districts. Later 46 additional districts were created out of the existing districts. The affected districts were re-demarcated and the census data was realigned to reflect the current 216 districts.

sizes - from the 2010 Population and Housing Census (PHC) was used as the sampling frame for the GLSS6.

To enhance the precision and reliability of the survey results, the EAs were first stratified into 10 main domains according to the ten administrative regions in Ghana. Within each region, the EAs were further stratified into rural and urban categories, bringing the total number of substrata to 20. A random sample of 1200 EAs was then selected according to probability proportional to population size to form the PSUs.

A complete listing of households in the selected PSUs was undertaken to form the Secondary Sampling Units (SSUs). Subsequently, 15 households from each PSU were selected systematically, yielding a total sample size of 18,000 households nationwide.

The unit of measurement for the GLSS6 was the population living within individual households. The institutional population (those who were in schools, hospitals, etc.), which represents a very small percentage (2.36%) of the 2010 population, was excluded from the frame because they do not form households.

Weights were computed to reflect the different probabilities of selection in order to obtain the true contribution of each selected EA in the sample based on the first and second stage probabilities of selection. The survey successfully interviewed 16,772 households (93% response rate) and 71,523 individuals.

The results from the GLSS6 show wide disparities in the level of poverty among regions in the coastal, forest and savannah zones. The dynamics of poverty in Ghana indicate that poverty is still very much a rural phenomenon and more prominent in rural savannah.

The 2010 PHC collected information on demographic, social, economic and housing characteristics of the population. The census enumerated 24,658,823 individuals and 5,467,136 households. However, 24,075,944 individuals in 5,467,054 households in occupied dwelling units were included in the analysis.

Common and comparable variables

Questions from the 2010 PHC and GLSS6 instruments were compared to obtain "candidate" variables. These variables are those for which the questions were worded the same way in the survey and the census, including the response options (See Appendix Table A3.1).

Correlates of household welfare (dependency ratio, household size, age of head, proportion of males in household, highest level of schooling completed, labor market status of head, etc.) were constructed from the matched variables from both data sources. The data from the survey was weighted to be nationally representative before the means of the correlates were compared. Only those variables whose census mean fell within the 95 percent confidence interval of the survey mean were included in the regression model. Since the survey and census years did not coincide, the means of some correlates were not statistically equivalent. Mapping methodology was applied based on the assumption that the estimated relationship between household welfare and the correlates do not change over time. This assumption is reasonable given that the census and the survey were conducted within 2-3 years interval.

Some variables were aggregated to the cluster, district and regional levels to reduce intra-cluster correlation by capturing variations in household welfare as a result of common cluster level characteristics and location effects. Adding area means helped to explain location effects and has been shown to improve estimates markedly (Elbers et al., 2002).

Modelling and Projection

The model and analysis in this report are done separately for each of the ten regions to appreciate the effect of spatial correlation between consumption expenditure and the selected variables within each region. As discussed in the methodology, the second step of SAE is fitting a relationship between the expenditure and the selected variables. Initially, one model was estimated for the entire country. Although the national level prediction was quite accurate, the regional predictions were poor due to disparities in consumption pattern and the inability of the national model to capture the heterogeneous relationship between the variables across regions. As a result, separate models were estimated for each region to allow a flexible relationship. The regional models gave accurate regional level results and led to the reduction of standard errors associated with the poverty estimates as discussed in chapter three. Only those variables that were statistically significant at the 5 percent level were used for prediction.

Ghana's decentralised administrative system

Ghana is practicing a decentralised system of administration under the local government system as contained in the 1992 constitution (Local Government Act 1993). This makes the district assemblies the highest decision making body at the metropolitan, municipal and district levels. The 216 Metropolitan, Municipal and District Assemblies (MMDAs) prepare their annual plans and program of activities to fit into the national development framework; the Ghana Shared Growth and Development Agenda (GSGDA I and II) prepared by the National Development Planning Commission (NDPC). Data and information are needed by the district assemblies to inform the preparation of these plans, including the implementation of programmes towards government efforts at reducing poverty among the vulnerable population. The preparation of a poverty map at the district level would, therefore, be necessary to inform the assemblies in the development of their plans and programmes.

Small area estimation

Household surveys that include reasonable measures of income or consumption can be used to calculate distributional measures. However, at low levels of aggregation, these samples are rarely representative or of sufficient size to yield statistically reliable estimates. At the same time, census (or other large sample) data of sufficient size that allow disaggregation at lower levels either have no information about income or consumption, or measure these variables poorly. The SAE procedure combines these types of data to take advantage of the detail in household sample surveys and the comprehensive coverage of census. This report applies the small area estimation method developed by Elbers, Lanjouw and Lanjouw (ELL; 2002, 2003).

The observed household consumption in the survey is regressed on selected common variables as

$$ln(y_{ch}) = X_{ch}\beta + \Omega_{ch} \qquad (1)$$

where y_{ch} is the per capita consumption expenditure of household h in sample cluster c,

$ln(y_{ch})$ is the natural log of per capita consumption expenditure of household h in cluster c,

X_{ch} is the vector of selected explanatory variables,

β is the vector of regression coefficients, and

Ω_{ch}, is the vector of disturbances of household $\boldsymbol{h}$ in cluster $\boldsymbol{c}$.

An initial estimate of β in equation (1), obtained from Ordinary Least Squares (OLS) estimation, gives estimated residuals which can be broken down into two components: a cluster specific random effect and an uncorrelated household error term:

$$\widehat{\Omega}_{ch} = \hat{\eta}_c + \varepsilon_{ch} \tag{2}$$

Where $\hat{\eta}_c$ is the cluster-specific random effect, calculated by averaging the within-cluster residuals and ε_{ch} is the household-specific error term estimated as the overall residual minus the location component.

The expenditure of a household in the census is predicted as follows:

$$ln(\hat{\boldsymbol{y}}_{ch}) = X_{ch}^T \widehat{\boldsymbol{\beta}} + \widehat{\boldsymbol{\eta}}_c + \widehat{\boldsymbol{\varepsilon}}_{ch} \tag{3}$$

Where $\hat{\beta}$, $\widehat{\boldsymbol{\eta}}_c$ and $\widehat{\boldsymbol{\varepsilon}}_{ch}$ are the estimates for β, η_c and ε_{ch} respectively. The point estimates and standard errors of the welfare indicators are calculated by Monte-Carlo simulations. In each simulation, a set of values for $\hat{\beta}, \widehat{\boldsymbol{\eta}}_c$, and $\widehat{\boldsymbol{\varepsilon}}_{ch}$ are drawn from their estimated distributions, and an estimate of consumption expenditure and poverty rates are obtained.

The original ELL method also draws location errors η_c from their estimated unconditional distributions. For those target population for which sampled data happen to be available, this approach does not make optimal use of available information. An approach proposed by Molina and Rao (2010) combines the simulation-based approach with what is referred to as Empirical Best, which uses the observed distribution of location error in the sampled data. With the adjustment that the distribution functions of the errors are estimated non-parametrically, this approach has been implemented in the PovMap software.

For all ten regional models, and in each simulation, $ln(\hat{\boldsymbol{y}}_{ch})$ is trimmed at the observed minimum and maximum values in the survey. Subsequently, the average point estimate and standard deviation of 100 simulations of equation (3) is calculated. Finally, predicted expenditure and poverty estimates for all households in the census were aggregated to regional and district level estimates. For the calculation of poverty indices, a poverty line of 1,314.00 Ghana Cedis per person per year was used.

CHAPTER THREE
POVERTY AND INEQUALITY ESTIMATES

Poverty analysis in Ghana has over the years been based on national and regional level indicators that are comparable over time. The broad trends that are identified using aggregate information are useful for monitoring and evaluating the overall performance of poverty reduction programmes in the country. However, for many policy and research applications, the information that can be extracted from aggregate indicators is not sufficient, since they do not reveal significant local variations in living conditions within the country. The detailed poverty maps for small administrative areas that are the ultimate output of this report provide information to help address this shortcoming of aggregate poverty analysis. This chapter provides the poverty and inequality maps at the district level for each of the ten administrative regions.

The welfare measures presented are the ones commonly known as the Foster-Greer-Thorbeck (FGT) family of poverty measures. The poverty headcount (P_0) is the proportion of population living below the national poverty line. Depth of poverty (P_1), also known as the poverty gap, is a measure of how far the poor are from the poverty line, and severity of poverty (P_2) is the square of the poverty gap which gives greater attention to the needs of the poorest. It takes account of the distribution of poverty among the poor, giving greater weight to the poorest of the poor. The Gini coefficient, a measure of welfare distribution, is used to measure inequality. Tables presenting the detailed results are found in Appendix 1. The standard errors of these estimates are also provided as a measure of their level of precision.

How reliable are the poverty estimates?

The performance of our models is tested by comparing the poverty prediction with the survey estimates at the regional level. This comparison is feasible because while the census estimates are obtained at all levels, GLSS6 is representative at the regional level. As shown in Table 3.1, predictions of poverty headcount for all the regions fall within 95 percent confidence interval of the survey means. While this is a common criterion to judge the reliability of the models, our predictions attained a higher degree of accuracy as the absolute difference between the survey estimates and census projections are often very small. This robustness check provides a reasonable level of confidence about the district level predictions of headcount rate and other measures.

With the exception of the Northern Region where there is an appreciable difference between the poverty headcount estimated from the GLSS6 and the 2010 PHC (poverty headcount of 50.4% in GLSS6 and 44.2% in the census), regional poverty headcount from the survey and the census are quite close (Table 3.1).

Table 3.1: Poverty head count by region (poverty line = GH₵1,314)

Region	Census			GLSS 6			
	Poverty head count	Standard error	Absolute Difference (Census & GLSS6)	Poverty head count	Standard error	95% confidence interval	
						Lower limit	Upper limit
Western	19.2	0.0040	1.7	20.9	0.0252	15.94	25.82
Central	19.6	0.0072	0.8	18.8	0.0223	14.44	23.19
Greater Accra	6.6	0.0015	1.0	5.6	0.0151	2.65	8.57
Volta	33.3	0.0028	0.5	33.8	0.0343	27.12	40.57
Eastern	22.0	0.0097	0.3	21.7	0.0242	16.91	26.4
Ashanti	13.6	0.0035	1.2	14.8	0.0169	11.43	18.07
Brong Ahafo	28.6	0.0036	0.7	27.9	0.0215	23.64	32.09
Northern	44.2	0.0062	6.2	50.4	0.0318	44.12	56.59
Upper East	45.9	0.0137	1.5	44.4	0.0388	36.8	52.01
Upper West	69.4	0.0102	1.3	70.7	0.0275	65.29	76.07

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

National Poverty Map

Figures 3.1 to 3.4 show the maps of headcount rate, number of poor persons, depth of poverty and inequality for the 216 districts in Ghana. The map shows that the three northern regions still remain the poorest in the country. Where the map adds value is how it reveals the heterogeneity in standard of living across districts within regions, a level of detail that could not be obtained from the GLSS6 data. For instance, Upper West as a whole has a poverty rate of 70.7 percent. However, within the region, there is a wide variation in the headcount rate across districts. It goes from a low of about 36 percent in Wa Municipal to approximately 84 percent in Wa East and more than 90 percent in Wa West. It is noteworthy that the two poorest districts border the least poor district in the region, a pattern that would not have been apparent without a poverty mapping exercise.

The map also reveals the existence of pockets of poverty and islands of prosperity. The poverty rate in Adaklu district (89.7%) in Volta region is more than two and half times the regional average (33.8%). Although Greater Accra has the lowest poverty rate in the country, poverty is concentrated in two districts – Ningo Prampram (31.2%) and Shai Osudoku (55.1%). In the Northern region where the headcount rate is 50.4 percent, two districts have poverty rates of less than 30 percent – Tamale Metropolis (24.6%) and Sagnerigu Municipal (29.3%).

An alternative way to visualize the spatial distribution of poverty is through the number of poor individuals. Remote, rural, isolated areas may have high headcount rate but may have few poor persons due to their small population size. In contrast, poverty rate may be low in urban areas but they may be host to a large number of poor people. Figure 3.2 shows the number of poor persons by district. Kumasi Metropolis is a good example of the contrast between headcount rate and number of those poor. It has one of the lowest headcount rate (5.3%) in the country but ranks second highest in the number of poor persons (88,935).

Depth of poverty measures how much below the poverty line the poor's standard of living is. The lower the depth of poverty, the closer the poor are to the poverty line, and vice versa. It

is easier to achieve poverty reduction in areas with low depth of poverty. As seen in Figure 3.3, depth of poverty is also the highest in areas with high headcount rate. This means poverty in these regions is not only widespread, it is also entrenched.

Finally, Figure 3.4 shows the distribution of the Gini coefficient, a measure of inequality, across districts. It shows that inequality is relatively high in Upper West and Upper East, two of the three poorest regions, compared to Northern region, the third poorest region.

Figure 3.1: Incidence of poverty
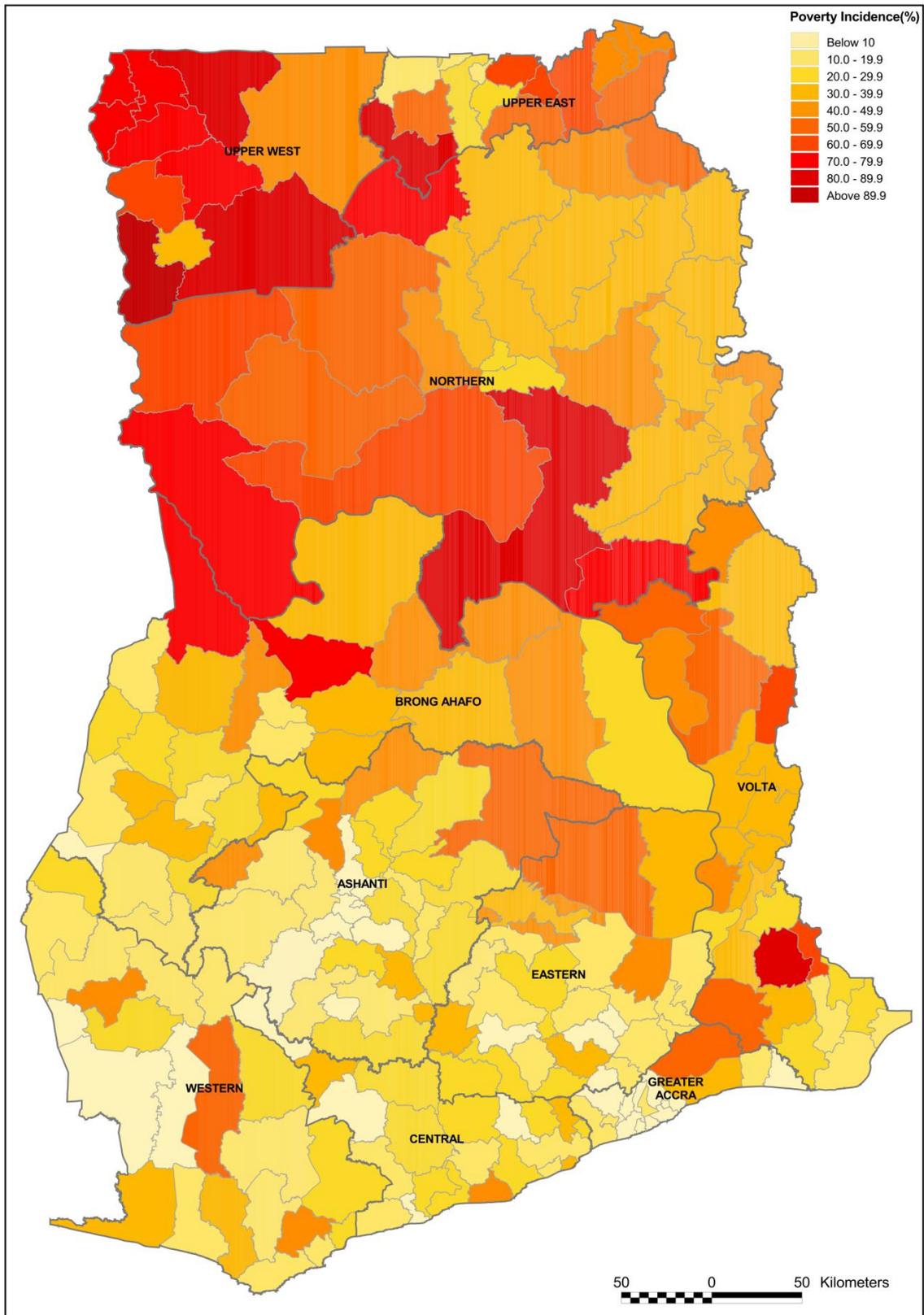
Figure 3.2: Estimated Number of Poor Persons
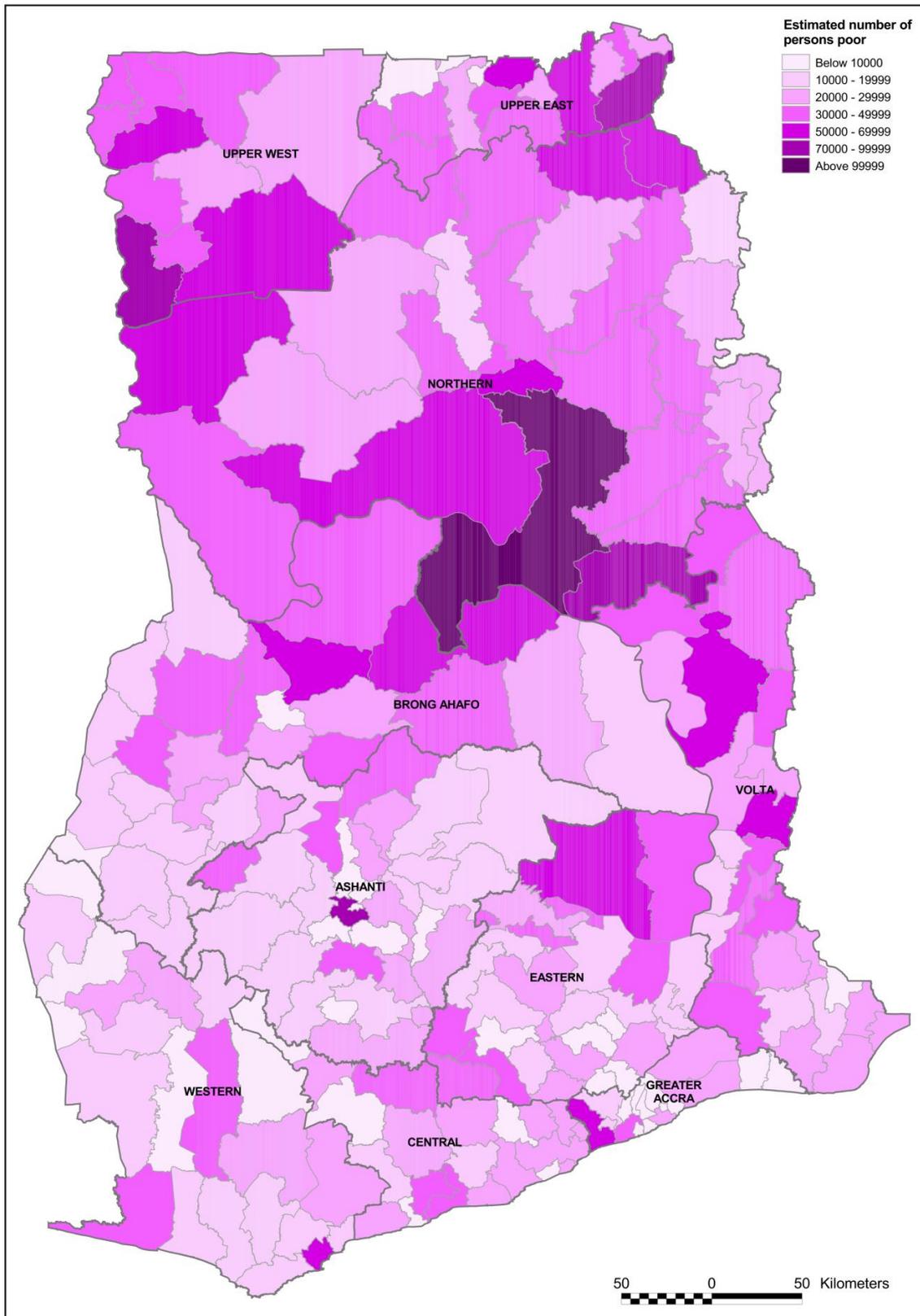
Figure 3.3: Depth of Poverty
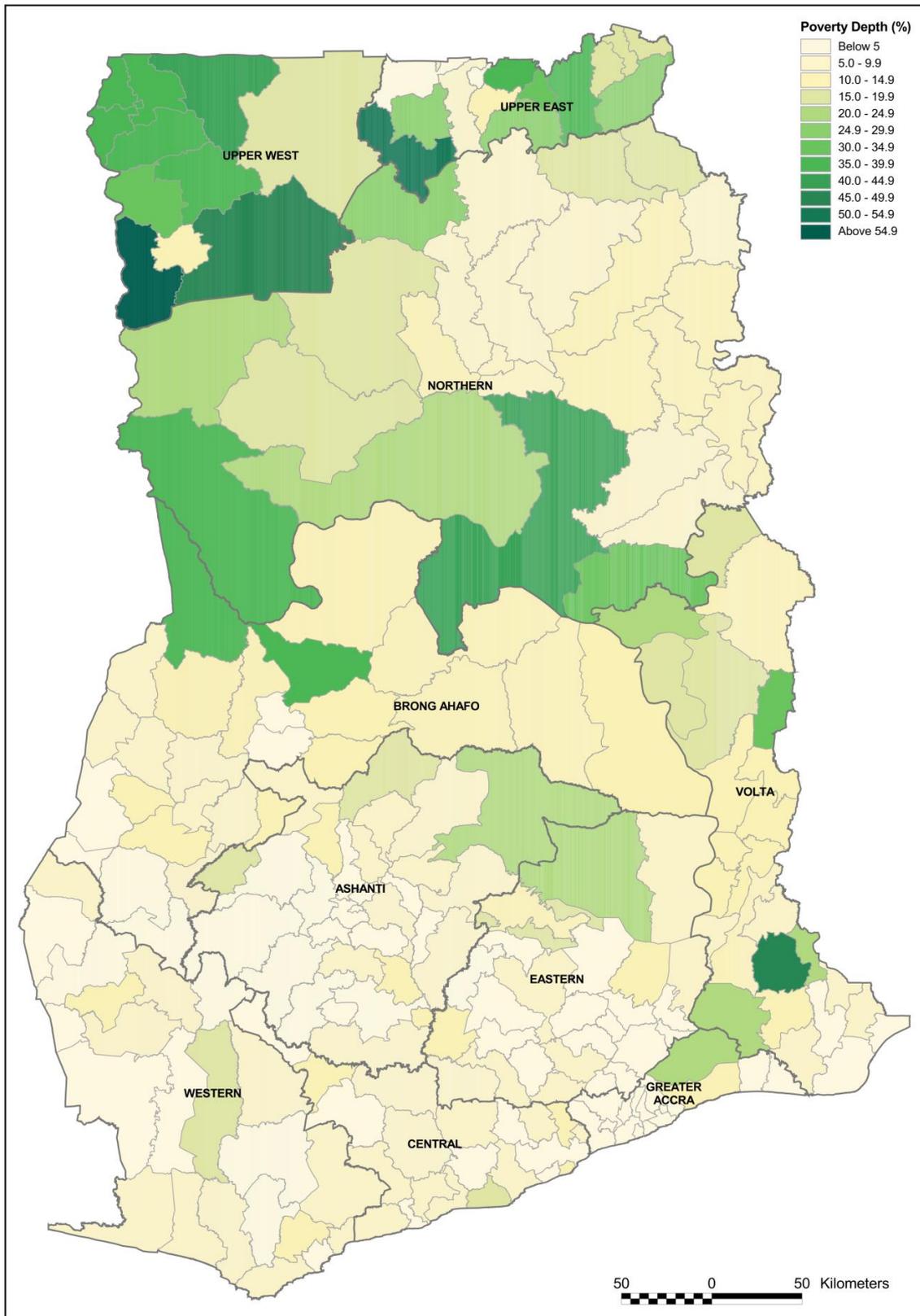
Figure 3.4: Inequality
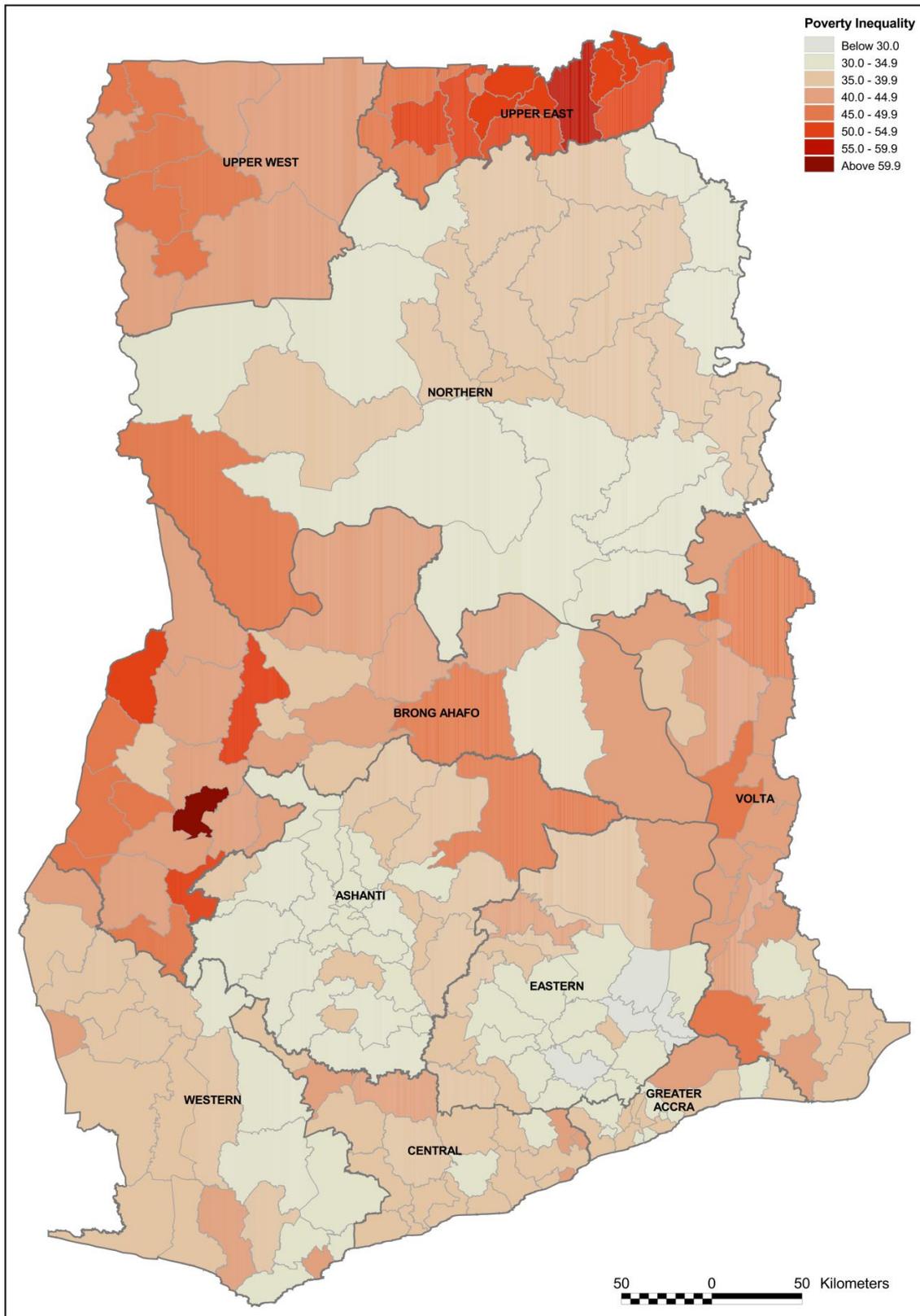
WESTERN REGION

The spatial distribution of poverty headcount, depth of poverty and inequality for the 22 districts and four sub-districts in the Western Region are presented in Table A1.1 and Figures 3.5 to 3.8. Among the districts in the region, Wassa Amenfi Central (51.9%), Bodi (42.5%) and Mpohor (40.4%) have the highest poverty headcount. The districts with the lowest poverty headcount are Suaman (6.0%), Wassa Amenfi West (6.9%) and Aowin (8.9%). Apart from being the districts with the highest poverty incidence, Wassa Amenfi Central, Bodi and Mpohor districts also recorded the highest depth of poverty and inequality in the region.

At the sub-district level, Sekondi has both the highest incidence of poverty (22.9%) and depth of poverty (7.7%). Essikadu-Ketan has the highest number of poor persons (24,593).

Sekondi Takoradi Metropolis (68,482), Jomoro (44,662) and Wassa Amenfi Central (35,095) are the districts with the highest number of poor persons in the region. Suaman (1,206) and Wassa Amenfi West (6,207) districts have lower number of poor persons (Table A1.1).

Figure 3.5: Poverty Incidence - Western Region
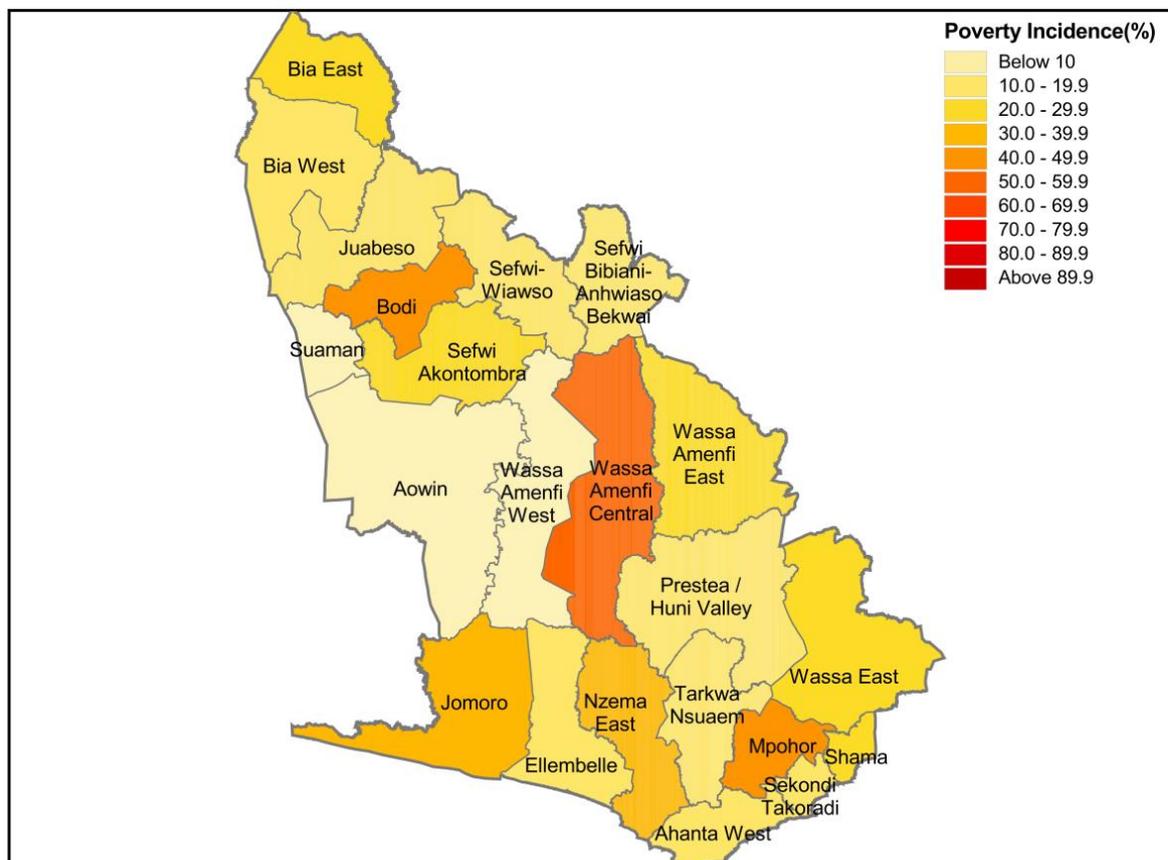
Figure 3.6: Estimated Number of Poor Persons - Western Region
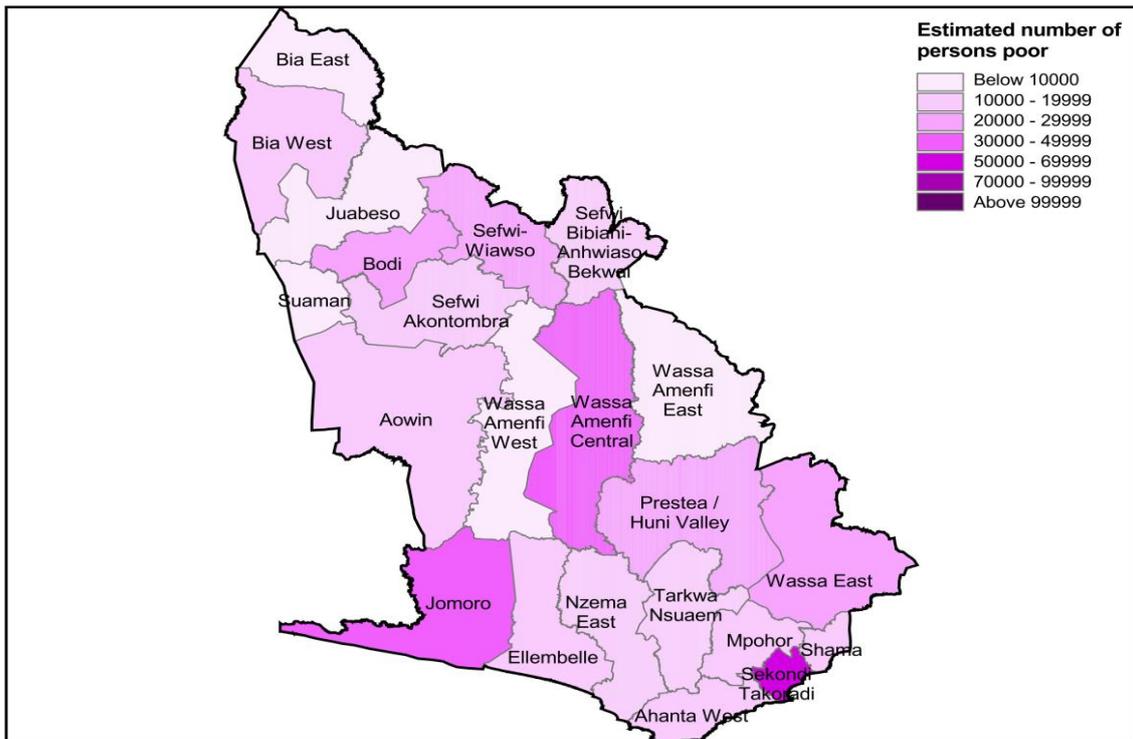
Figure 3.7: Poverty Depth - Western Region
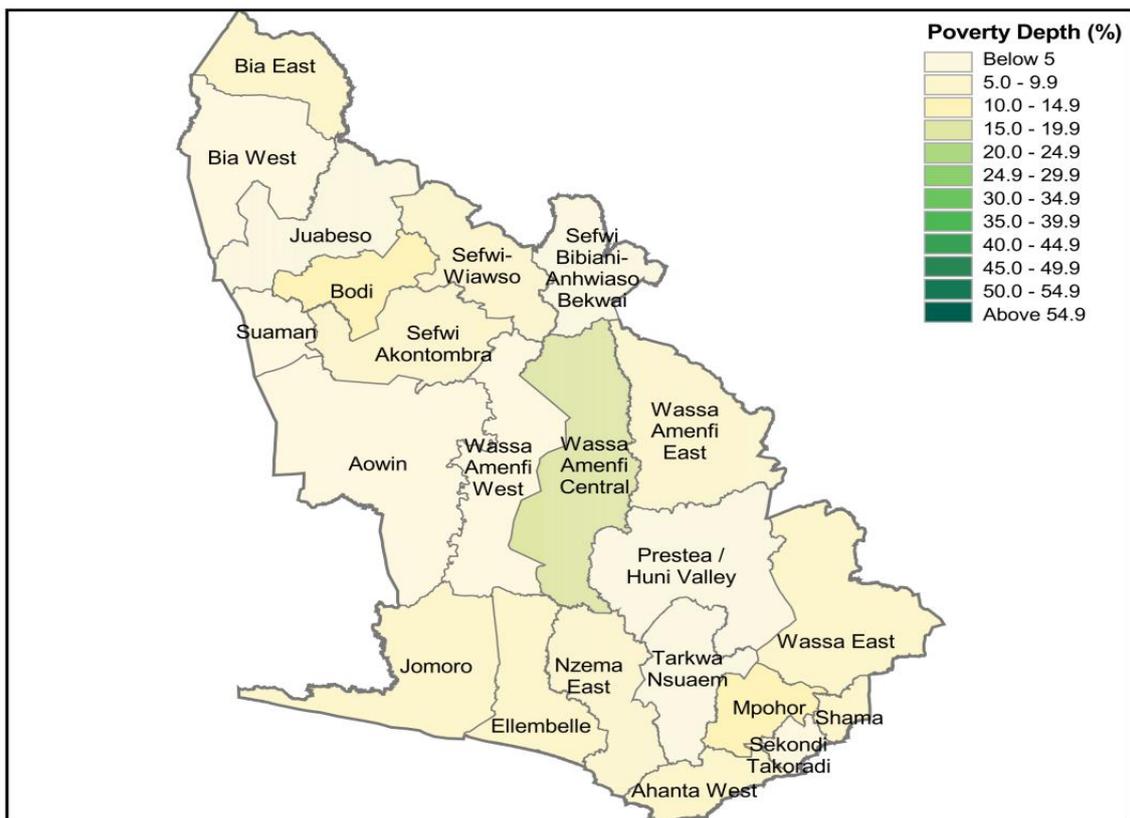
Figure 3.8: Poverty Inequality - Western Region
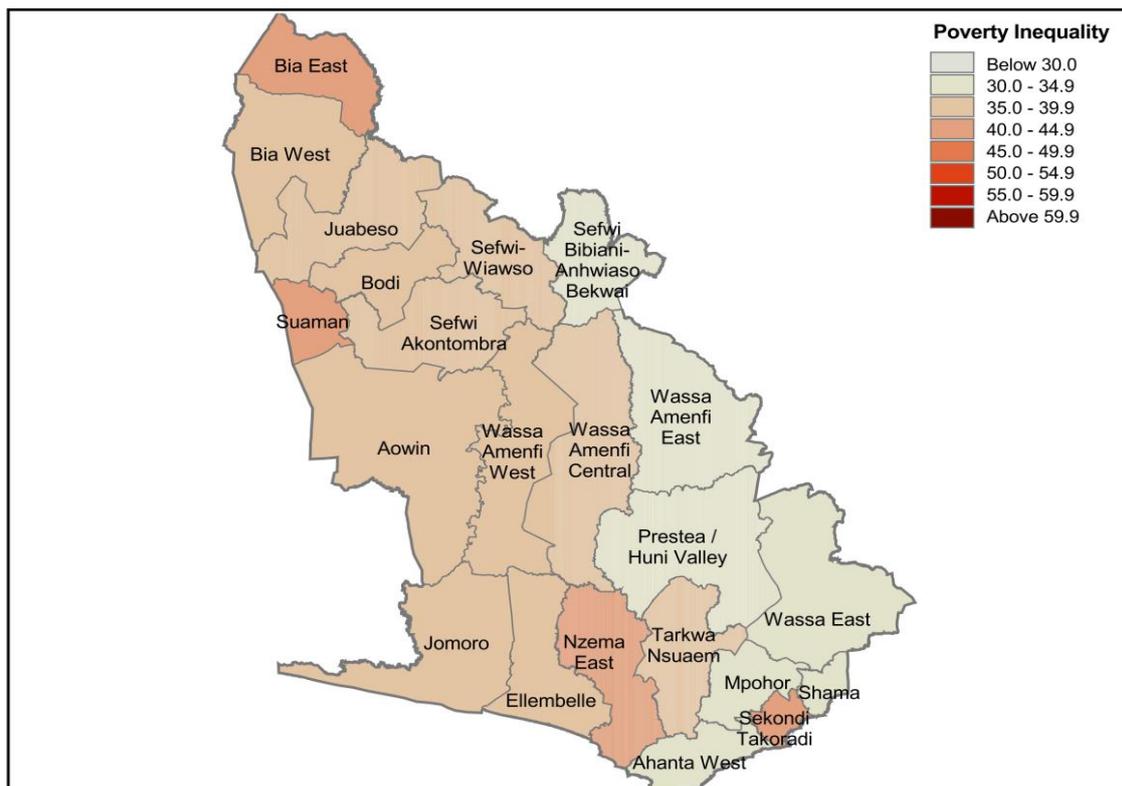
CENTRAL REGION

The Central Region currently has a total of 20 districts, consisting of one metropolis, six municipalities and 13 districts. The metropolitan area is further divided into two sub-districts. Table A1.2 and Figures 3.9 to 3.12 present poverty headcount and inequality estimates for the districts and sub-districts in the region. Eleven districts, including Ekumfi, Mfantsiman, Agona East, Assin North Municipality and Awutu Senya East Municipality, have incidence and depth of poverty above the regional averages of 19.6 percent and 5.7 percent respectively (Table A1.2). Their headcount rates range between 20.3 and 48.4 percent with depth between 6.1 and 16.8 percent. Although Ekumfi district is the poorest in the region, it ranks 10th in the region in terms of the distribution of the poor population. Mfantsiman (40,489), Assin North (38,443) and Abura Asebu Kwamankese (31,022) districts have the highest number of poor persons in the region.

Inequality is lower in all the districts compared to the regional average (42.0) with the exception of Awutu Senya East Municipality (42.6). Agona East reported the least level of inequality (34.7).

Cape Coast Metropolis has the least incidence and depth of poverty in the region (2.6% for incidence and 0.7% for depth) while at the sub-district level, poverty and inequality are higher in Cape Coast South (2.7% and 37.9 respectively) than in Cape Coast North (2.3% and 36.3 respectively).

Figure 3.9: Poverty Incidence - Central Region
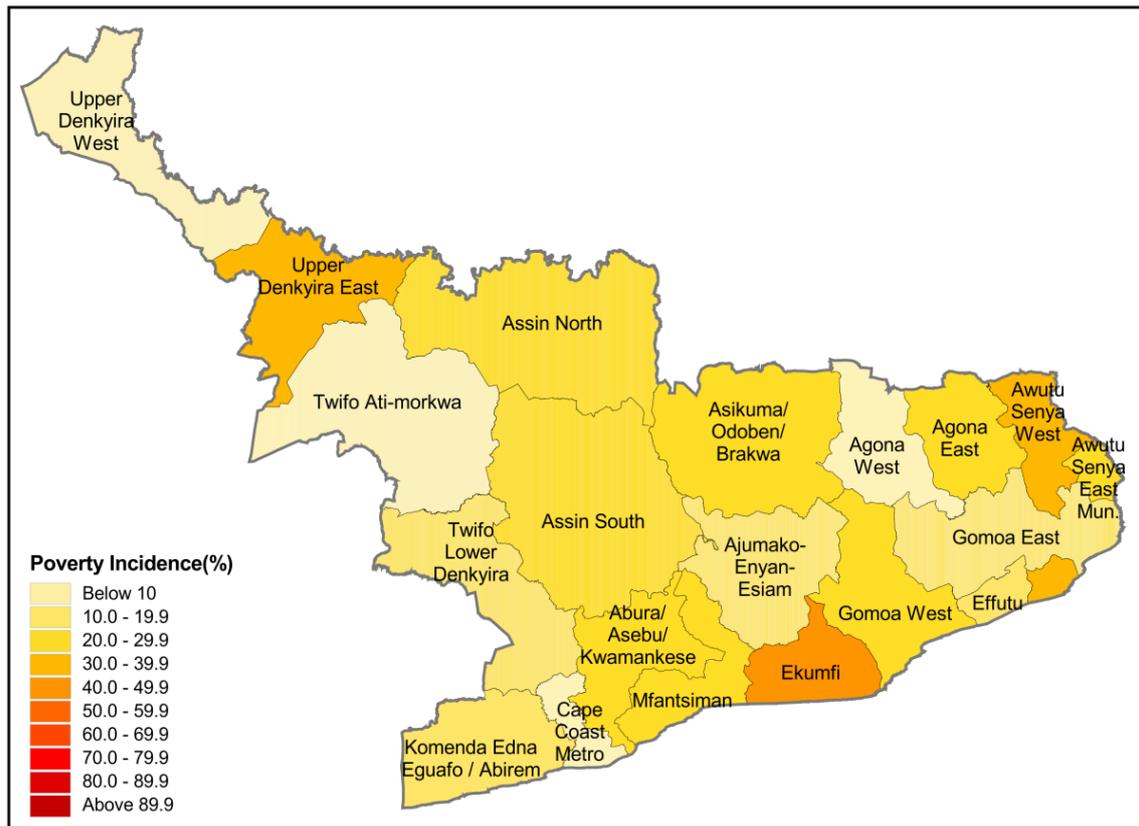
Figure 3.10: Estimated Number of Poor Persons - Central Region
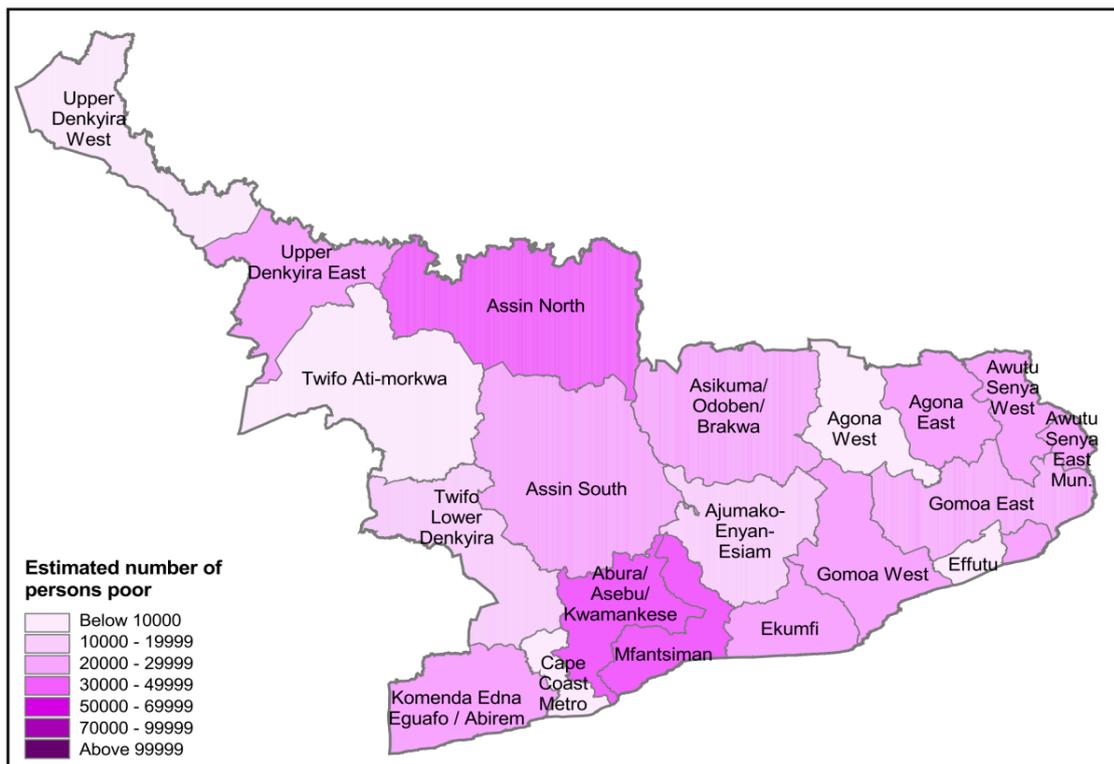
Figure 3.11: Poverty Depth - Central Region

Poverty Depth (%)
- Below 5
- 5.0 - 9.9
- 10.0 - 14.9
- 15.0 - 19.9
- 20.0 - 24.9
- 24.9 - 29.9
- 30.0 - 34.9
- 35.0 - 39.9
- 40.0 - 44.9
- 45.0 - 49.9
- 50.0 - 54.9
- Above 54.9
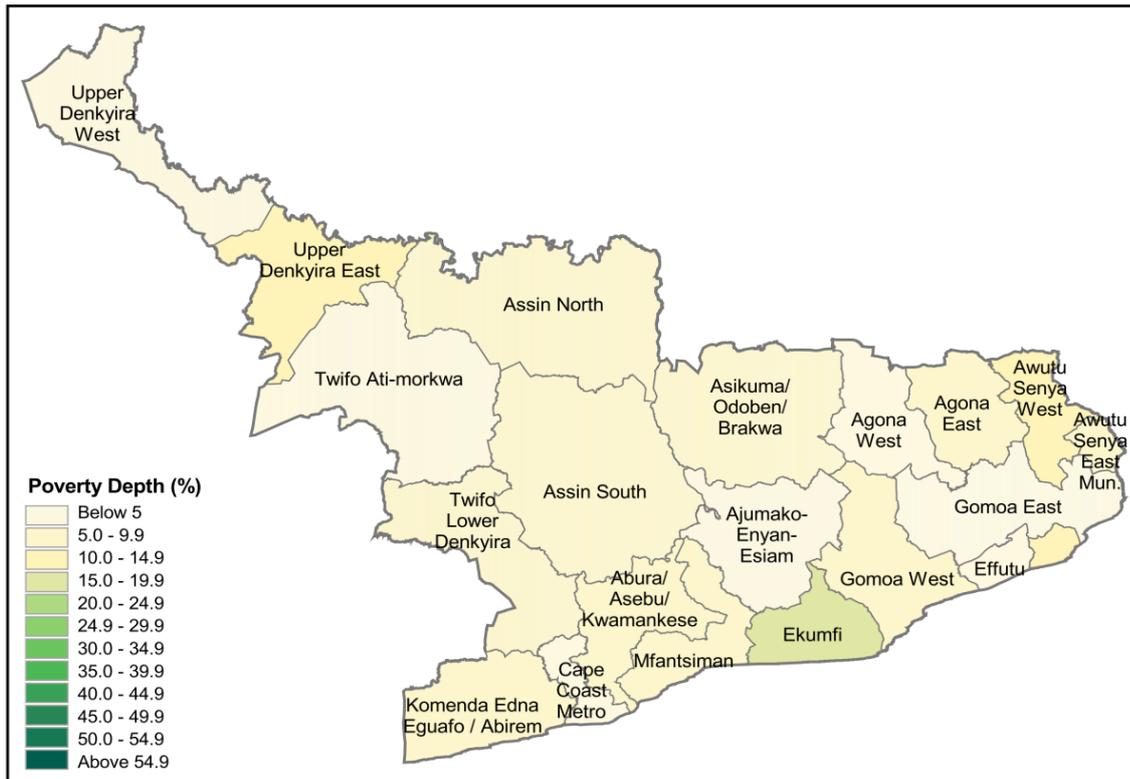
Figure 3.12: Poverty Inequality - Central Region

Poverty Inequality
- Below 30.0
- 30.0 - 34.9
- 35.0 - 39.9
- 40.0 - 44.9
- 45.0 - 49.9
- 50.0 - 54.9
- 55.0 - 59.9
- Above 59.9
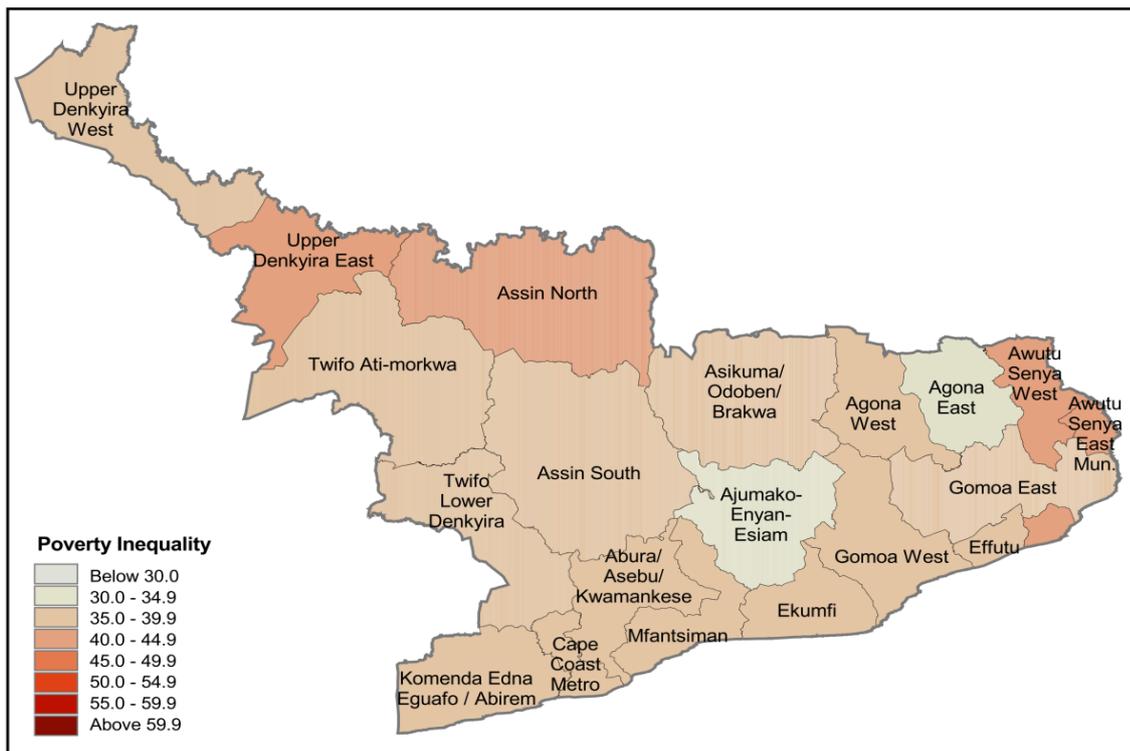
GREATER ACCRA REGION

Greater Accra region has very low levels of poverty incidence (6.6%) and poverty depth (1.8%). Table A1.3 and Figures 3.13 to 3.16 show that there are significant variations in the incidence and depth of poverty among the 16 districts. La Dade Kotopon Municipal (1.3%), Accra Metropolis (2.6%) and La Nkwantanang Madina (2.8%) have the lowest poverty incidence. Two districts in the region, Shai Osudoku (55.1%) and Ningo Prampram (31.2%), have rates more than four times the regional average.

In terms of depth of poverty, La Dade Kotopon Municipal (0.3%), Accra Metropolis (0.6%) and La Nkwantanang Madina Municipal (0.6%) recorded the lowest rates. Shai Osudoku (23.2%) has the highest poverty depth followed by Ningo Prampram (10.1%) and Ga South Municipal (4.3%).

The distribution of inequality in the region indicates that Shai Osudoku has the highest (40.1), and is the only district with inequality above the regional average of 37.6. Ga South Municipal has the highest number of poor persons (61,347) in the region.

Among the sub districts, poverty incidence is highest in Tema West (9.7%) while Okaikoi North (0.7%) has the lowest. The two sub districts rank the same in terms of poverty depth. Inequality is highest in Tema East (36.9) while Ayawaso West Wogon has the lowest (32.8). Tema West (13,383) has the highest number of poor persons, with the least being Ayawaso West Wogon (452).

Figure 3.13: Poverty Incidence - Greater Accra Region
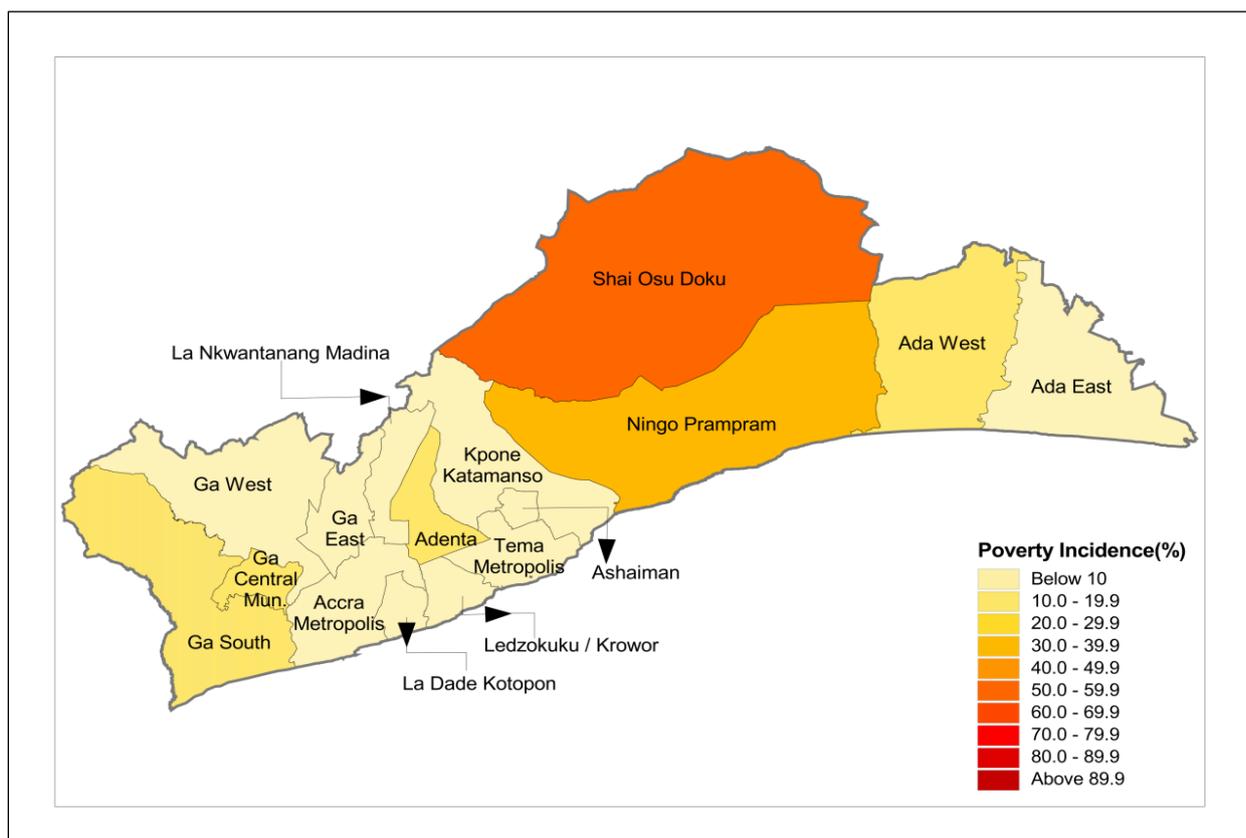
Figure 3.14: Estimated Number of Poor Persons - Greater Accra Region
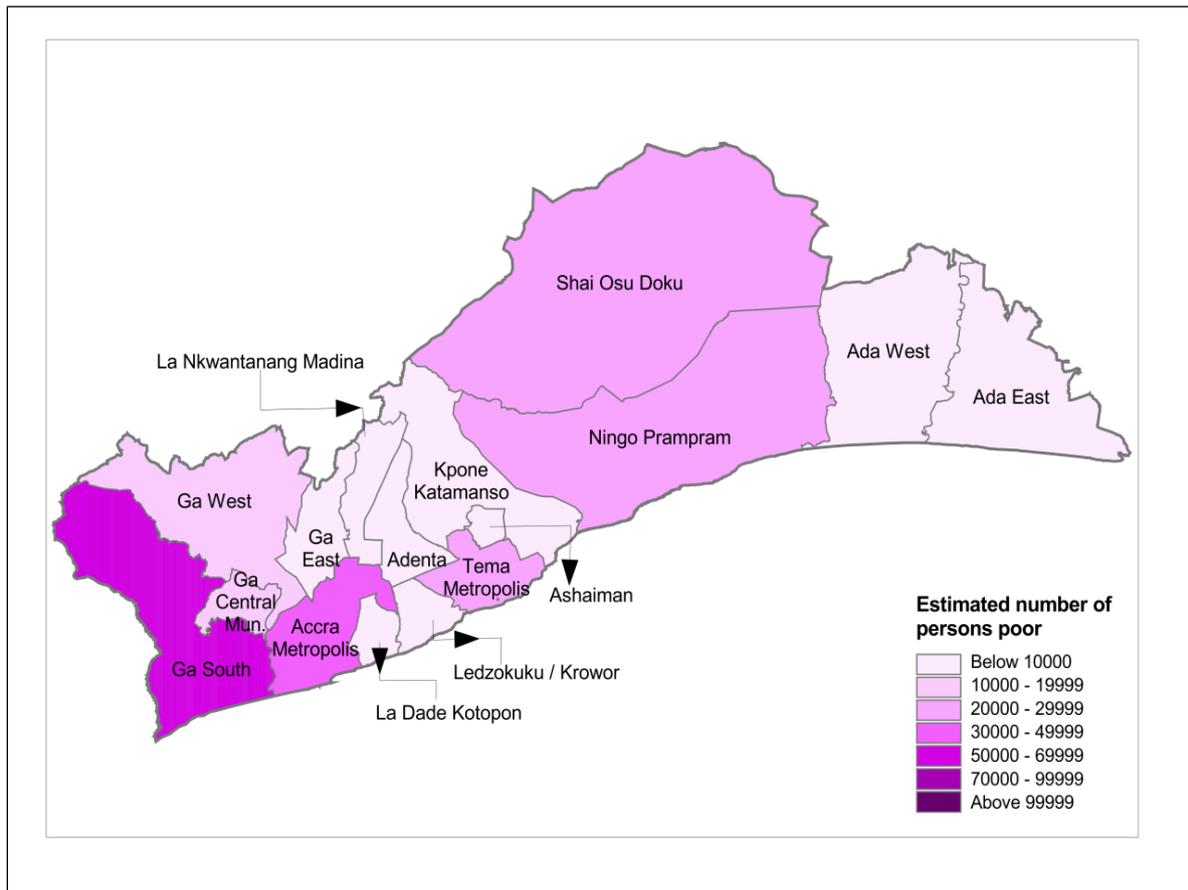
Figure 3.15: Poverty Depth – Greater Accra Region
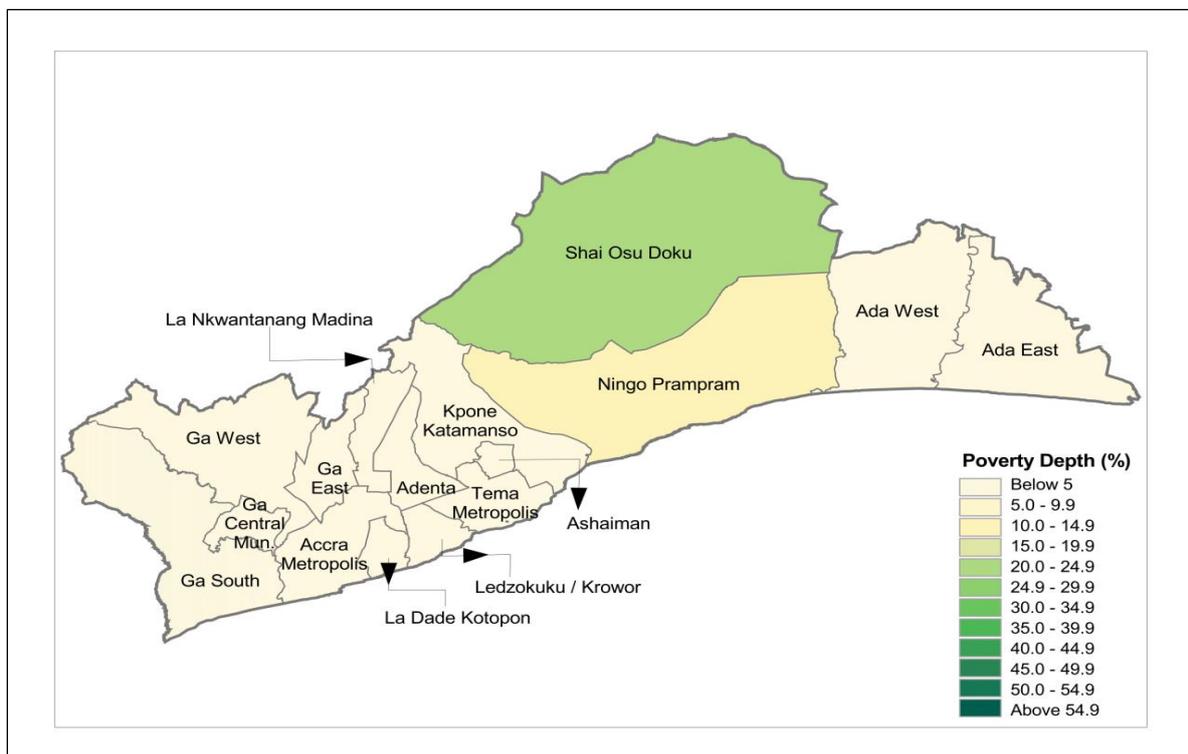
Figure 3.16: Poverty Inequality - Greater Accra Region
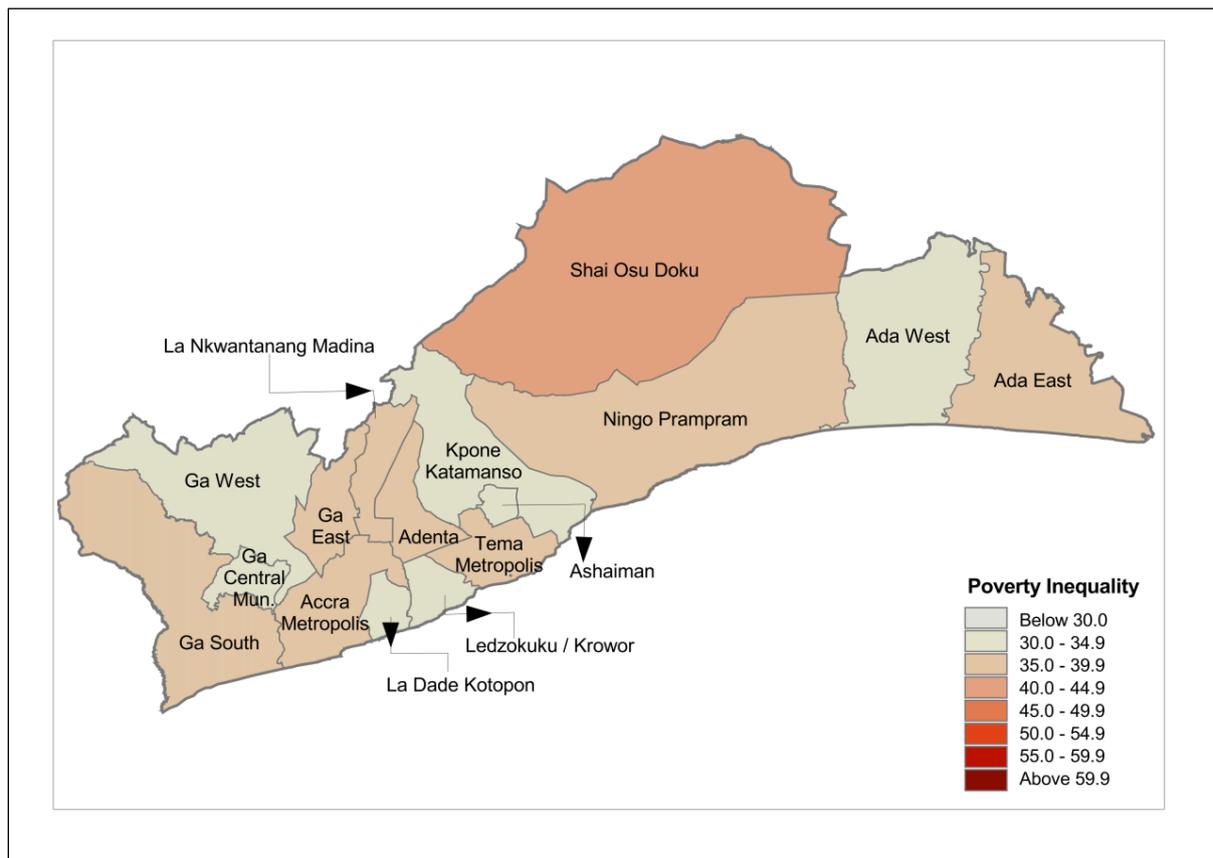
VOLTA REGION

Poverty incidence, depth of poverty and inequality in the Volta Region are presented in Table A1.4 and Figures 3.17 to 3.20. The results reveal that there exist high variations in the levels of poverty among the 25 districts in the region. More than half (13 out of 25) of the districts have poverty incidence higher than the regional average of 33.3 percent. The incidence of poverty is highest in Adaklu (89.7%), followed by Kadjebi (66.8%), and Agortime Ziope (62.1%) districts. The lowest poverty headcount is observed in Akatsi South District (10.5%).

Adaklu District has the highest depth of poverty (46.9%), followed by Kadjebi (30.1%) and Agortime Ziope (24.2%) districts. The lowest depth of poverty is recorded in Akatsi South District (2.6%).

Six of the 25 districts have inequality above the regional value of 43.7. These districts are: North Tongu (46.0), Biakoye (45.0), Kpando Municipal (44.4), Jasikan (44.0) and Nkwanta North (44.1). Adaklu District (32.2), however, recorded the lowest inequality in the region.

Krachi East District (58,329) has the highest number of poor persons in the region, followed by Hohoe Municipal (51,976) and North Tongu District (45,899). Akatsi North District recorded the lowest number of poor persons (7,835).

Figure 3.17: Poverty Incidence - Volta Region
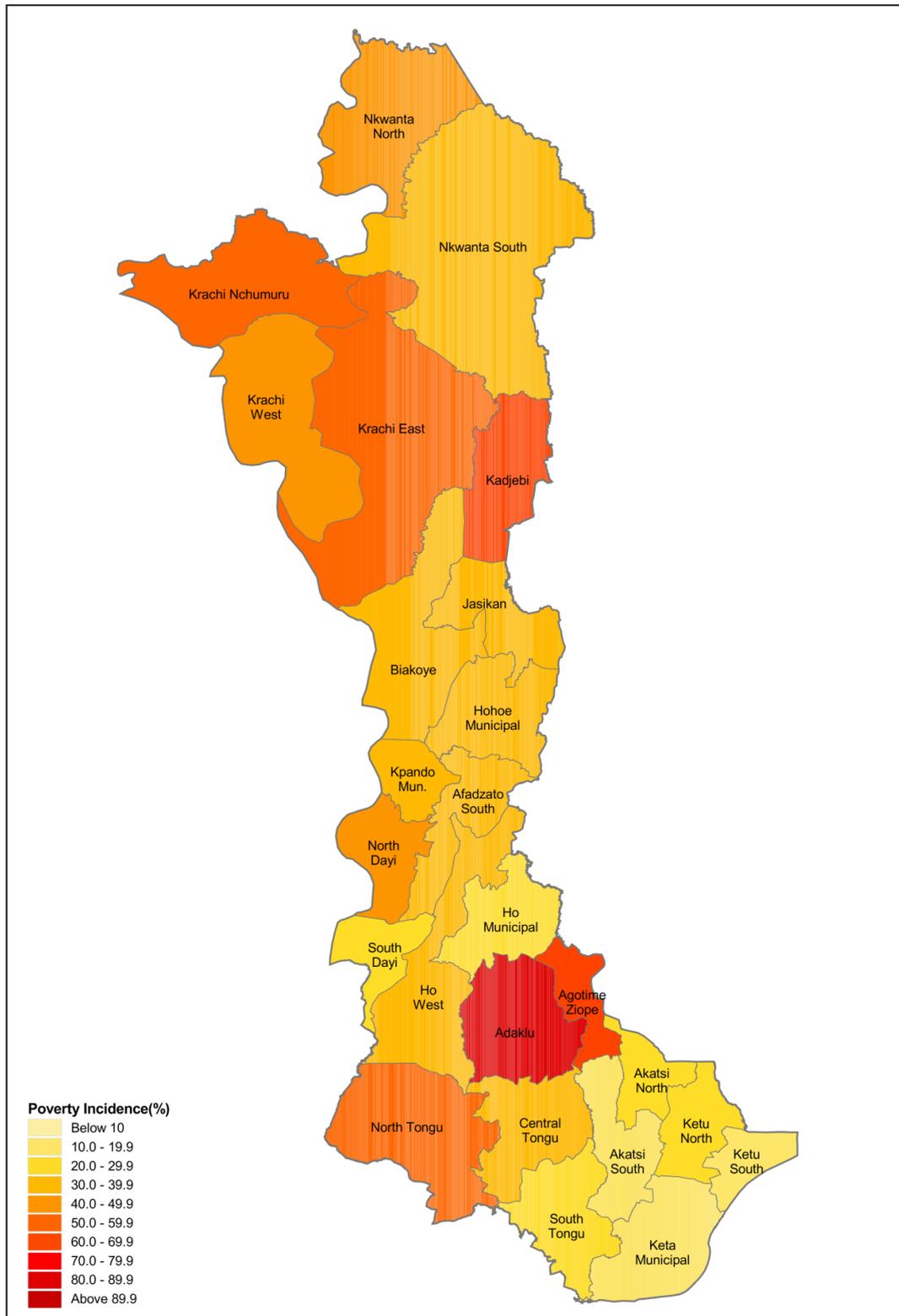
Figure 3.18: Estimated Number of Poor Persons - Volta Region
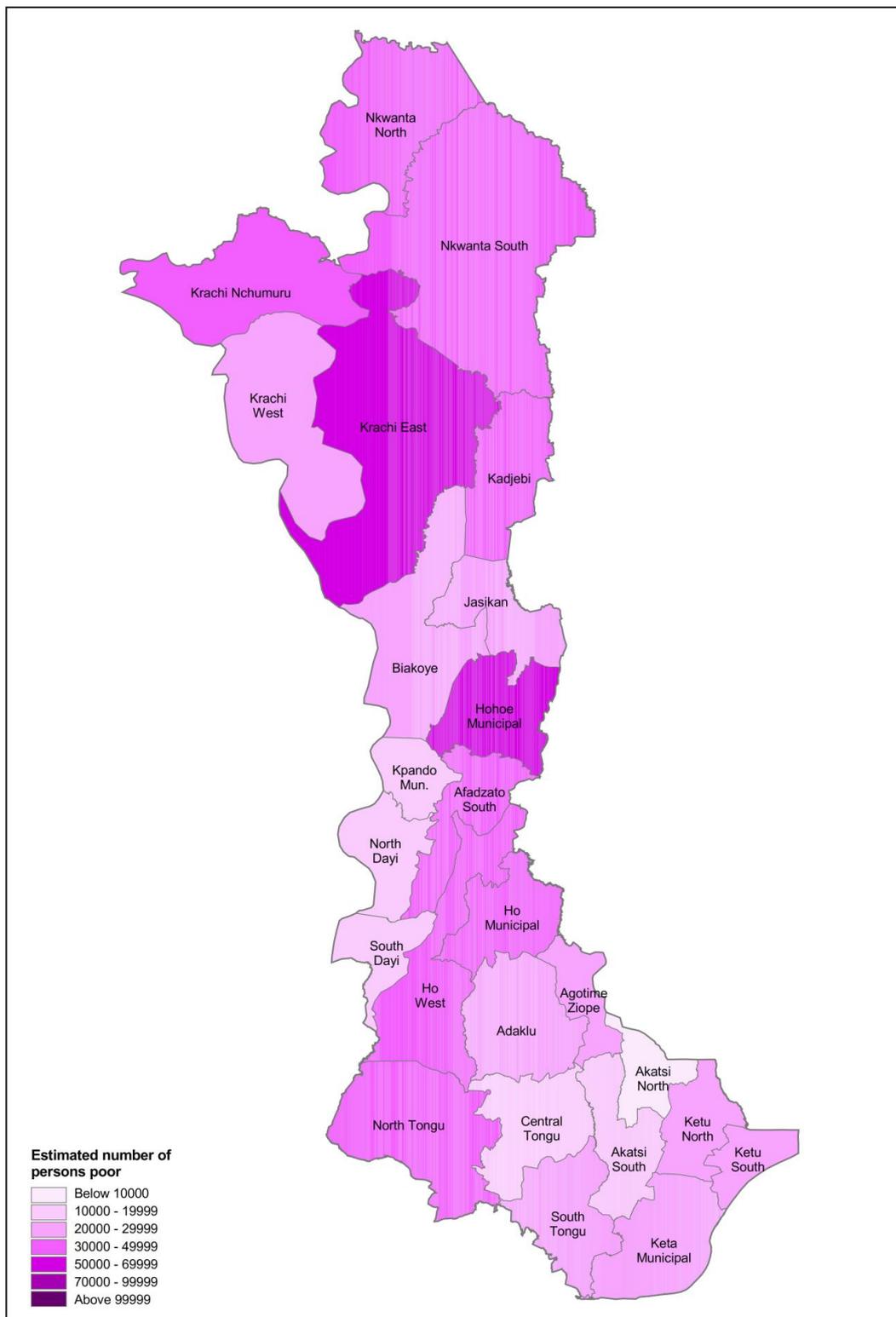
Figure 3.19: Poverty Depth – Volta Region
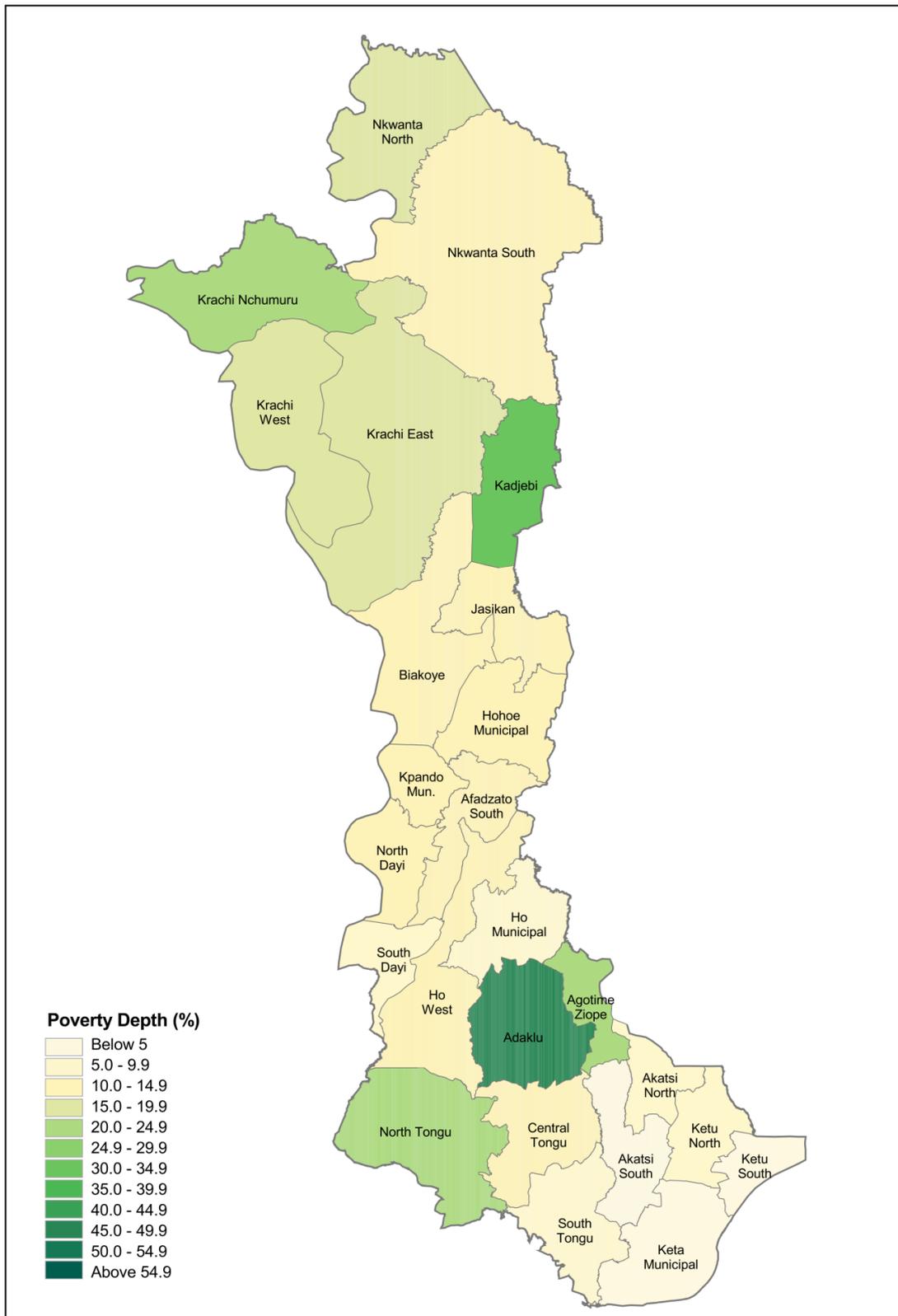
Figure 3.20: Poverty Inequality - Volta Region
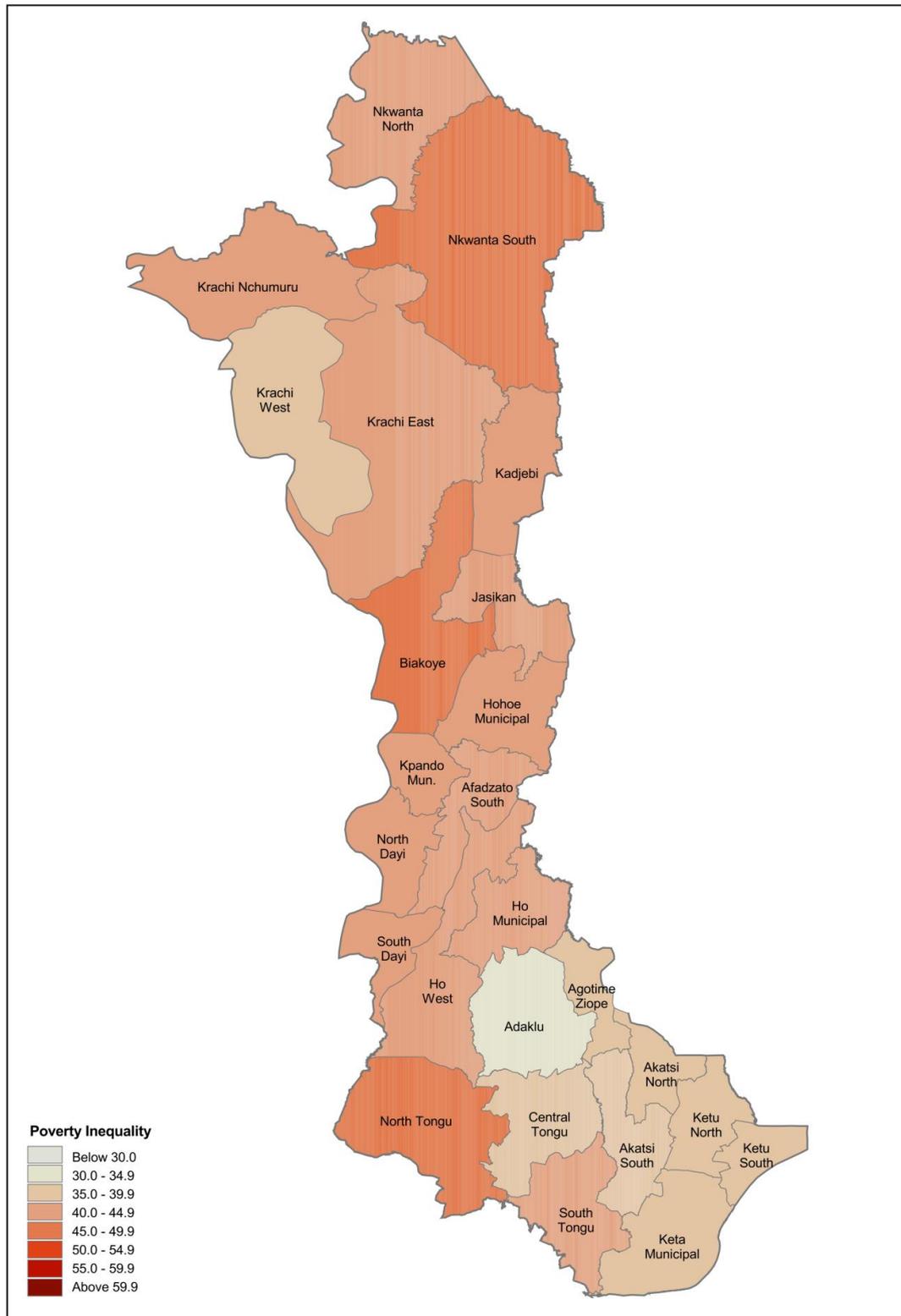
EASTERN REGION

There are high variations in poverty rates among districts in the Eastern region. Table A1.5 and Figures 3.21, 3.22 and 3.23 present the distribution of poverty headcounts, depth of poverty and inequality for the 26 districts in the region. The incidence of poverty ranges from 4.6 percent in New Juaben Municipal to 59.7 percent in Kwahu Afram Plains South District. Eleven districts have poverty incidence higher than the regional average of 22.0 percent.

Denkyembuor District and New Juaben Municipal have the lowest poverty depth of 1.1 percent, followed by Nsawam Adoagyiri Municipal and Suhum Municipal with 1.4 percent. The three districts with the lowest inequality are Upper Manya (27.2), Lower Manya (28.3) and Yilo Krobo (29.1).

Kwahu Afram Plains South has the highest number of poor persons (67,555) in the region and Denkyembuor District the lowest (3,559).

**Figure 3.21: Poverty Incidence - Eastern Region**
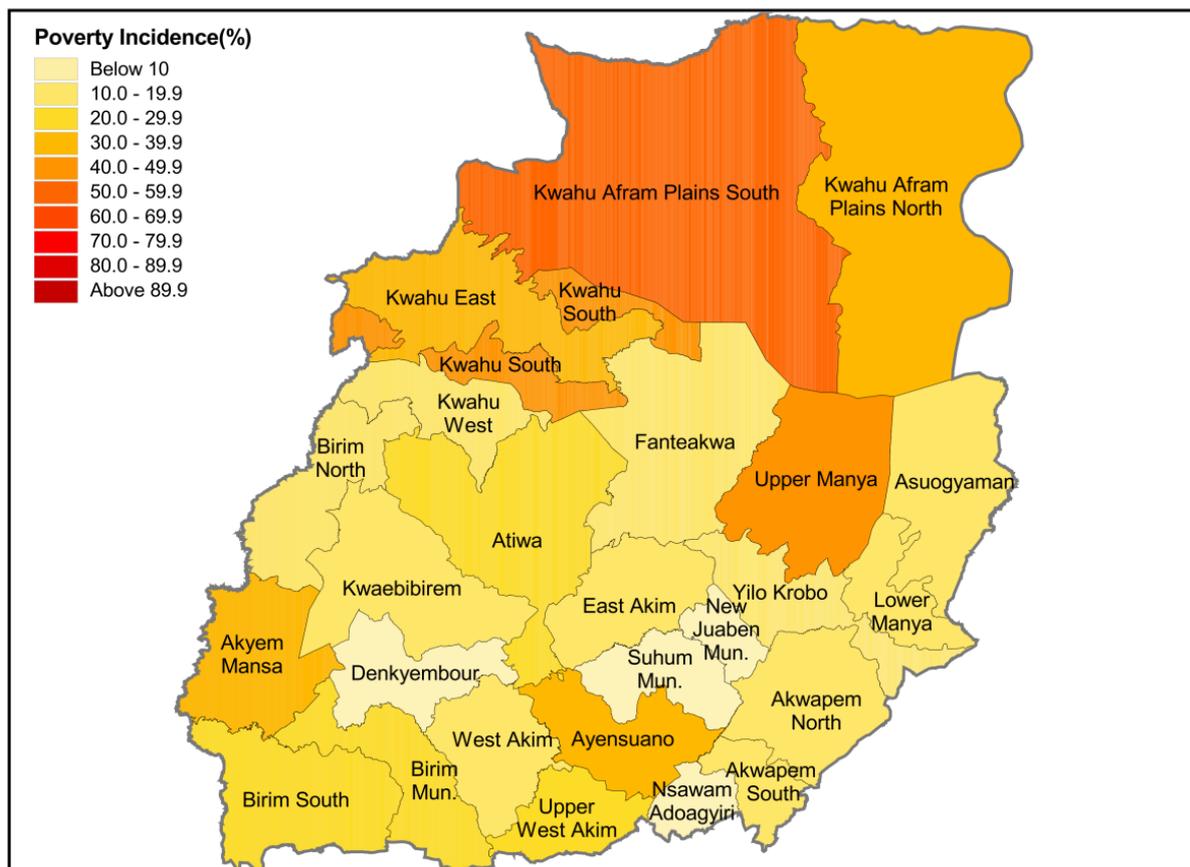
Figure 3.23: Estimated Number of Poor Persons - Eastern Region
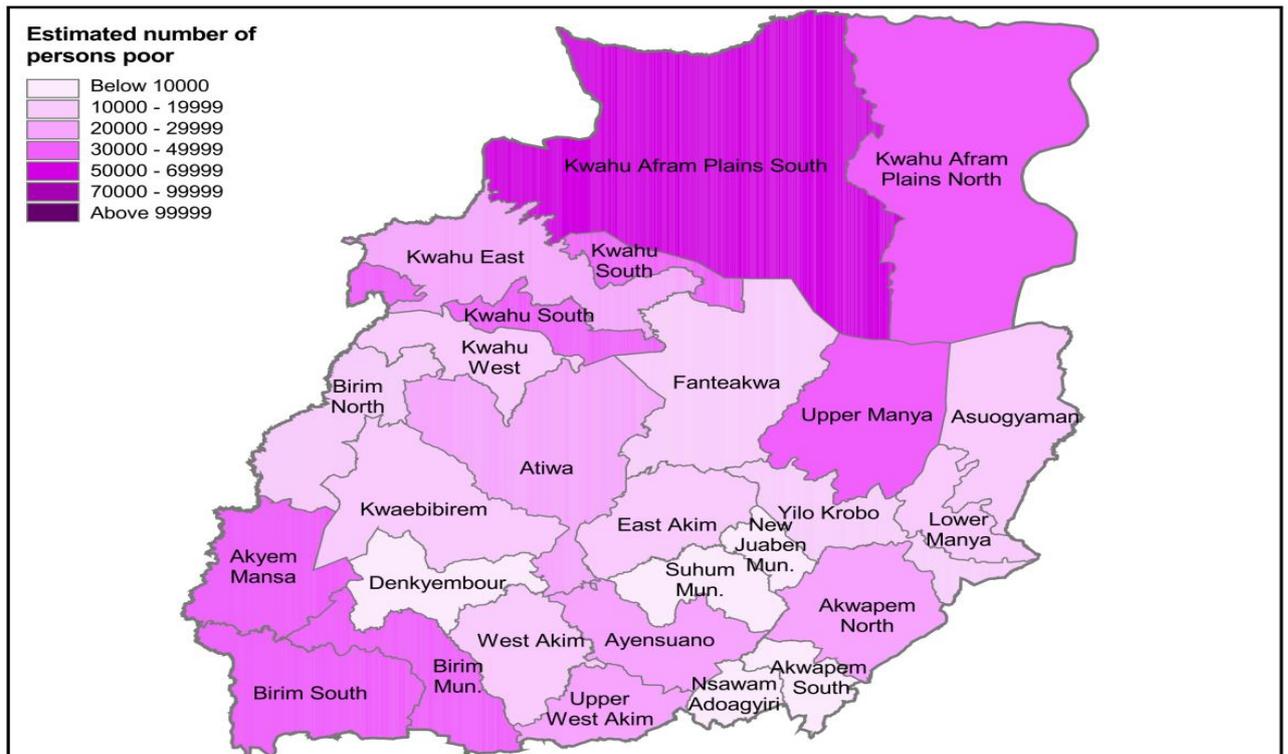
**Figure 3.23: Poverty Depth – Eastern Region**
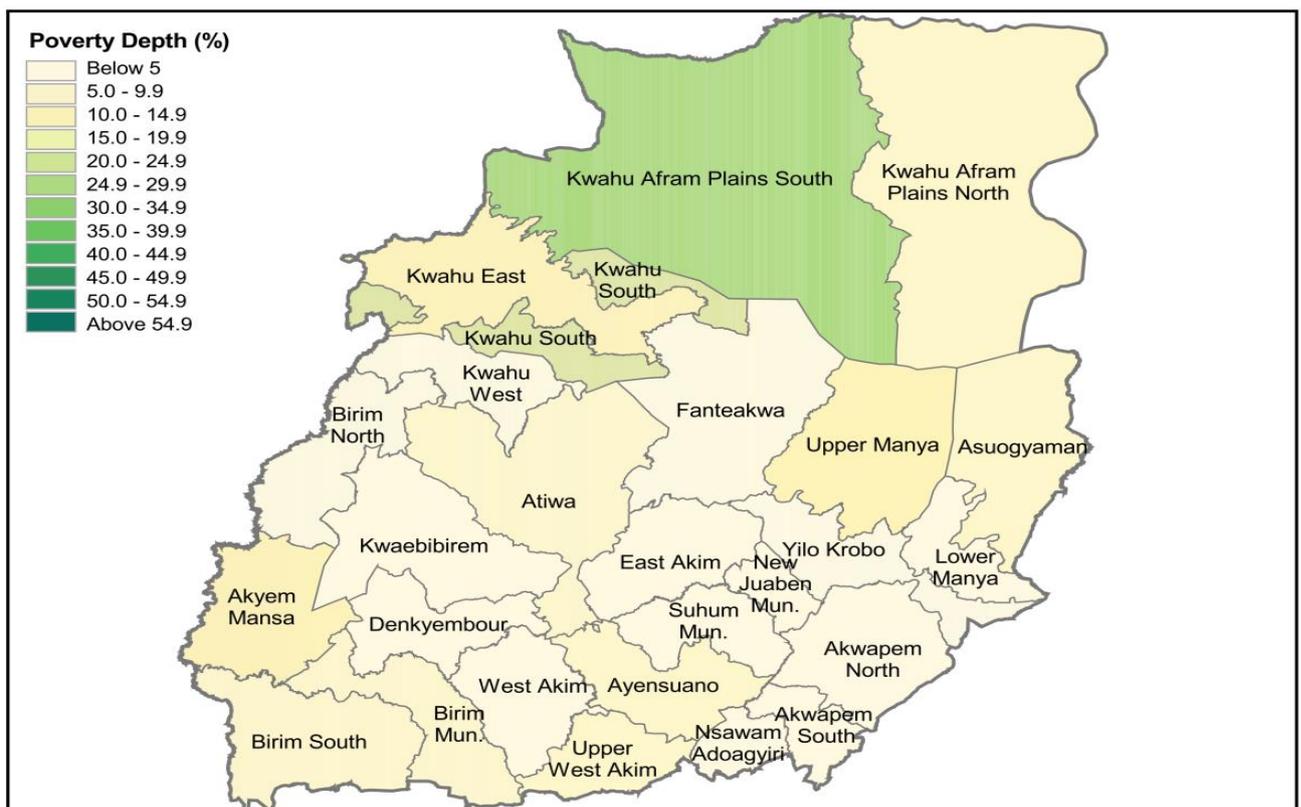
Figure 3.24: Poverty Inequality - Eastern Region
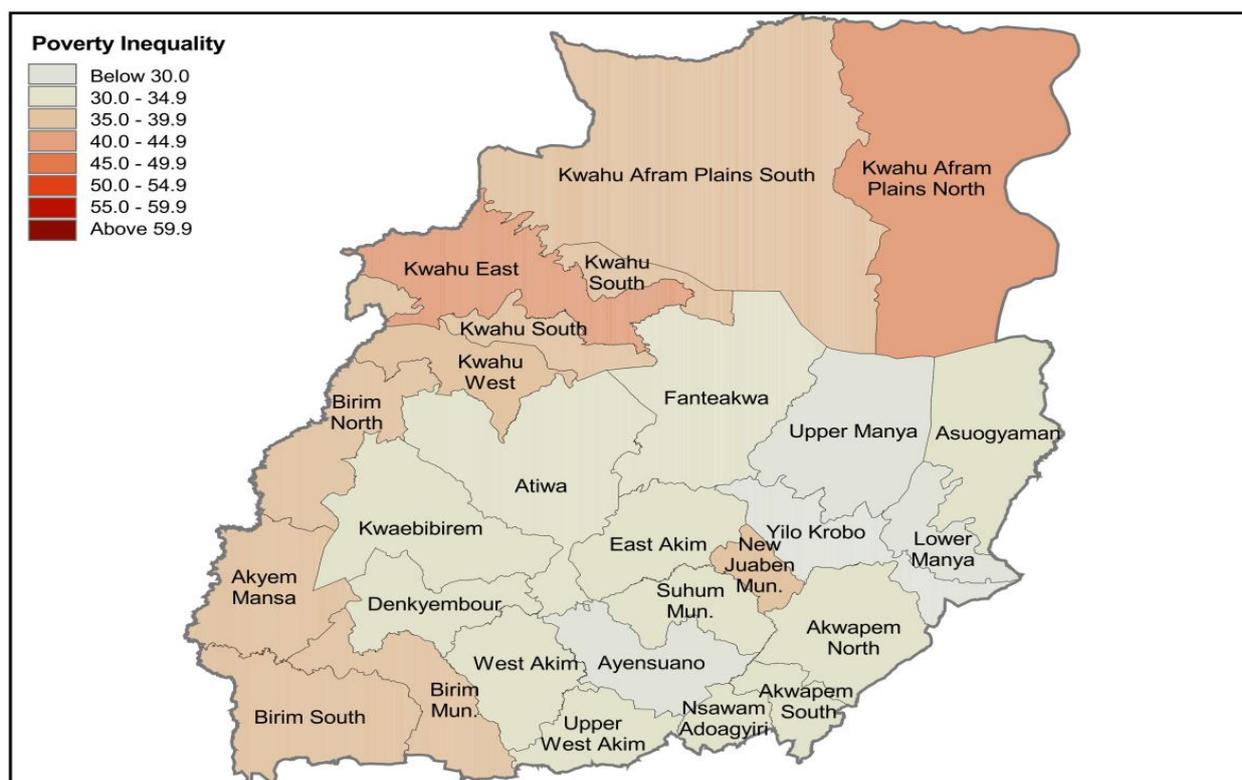
ASHANTI REGION

There are variations in poverty incidence, depth of poverty and inequality among districts in the Ashanti Region as presented in Table A1.6 and Figures 3.25 to 3.28.

Sekyere Afram Plains North (59.6%) recorded the highest poverty incidence, followed by Ejura Sekyedumasi (47.0%) and Ahafo Ano North (46.4%) districts. Asokore Mampong Municipal (3.3%), Afigya Kwabre (4.0%) and Atwima Kwanwoma (4.9%) have relatively low poverty incidence in the region.

Variations also exist in depth of poverty among the districts in the region. Asokore Mampong Municipal has the lowest rate of 0.7 percent, while the highest is in Sekyere Afram Plains North (24.3%). With the exception of Sekyere Afram Plains North (49.8) and Obuasi Municipal (38.0), inequality in all other districts is lower than the regional average of 37.3. Though Sekyere Afram Plains North has the highest poverty incidence in the region, Kumasi Metropolis (88,935) has the highest number of poor persons followed by Ahafo Ano North District (43,070).

Figure 3.25: Poverty Incidence - Ashanti Region
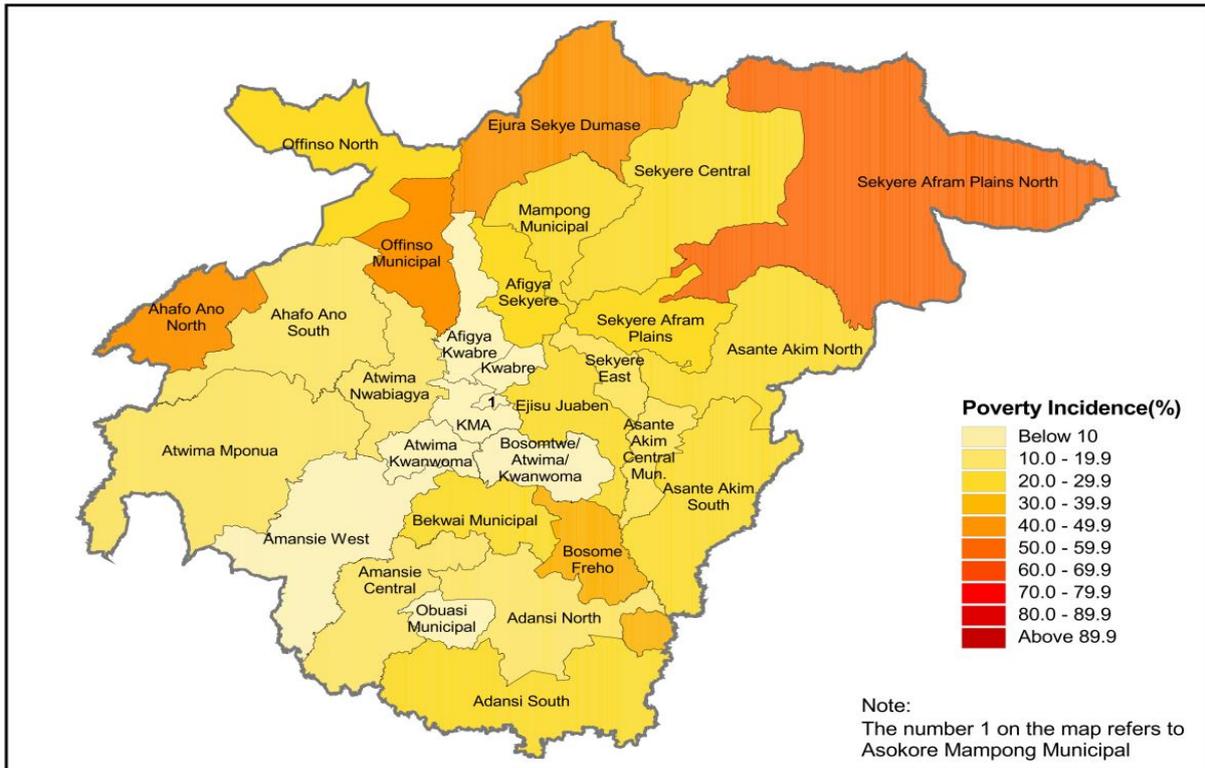
Figure 3.26: Estimated Number of Poor Persons - Ashanti Region
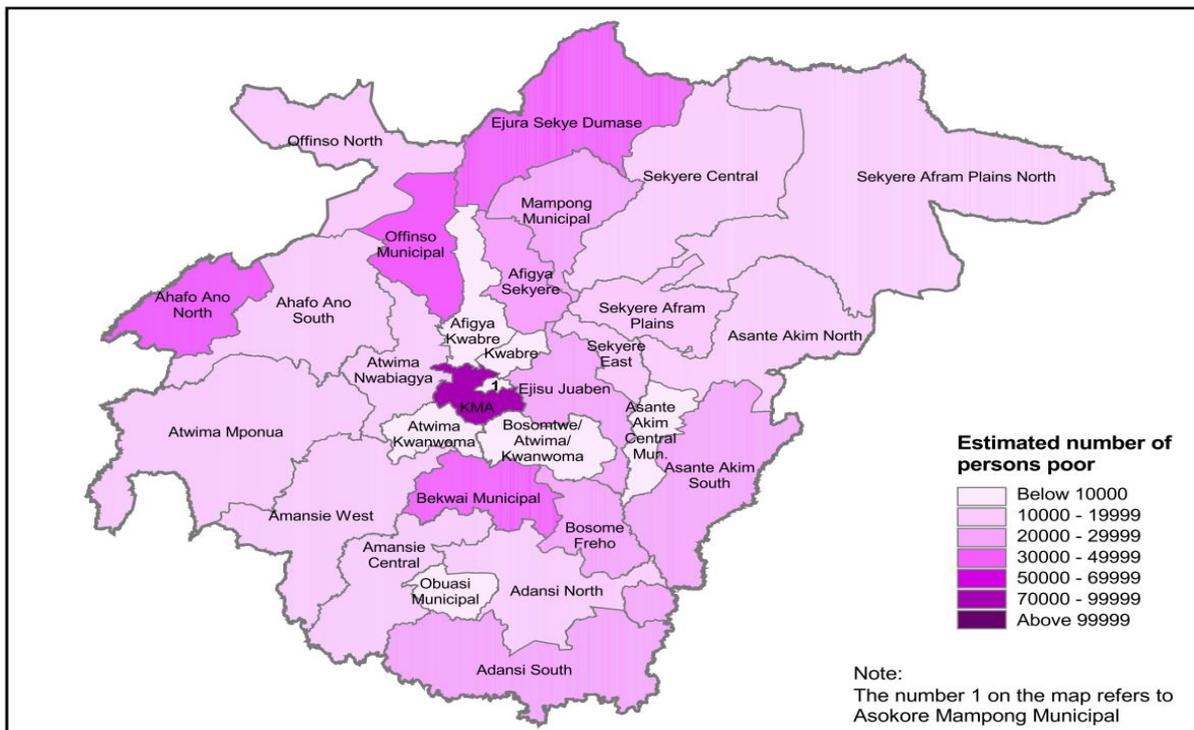
Figure 3.27: Poverty Depth – Ashanti Region

Figure 3.28: Poverty Inequality - Ashanti Region

BRONG AHAFO REGION

Brong Ahafo Region has districts located in both the Savannah and Forest ecological zones. More than half (15 out of 27) of the districts in the region have poverty incidence higher than the regional average of 28.6 percent as shown in Table A1.7 and Figures 3.29 to 3.32. Kintampo South (78.3%) and Banda (78.0%) districts, both in the Savannah ecological zone, have the highest poverty incidence.

The districts with the lowest incidence of poverty are found within the forest ecological zone. These are Dormaa West District (9.9%), Dormaa Municipal (11.4%) and Asunafo North Municipal (12.0%). In terms of the population classified as poor, Kintampo South (62,893) has the highest in the region, followed by Pru District (54,818). Dormaa West District (4,639) has the least number of poor persons.

Banda (37.9%) and Kintampo South (35.8%) districts recorded the highest depth of poverty while Dormaa West District (2.5%) has the lowest. With regard to inequality, Sunyani Municipal (64.0) has the highest while the lowest is observed in Kintampo South (35.9).

Figure 3.29: Poverty Incidence – Brong Ahafo Region
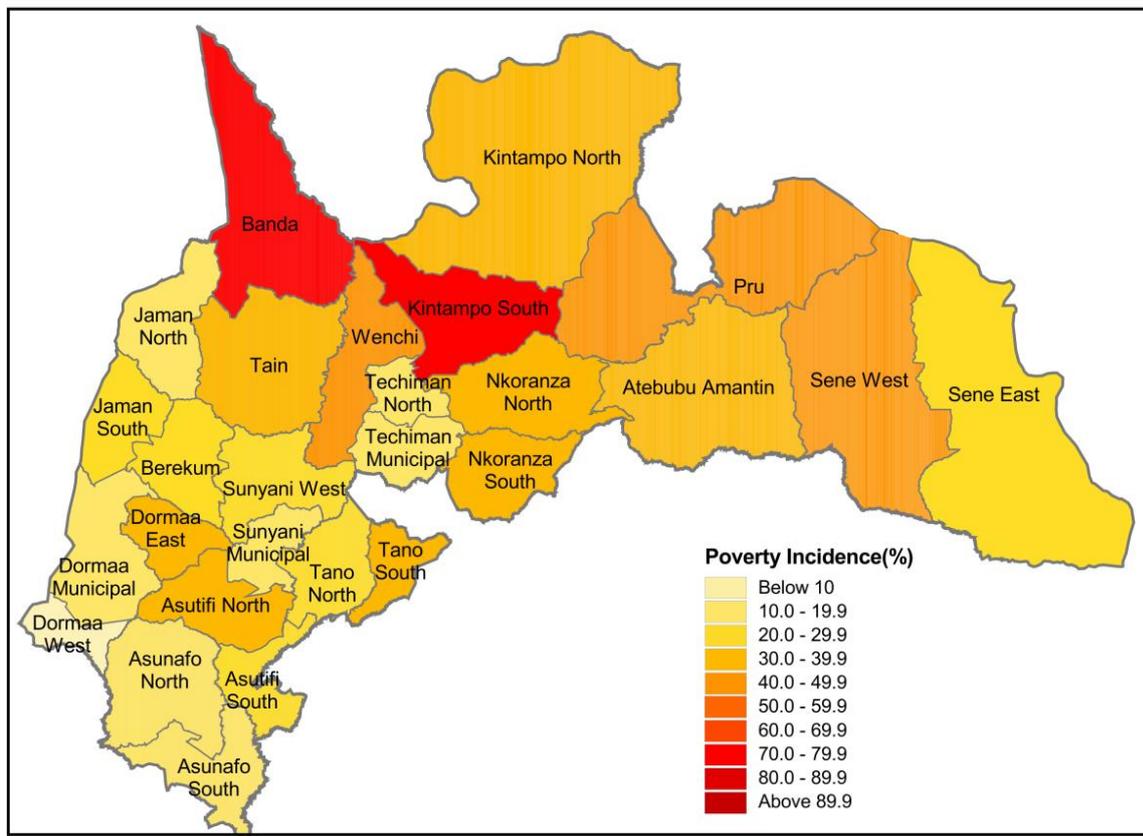
Figure 3.30: Estimated Number of Poor Persons - Brong Ahafo Region
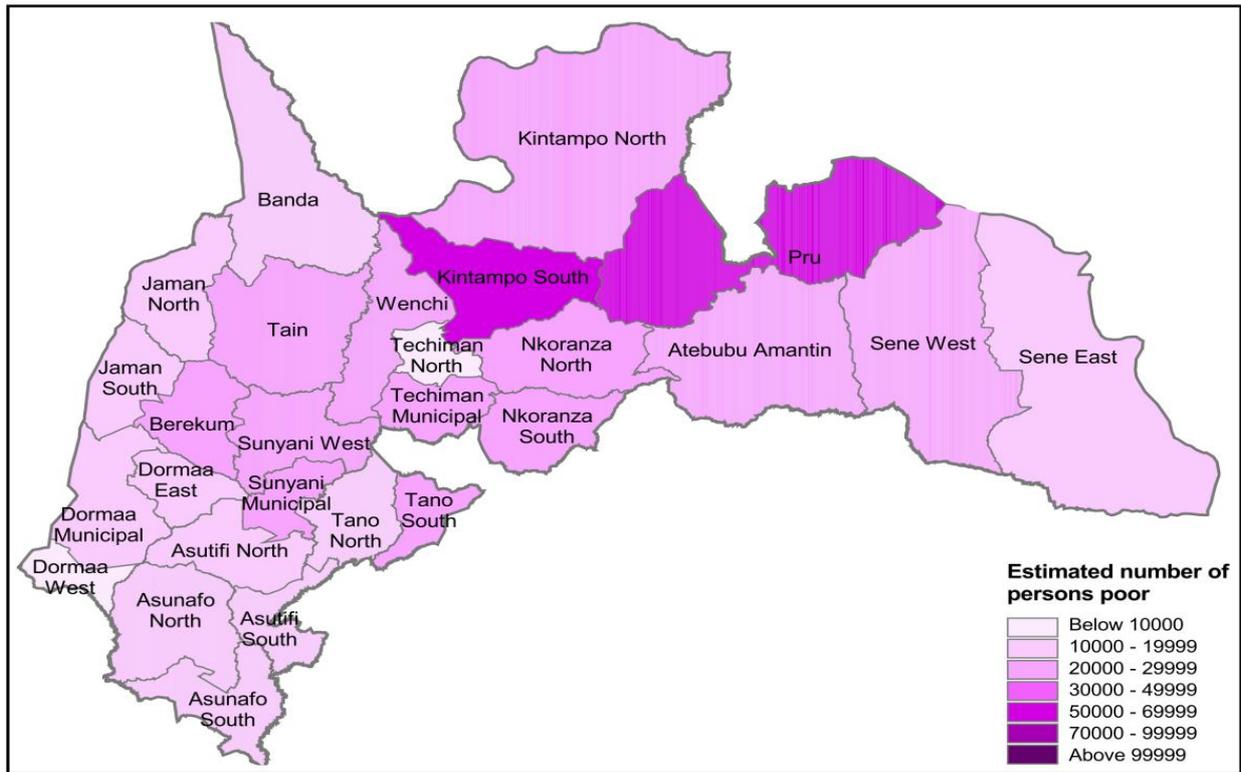
Figure 3.31: Poverty Depth – Brong Ahafo Region
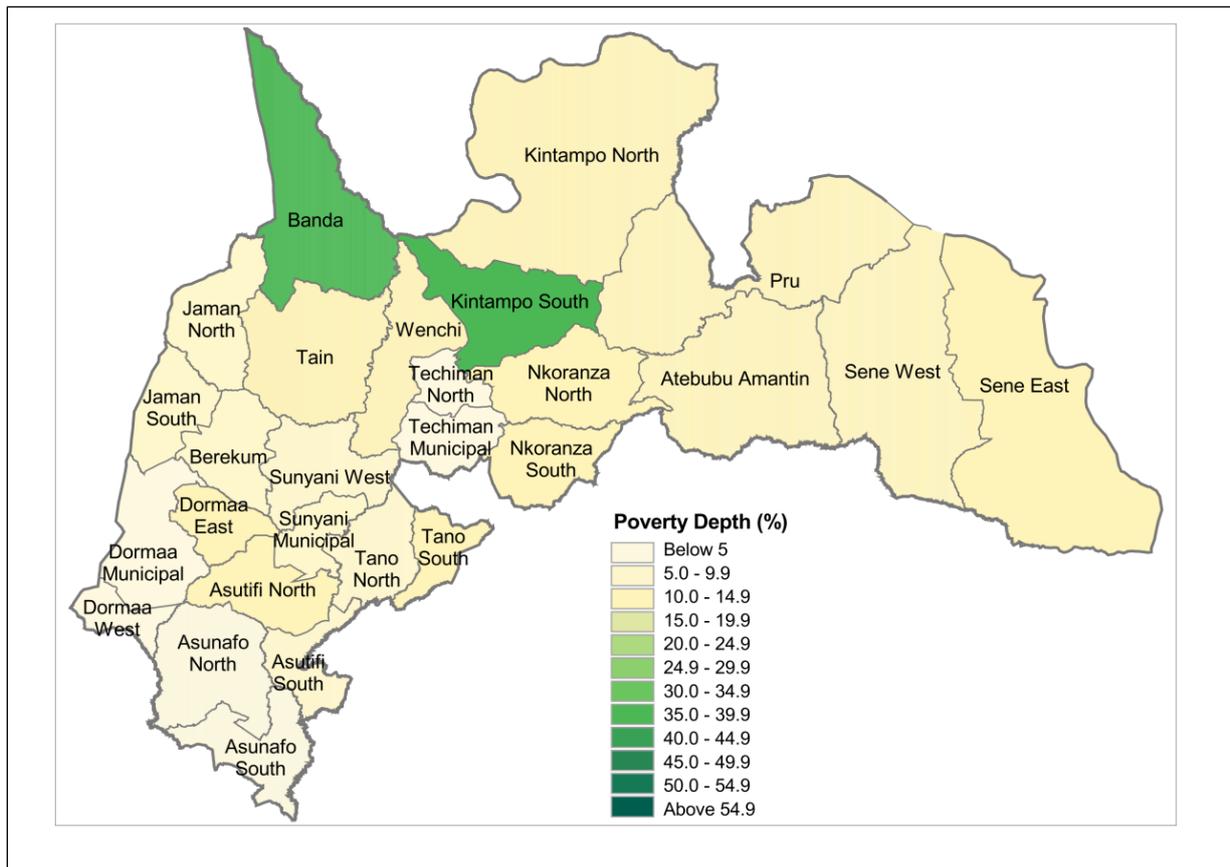
Figure 3.32: Poverty Inequality - Brong Ahafo Region
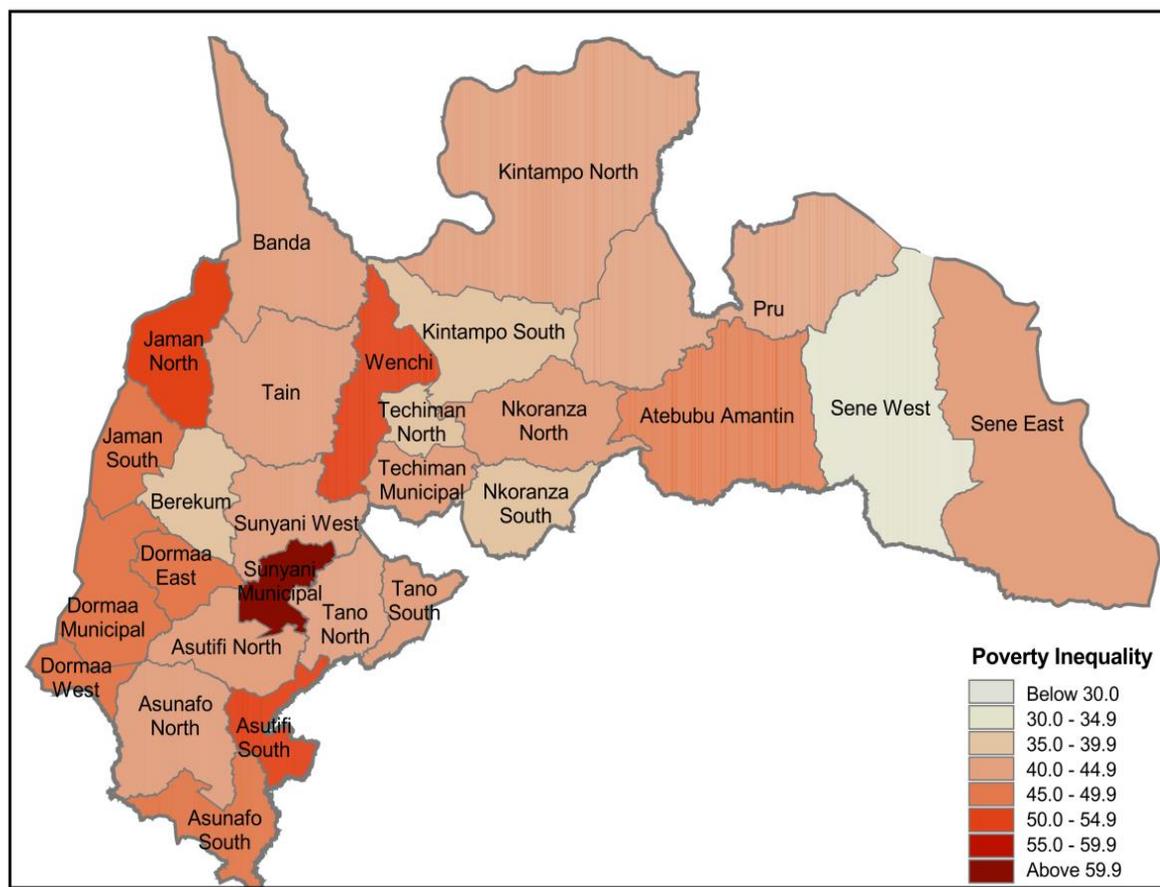
NORTHERN REGION

The estimates of poverty for the 25 districts and two sub-districts in the Northern Region are presented in Table A1.8 and Figures 3.33 to 3.6. Eleven of the districts have poverty incidence higher than the regional average of 44.2 percent. The highest is East Gonja (84.2%), followed by Bole (79.4%) and Kpandai (76.9%) districts. The incidence is lowest for Tamale Metropolis (24.6%) and Sagnerigu Municipal (29.3%).

Depth of poverty in the Northern Region is 15.5 percent. The rate is highest in East Gonja (41.0%), followed by Bole (38.1%) district. Tamale Metropolis (6.8%), Sagnerigu Municipal (8.2%) and Nanumba North District (8.9%) recorded the lowest depth of poverty.

The region ranked fourth in terms of inequality in the country. Inequality is high in the Bole (45.5) and Zabzugu (39.1) districts, but low in Gonja Central (30.0) and Chereponi (30.0) districts.

The districts that dominate in terms of the number of poor persons are East Gonja (112,130), Kpandai (82,712), Bunkpurugu Yonyo (66,444) and Sawla-Tuna-Kalba (61,780).

Figure 3.33: Poverty Incidence – Northern Region
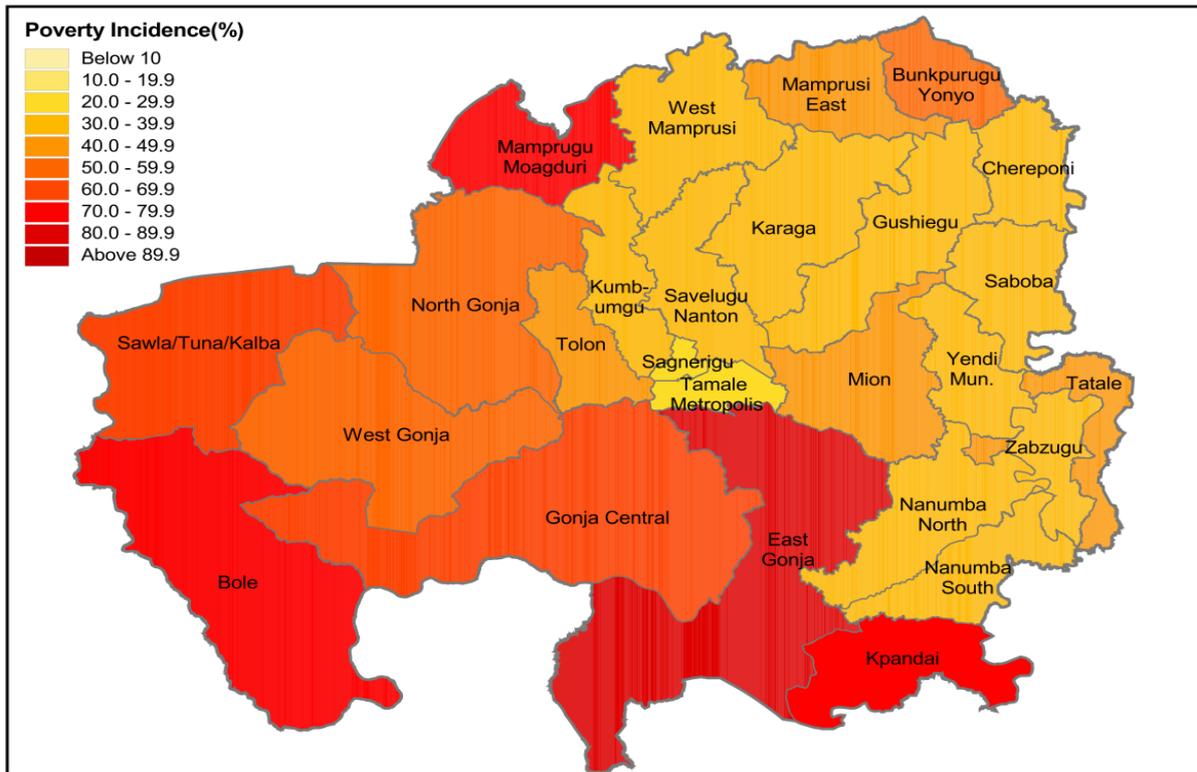
Figure 3.34: Estimated Number of Poor Persons - Northern Region
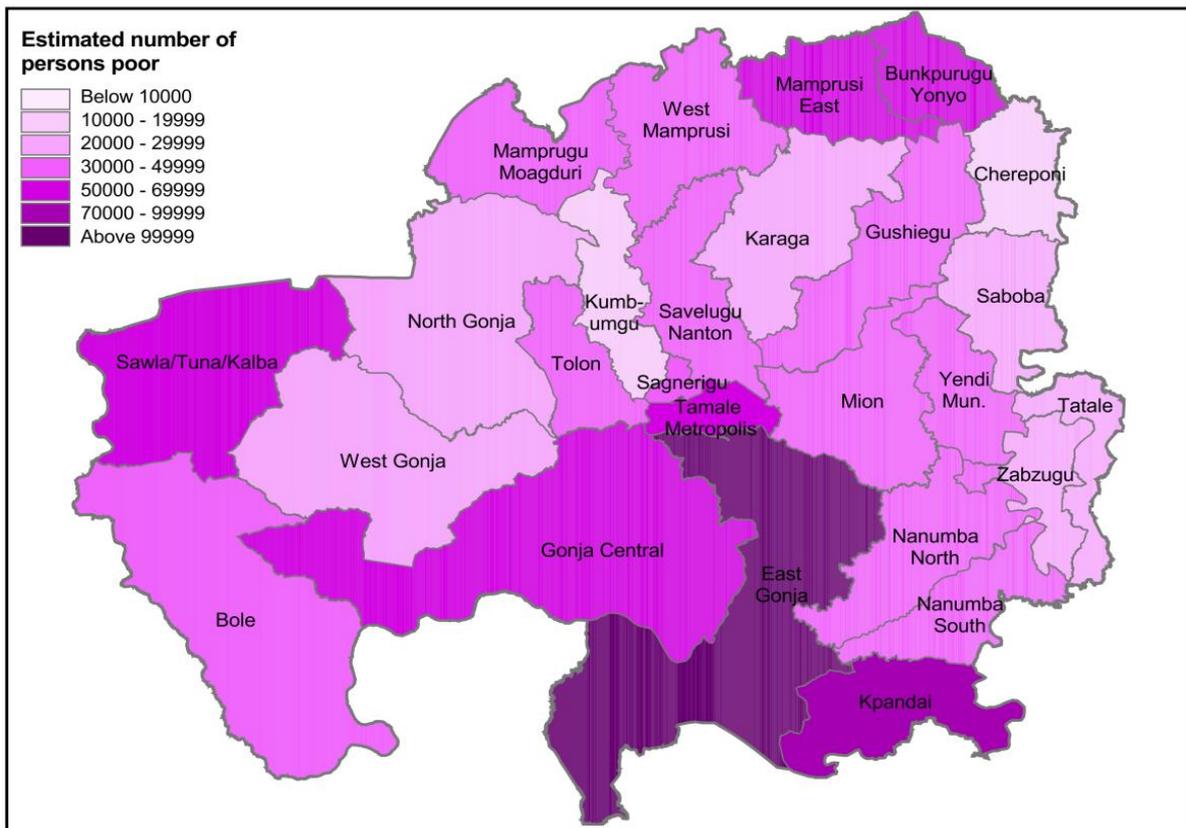
Figure 3.35: Poverty Depth – Northern Region
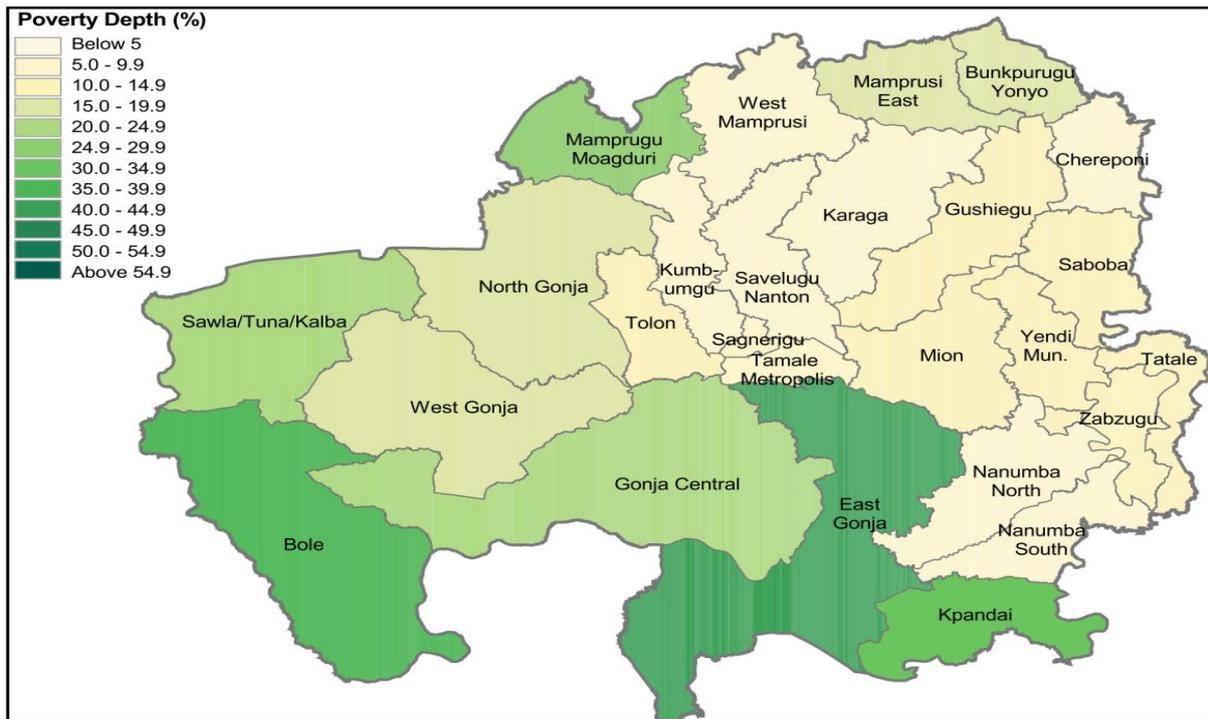
Figure 3.36: Poverty Inequality - Northern Region
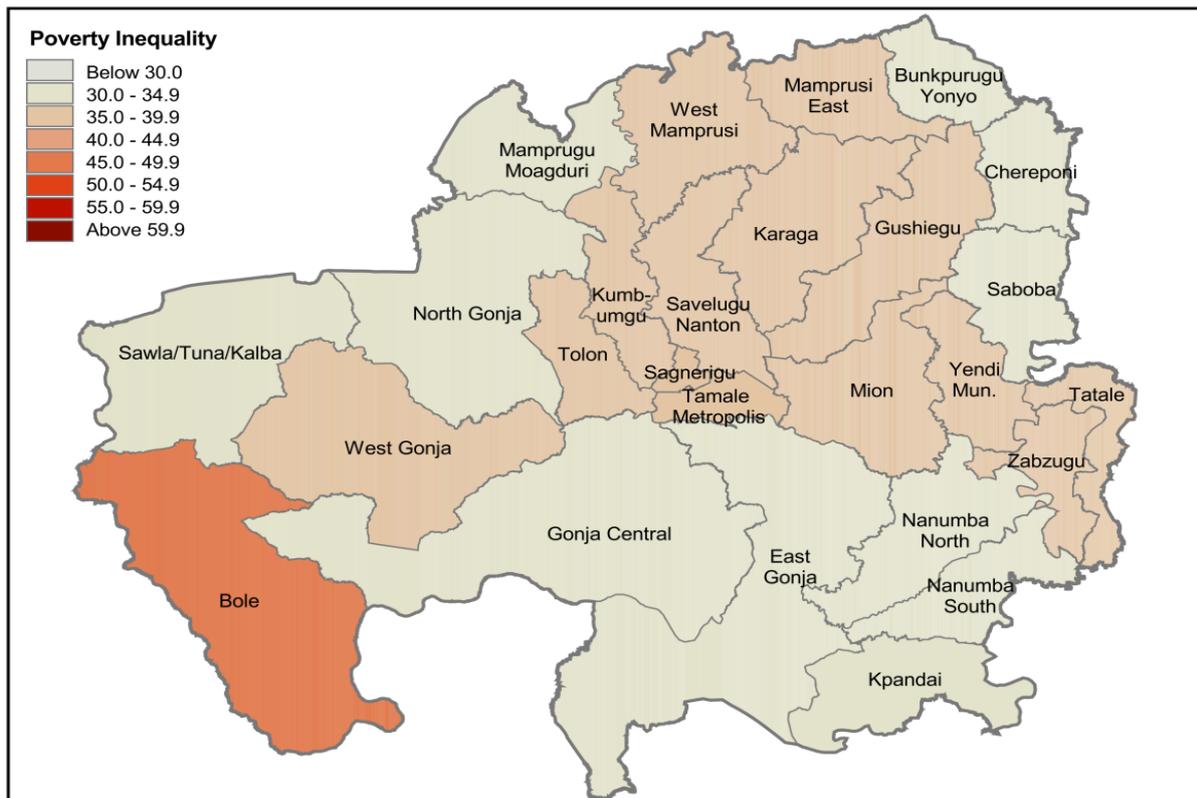
UPPER EAST REGION

There exist variations in poverty incidence among districts in the Upper East Region. Table A1.9 Figures 3.37 to 3.40 indicate that the incidence of poverty is highest in Builsa South (84.4%), followed by Bawku West (68.1%), Bongo (67.4%) and Nabdam (63.0%) districts. The lowest poverty incidence is observed in Kassena Nankana West District (13.1%). In terms of depth of poverty, a similar pattern is observed (Builsa South - 51.8%, Bawku West - 37.2%, Bongo - 36.4%, and Nabdam - 31.3%).

Although Builsa South District has the highest level of poverty incidence, it recorded the lowest inequality (48.5). Inequality is highest in Bawku West (57.9) followed by Garu Tempane (54.8) and Bongo (54.4) districts.

Garu Tempane, with a poverty incidence of 54.5 percent, has the highest number of poor persons (70,087) in the region followed by Bawku West (63,315) and Bongo (56,622). Though Builsa South has the highest poverty incidence of 84.4 percent, the population poor is 30,730.

Figure 3.37: Poverty Incidence – Upper East Region
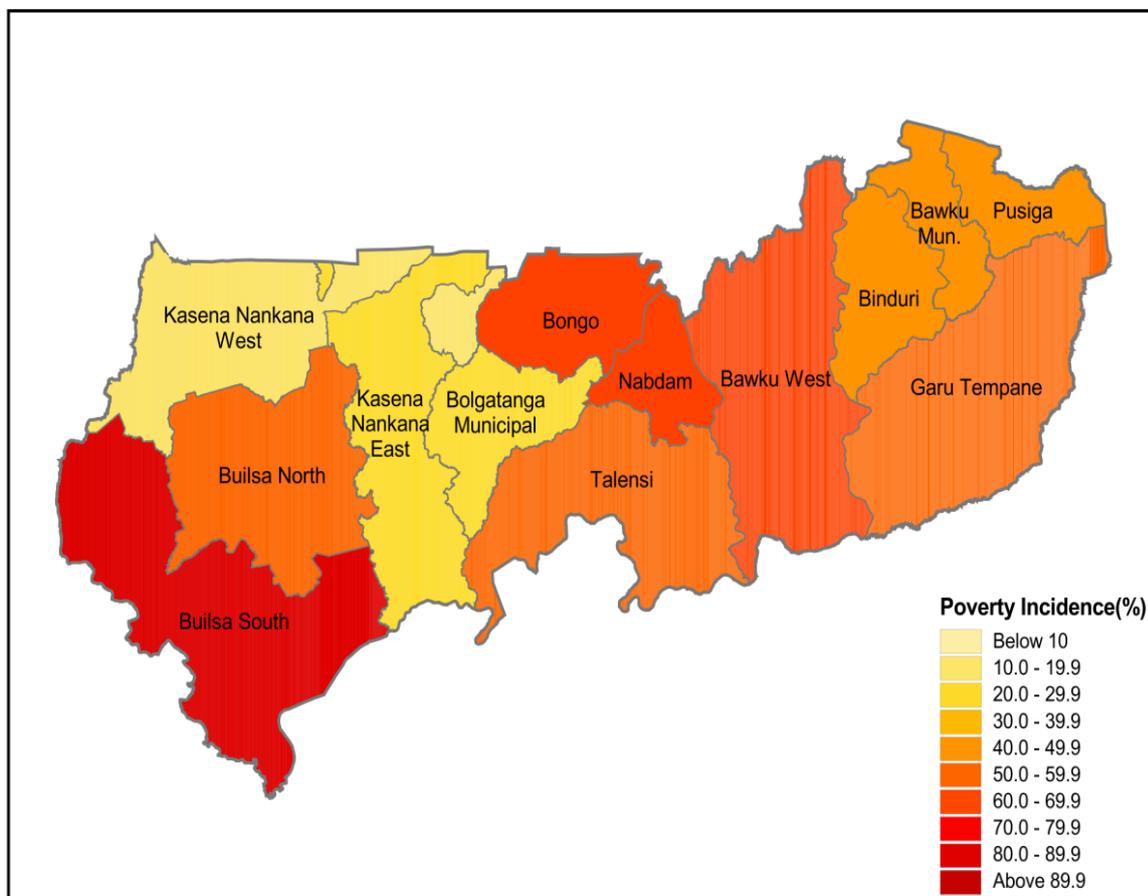
Figure 3.38: Estimated Number of Poor Persons - Upper East Region
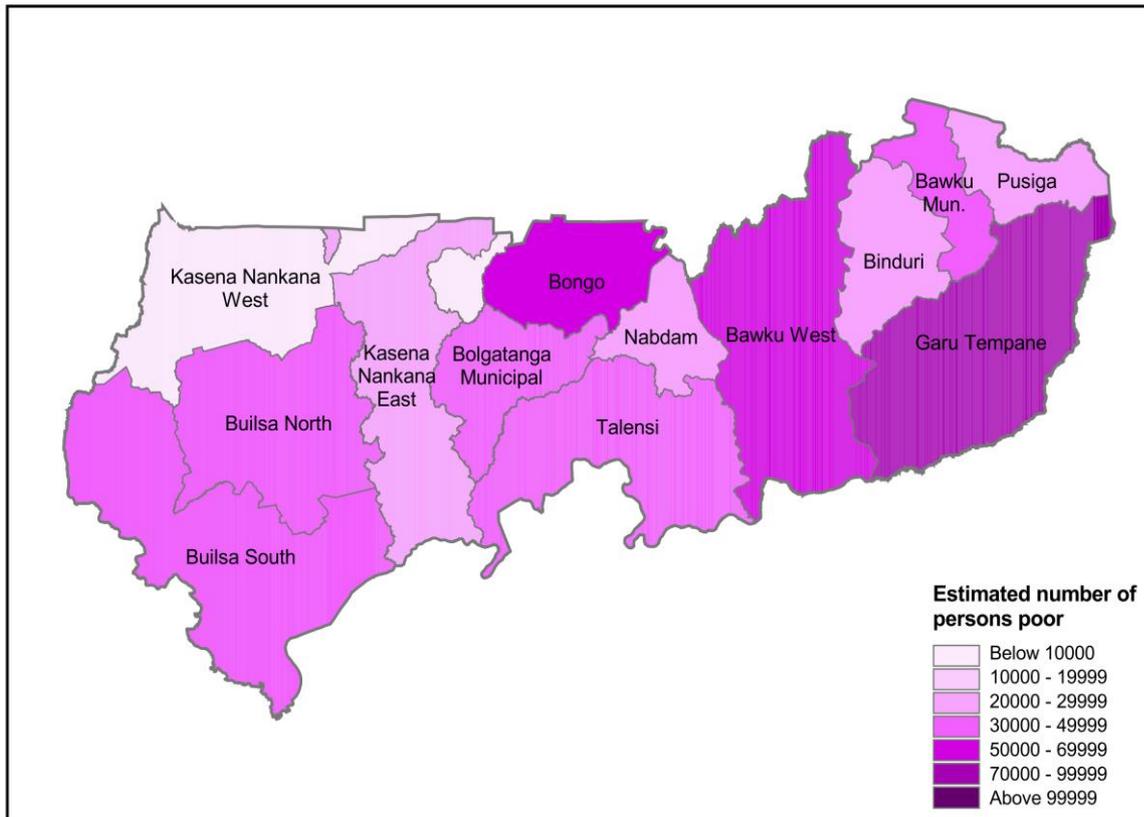
Figure 3.39: Poverty Depth – Upper East Region
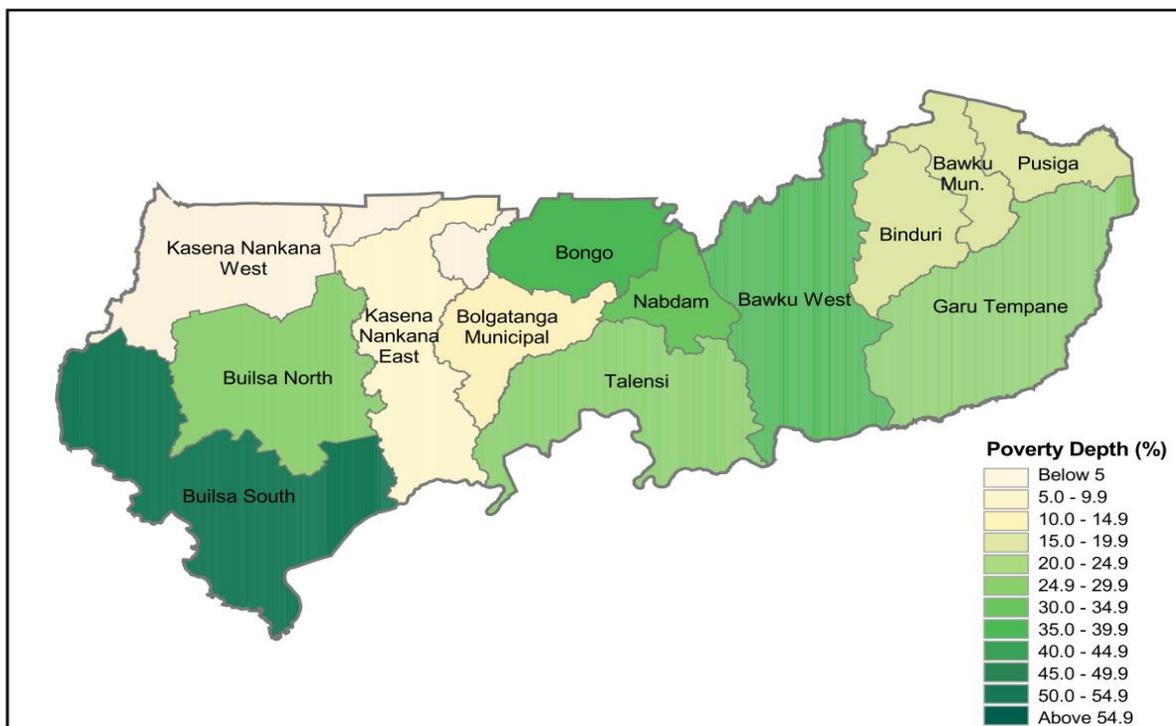
Figure 3.40: Poverty Inequality - Upper East Region
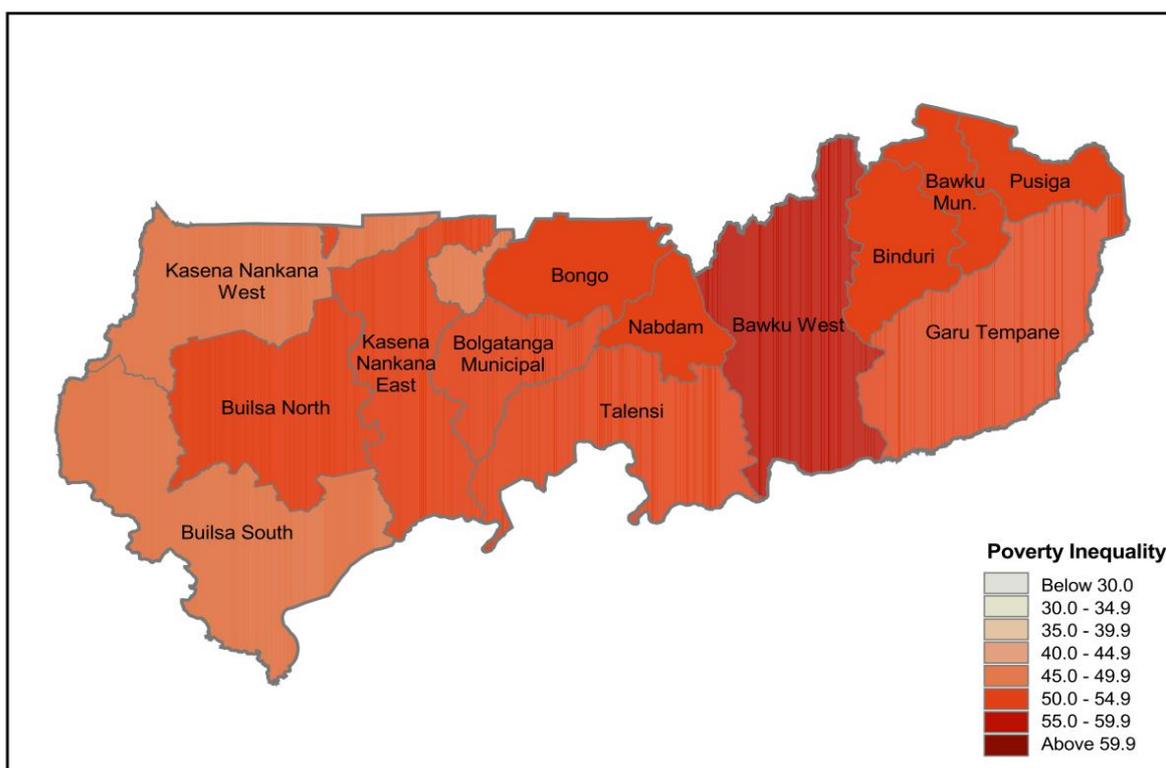
UPPER WEST REGION

Upper West Region (70.7%) has the highest poverty incidence among all the regions in Ghana. Wa West (92.4%) recorded the highest poverty headcount, followed by Wa East (83.8%) and Sissala West (81.2%) districts. The poverty headcount for Wa Municipal (35.5%) is the lowest in the region. The incidence rates for eight out of the 11 districts in the region range from 71.4 to 92.4 percent, and are above the regional average of 69.4 percent (Table A10 and Figures 3.41 to 3.44).

The depth of poverty follows a similar pattern and is highest in Wa West (59.0%), followed by Wa East (46.1%) and Sissala West (44.8%) districts. Wa Municipal has the lowest depth of poverty (13.8%) among the districts in the region.

With respect to inequality, there is not much variation among the districts in the region as shown in Table A1.10. Inequality ranges from 41.5 in Wa East to 47.5 in Lambussie Karni. Sissala East and Sissala West have the same level of inequality (43.3).

In terms of the number of poor persons, Wa West (74,297) has the highest, followed by Jirapa (62,364) and Wa East (59,577) districts. Daffiama Bussie, which has the lowest population in the region, has the lowest number of poor persons. Wa Municipal, on the other hand, has the largest population of 102,264 in the region but had a relatively low number of poor persons (36,253).

Figure 3.41: Poverty Incidence – Upper West Region
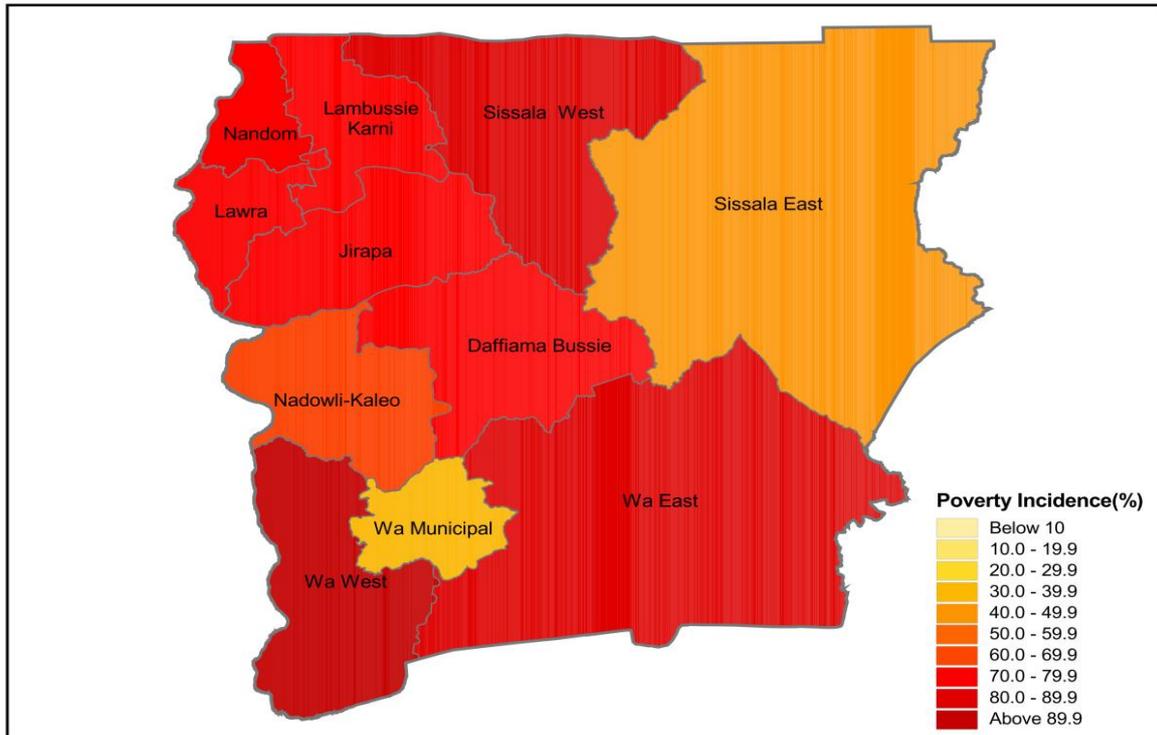
Figure 3.42: Estimated Number of Poor Persons - Upper West Region
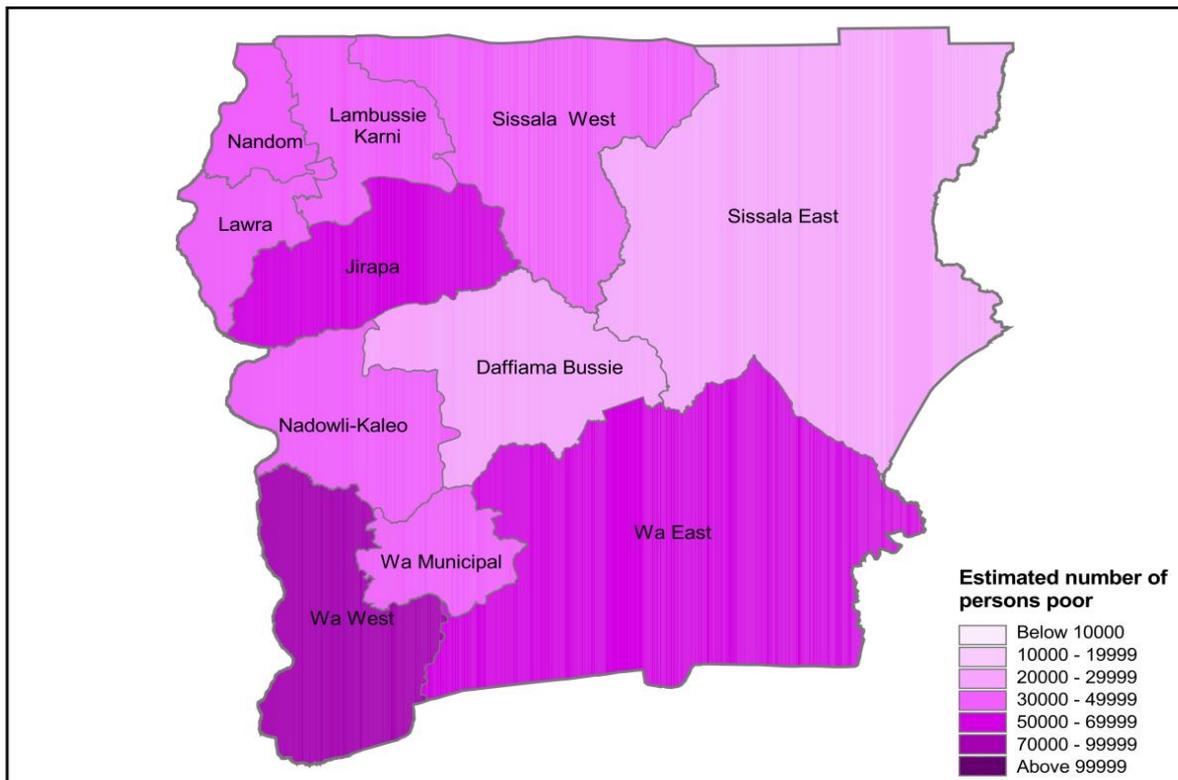
Figure 3.43: Poverty Depth – Upper West Region
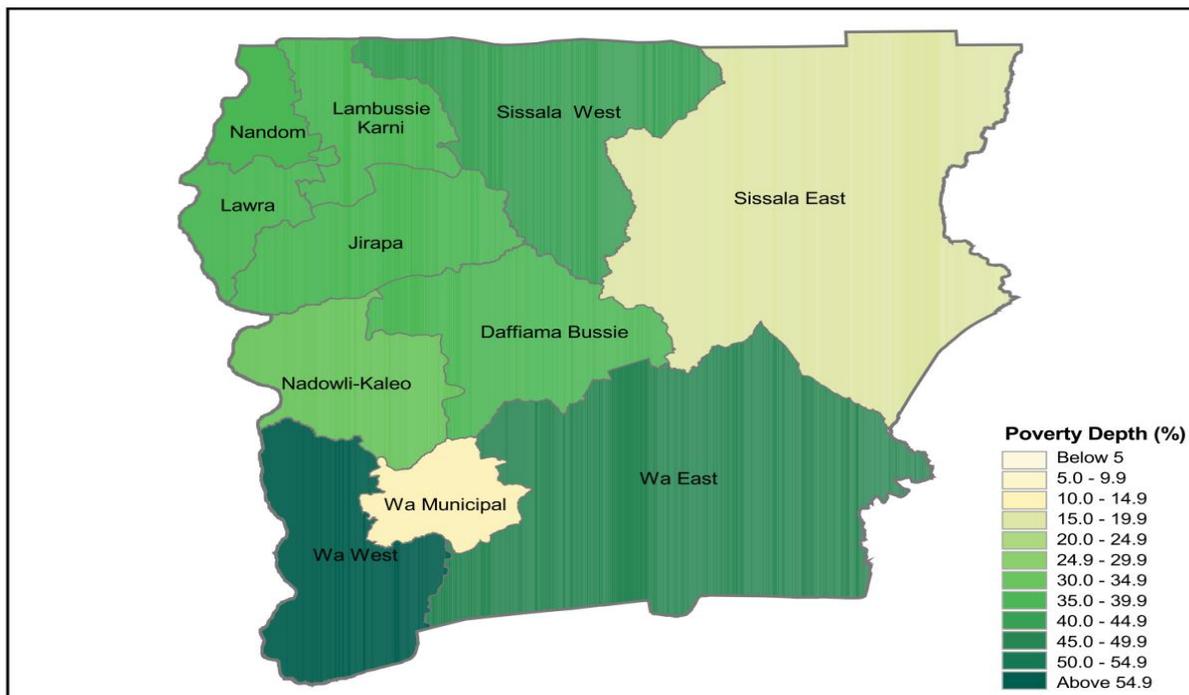
Figure 3.44: Poverty Inequality - Upper West Region
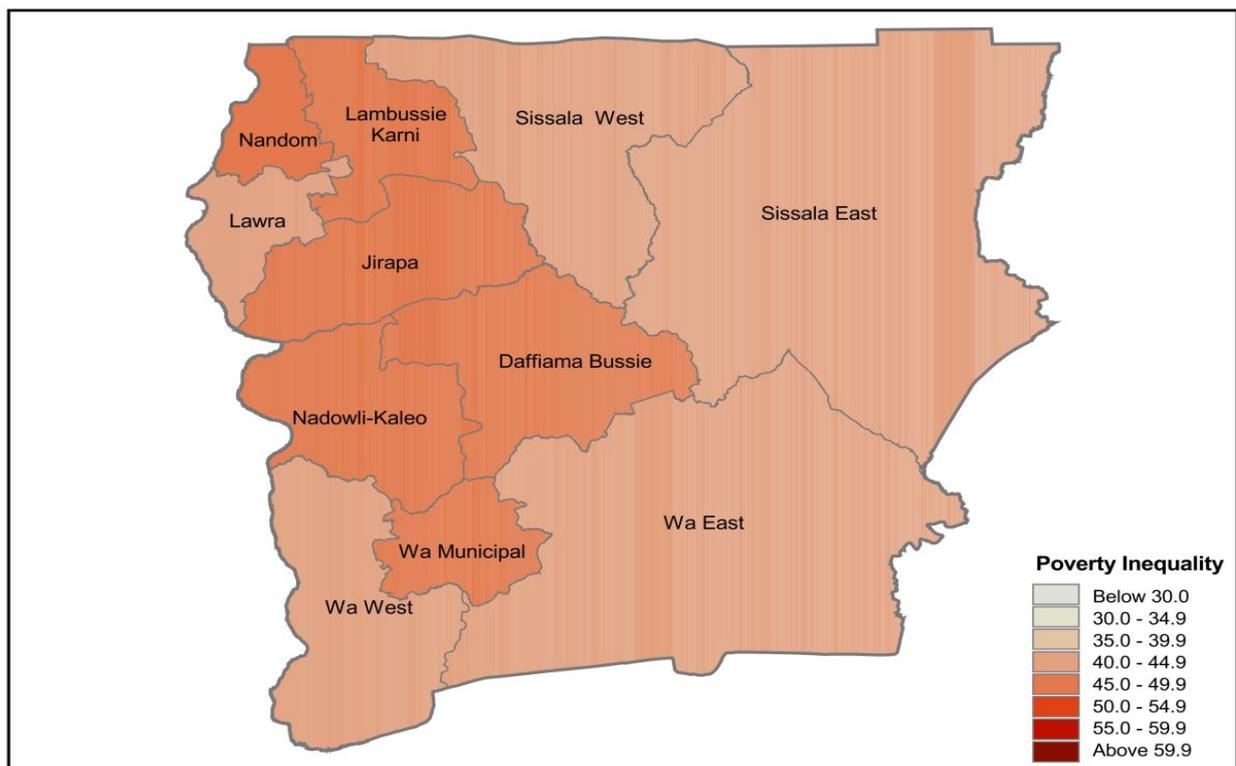
CHAPTER FOUR
CONCLUSIONS

The report provides poverty estimates for all the 216 districts and 29 sub-districts in Ghana. The data from the report are derived from the sixth round of the Ghana Living Standards Survey (GLSS6) and the 2010 Population and Housing Census (2010 PHC). It is the second poverty mapping report produced by GSS, having published the first in 2005. The need for data for planning developmental programmes, monitoring and evaluation at the district level has necessitated the preparation of this report.

The poverty measures presented in this report are the poverty headcount (P_0) and poverty gap (P_1), as well as their standard errors to indicate their level of precision. The Gini coefficient is used to measure inequality. The computed poverty estimates at the regional level using the 2010 PHC data are comparable with their corresponding estimates obtained from GLSS6. This provides confidence in the reliability of the models.

The report reveals significant variations in incidence and depth of poverty among the districts, within and across regions. However, the same cannot be said with respect to inequality. Wa West in the Upper West region has the highest poverty incidence and depth. The least incidence rate is recorded in La Dade Kotopon Municipal in the Greater Accra region. With regard to welfare distribution, Sunyani Municipal in the Brong Ahafo region has the highest inequality. The least inequality is recorded in Upper Manya in the Eastern region. East Gonja in the Northern region has more poor persons than any other district in Ghana. The least number of poor persons is in Suaman District in the Western region.

Poverty maps have become more useful in the context of social safety-net programs. They are best suited to guide spatial targeting, for instance, identifying areas associated with high poverty rates. They are useful to rank geographical areas for phased roll-out programs. However, they are not a substitute for the identification of beneficiaries, which requires household or individual-level targeting. The poverty estimates presented in this report are based on consumption expenditure only, and may not adequately capture other attributes of poverty or vulnerability. These estimates do not explain the causes of poverty. Therefore, specialized surveys may be required to determine them.

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APPENDICES

APPENDIX 1: Table of results by region

Table A1.1: Poverty and Inequality Estimates of Western Region by District
(Poverty line= GH₵1,314)

Region/District	Household Population	Poverty head count (P_0)	standard error	Poverty depth (P_1)	standard error	poverty severity (P_2)	standard error	Gini coefficient	Estimated number of poor persons
Western Region	**2,307,385**	**19.2**	**0.0040**	**5.5**	**0.0018**	**2.3**	**0.0010**	**41.2**	**443,479**
Jomoro	145,480	30.7	0.0137	9.4	0.0055	4.1	0.0029	38.2	44,662
Ellembelle	85,338	19.9	0.0118	5.4	0.0039	2.2	0.0018	36.7	16,957
Nzema East	59,250	32.2	0.0172	9.5	0.0089	4.0	0.0055	44.5	19,067
Ahanta West	103,710	19.3	0.0094	5.2	0.0034	2.2	0.0017	33.7	19,975
Sekondi Takoradi Metropolis	532,516	12.9	0.0052	3.9	0.0023	1.7	0.0013	43.1	68,482
Kwesimintsim	*222,282*	*9.4*	*0.0060*	*2.7*	*0.0022*	*1.2*	*0.0012*	*43.5*	*20,806*
Takoradi	*88,075*	*8.7*	*0.0053*	*3.2*	*0.0021*	*1.7*	*0.0014*	*42.5*	*7,680*
Sekondi	*66,999*	*22.9*	*0.0130*	*7.7*	*0.0057*	*3.7*	*0.0032*	*41.1*	*15,329*
Essikadu-Ketan	*155,160*	*15.9*	*0.0090*	*4.3*	*0.0035*	*1.7*	*0.0018*	*34.9*	*24,593*
Shama	80,632	21.7	0.0119	5.6	0.0044	2.2	0.0022	32.1	17,521
Wassa East	79,436	25.7	0.0172	7.1	0.0059	2.9	0.0028	34.0	20,383
Tarkwa Nsuaem Municipal	86,566	14.5	0.0080	4.1	0.0032	1.7	0.0017	36.5	12,535
Prestea/Huni Valley	154,528	17.4	0.0087	4.7	0.0031	1.9	0.0015	34.6	26,950
Wassa Amenfi East	81,441	26.6	0.0111	6.6	0.0040	2.4	0.0020	30.9	21,696
Wassa Amenfi West	89,823	6.9	0.0053	1.9	0.0018	0.8	0.0010	37.0	6,207
Aowin	115,699	8.9	0.0066	2.4	0.0020	1.1	0.0010	39.9	10,263
Sefwi Akontombra	81,883	21.4	0.0128	5.8	0.0044	2.4	0.0022	38.0	17,531
Sefwi Wiawso	135,568	18.7	0.0097	5.0	0.0034	2.0	0.0016	38.5	25,324
Sefwi Bibiani-Ahwiaso Bekwai	120,505	10.8	0.0080	2.7	0.0024	1.1	0.0011	34.8	13,027
Juabeso	57,679	13.9	0.0099	3.6	0.0032	1.5	0.0015	37.5	8,012
Bia west	88,204	14.3	0.0094	3.8	0.0033	1.6	0.0017	39.8	12,569
Mpohor	41,976	40.4	0.0214	12.1	0.0085	5.0	0.0044	31.3	16,971
Wassa Amenfi Central	67,608	51.9	0.0187	17.1	0.0090	7.7	0.0050	35.6	35,095
Suaman	19,999	6.0	0.0104	1.6	0.0030	0.7	0.0014	43.0	1,206
Bodi	52,315	42.5	0.0198	13.7	0.0084	6.2	0.0044	38.6	22,213
Bia East	27,229	24.7	0.0166	7.0	0.0064	2.9	0.0032	40.1	6,728

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

Table A1.2: Poverty and Inequality Estimates of Central Region by District
(Poverty line= GH₵1,314)

Region/District	Household Population	Poverty head count (P₀)	Standard error	Poverty depth (P₁)	Standard error	Poverty severity (P₂)	Standard error	Gini coefficient	Estimated number of poor persons
Central	**2,113,763**	**19.6**	**0.0072**	**5.7**	**0.003**	**2.4**	**0.0016**	**42.0**	**415,143**
Komenda-Edina-Eguafo-Abirem Municipal	139,053	18.6	0.0183	5.0	0.0069	2.1	0.0034	37.2	25,836
Cape Coast Metropolis	140,405	2.6	0.0063	0.7	0.0019	0.3	0.0009	37.3	3,580
Cape Coast South	*81,560*	*2.7*	*0.0076*	*0.7*	*0.0021*	*0.3*	*0.0009*	*37.9*	*2,227*
Cape Coast North	*58,845*	*2.3*	*0.0059*	*0.7*	*0.0020*	*0.3*	*0.0011*	*36.3*	*1,348*
Abura-Asebu-Kwamankese	114,220	27.2	0.0169	7.8	0.0062	3.3	0.0032	36.8	31,022
Mfantsiman	135,823	29.8	0.0199	8.6	0.0083	3.7	0.0045	38.9	40,489
Ajumako-Enyan-Essiam	136,633	11.7	0.0137	2.9	0.0041	1.2	0.0019	34.8	15,986
Gomoa West	132,833	22.6	0.0157	6.6	0.0006	2.9	0.0032	39.2	29,967
Effutu Municipal	60,891	12.3	0.0154	3.4	0.0060	1.4	0.0032	38.5	7,465
Gomoa East	202,446	14.5	0.0135	3.8	0.0045	1.5	0.0021	38.0	29,415
Awutu Senya	84,505	33.6	0.0306	10.5	0.0128	4.7	0.0067	41.5	28,419
Agona East	84,738	25.4	0.0261	7.0	0.0089	2.9	0.0041	34.7	21,549
Agona West Municipal	111,447	4.4	0.0069	1.1	0.0019	0.4	0.0008	35.2	4,904
Asikuma-Odoben Brakwa	111,094	24.0	0.0151	6.5	0.0054	2.7	0.0026	36.0	26,685
Assin South	102,062	23.6	0.0203	6.7	0.0075	2.9	0.0037	39.4	24,066
Assin North Municipal	157,749	24.4	0.0152	7.3	0.0058	3.2	0.0030	41.8	38,443
TwifoAti Morkwa	59,284	7.9	0.0081	2.1	0.0028	0.9	0.0014	38.7	4,666
Upper Denkyira East Municipal	71,519	30.6	0.0318	10.0	0.0141	4.5	0.0076	41.9	21,878
Upper Denkyira West	58,750	3.3	0.0092	0.8	0.0026	0.3	0.0012	38.4	1,945
Twifo Heman Lower Denkyira	54,047	18.7	0.0208	5.2	0.0069	2.2	0.0033	37.7	10,080
Ekumfi	51,033	48.4	0.0271	16.8	0.0141	7.9	0.0085	39.2	24,695
Awutu Senya East Municipal	105,231	20.3	0.0202	6.1	0.0082	2.7	0.0043	42.6	21,320

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

Table A1.3: Poverty and Inequality Estimates of Greater Accra Region by District
(Poverty line= GH₵1,314)

Region/District/ Sub-district	Household Population	Poverty head count (P0)	Standard error	Poverty depth (P1)	Standard error	Poverty severity (P2)	standard error	Gini coefficient	Estimated number of poor persons
Greater Accra Region	**3,888,237**	**6.6**	**0.0015**	**1.8**	**0.0005**	**0.8**	**0.0002**	**37.6**	**257,401**
Ga South Municipal	404,129	15.2	0.0058	4.3	0.0019	1.8	0.0009	36.3	61,347
Ga West Municipal	215,099	8.9	0.0046	2.2	0.0013	0.8	0.0005	34.7	19,230
Ga East Municipal	144,863	4.8	0.0032	1.1	0.0008	0.4	0.0003	35.5	6,881
Accra Metropolis	1,599,650	2.6	0.0013	0.6	0.0004	0.2	0.0002	35.4	40,791
Ablekuma South	*206,626*	*1.5*	*0.0013*	*0.3*	*0.0003*	*0.1*	*0.0001*	*33.0*	*3,058*
Ablekuma Central	*264,154*	*2.8*	*0.0023*	*0.6*	*0.0006*	*0.2*	*0.0003*	*33.5*	*7,423*
Ashiedu Keteke	*111,038*	*7.2*	*0.0106*	*2.0*	*0.0038*	*0.8*	*0.0018*	*37.8*	*8,028*
Osu Klotey	*115,070*	*1.9*	*0.0023*	*0.4*	*0.0005*	*0.1*	*0.0002*	*35.3*	*2,175*
Ayawaso East	*178,915*	*6.2*	*0.0055*	*1.5*	*0.0015*	*0.5*	*0.0006*	*34.7*	*11,146*
Ayawaso Central	*138,093*	*2.3*	*0.0019*	*0.5*	*0.0005*	*0.2*	*0.0002*	*33.2*	*3,162*
Okai Koi South	*116,720*	*2.2*	*0.0020*	*0.4*	*0.0004*	*0.1*	*0.0002*	*33.5*	*2,521*
Ablekuma North	*193,498*	*0.7*	*0.0007*	*0.1*	*0.0002*	*0.0*	*0.0001*	*32.8*	*1,335*
Okai Koi North	*223,539*	*0.7*	*0.0007*	*0.1*	*0.0002*	*0.0*	*0.0001*	*33.2*	*1,542*
Ayawaso West Wogon	*51,997*	*0.9*	*0.0018*	*0.2*	*0.0005*	*0.1*	*0.0002*	*36.6*	*452*
Adenta Municipal	76,601	10.1	0.0070	2.6	0.0021	1.0	0.0009	37.4	7,706
Ledzokuku/Krowor Municipal	221,757	4.2	0.0028	0.9	0.0007	0.3	0.0003	33.5	9,336
Ashaiman Municipal	185,804	4.4	0.0036	1.0	0.0009	0.3	0.0004	33.0	8,250
Tema Metropolis	285,139	8.7	0.0054	2.1	0.0015	0.8	0.0006	36.9	24,665
Tema West	*137,684*	*9.7*	*0.0077*	*2.3*	*0.0021*	*0.9*	*0.0009*	*36.8*	*13,383*
Tema East	*147,455*	*7.7*	*0.0061*	*1.8*	*0.0017*	*0.7*	*0.0007*	*36.9*	*11,280*
Shai Osudoku	50,021	55.1	0.0195	23.2	0.0103	12.7	0.0061	40.1	27,547
Ada East	70,470	5.9	0.0086	1.5	0.0027	0.5	0.0012	36.0	4,172
Ga Central Municipal	114,745	10.1	0.0074	2.3	0.0021	0.8	0.0008	33.4	11,624
La Dade Kotopon Municipal	179,247	1.3	0.0014	0.3	0.0003	0.1	0.0001	33.1	2,348
La Nkwantanang Madina Municipal	108,047	2.8	0.0025	0.6	0.0006	0.2	0.0002	35.7	3,025
Kpone Katamanso	106,398	3.5	0.0029	0.8	0.0008	0.3	0.0003	34.0	3,692
Ningo Prampram	68,521	31.2	0.0175	10.1	0.0073	4.6	0.0039	36.4	21,379
Ada West	57,746	11.1	0.0130	2.6	0.0034	0.9	0.0014	34.5	6,387

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

Table A1.4: Poverty and Inequality Estimates of Volta Region by District
(Poverty line= GH₵1,314)

Region/District	Household Population	Poverty head count (P0)	Standard error	Poverty depth (P1)	Standard error	Poverty severity (P2)	Standard error	Gini coefficient	Estimated number of poor persons
Volta Region	**2,086,557**	**33.3**	**0.0028**	**11.8**	0.0018	**5.7**	0.0012	**43.7**	**694,615**
South Tongu	86,546	25.4	0.0077	7.5	0.0045	3.2	0.0027	41.7	21,957
Keta Municipal	144,747	14.6	0.0075	3.8	0.0032	1.5	0.0017	39.1	21,119
Ketu South	157,223	15.3	0.0067	4.1	0.0026	1.6	0.0013	37.6	24,118
Ketu North	98,571	23.5	0.0085	6.4	0.0044	2.6	0.0025	36.6	23,154
Akatsi South	97,405	10.5	0.0084	2.6	0.0032	1.0	0.0015	37.9	10,257
Central Tongu	58,764	33.4	0.0066	10.2	0.0036	4.4	0.0021	37.5	19,651
Agotime Ziope	27,731	62.1	0.0101	24.2	0.0073	12.1	0.0054	37.4	22,324
Ho Municipal	172,064	21.9	0.0067	6.6	0.0031	2.9	0.0017	42.2	37,613
South Dayi	45,849	27.7	0.0080	8.7	0.0041	3.8	0.0024	42.8	12,686
Kpando Municipal	52,754	32.4	0.0088	11.1	0.0052	5.2	0.0034	44.4	17,113
Hohoe Municipal	164,326	31.6	0.0062	10.6	0.0033	4.9	0.0020	42.8	51,976
Biakoye	65,435	31.6	0.0068	10.8	0.0038	5.1	0.0024	45.0	20,651
Jasikan	58,733	39.1	0.0062	14.6	0.0035	7.3	0.0025	44.0	22,959
Kadjebi	58,273	66.8	0.0085	30.1	0.0043	16.8	0.0028	43.6	38,909
Krachi East	115,251	50.6	0.0049	19.4	0.0035	9.7	0.0027	42.5	58,329
Krachi West	48,839	41.1	0.0074	15.4	0.0037	7.7	0.0024	39.6	20,083
Nkwanta South	116,684	31.7	0.0069	10.6	0.0041	4.9	0.0027	45.2	36,989
Nkwanta North	63,822	49.9	0.0068	19.2	0.0035	9.7	0.0025	44.1	31,854
North Tongu	88,866	51.7	0.0065	20.4	0.0042	10.5	0.0031	46.0	45,899
Akatsi North	29,587	26.5	0.0105	7.1	0.0050	2.8	0.0027	36.6	7,835
Adaklu	35,960	89.7	0.0097	46.9	0.0055	28.2	0.0038	32.2	24,883
Ho West	93,523	39.6	0.0061	13.0	0.0038	5.9	0.0024	41.5	37,054
Afadzato South	94,029	36.9	0.0071	12.6	0.0039	5.8	0.0024	43.4	34,734
North Dayi	39,566	40.6	0.0080	13.8	0.0058	6.4	0.0039	41.7	16,052
Krachi Nchumuru	72,009	52.6	0.0060	20.9	0.0030	10.9	0.0021	41.5	37,855

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

Table A1.5: Poverty and Inequality Estimates of Eastern Region by District
(Poverty line= GH₵1,314)

Region/District	Household Population	Poverty head count (P₀)	Standard error	Poverty depth (P₁)	Standard error	Poverty severity (P₂)	Standard error	Gini coefficient	Estimated number of poor persons
Eastern Region	**2,574,543**	**22.0**	**0.0097**	**6.1**	**0.0041**	**2.5**	**0.0022**	**37.9**	**566,399**
Birim South	117,985	27.6	0.0253	8.0	0.0111	3.5	0.0062	39.0	32,505
Birim Municipal	141,800	22.8	0.0247	6.7	0.0103	2.9	0.0056	37.3	32,345
West Akim Municipal	107,093	11.0	0.0163	2.5	0.0045	0.9	0.0018	34.3	11,759
Suhum Municipal	88,381	6.5	0.0098	1.4	0.0023	0.5	0.0009	33.4	5,762
Nsawam Adoagyiri Municipal	79,402	6.3	0.0096	1.4	0.0024	0.5	0.001	34.7	4,963
Akwapem North	134,359	19.3	0.0203	4.6	0.0058	1.7	0.0024	34.5	25,891
New Juaben Municipal	173,653	4.6	0.0071	1.1	0.002	0.5	0.0009	35.9	7,936
Yilo Krobo	86,567	15.9	0.0269	3.3	0.0069	1.1	0.0026	29.1	13,799
Lower Manya	87,649	14.8	0.0188	2.9	0.0053	0.9	0.0021	28.3	12,963
Asuogyaman	96,027	19.9	0.0265	5.0	0.008	1.9	0.0035	33.5	19,100
Upper Manya	71,227	43.6	0.0381	11.2	0.0153	4.1	0.0073	27.2	31,041
Fanteakwa	106,155	18.1	0.0214	4.0	0.006	1.4	0.0024	33.9	19,257
East Akim Municipal	164,561	10.6	0.0113	2.3	0.0031	0.8	0.0014	32.9	17,493
Kwaebibirem	111,525	16.6	0.0159	3.8	0.0043	1.4	0.0018	33.1	18,457
Akyem Mansa	96,378	38.8	0.0266	12.7	0.0143	5.9	0.0089	36.0	37,433
Birim North	77,572	14.3	0.0145	3.7	0.0046	1.5	0.0022	35.5	11,093
Atiwa	109,352	27.1	0.0263	6.4	0.008	2.3	0.0033	30.7	29,634
Kwahu West Municipal	90,131	18.2	0.0215	4.6	0.0068	1.8	0.003	35.2	16,386
Kwahu South	68,182	48.0	0.0373	16.3	0.0184	7.6	0.0103	39.1	32,714
Kwahu East	76,379	36.6	0.0388	12.0	0.0164	5.6	0.0087	41.5	27,970
Kwahu Afram Plains North	100,568	31.7	0.043	9.0	0.0156	3.7	0.0073	40.5	31,920
Upper West Akyem	85,875	25.6	0.0225	6.5	0.0082	2.5	0.0039	32.6	21,975
Akwapim South	36,932	16.5	0.0181	3.8	0.0051	1.4	0.0021	33.6	6,101
Ayensuano	75,843	30.9	0.0219	7.7	0.0075	2.9	0.0034	29.3	23,466
Denkyembuor	77,713	4.6	0.0089	1.1	0.0028	0.4	0.0013	34.7	3,559
Kwahu Afram Plains South	113,234	59.7	0.043	21.2	0.0261	10.0	0.0159	36.6	67,555

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

**Table A1.6: Poverty and Inequality Estimates of Ashanti Region by District
(Poverty line= GH₵1,314)**

Region/District	Household Population	Poverty head count (P₀)	Standard error	Poverty depth (P₁)	Standard error	Poverty severity (P₂)	Standard error	Gini coefficient	Estimated number of poor persons
Ashanti	**4,671,948**	**13.6**	**0.0035**	**3.8**	**0.0015**	**1.6**	**0.0008**	**37.3**	**636,787**
Atwima Mponua	118,040	12.9	0.0127	3.0	0.0040	1.1	0.0018	32.5	15,204
Amansie West	132,443	9.6	0.0136	2.1	0.0040	0.7	0.0016	32.0	12,701
Amansie Central	89,350	19.8	0.0164	4.9	0.0061	1.8	0.0029	33.1	17,727
Adansi South	113,145	21.9	0.0166	5.7	0.0060	2.2	0.0029	33.2	24,733
Obuasi Municipal	165,052	5.3	0.0073	1.3	0.0022	0.5	0.0010	38.0	8,682
Adansi North	105,324	18.4	0.0140	4.8	0.0050	1.9	0.0024	34.9	19,411
Bekwai Municipal	115,445	29.8	0.0125	8.9	0.0055	3.8	0.0030	36.3	34,380
Bosome Freho	59,405	37.6	0.0170	11.6	0.0079	5.0	0.0044	33.6	22,336
Asante Akim South	115,289	22.0	0.0135	6.1	0.0052	2.5	0.0027	36.0	25,398
Asante Akim Central Municipal	70,583	11.5	0.0117	3.0	0.0036	1.2	0.0016	36.1	8,089
Ejisu Juaben Municipal	141,177	20.9	0.0116	5.5	0.0042	2.2	0.0020	33.3	29,520
Bosumtwi	92,253	5.8	0.0078	1.2	0.0023	0.4	0.0010	32.3	5,323
Atwima Kwanwoma	89,249	4.9	0.0065	1.1	0.0019	0.4	0.0009	32.9	4,373
Kumasi Metropolis	1,674,853	5.3	0.0039	1.2	0.0013	0.4	0.0006	33.9	88,935
Kwadaso	*241,467*	*5.2*	*0.0059*	*1.2*	*0.0016*	*0.4*	*0.0007*	*34.7*	*12,629*
Nhyiaeso	*132,345*	*4.3*	*0.0075*	*0.9*	*0.0021*	*0.3*	*0.0009*	*33.3*	*5,731*
Subin	*170,580*	*5.2*	*0.0057*	*1.1*	*0.0018*	*0.4*	*0.0008*	*33.5*	*8,921*
Asokwa	*137,071*	*1.9*	*0.0031*	*0.4*	*0.0008*	*0.1*	*0.0003*	*31.8*	*2,618*
Oforikrom	*284,533*	*11.2*	*0.0091*	*2.7*	*0.0030*	*1.0*	*0.0014*	*33.0*	*31,811*
Manhyia	*156,178*	*4.3*	*0.0047*	*0.9*	*0.0014*	*0.3*	*0.0006*	*35.2*	*6,653*
Old Tafo	*143,698*	*5.2*	*0.0067*	*1.1*	*0.0018*	*0.4*	*0.0008*	*31.9*	*7,472*
Suame	*157,623*	*4.6*	*0.0070*	*1.0*	*0.0018*	*0.3*	*0.0007*	*32.0*	*7,298*
Bantama	*251,358*	*2.4*	*0.0038*	*0.5*	*0.0010*	*0.2*	*0.0004*	*31.5*	*5,982*
Atwima Nwabiagya	146,076	13.3	0.0098	3.4	0.0034	1.3	0.0016	33.5	19,355
Ahafo Ano South	120,320	14.1	0.0126	3.3	0.0040	1.2	0.0017	32.5	16,977
Ahafo Ano North	92,924	46.4	0.0208	16.4	0.0109	7.8	0.0066	37.1	43,070
Offinso Municipal	76,177	40.0	0.0167	12.2	0.0076	5.2	0.0043	32.0	30,494
Afigya Kwabre	133,696	4.0	0.0053	0.9	0.0014	0.3	0.0006	34.3	5,334
Kwabre East	113,350	6.2	0.0067	1.4	0.0020	0.5	0.0009	32.7	7,016
Afigya Sekyere	91,819	25.2	0.0142	7.2	0.0057	3.0	0.0029	33.9	23,111
Mampong Municipal	86,190	29.5	0.0136	8.9	0.0059	3.8	0.0031	35.7	25,417
Sekyere East	61,136	17.4	0.0122	4.8	0.0045	1.9	0.0023	35.0	10,607
Sekyere Afram Plains	64,469	28.9	0.0183	7.9	0.0068	3.1	0.0032	32.4	18,638
Sekyere Central	70,574	22.8	0.0185	6.0	0.0076	2.3	0.0038	35.3	16,119
Ejura Sekye Dumasi	83,939	47.0	0.0189	17.0	0.0097	8.2	0.0059	37.0	39,451
Offinso North	55,814	29.4	0.0250	8.2	0.0097	3.3	0.0048	32.6	16,415
Asokore Mampong Municipal	297,321	3.3	0.0050	0.7	0.0015	0.2	0.0006	32.6	9,663
Asante Akim North	68,423	26.3	0.0129	7.8	0.0056	3.3	0.0030	36.4	17,961
Sekyere Afram Plains North	28,112	59.6	0.0298	24.3	0.0155	12.6	0.0103	49.8	16,763

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

Table A1.7: Poverty and Inequality Estimates of Brong Ahafo Region by District (Poverty line= GH₵1,314)

Region/District	Household Population	Poverty head count (P₀)	Standard error	Poverty depth (P₁)	Standard error	Poverty severity (P₂)	Standard error	Gini coefficient	Estimated number of poor persons
Brong Ahafo	**2,265,434**	**28.6**	**0.0036**	**9.5**	**0.0016**	**4.4**	**0.0009**	**49.4**	**648,367**
Asunafo South	94,603	13.9	0.0092	3.9	0.0036	1.6	0.0018	48.1	13,140
Asunafo North Municipal	123,134	12.0	0.0079	3.0	0.0026	1.1	0.0011	40.4	14,739
Asutifi North	51,524	35.4	0.0105	12.2	0.0053	5.7	0.0033	42.1	18,250
Dormaa Municipal	109,965	11.4	0.0090	2.8	0.0027	1.1	0.0012	45.1	12,492
Dormaa East	50,137	35.3	0.0121	11.2	0.0050	4.9	0.0027	47.5	17,693
Tano South	77,185	38.0	0.0096	12.4	0.0041	5.6	0.0023	40.3	29,315
Tano North	78,784	20.8	0.0080	5.9	0.0032	2.4	0.0016	40.7	16,411
Sunyani Municipal	110,722	19.4	0.0076	6.4	0.0033	3.0	0.0018	64.0	21,524
Sunyani West	84,630	29.5	0.0143	8.7	0.0057	3.7	0.0030	44.5	24,957
Berekum Municipal	125,800	28.0	0.0091	7.8	0.0036	3.1	0.0018	39.8	35,199
Jaman South	90,856	20.5	0.0102	5.5	0.0035	2.2	0.0017	46.5	18,607
Jaman North	82,074	18.8	0.0148	5.5	0.0049	2.3	0.0023	51.1	15,413
Tain	87,245	38.2	0.0142	13.0	0.0067	6.0	0.0038	43.2	33,362
Wenchi Municipal	88,209	41.2	0.0141	14.9	0.0068	7.3	0.0041	51.7	36,307
Techiman Municipal	145,309	14.2	0.0074	3.8	0.0024	1.5	0.0011	40.3	20,576
Nkoranza South	100,268	36.1	0.0102	11.3	0.0045	4.9	0.0024	38.3	36,217
Nkoranza North	65,222	30.9	0.0119	10.0	0.0056	4.5	0.0032	42.9	20,121
Atebubu Amantin	104,244	33.3	0.0091	11.4	0.0041	5.4	0.0024	48.2	34,703
Sene West	57,049	45.8	0.0181	14.5	0.0104	6.5	0.0063	34.0	26,106
Pru	127,069	43.1	0.0100	14.9	0.0058	7.0	0.0036	41.9	54,818
Kintampo South	80,344	78.3	0.0127	35.8	0.0097	19.8	0.0069	35.9	62,893
Kintampo North Municipal	94,479	31.8	0.0115	10.6	0.0045	5.0	0.0023	44.7	30,082
Asutifi South	50,430	21.3	0.0091	6.1	0.0036	2.5	0.0020	53.4	10,742
Dormaa West	46,909	9.9	0.0081	2.5	0.0022	1.1	0.0009	48.1	4,639
Techiman North	58,701	15.7	0.0098	4.2	0.0030	1.7	0.0014	39.0	9,216
Banda	20,171	78.0	0.0134	37.9	0.0104	21.8	0.0077	42.0	15,735
Sene East	60,371	29.3	0.0128	10.5	0.0066	5.2	0.0039	44.4	17,683

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

Table A1.8: Poverty and Inequality Estimates of Northern Region by District
(Poverty line= GH₵1,314)

Region/District	Household Population	Poverty head count (P0)	Standard error	Poverty depth (P1)	Standard error	Poverty severity (P2)	Standard error	Gini coefficient	Estimated number of poor persons
Northern Region	**2,445,061**	**44.2**	**0.0062**	**15.5**	**0.0035**	**7.4**	**0.0023**	**38.8**	**1,079,494**
Bole	60,314	79.4	0.0238	38.1	0.0201	21.8	0.0151	45.5	47,907
Sawla-Tuna-Kalba	98,880	62.5	0.0165	22.0	0.0108	10.3	0.0074	32.6	61,780
West Gonja	40,269	52.7	0.0198	18.3	0.0095	8.4	0.0059	37.4	21,234
Gonja Central	86,432	61.2	0.0156	20.9	0.0079	9.6	0.0050	30.0	52,879
East Gonja	133,139	84.2	0.0126	41.0	0.0117	23.5	0.0096	34.9	112,130
Kpandai	107,598	76.9	0.0183	33.1	0.0118	17.6	0.0085	32.4	82,712
Nanumba South	90,307	33.9	0.0145	9.6	0.0072	3.9	0.0041	34.8	30,569
Nanumba North	139,405	31.6	0.0143	8.9	0.0064	3.6	0.0034	34.9	44,024
Zabzugu	62,922	36.0	0.0164	11.6	0.0085	5.2	0.0053	39.1	22,646
Yendi Municipal	116,602	32.2	0.0127	10.0	0.0061	4.4	0.0037	38.7	37,581
Tamale Metropolis	219,971	24.6	0.0135	6.8	0.0055	2.7	0.0028	37.3	54,091
Tamale South	*79,818*	*32.2*	*0.0158*	*9.0*	*0.0068*	*3.6*	*0.0035*	*32.4*	*25,714*
Tamale Central	*140,153*	*20.1*	*0.0156*	*5.4*	*0.0060*	*2.2*	*0.0029*	*38.1*	*28,233*
Tolon	71,862	42.7	0.0161	14.0	0.0093	6.3	0.0059	37.3	30,692
Savelugu Nanton	138,221	32.2	0.0157	9.4	0.0062	3.9	0.0033	36.1	44,549
Karaga	76,927	32.3	0.0161	9.8	0.0077	4.2	0.0044	36.8	24,863
Gushiegu	110,039	35.7	0.0117	11.1	0.0058	4.9	0.0036	36.5	39,328
Saboba	64,927	39.7	0.0142	11.5	0.0070	4.7	0.0041	34.3	25,757
Chereponi	53,170	34.7	0.0288	9.3	0.0111	3.5	0.0054	30.0	18,455
Bunkpurugu Yonyo	121,315	54.8	0.0193	19.5	0.0108	9.2	0.0071	34.4	66,444
Mamprusi East	119,596	44.5	0.0177	15.4	0.0092	7.2	0.0057	36.8	53,208
Mamprusi West	119,595	30.4	0.0127	8.6	0.0054	3.5	0.0029	35.6	36,357
North Gonja	42,972	53.8	0.0218	17.9	0.0107	8.0	0.0064	30.6	23,119
Kumbumgu	39,033	32.3	0.0191	9.7	0.0100	4.2	0.0059	37.7	12,596
Sagnerigu Municipal	146,291	29.3	0.0166	8.2	0.0068	3.4	0.0035	37.5	42,790
Mion	81,026	44.3	0.0129	14.2	0.0067	6.3	0.0041	35.3	35,870
Tatale	59,088	43.1	0.0211	13.9	0.0112	6.1	0.0067	36.3	25,485
Mamprugu Moagduri	45,160	71.2	0.0245	29.3	0.0169	15.2	0.0118	32.7	32,163

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

Table A1.9: Poverty and Inequality Estimates of Upper East Region by District (Poverty line= GH₵1,314)

Region/District	Household Population	Poverty head count (P0)	Standard error	Poverty depth (P1)	Standard error	Poverty severity (P2)	Standard error	Gini coefficient	Estimated number of poor persons
Upper East	**1,034,688**	**45.9**	**0.0137**	**22.2**	**0.0118**	**13.6**	**0.0097**	**57.6**	**474,818**
Builsa North	56,163	54.3	0.0450	26.3	0.0296	16.1	0.0212	52.6	30,485
Kasena Nankana West	69,965	13.1	0.0236	4.7	0.0100	2.5	0.0059	48.6	9,172
Kasena Nankana East	107,435	24.2	0.0258	9.6	0.0138	5.3	0.0095	52.3	25,967
Bolgatanga Municipal	129,696	27.9	0.0214	11.7	0.0123	6.6	0.0084	53.4	36,224
Talensi	80,596	56.5	0.0353	27.0	0.0253	16.2	0.0188	51.3	45,561
Bongo	83,996	67.4	0.0362	36.4	0.0316	23.7	0.0257	54.4	56,622
Bawku West	93,028	68.1	0.0242	37.2	0.0249	24.2	0.0220	57.9	63,315
Garu Tempane	128,623	54.5	0.0303	26.7	0.0226	16.4	0.0172	54.8	70,087
Bawku Municipal	97,221	42.0	0.0232	17.8	0.0145	10.0	0.0101	52.2	40,823
Builsa South	36,431	84.4	0.0557	51.8	0.0622	36.2	0.0546	48.5	30,730
Nabdam	33,576	63.0	0.0543	31.3	0.0405	19.2	0.0306	50.5	21,156
Binduri	60,878	43.3	0.0286	18.7	0.0194	10.6	0.0142	54.3	26,360
Pusiga	57,080	43.3	0.0463	19.0	0.0280	10.9	0.0190	54.0	24,699

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

Table A1.10: Poverty and Inequality Estimates of Upper East Region by District (Poverty line= GH₵1,314)

Region/District	Household Population	Poverty head count (P0)	Standard error	Poverty depth (P1)	Standard error	Poverty severity (P2)	Standard error	Gini coefficient	Estimated number of poor persons
Upper West	**688,328**	**69.4**	**0.0102**	**35.8**	**0.0087**	**22.5**	**0.0074**	**49.7**	**477,631**
Wa West	80,382	92.4	0.0140	59.0	0.0261	41.8	0.0266	42.2	74,297
Wa Municipal	102,264	35.5	0.0360	13.8	0.0179	7.3	0.0107	45.1	36,253
Wa East	71,120	83.8	0.0264	46.1	0.0311	29.9	0.0273	41.5	59,577
Sissala East	55,764	47.3	0.0414	17.7	0.0219	8.9	0.0131	43.3	26,399
Nadowli-Kaleo	60,808	68.5	0.0288	32.9	0.0213	19.6	0.0157	45.0	41,629
Jirapa	87,308	71.4	0.0189	35.0	0.0181	21.0	0.0144	46.3	62,364
Sissala West	49,021	81.2	0.0294	44.8	0.0284	29.3	0.0237	43.3	39,790
Lambussie Karni	50,896	72.6	0.0319	36.2	0.0284	21.8	0.0222	47.5	36,971
Lawra	53,753	73.5	0.0276	36.3	0.0249	21.9	0.0196	43.7	39,519
Daffiama Bussie	32,185	73.6	0.0239	37.5	0.0209	23.1	0.0171	45.0	23,698
Nandom	44,827	73.7	0.0330	37.9	0.0320	23.5	0.0261	46.9	33,046

Source: Ghana Statistical Service, 2010 Population and Housing Census and GLSS6

Table A1.11: Rank of Districts by Poverty Indices

District code	District name	Poverty head count		Poverty depth		Inequality		Estimated number of poor persons	
		P_0	Rank	(P_1)	Rank	Gini	Rank	Number	Rank
101	Jomoro	30.7	95	9.4	94	38.2	96	44,662	25
102	Ellembelle	19.9	141	5.4	142	36.7	122	16,957	153
103	Nzema East	32.2	85	9.5	93	44.5	36	19,067	137
104	Ahanta West	19.3	145	5.2	143	33.7	176	19,975	130
105	Sekondi Takoradi Metropolis	12.9	174	3.9	160	43.1	48	68,482	6
106	Shama	21.7	133	5.6	138	32.1	204	17,521	148
107	Wassa East	25.7	115	7.1	117	34.0	171	20,383	127
108	Tarkwa Nsuaem Municipal	14.5	164	4.1	158	36.5	126	12,535	173
109	Prestea/Huni Valley	17.4	153	4.7	152	34.6	163	26,950	82
110	Wassa Amenfi East	26.6	112	6.6	125	30.9	208	21,696	117
111	Wassa Amenfi West	6.9	193	1.9	193	37.0	117	6,207	199
112	Aowin	8.9	190	2.4	186	39.9	76	10,263	180
113	Sefwi Akontombra	21.4	134	5.8	136	38.0	98	17,531	147
114	Sefwi Wiawso	18.7	147	5.0	146	38.5	93	25,324	94
115	Sefwi Bibiani-Ahwiaso Bekwai	10.8	182	2.7	180	34.8	156	13,027	167
116	Juabeso	13.9	169	3.6	169	37.5	106	8,012	190
117	Bia west	14.3	166	3.8	164	39.8	77	12,569	172
118	Mpohor	40.4	58	12.1	66	31.3	207	16,971	152
119	Wassa Amenfi Central	51.9	35	17.1	42	35.6	143	35,095	54
120	Suaman	6.0	197	1.6	194	43.0	49	1,206	216
121	Bodi	42.5	53	13.7	58	38.6	91	22,213	113
122	Bia East	24.7	120	7.0	118	40.1	75	6,728	197
201	Komenda-Edina-Eguafo-Abirem Municipal	18.6	149	5.0	145	37.2	114	25,836	89
202	Cape Coast Metropolis	2.6	214	0.7	212	37.3	112	3,580	211
203	Abura-Asebu-Kwamankese	27.2	110	7.8	110	36.8	121	31,022	67
204	Mfantsiman	29.8	98	8.6	103	38.9	88	40,489	33
205	Ajumako-Enyan-Essiam	11.7	177	2.9	177	34.8	157	15,986	160
206	Gomoa West	22.6	129	6.6	124	39.2	81	29,967	74
207	Effutu Municipal	12.3	175	3.4	171	38.5	92	7,465	194
208	Gomoa East	14.5	163	3.8	166	38.0	99	29,415	77
209	Ewutu Senya	33.6	77	10.5	82	41.5	64	28,419	79
210	Agona East	25.4	117	7.0	119	34.7	161	21,549	118
211	Agona West Municipal	4.4	207	1.1	205	35.2	151	4,904	205
212	Asikuma-Odoben Brakwa	24.0	124	6.5	126	36.0	136	26,685	83
213	Assin South	23.6	125	6.7	121	39.4	80	24,066	103
214	Assin North Municipal	24.4	122	7.3	114	41.8	61	38,443	39
215	Twifo Ati Morkwa	7.9	192	2.1	190	38.7	89	4,666	206
216	Upper Denkyira East Municipal	30.6	96	10.0	87	41.9	60	21,878	116
217	Upper Denkyira West	3.3	211	0.8	210	38.4	94	1,945	215
218	Twifo Heman Lower Denkyira	18.7	148	5.2	144	37.7	101	10,080	182

Table A1.11: Rank of Districts by Poverty Indices (Cont'd)

District code	District name	Poverty head count		Poverty depth		Inequality		Estimated number of poor persons	
		P_0	Rank	(P_1)	Rank	Gini	Rank	Number	Rank
219	Ekumfi	48.4	39	16.8	44	39.2	82	24,695	100
220	Awutu Senya East Municipal	20.3	139	6.1	132	42.6	53	21,320	121
301	Ga South Municipal	15.2	160	4.3	155	36.3	132	61,347	13
302	Ga West Municipal	8.9	189	2.2	189	34.7	159	19,230	135
303	Ga East Municipal	4.8	203	1.1	206	35.5	146	6,881	196
304	Accra Metropolis	2.6	215	0.6	215	35.4	147	40,791	32
305	Adenta Municipal	10.1	186	2.6	182	37.4	108	7,706	193
306	Ledzokuku/Krowor Municipal	4.2	208	0.9	208	33.5	181	9,336	184
307	Ashaiman Municipal	4.4	206	1.0	207	33.0	189	8,250	188
308	Tema Metropolis	8.7	191	2.1	192	36.9	118	24,665	101
309	Shai Osudoku	55.1	28	23.2	27	40.1	74	27,547	81
310	Ada East	5.9	198	1.5	195	36.0	137	4,172	209
311	Ga Central Municipal	10.1	185	2.3	187	33.4	182	11,624	176
312	La Dade Kotopon Municipal	1.3	216	0.3	216	33.1	188	2,348	214
313	La Nkwantanang Madina Municipal	2.8	213	0.6	214	35.7	142	3,025	213
314	Kpone Katamanso	3.5	210	0.8	211	34.0	172	3,692	210
315	Ningo Prampram	31.2	92	10.1	85	36.4	128	21,379	120
316	Ada West	11.1	180	2.6	181	34.5	165	6,387	198
401	South Tongu	25.4	118	7.5	113	41.7	63	21,957	115
402	Keta Municipal	14.6	162	3.8	163	39.1	85	21,119	124
403	Ketu South	15.3	159	4.1	157	37.6	103	24,118	102
404	Ketu North	23.5	126	6.4	129	36.6	124	23,154	106
405	Akatsi South	10.5	184	2.6	183	37.9	100	10,257	181
406	Central Tongu	33.4	78	10.2	84	37.5	104	19,651	131
407	Agotime Ziope	62.1	23	24.2	26	37.4	109	22,324	112
408	Ho Municipal	21.9	131	6.6	123	42.2	56	37,613	41
409	South Dayi	27.7	108	8.7	102	42.8	51	12,686	170
410	Kpando Municipal	32.4	80	11.1	77	44.4	39	17,113	150
411	Hohoe Municipal	31.6	89	10.6	81	42.8	52	51,976	21
412	Biakoye	31.6	91	10.8	78	45.0	34	20,651	125
413	Jasikan	39.1	62	14.6	51	44.0	41	22,959	109
414	Kadjebi	66.8	20	30.1	20	43.6	43	38,909	38
415	Krachi East	50.6	37	19.4	34	42.5	54	58,329	15
416	Krachi West	41.1	56	15.4	47	39.6	79	20,083	129
417	Nkwanta South	31.7	88	10.6	80	45.2	29	36,989	45
418	Nkwanta North	49.9	38	19.2	35	44.1	40	31,854	65
419	North Tongu	51.7	36	20.4	32	46.0	27	45,899	23
420	Akatsi North	26.5	113	7.1	116	36.6	125	7,835	192
421	Adaklu	89.7	2	46.9	3	32.2	203	24,883	96
422	Ho West	39.6	61	13.0	59	41.5	68	37,054	44

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Table A1.11: Rank of Districts by Poverty Indices (Cont'd)

District code	District name	Poverty head count		Poverty depth		Inequality		Estimated number of poor persons	
		P_0	Rank	(P_1)	Rank	Gini	Rank	Number	Rank
423	Afadzato South	36.9	67	12.6	62	43.4	44	34,734	55
424	North Dayi	40.6	57	13.8	57	41.7	62	16,052	159
425	Krachi Nchumuru	52.6	34	20.9	31	41.5	66	37,855	40
501	Birim South	27.6	109	8.0	107	39.0	87	32,505	61
502	Birim Municipal	22.8	128	6.7	122	37.3	111	32,345	62
503	West Akim Municipal	11.0	181	2.5	185	34.3	168	11,759	175
504	Suhum Municipal	6.5	194	1.4	197	33.4	183	5,762	201
505	Nsawam Adoagyiri Municipal	6.3	195	1.4	198	34.7	160	4,963	204
506	Akwapem North	19.3	144	4.6	154	34.5	164	25,891	88
507	New Juaben Municipal	4.6	205	1.1	202	35.9	140	7,936	191
508	Yilo Krobo	15.9	157	3.3	173	29.1	214	13,799	165
509	Lower Manya	14.8	161	2.9	178	28.3	215	12,963	168
510	Asuogyaman	19.9	140	5.0	147	33.5	179	19,100	136
511	Upper Manya	43.6	47	11.2	75	27.2	216	31,041	66
512	Fanteakwa	18.1	152	4.0	159	33.9	173	19,257	134
513	East Akim Municipal	10.6	183	2.3	188	32.9	191	17,493	149
514	Kwaebibirem	16.6	155	3.8	162	33.1	186	18,457	140
515	Akyem Mansa	38.8	63	12.7	61	36.0	138	37,433	43
516	Birim North	14.3	165	3.7	168	35.5	145	11,093	177
517	Atiwa	27.1	111	6.4	130	30.7	209	29,634	75
518	Kwahu West Municipal	18.2	151	4.6	153	35.2	150	16,386	157
519	Kwahu South	48.0	40	16.3	46	39.1	84	32,714	60
520	Kwahu East	36.6	68	12.0	67	41.5	65	27,970	80
521	Kwahu Afram Plains North	31.7	87	9.0	97	40.5	70	31,920	64
522	Upper West Akyem	25.6	116	6.5	127	32.6	196	21,975	114
523	Akwapim South	16.5	156	3.8	165	33.6	177	6,101	200
524	Ayensuano	30.9	93	7.7	112	29.3	213	23,466	105
525	Denkyembuor	4.6	204	1.1	203	34.7	162	3,559	212
526	Kwahu Afram Plains South	59.7	25	21.2	29	36.6	123	67,555	7
601	Atwima Mponua	12.9	173	3.0	174	32.5	199	15,204	163
602	Amansie West	9.6	188	2.1	191	32.0	205	12,701	169
603	Amansie Central	19.8	142	4.9	148	33.1	187	17,727	144
604	Adansi South	21.9	132	5.7	137	33.2	185	24,733	98
605	Obuasi Municipal	5.3	201	1.3	199	38.0	97	8,682	187
606	Adansi North	18.4	150	4.8	149	34.9	153	19,411	132
607	Bekwai Municipal	29.8	99	8.9	99	36.3	130	34,380	57
608	Bosome Freho	37.6	66	11.6	70	33.6	178	22,336	111
609	Asante Akim South	22.0	130	6.1	131	36.0	135	25,398	93
610	Asante Akim Central Municipal	11.5	178	3.0	175	36.1	133	8,089	189
611	Ejisu Juaben Municipal	20.9	136	5.5	139	33.3	184	29,520	76
612	Bosumtwi	5.8	199	1.2	200	32.3	202	5,323	203

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Table A1.11: Rank of Districts by Poverty Indices (Cont'd)

District code	District name	Poverty head count		Poverty depth		Inequality		Estimated number of poor persons	
		P_0	Rank	(P_1)	Rank	Gini	Rank	Number	Rank
613	Atwima Kwanwoma	4.9	202	1.1	204	32.9	190	4,373	208
614	Kumasi Metropolis	5.3	200	1.2	201	33.9	175	88,935	2
615	Atwima Nwabiagya	13.3	171	3.4	170	33.5	180	19,355	133
616	Ahafo Ano South	14.1	168	3.3	172	32.5	198	16,977	151
617	Ahafo Ano North	46.4	43	16.4	45	37.1	115	43,070	28
618	Offinso Municipal	40.0	59	12.2	65	32.0	206	30,494	71
619	Afigya Kwabre	4.0	209	0.9	209	34.3	169	5,334	202
620	Kwabre East	6.2	196	1.4	196	32.7	193	7,016	195
621	Afigya Sekyere	25.2	119	7.2	115	33.9	174	23,111	108
622	Mampong Municipal	29.5	100	8.9	100	35.7	141	25,417	92
623	Sekyere East	17.4	154	4.8	150	35.0	152	10,607	179
624	Sekyere Afram Plains	28.9	105	7.9	108	32.4	200	18,638	138
625	Sekyere Central	22.8	127	6.0	134	35.3	148	16,119	158
626	Ejura Sekye Dumasi	47.0	42	17.0	43	37.0	116	39,451	36
627	Offinso North	29.4	102	8.2	106	32.6	195	16,415	155
628	Asokore Mampong Municipal	3.3	212	0.7	213	32.6	197	9,663	183
629	Asante Akim North	26.3	114	7.8	111	36.4	129	17,961	143
630	Sekyere Afram Plains North	59.6	26	24.3	25	49.8	16	16,763	154
701	Asunafo South	13.9	170	3.9	161	48.1	20	13,140	166
702	Asunafo North Municipal	12.0	176	3.0	176	40.4	71	14,739	164
703	Asutifi North	35.4	73	12.2	64	42.1	57	18,250	142
704	Dormaa Municipal	11.4	179	2.8	179	45.1	31	12,492	174
705	Dormaa East	35.3	74	11.2	74	47.5	22	17,693	145
706	Tano South	38.0	65	12.4	63	40.3	73	29,315	78
707	Tano North	20.8	137	5.9	135	40.7	69	16,411	156
708	Sunyani Municipal	19.4	143	6.4	128	64.0	1	21,524	119
709	Sunyani West	29.5	101	8.7	101	44.5	37	24,957	95
710	Berekum Municipal	28.0	106	7.8	109	39.8	78	35,199	53
711	Jaman South	20.5	138	5.5	140	46.5	25	18,607	139
712	Jaman North	18.8	146	5.5	141	51.1	14	15,413	162
713	Tain	38.2	64	13.0	60	43.2	47	33,362	58
714	Wenchi Municipal	41.2	55	14.9	49	51.7	12	36,307	48
715	Techiman Municipal	14.2	167	3.8	167	40.3	72	20,576	126
716	Nkoranza South	36.1	69	11.3	73	38.3	95	36,217	51
717	Nkoranza North	30.9	94	10.0	88	42.9	50	20,121	128
718	Atebubu Amantin	33.3	79	11.4	72	48.2	19	34,703	56
719	Sene West	45.8	44	14.5	52	34.0	170	26,106	86
720	Pru	43.1	50	14.9	50	41.9	59	54,818	17
721	Kintampo South	78.3	8	35.8	15	35.9	139	62,893	10
722	Kintampo North Municipal	31.8	86	10.6	79	44.7	35	30,082	73
723	Asutifi South	21.3	135	6.1	133	53.4	8	10,742	178

Table A1.11: Rank of Districts by Poverty Indices (Cont'd)

District code	District name	Poverty head count		Poverty depth		Inequality		Estimated number of poor persons	
		P_0	Rank	(P_1)	Rank	Gini	Rank	Number	Rank
724	Dormaa West	9.9	187	2.5	184	48.1	21	4,639	207
725	Techiman North	15.7	158	4.2	156	39.0	86	9,216	185
726	Banda	78.0	9	37.9	8	42.0	58	15,735	161
727	Sene East	29.3	103	10.5	83	44.4	38	17,683	146
801	Bole	79.4	7	38.1	7	45.5	28	47,907	22
802	Sawla-Tuna-Kalba	62.5	22	22.0	28	32.6	194	61,780	12
803	West Gonja	52.7	33	18.3	38	37.4	107	21,234	122
804	Gonja Central	61.2	24	20.9	30	30.0	211	52,879	20
805	East Gonja	84.2	4	41.0	6	34.9	154	112,130	1
806	Kpandai	76.9	10	33.1	17	32.4	201	82,712	3
807	Nanumba South	33.9	76	9.6	92	34.8	158	30,569	70
808	Nanumba North	31.6	90	8.9	98	34.9	155	44,024	27
809	Zabzugu	36.0	70	11.6	69	39.1	83	22,646	110
810	Yendi Municipal	32.2	83	10.0	86	38.7	90	37,581	42
811	Tamale Metropolis	24.6	121	6.8	120	37.3	113	54,091	18
812	Tolon	42.7	52	14.0	54	37.3	110	30,692	69
813	Savelugu Nanton	32.2	84	9.4	95	36.1	134	44,549	26
814	Karaga	32.3	81	9.8	89	36.8	120	24,863	97
815	Gushiegu	35.7	71	11.1	76	36.5	127	39,328	37
816	Saboba	39.7	60	11.5	71	34.3	167	25,757	90
817	Chereponi	34.7	75	9.3	96	30.0	212	18,455	141
818	Bunkpurugu Yonyo	54.8	29	19.5	33	34.4	166	66,444	8
819	Mamprusi East	44.5	45	15.4	48	36.8	119	53,208	19
820	Mamprusi West	30.4	97	8.6	104	35.6	144	36,357	47
821	North Gonja	53.8	32	17.9	39	30.6	210	23,119	107
822	Kumbumgu	32.3	82	9.7	90	37.7	102	12,596	171
823	Sagnerigu Municipal	29.3	104	8.2	105	37.5	105	42,790	29
824	Mion	44.3	46	14.2	53	35.3	149	35,870	52
825	Tatale	43.1	51	13.9	55	36.3	131	25,485	91
826	Mamprugu Moagduri	71.2	16	29.3	21	32.7	192	32,163	63
901	Builsa North	54.3	31	26.3	24	52.6	9	30,485	72
902	Kasena Nankana West	13.1	172	4.7	151	48.6	17	9,172	186
903	Kasena Nankana East	24.2	123	9.6	91	52.3	10	25,967	87
904	Bolgatanga Municipal	27.9	107	11.7	68	53.4	7	36,224	50
905	Talensi	56.5	27	27.0	22	51.3	13	45,561	24
906	Bongo	67.4	19	36.4	12	54.4	4	56,622	16
907	Bawku West	68.1	18	37.2	11	57.9	2	63,315	9
908	Garu Tempane	54.5	30	26.7	23	54.8	3	70,087	5
909	Bawku Municipal	42.0	54	17.8	40	52.2	11	40,823	31
910	Builsa South	84.4	3	51.8	2	48.5	18	30,730	68
911	Nabdam	63.0	21	31.3	19	50.5	15	21,156	123

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Table A1.11: Rank of Districts by Poverty Indices (Cont'd)

District code	District name	Poverty head count		Poverty depth		Inequality		Estimated number of poor persons	
		P_0	Rank	(P_1)	Rank	Gini	Rank	Number	Rank
912	Binduri	43.3	48	18.7	37	54.3	5	26,360	85
913	Pusiga	43.3	49	19.0	36	54.0	6	24,699	99
1001	Wa West	92.4	1	59.0	1	42.2	55	74,297	4
1002	Wa Municipal	35.5	72	13.8	56	45.1	30	36,253	49
1003	Wa East	83.8	5	46.1	4	41.5	67	59,577	14
1004	Sissala East	47.3	41	17.7	41	43.3	45	26,399	84
1005	Nadowli-Kaleo	68.5	17	32.9	18	45.0	33	41,629	30
1006	Jirapa	71.4	15	35.0	16	46.3	26	62,364	11
1007	Sissala West	81.2	6	44.8	5	43.3	46	39,790	34
1008	Lambussie Karni	72.6	14	36.2	14	47.5	23	36,971	46
1009	Lawra	73.5	13	36.3	13	43.7	42	39,519	35
1010	Daffiama Bussie	73.6	12	37.5	10	45.0	32	23,698	104
1011	Nandom	73.7	11	37.9	9	46.9	24	33,046	59

APPENDIX 2: Regional GLS models

Generalized Least Square Estimates: Western Region

$R^2 = 0.5573$ $adjR^2 = 0.5429$

Variable label	Coefficient	Std. Err.
Intercept	-0.86	7.97
Average age	0.02	0.00
EA level mean of households engaged in agriculture	0.35	0.13
EA level mean of households with births within the last 12 months	-0.90	0.24
District level mean of dummy for whether household live in conventional dwelling	16.10	7.87
Proportion of household members who are employed	0.24	0.04
Dummy for whether the household owns a fixed telephone	0.51	0.10
EA level mean of dummy for whether households owns fixed telephone	2.12	0.67
Dummy for whether the household floor material is Cement/concrete, stone, burnt bricks	0.14	0.06
Dummy for household with main floor material being wood/vinyl/ceramic/porcelain/granite/marble/terrazzo	0.43	0.10
EA level mean of dummy for whether household use charcoal as cooking fuel	0.68	0.14
EA level mean of dummy for whether household use gas as cooking fuel	-1.81	0.31
Age of the household head	-0.02	0.00
EA level mean of dummy for whether household head e is born outside Ghana	-4.55	1.44
EA level mean of dummy for whether household head is born in Greater Accra region	-4.46	0.85
District level mean of dummy for whether household head employment status is apprentice	30.19	11.32
District level mean of dummy for whether household head ethnicity is Ewe	3.44	0.76
District level mean of dummy for whether household head ethnicity is Grusi	-4.95	1.92
Dummy for whether ethnicity for household head is Mande	-0.30	0.05
District level mean of dummy for whether ethnicity of household head is Mande	25.25	6.66
EA level mean of dummy for whether ethnicity for household head is Other	-4.76	3.13
EA level mean of dummy for whether household head is a Ghanaian	-2.59	1.01
District level mean of dummy for whether household head is a Male	-4.88	1.07
EA level mean of dummy for whether household head is a Male	1.23	0.21
EA level mean of dummy for whether household head's marital status is informal/consensual union/living together	-0.46	0.26
Dummy for married household head	-0.08	0.02
District level mean of dummy for whether household head is widowed	-19.18	3.28
Dummy for household heads engaged in elementary occupations	-0.11	0.04
District level mean of dummy for whether household head's occupation is elementary occupations	-15.69	4.30
District level mean of dummy for whether household head's occupation is professional	12.11	4.59
EA level mean of dummy for whether household head's occupation is professional	1.90	0.41
District level mean of dummy for whether household head's occupation is technician and associate professional	12.59	6.81
EA level mean of dummy for whether household head's occupation is service/sales workers	1.61	0.43
District level mean of dummy for whether household head's occupation is craft and related trades workers	2.67	1.14
EA level mean of dummy for whether household head's religion is traditionalist/Other	1.58	0.64
EA level mean of dummy for whether household head's highest level of schooling completed is JSS/JHS	0.59	0.36
EA level mean of dummy for whether household head's highest level of schooling completed is Middle	1.91	0.30
EA level mean of dummy for whether household use internet	0.87	0.23

Generalized Least Square Estimates: Western Region (Cont'd)

$R^2 = 0.5573$ $adjR^2 = 0.5429$

Variable label	Coefficient	Std. Err.
EA level mean of dummy for whether household use candle, firewood, crop residue, other for lighting	-11.36	2.25
EA level mean of dummy for whether household use PC	-1.30	0.46
Dummy for households dwelling have concrete/other as main construction material of roof	0.13	0.08
Dummy for households occupying 10 rooms	1.14	0.52
District level mean of dummy for number of rooms households occupy	-0.84	0.18
Dummy for whether households dispose of refuse by collection	0.41	0.08
EA level mean of dummy for whether households dispose of refuse by collection	0.63	0.16
Dummy for whether households dispose of refuse at public dump	0.09	0.03
EA level mean of dummy for whether households dispose of refuse at public dump	-0.43	0.11
EA level mean of dummy for whether households dispose of refuse indiscriminately	-0.49	0.15
Dummy for households with tenure being rent free, perching, squatting	-0.12	0.03
EA level mean of dummy for whether household uses KVIP toilet facility	-0.37	0.16
Dummy for households using bucket/pan, public toilet, other as toilet facility	-0.12	0.03
EA level mean of dummy for whether household drinking water source is bottled or sachet water	1.29	0.17
Dummy for households main source of water for general use being rain water, tanker, unprotected well or spring, river/stream, dugout	0.26	0.04
EA level mean of dummy for whether households main source of water for general use is pipe inside or outside dwelling, public tap	-0.31	0.07
Dummy for households main source of water for general use being Bore-hole/pump/tube well, protected well, protected spring, sachet	0.16	0.03

Generalized Least Square Estimates: Central Region

$R^2 = 0.4470$ $adjR^2 = 0.4310$

Variable label	Coefficient	Std. Err.
Intercept	7.22	0.38
EA level mean of dummy for age	-0.03	0.01
Proportion employed	0.73	0.08
District level mean of dummy for whether head of household is born in Upper West region	213.24	25.35
EA level mean of dummy for whether head of household is born in Eastern region	-1.13	0.38
Dummy for whether head of household is born in Brong Ahafo	-0.39	0.07
District level mean of dummy for whether head of household is born in Upper East region	-80.69	10.59
District level mean of dummy for whether head of household 's employment status is domestic employee (house help)	115.36	32.74
EA level mean of dummy for whether head of household 's employment status is "other"	-18.57	8.55
EA level mean of dummy for whether head of household 's ethnicity is Ga-Dangme	3.06	0.57
EA level mean of dummy for whether head of household 's ethnicity is Grusi	-1.41	0.88
EA level mean of dummy for whether head of household 's ethnicity is Mole-Dagbon	7.81	2.07
Dummy for whether head of household has other ethnicity	0.69	0.17
Dummy for whether head of household is male	-0.10	0.03
Dummy for whether head of household is never married	0.22	0.04
District level mean of dummy for whether head of household is in informal/consensual union	-1.31	0.82
EA level mean of dummy for whether head of household is in informal/consensual union	-1.98	0.33
Dummy for whether head of household marital status is separated	0.13	0.06
EA level mean of dummy for whether head of household marital status is separated	1.59	0.55
EA level mean of dummy for whether head of household 's marital status is divorced	2.34	0.44
EA level mean of dummy for whether head of household's occupation is Legislators/managers	6.07	1.55
Dummy for whether head of household's occupation is Professional	0.27	0.06
District level mean of dummy for whether head of household's occupation is Professional	8.04	2.06
Dummy for whether head of household's occupation is Clerical support worker	0.35	0.17
Dummy for whether head of household's religion is Christian	0.10	0.03
EA level mean of dummy for whether head of household's religion is Islam/Ahmadi	-1.03	0.30
EA level mean of dummy for whether head of household's highest level of schooling completed is primary	1.69	0.46
EA level mean of dummy for whether head of household's highest level of schooling completed is JSS/JHS	0.91	0.53
EA level mean of dummy for whether head of household's highest level of schooling completed is middle school	-1.15	0.27
District level mean of dummy for whether households use kerosene or gas lamp as fuel for lighting	-1.29	0.49
Dummy for whether household use flashlight/torch as source of lighting	-0.21	0.04
Proportion of males	-0.17	0.05
Dummy for whether household dwelling units has wood, slate/asbestos, roofing tiles as roof	-0.13	0.04
District level mean of dummy for whether dwelling unit has metal sheet as roof	1.29	0.20
Households occupying one room	-0.08	0.03
EA level mean of dummy for whether household use WC as toilet facility	1.20	0.35
District level mean of dummy for whether households use pit latrine as toilet facility	-1.87	0.48
Dummy for whether household use bucket/pan, public toilet, other as toilet facility	-0.08	0.03
EA level mean of dummy for whether household use bucket/pan, public toilet, other as toilet facility	0.16	0.08
Dummy for whether household use pipe inside or outside dwelling, public tap as drinking water source	-0.17	0.03

Generalized Least Square Estimates: Central Region (Cont'd)

$R^2 = 0.4470$ $adjR^2 = 0.4310$

Variable label	Coefficient	Std. Err.
Interaction term of district level mean of dummy for whether an employee with proportion employed	-1.30	0.37
Interaction term of EA level mean of dummy for whether an employee with household owns a fixed phone	-1.32	0.31
Interaction term of EA level mean of dummy for whether an employee with EA level mean of dummy for using electricity (main/generator), solar	2.27	0.48
Interaction term of EA level mean of dummy for whether an employee with EA level mean of dummy for ownership of PC	-4.89	1.28
Interaction term of EA level mean of dummy for whether an employee with dwelling unit using Wood, Metal sheet/slate/asbestos, Bamboo, Palm leaves/thatch as wall	-1.07	0.58

Generalized Least Square Estimates: Greater Accra Region

$R^2 = 0.5964$ $adjR^2 = 0.5833$

Variable label	Coefficient	Std. Err.
Intercept	26.50	2.14
Dummy variable for whether any household member engaged in agriculture	0.14	0.05
Dummy for number of rooms occupied by household	0.05	0.01
Dummy for whether household own a fixed telephone line	0.31	0.06
District level mean of dummy for whether household own a fixed telephone line	-9.97	0.95
EA level mean of dummy for whether household own a fixed telephone line	0.97	0.30
EA level mean of dummy for whether household dwelling has Mud/mud bricks/earth, bamboo, palm leaves/thatch(grass/ruffian as main construction material of floor	-0.30	0.14
Dummy for whether household dwelling has metal sheet as main construction material of floor	0.27	0.03
District level mean of dummy for whether household uses Charcoal as a cooking fuel	3.47	0.61
EA level mean of dummy for age of household head	-0.02	0.01
EA level mean of dummy for household head born in Upper East region	5.90	1.82
EA level mean of dummy for household head born in Central region	0.90	0.35
Dummy variable for whether household head is born in Greater Accra region	0.09	0.02
EA level mean of dummy for whether household head is born in Ashanti region	1.46	0.53
Dummy for whether household head is born in Brong Ahafo region	0.19	0.07
EA level mean of dummy for whether household head is born in Brong Ahafo region	-0.74	0.19
Dummy variable for whether employment status of head of household is casual worker	-0.22	0.08
District level mean of dummy for whether head of household is domestic employee (house help)	111.35	13.11
EA level mean of dummy for whether household head is a foreigner	-3.71	0.56
EA level mean of dummy for whether household head is Akan	-0.68	0.16
EA level mean of dummy for whether household head is Guan	-3.61	0.88
EA level mean of dummy for whether household head's ethnicity is Other ethnic group	1.84	0.77
EA level mean of dummy for whether marital status of head of household is separated	-1.09	0.51
Dummy for whether head of household is a widow	-0.12	0.04
Dummy for the household head is unemployed/inactive	-0.08	0.03
EA level mean of dummy for whether household head is into elementary occupations	-1.93	0.42
Dummy for whether household head is a legislators/managers	0.36	0.06
EA level mean of dummy for whether occupation of household head is legislators/managers	-1.31	0.57
Dummy for whether occupation of household head is clerical support workers	0.21	0.06
Dummy for whether highest level of schooling completed by the household head is primary	-0.15	0.04
Dummy for whether highest level of schooling completed by the household head is JSS/JHS	-0.12	0.03
EA level mean of dummy for whether the highest level of schooling completed by the household head is JSS/JHS	1.55	0.39
District level mean of dummy for whether the highest level of schooling completed by the household head is Middle	4.77	1.05
Household with only one member	1.18	0.07
Household with two members	0.94	0.07
Household with three members	0.74	0.07
Household with four members	0.63	0.07
Household with five members	0.51	0.07
Household with six members	0.38	0.07
Household with seven members	0.32	0.08
Household with eight members	0.20	0.09
Household with fifteen members	-0.56	0.20
District level mean of dummy for household size	-0.73	0.11
EA level mean of dummy for whether household uses Kerosene or gas lamp main source of lighting	-1.27	0.18

Generalized Least Square Estimates: Greater Accra Region (Cont'd)

R^2 = 0.5964   adjR^2 = 0.5833

Variable label	Coefficient	Std. Err.
EA level mean of dummy for whether household uses flashlight/torch as main source of lighting	1.49	0.33
Proportion of male in the household	-0.18	0.03
District level mean of dummy for whether household members are male	-43.08	4.57
EA level mean of married household members	-0.94	0.32
EA level mean of dummy for whether household dwelling has Mud/mud bricks/earth, bamboo, palm leaves/thatch(grass/ruffian as main construction material of roof	1.12	0.32
District level mean of dummy for number of rooms occupied by household	2.23	0.26
Dummy for whether household refuse disposal is burning	-0.09	0.03
District level mean of dummy for whether household solid waste disposal is by burning	-2.86	0.25
EA level mean of dummy for whether household solid waste disposal is dumped indiscriminately	0.30	0.12
Dummy for whether household tenancy arrangement is rent free, perching or squatting.	-0.17	0.03
Dummy for whether household has no toilet facility	-0.24	0.06
Dummy for whether household uses KVIP as toilet facility	-0.08	0.03
EA level mean of dummy for whether dwelling of household has Burnt bricks, Cement blocks/concrete and Other as main construction material of outer wall	0.46	0.14
EA level mean of dummy for whether household uses pipe inside or outside dwelling, public tap as main source of drinking water	0.16	0.07
EA level mean of dummy for whether household uses pipe inside or outside dwelling, public tap as main source of water for general use	-0.41	0.08
Dummy for whether household uses pipe inside or outside dwelling, public tap as main source of water for general use	-0.14	0.04
EA level mean of dummy for whether household uses bore-hole/pump/tube well, protected well, protected spring, sachet water, as main source of water for general use	-0.24	0.10

Generalized Least Square Estimates: Volta Region

$R^2 = 0.5130$ $adjR^2 = 0.5029$

Variable label	Coefficient	Std. Err.
Intercept	7.53	0.17
Households number of bedrooms	0.06	0.01
Proportion of Christian household members	-0.09	0.04
EA level mean of dummy for whether household member is Christian	-0.82	0.09
Proportion of household members who are employed	0.46	0.05
EA level mean of dummy for whether a household member is an employee	2.48	0.21
EA level mean of dummy for whether households dwelling unit has earth/mud as main material for floor	-0.74	0.08
Dummy for whether household dwelling has wood/vinyl/ceramic/porcelain/granite/marble/terrazzo as main floor material	0.37	0.13
EA level mean of dummy for whether households dwelling has wood/vinyl/ceramic/porcelain/granite/marble/terrazzo as main floor material	-3.71	0.52
Dummy for whether household use wood as cooking fuel	-0.22	0.04
EA level mean of dummy for whether household use charcoal as cooking fuel is	0.70	0.08
Dummy for whether households use gas as cooking fuel	0.28	0.05
EA level mean of dummy for whether household head is born in Ashanti region	4.44	0.72
Dummy for whether household head is casual worker	-0.36	0.10
District level mean of dummy for whether household head is a domestic employee (house help)	-62.25	14.42
District level mean of dummy for whether employment status of household head is 'other'	-319.25	30.25
EA level mean of dummy for whether ethnicity of household head is Guan	0.80	0.06
EA level mean of dummy for whether ethnicity of household head is Mande	-38.43	7.12
Dummy for whether occupation of household heads is 'other occupations'	-0.72	0.39
EA level mean of dummy for whether household head's occupation is professional	-8.93	1.07
EA level mean of dummy for whether household head's religion is Islam/Ahmadi	-1.76	0.14
Dummy for whether highest level of schooling completed of household head is none or less than primary	-0.12	0.03
Household size	-0.08	0.01
EA level mean of dummy for whether household use kerosene or gas lamp for lighting	0.56	0.06
EA level mean of dummy for whether household use candle, firewood, crop residue or other for lighting	-9.48	1.32
Proportion of male members in the household	-0.21	0.05
EA level mean of dummy for marital status of household members	1.25	0.19
EA level mean of dummy for whether household dwelling has Mud/mud bricks/earth, bamboo or palm leave as main material for roof e	0.31	0.08
EA level mean of dummy for number of rooms households occupy	0.11	0.02
Dummy for whether household use WC as toilet facility	0.18	0.06
EA level mean of dummy for whether household use Bucket/pan, public toilet, other toilet facility	0.39	0.06
Dummy for whether household dwelling has mud bricks/earth or landcrete as main material for outer wall	0.09	0.03
EA level mean of dummy for whether household use rain, tanker, unprotected well or spring, river/stream or dugout as source of water for general	0.18	0.04

Generalized Least Square Estimates: Eastern Region

$R^2 = 0.4760$ $adjR^2 = 0.4650$

Variable label	Coefficient	Std. Err.
Intercept	-115.82	19.37
Dummy for the average age of household members	0.02	0.00
EA level mean for any live birth in the household in the last 12 months	-0.73	0.31
Proportion of household members employed	0.14	0.04
EA level mean of dummy for whether a household own a fixed telephone line	-1.53	0.34
Dummy for whether household dwelling has wood/vinyl, ceramic/porcelain/granite/marble tiles as floor type	0.32	0.09
District level mean of dummy for a person being Ghanaian	121.53	18.43
Age of the head of household	-0.01	0.00
District level mean age of the head of household	-0.07	0.03
EA level mean of dummy for whether head of household born in Central Region	-1.06	0.47
Dummy for whether head of household is born in Greater Accra Region	0.26	0.05
District level mean of dummy for whether head of household is born in Volta Region	-3.76	0.61
Dummy for whether head of household is born in Eastern Region	0.10	0.03
Dummy for whether head of household is born in Ashanti Region	0.29	0.06
EA level mean dummy for whether head of household is born in Ashanti Region	3.83	0.89
Dummy for whether employment status of the head of household is self-employed with employees	0.17	0.05
District level mean dummy for whether head of household is a foreigner	62.40	12.75
EA level mean dummy for whether head of household is a foreigners	6.43	1.67
Dummy for whether ethnicity of head of household is Mole-Dagbon	-0.17	0.07
EA level mean dummy for whether ethnicity of head of household is Mande	11.12	2.91
EA level mean dummy for whether nationality of head of household is Ghanaian	5.60	2.02
Dummy for whether marital status of head of household is informal/consensual union	-0.17	0.03
EA level mean of dummy for whether marital status of head of household is separated	1.10	0.44
EA level mean of dummy for whether occupation of head of household is 'other'	26.59	13.79
Dummy for whether head of household is unemployed/inactive	0.21	0.05
Dummy for whether occupation of head of household is technicians and associate professionals	0.24	0.08
EA level mean dummy for whether occupation of head of household is other occupation clerical support workers	5.29	1.98
Dummy for whether religion of head of household is Christian	0.08	0.03
EA level mean of dummy for whether highest level of schooling completed by the head of household is none or less than primary	-0.64	0.18
Dummy for whether highest level of schooling completed by the head of household is none or less than primary	-0.07	0.03
EA level mean of household size	0.05	0.02
Dummy for whether household dwelling use flashlight/torch as main source of lighting	-0.17	0.03
Dummy for whether tenancy arrangement of household 's is renting	0.13	0.03
Dummy for whether household uses water closet (WC) as toilet facility	0.21	0.06
Dummy for whether household use KVIP as toilet facility	0.10	0.04
District level mean of dummy for whether dwelling of household has wood/ metal sheet/ slate/ asbestos as material of outer wall	-10.94	3.54
Dummy for whether household use pipe inside or outside dwelling or public tap as drinking water source	-0.08	0.03

Generalized Least Square Estimates: Ashanti Region

$R^2 = 0.4969$ $adjR^2 = 0.4846$

Variable label	Coefficient	Std. Err.
Intercept	-0.3114	1.9908
Mean age of household members	0.021	0.0011
EA level proportion of households living in conventional dwelling	1.2784	0.3539
Proportion of household members who are paid employees	0.1969	0.0439
EA level proportion of households having Cement/concrete, stone or burnt bricks as main material for floor	-0.2161	0.0739
EA level proportion of households using wood as cooking fuel	2.4066	0.89
EA level proportion of households using charcoal as cooking fuel	-0.4963	0.1381
EA level proportion of Ghanaian population	4.03	1.2229
Age of household head	-0.0171	0.0012
District level mean age of household heads	0.0831	0.031
District level proportion of household heads born in Central Region	3.6508	1.0031
Dummy for household head born in Greater Accra Region	0.2407	0.1158
District level proportion of household heads born in Brong Ahafo Region	13.6616	2.7838
District level proportion of household heads who are employees	2.0272	0.753
Dummy for household heads who are self-employed with employees	0.201	0.04
District level proportion of household heads who are self-employed with employees	-4.8195	1.9171
EA level proportion of household heads who are apprentices	-4.9067	0.8875
Dummy for household heads who have never married	0.1317	0.0414
Dummy for household heads who are in informal or consensual union	-0.0828	0.0369
District level proportion of household heads who are married	-1.9603	0.6324
EA level proportion of household heads who have separated from their spouse	-2.2129	0.3626
EA level proportion of household heads who are divorced	-1.0889	0.3253
Dummy for household heads who are in elementary occupations	-0.1251	0.0449
District level proportion of household heads who are professionals in occupation	-14.2078	2.3222
EA level proportion of household head who have no religion	-1.0081	0.2475
District level proportion of households using Electricity (mains/private generator) or solar energy as main source of lighting	0.7736	0.3304
EA level proportion of households using flashlight/torch as main source of lighting	-3.5916	1.1343
Proportion of male members in a household	-0.115	0.0375
District level proportion of households with mud/mud bricks/earth, bamboo, thatch/palm leaves or raffia as main material for roof	7.5799	2.0615
Dummy for household use of wood, slate/Asbestos or roofing tile as roof	0.1594	0.0536
Dummy for households with 'Rent-free' as tenure arrangement	-1.0958	0.3726
District level proportion of households using private KVIP toilet facility	3.6817	0.5297
Dummy for households using private Bucket/pan, public toilet or 'other' toilet facility	-0.1581	0.0284
EA level proportion of households having wood, metal sheet, bamboo or palm leaves as main material of outer walls of dwelling	1.5109	0.325
Interaction term of district level proportion of the employed with dummy of household ownership of fixed telephone line	1.0066	0.237
Interaction term of district level proportion of the employed with district level proportion of households having Earth/Mud as main material for floor	4.6988	1.3899
Interaction term of district level proportion of the employed with EA level proportion of households using wood as cooking fuel	-7.7779	2.1422
Interaction term of district level proportion of the employed with district level proportion of households using kerosene or gas lamp for lighting	-12.9355	2.5186
Interaction term of district level proportion of the employed with EA level proportion of households using Flashlight/Torch for lighting	7.7914	2.6371

Generalized Least Square Estimates: Ashanti Region (Cont'd)

$R^2 = 0.4969$ $adjR^2 = 0.4846$

Variable label	Coefficient	Std. Err.
Interaction term of district level proportion of the employed with district level proportion of households having mud/mud bricks/earth, bamboo, thatch/palm leaves or raffia as main material for roof	-12.4553	4.4718
Interaction term of district level proportion of the employed with district level proportion of households having concrete or 'other' as main material for roof	22.4976	5.0563
Interaction term of district level proportion of the employed with dummy of household use of public dump as method of solid waste disposal	-0.1714	0.0691
Interaction term of district level proportion of the employed with dummy for household with 'Rent-free' as tenure arrangement	2.4771	0.8942
Interaction term of district level proportion of the employed with dummy for household not using Pit latrine as toilet facility	0.3181	0.084
Interaction term of district level proportion of the employed with EA level proportion of households using private Bucket/pan, public toilet or 'other' toilet facility	0.6867	0.1465
Interaction term of district level proportion of the employed with EA level proportion of households having stone, burnt bricks, cement blocks/concrete or 'other' as main material for outer walls of dwelling	0.4168	0.184
Interaction term of district level proportion of the employed with district level proportion of household using Bore-hole/pump/tube well, protected well or protected spring as main source of drinking water	3.7056	0.4557
Interaction term of district level proportion of the employed with EA level proportion of household using bore-hole/pump/tube well, protected well or protected spring as main source of drinking water	-0.3376	0.1266

Generalized Least Square Estimates: Brong Ahafo Region

R² = 0.5399   adjR² = 0.5221

Variable label	Coefficient	Std. Err.
Intercept	10.33	0.38
Average age of household members	0.00	0.00
District level mean of dummy for whether the household head was born in upper west region	-3.22	0.46
EA level mean of dummy for whether the household head was born in Greater Accra region	-2.95	1.30
Dummy for whether the household head was born in Brong Ahafo region	0.09	0.03
EA level mean of dummy for whether the household head was born in Brong Ahafo region	-0.58	0.12
District level mean of dummy for whether household head is Unemployed/Inactive	-8.21	1.12
Dummy for whether household head is Ewe	0.32	0.07
District level mean of dummy for whether household head is Mande	4.80	0.77
EA level mean of dummy for whether household head is widowed	3.80	0.53
Dummy for whether household head is a Legislator/Manager	0.30	0.09
Dummy for whether household head is a Professional	0.22	0.05
EA level mean of dummy for whether household head is a Technician and associate profession	-2.76	1.23
District level mean of dummy for whether household head has no religion	-2.62	0.69
Size of household	-0.09	0.01
EA level mean of dummy for whether household member is married	1.09	0.31
EA level mean of dummy for whether household owns a PC	6.91	1.11
Dummy for whether households occupy three rooms	0.17	0.04
Dummy for whether households occupy four rooms	0.28	0.06
Dummy for whether households occupy seven rooms	0.64	0.20
EA level mean of dummy for whether households use Public dump as solid waste disposal	0.17	0.08
Dummy for whether dwelling unit is rented	0.12	0.03
EA level mean of dummy for whether dwelling unit of household is rented	-1.13	0.24
EA level mean of dummy for whether household have no toilet facility	0.19	0.08
Dummy for whether the household uses WC as toilet facility	0.26	0.07
EA level mean of Dummy for whether household uses WC as toilet facility	-1.71	0.32
Dummy for whether household use Pipe inside or outside dwelling, public standpipe as main source of drinking water	-0.14	0.04
Dummy for whether household use "Bore-hole/pump/tube well or protected well" as the main source of drinking water is	-0.18	0.04
EA level mean of dummy for whether household use "Bottled or sachet water as main source of water for general use	-0.35	0.07
Interaction term of EA level mean of dummy for the square of agricultural household	-0.25	0.04
Interaction term of EA level mean of dummy for agricultural household, with households occupying five sleeping rooms	0.57	0.10
Interaction term of EA level mean of dummy for Christian, with EA level mean of dummy for employee	5.09	0.61
Interaction term of district level mean for dependency ratio, with district level mean for births in the last 12 months	-5.10	1.16
Interaction term of dummy for the square of the proportion of paid employees	0.23	0.05
Square of the Interaction term of EA level mean of employees	-7.88	1.27
Interaction term of district level mean for households with fixed phones , with EA level mean for births in the last 12 months	-50.98	14.08
Interaction term of EA level mean for households with fixed phones , with households without fixed phones	-5.45	0.97
Interaction term of EA level mean of dummy for households using Wood, vinyl tiles, ceramic/porcelain as floor material , with district level mean of dummy for household using gas for cooking	25.46	7.43

Generalized Least Square Estimates: Brong Ahafo Region (Cont'd)

$R^2 = 0.5399$ $adjR^2 = 0.5221$

Variable label	Coefficient	Std. Err.
Interaction term of district level mean of dummy for households using wood as fuel for cooking, with EA level mean of dummy for household using wood as fuel for cooking	-1.49	0.19
Interaction term of district level mean of dummy for households using wood , with EA level mean of dummy for household using wood	-0.50	0.08
Interaction term of District level mean of dummy for households using wood as fuel for cooking, with District level mean of dummy for household using gas for cooking	-10.41	2.71
Interaction term of EA level mean of dummy for households using wood as fuel for cooking, with EA level mean of dummy for household using Electricity, kerosene , crop residual for cooking	3.70	0.94
Interaction term of dummy for households using charcoal as fuel for cooking , with district level mean of dummy for household using charcoal for cooking	-0.86	0.18
Interaction term of EA level mean of dummy for households using charcoal as fuel for cooking, with district level mean of dummy for household using Electricity, kerosene , crop residual for cooking	-7.79	3.80
Interaction term of dummy for households heads who is a contributing family worker , with EA level mean of dummy for heads of households who are casual workers	-22.99	4.65
Interaction term of dummy for households heads who is a contributing family worker , with district level mean of dummy for self-employed with employees household heads	-6.92	1.46
Interaction term of District level mean of dummy for households heads who is a contributing family worker , with EA level mean of dummy for self-employed with employees heads of households	-101.80	43.90
Interaction term of EA level mean of dummy for households heads who is an apprentice , with EA level mean of dummy for heads of household who are casual workers	-194.96	27.78
Interaction term of EA level mean of dummy for households heads who is an apprentice , with dummy for heads of household who are contributing family workers	58.04	17.87
Interaction term of EA level mean of dummy for households heads who is an apprentice , with District level mean of dummy for heads of household who are contributing family workers	511.37	93.11
Interaction term of EA level mean of dummy for households heads who is a domestic employee (house help) , with EA level mean of dummy for heads of household who are self-employed with employees	376.86	123.33
Interaction term of district level mean of dummy for households heads who is a domestic employee (house help) , with EA level mean of dummy for heads of household who are casual workers	5467.53	1054.75
Interaction term of district level mean of dummy for other employment status of households heads , with district level mean of dummy for heads of household who are contributing family workers	10549.34	2221.48
Interaction term of EA level mean of dummy for other employment status of household heads , with EA level mean of dummy for heads of household who are contributing family workers	464.51	145.34
Interaction term of dummy for household heads who are foreigners , with EA level mean of dummy for heads of household who are contributing family workers	5.48	1.70
Interaction term of district level of dummy for household heads who are foreigners , with dummy for heads of household who are self-employed with employees	4.18	1.07
Interaction term of district level of dummy for household heads who are foreigners , with EA level mean of dummy for heads of household who are contributing family workers	-208.01	49.59
Interaction term of district level of dummy for no schooling , with district level mean of dummy for household who own PC	29.13	8.32
Interaction term of district level of dummy for no schooling , with EA level mean of dummy for household who own PC	-28.75	2.72
Interaction term of district level of dummy for the square of number of livestock owned by household	0.00	0.00
Interaction term of EA level of dummy of the square for households who own PC	13.31	3.25

Generalized Least Square Estimates: Northern Region

R² = 0.5283   adjR² = 0.5180

Variable label	Coefficient	Std. Err.
Intercept	8.63	0.36
EA level mean of dummy for the dependency ratio	-0.19	0.07
EA level mean of dummy for whether the person is an employee	2.56	0.55
Dummy for whether the household uses gas for cooking	0.53	0.06
EA level mean of dummy for whether the household uses gas for cooking	2.45	0.50
EA level mean of dummy for whether the household head was born in Volta region	-1.66	0.64
EA level mean of dummy for whether the household head is an employee	-3.30	0.53
District level mean of dummy for whether the household head a contributing family worker	-8.14	1.80
EA level mean of dummy for whether the household head is an apprentice	-16.66	3.32
Dummy for whether the household head is domestic employee	-0.50	0.09
EA level mean of dummy for whether the household head is domestic employee	4.36	1.38
District level mean of dummy for whether the household head a belong to the Ga-Dangme ethnic group	-25.94	4.40
EA level mean of dummy for whether the household head belongs to the Ewe ethnic group	1.35	0.24
Dummy for whether the household head belong to other ethnic groups	-0.51	0.09
Dummy for whether the household head is a male	-0.17	0.03
District level mean of dummy for whether marital status of household head is "Informal/consensual union/living together"	-24.24	7.04
EA level mean of dummy for whether the marital status of household head is "separated"	-3.65	0.82
EA level mean of dummy for whether the occupation of household head is into elementary occupations	3.92	0.58
EA level mean of dummy for whether the occupation of household head is a professional	2.78	0.51
EA level mean of dummy for whether the occupation of household head is a service/sales worker	1.82	0.31
EA level mean of dummy for whether the highest level of schooling completed by household head is primary	1.70	0.46
Dummy for whether the household uses flashlight/torch for lighting	-0.19	0.03
District level mean of dummy for whether the household uses flashlight/torch for lighting	-0.80	0.15
District level mean of dummy for whether the household uses candle, firewood, crop residue, other for lighting	10.97	3.94
EA level mean of dummy for whether the member is a male	-2.16	0.70
EA level mean of dummy for whether the household solid waste is collected	0.23	0.10
Dummy for whether the household solid waste is dumped indiscriminately	-0.16	0.04
EA level mean of dummy for whether the dwelling unit of household is rented	-0.82	0.27
EA level mean of dummy for whether the outer wall of dwelling unit is constructed with mud bricks/earth, landcrete	0.40	0.10
Dummy for proportion of person employed, interacted with household in conventional type of dwelling	0.47	0.11
Interaction term of dummy for the square of the proportion of person employed	0.46	0.11
Dummy for the proportion of person employed, interacted with household not using pit latrine	-0.40	0.11
EA mean of dummy for the proportion of person who are paid employees interacted with household floor constructed with wood, vinyl tiles, ceramic/porcelain	-7.74	2.73
Dummy for the proportion of person who are paid employees, interacted with Grusi as ethnicity of household head	0.65	0.20
Dummy for the proportion of person who are paid employees, interacted with household head who are not Legislators/managers	0.70	0.11
EA mean of dummy for the proportion of person who are paid employees, interacted with dwelling units roofed with concrete/other material	3.25	0.76
District level mean of dummy for the proportion of paid employees, interacted households burning solid waste	-1.62	0.77

Generalized Least Square Estimates: Upper East Region

R2=0.5991   adjR2=0.5787

Variable label	Coefficient	Std. Err.
Intercept	-0.7203	0.7455
EA level mean age of the population	0.2688	0.0259
EA level proportion of households engaged in agricultural activities	0.6472	0.1832
Proportion of the employed	0.2983	0.0685
EA level proportion of the employed	-0.9383	0.1905
Dummy for whether household use wood as cooking fuel	-0.2511	0.0604
Dummy for whether household use gas as cooking fuel	0.2468	0.1148
EA level proportion of households using gas as cooking fuel	-3.648	0.8387
Mean age of household heads	-0.0037	0.0012
EA level mean age of household heads	-0.0611	0.009
EA level proportion of household heads born in Brong Ahafo Region	-26.8514	5.5846
Dummy for household heads who are employees	0.1613	0.0743
EA level proportion of household heads who are casual workers	6.6727	1.6321
EA level proportion of household heads who are contributing family workers	-3.9406	0.5485
EA level proportion of household heads who are domestic employees (househelps)	16.4113	1.7282
Dummy for household heads who belong to the Gurma ethnic group	-0.3066	0.1137
Dummy for male headed households	0.1252	0.051
EA level proportion of household heads who are in informal or consensual union	3.094	0.9568
Dummy for household heads who are married	-0.2552	0.0568
EA level proportion of household heads who are professionals in occupation	6.2243	1.1222
District level proportion of household heads who have completed Junior Secondary School or Junior High School	62.29	8.3967
EA level proportion of households with any member using internet	3.9047	0.6453
EA level proportion of households using candle, firewood, crop residue or 'other' source of lighting	7.103	0.6967
Proportion of household members who have never attended school	0.3958	0.0704
EA level proportion of the population who have never attended school	-0.7831	0.3554
EA level of average livestock per household	0.0047	0.0017
Dummy for household ownership of desktop or laptop computer	0.5826	0.1368
Dummy for household use of wood, slate/asbestos or roofing tile as roof	0.3014	0.0946
EA level proportion of households using cement/concrete or 'other' as roof	4.9424	0.7352
EA level proportion of households whose solid waste are collected	-1.3171	0.1318
EA level proportion of households whose solid waste are burned or buried	-0.9129	0.0815
District level proportion of households whose solid waste are dumped indiscriminately (includes 'other')	9.2416	1.4269
Dummy for households renting their dwelling unit	0.3498	0.1112
EA level proportion of households using private KVIP toilet facility	2.1695	0.408
Dummy for households using mud bricks/earth or landcrete as main material of outer wall of dwelling	-0.2057	0.0746
EA level proportion of households having mud bricks/earth or landcrete as main material of outer wall of dwelling	1.8099	0.1921
EA level proportion of households having wood, metal sheet, bamboo or palm leaves as main material of outer wall of dwelling	6.4865	0.7265

Generalized Least Square Estimates: Upper West Region

$R^2 = 0.5870$ $adjR^2 = 0.5760$

Variable label	Coefficient	Std. Err.
Intercept	-5.88	1.51
Households occupying one sleeping rooms	0.24	0.04
District level mean of dummy for of sleeping rooms	2.01	0.29
Proportion of population employed	0.43	0.07
Proportion of population who are employees	0.43	0.10
EA level mean of dummy for whether dwelling has earth/mud as floor	-0.59	0.11
Dummy for whether dwelling has cement, concrete, stone, burnt bricks as floor	0.18	0.04
Average age of head of household	0.00	0.00
EA level mean of dummy for whether head of household is born in Upper West region	1.83	0.49
EA level mean of dummy for whether head of household is born in Western region	11.36	3.39
EA level mean of dummy for whether head of household is born in Volta region	26.94	5.71
Dummy for whether head of household is unemployed/inactive	0.19	0.06
District level mean of dummy for whether head of household is self-employed with employees	25.55	6.00
EA level mean of dummy for whether head of household is self-employed with employees	-2.66	1.12
District level mean of dummy for whether head of household's ethnicity is a foreigner	11.27	3.14
EA level mean of dummy for whether head of household's ethnicity is Ga-Dangme	-25.08	9.59
Dummy for whether head of household's ethnicity is Mole-Dagbon	-0.18	0.07
Dummy for whether head of household's ethnicity is Grusi	-0.20	0.09
EA level mean of dummy for whether head of household's marital status is separated	5.87	1.46
Dummy for whether head of household's occupation is legislator/manager	0.39	0.12
EA level mean of dummy for household size	0.06	0.02
Dummy for whether household uses flashlight/torch for lighting	-0.29	0.05
EA level mean of dummy for whether person is male	4.20	1.02
EA level mean of dummy for rooms	-0.11	0.04
EA level mean of dummy for whether solid waste is collected	0.40	0.14
District level mean of dummy for whether solid waste is burned by household	11.38	1.69
Dummy for whether household uses WC as toilet facility	0.46	0.11
Dummy for whether household uses pit latrine as toilet facility	0.12	0.06
District level mean of dummy for whether household uses pit latrine as toilet facility	-2.72	0.79
Dummy for whether household uses KVIP as toilet facility	0.34	0.12
EA level mean of dummy for whether household has Stone, Burnt bricks, Cement blocks/concrete, other as wall	0.63	0.17
Dummy for whether household uses pipe inside or outside dwelling, public tap water for drinking	-0.39	0.10
Dummy for whether household uses bore-hole/pump/tube well, protected well, protected spring, sachet water for drinking	-0.27	0.09
Dummy for whether household uses pipe inside or outside dwelling, public tap water for general use	0.53	0.12
EA level mean of dummy for whether household uses pipe inside or outside dwelling, public tap water for general use	0.24	0.11
Dummy for whether household uses bore-hole/pump/tube well, protected well, protected spring, sachet water for general use	0.40	0.09

APPENDIX 3: Common variables

Table A3.1: Comparison of 2010 PHC and GLSS6 questions

Census question number	Census question	Corresponding section and question number in GLSS 6
PID	PID	s1q1
RELCODE	Relationship to head	s1q3
SEX	Sex	s1q2
P01	What is [NAME]'s date of birth?	s1q4
P02	How old is [NAME], in completed years?	s1q5
P03	What is [NAME]'s Nationality?	s1q12
P04	To which ethnic group does [NAME]	s1q13
P05	Was [NAME] born in this village/ town	s5aq1
P06	In what region or country was [NAME] born?	s1q11
P09	Religion	s1q10
P10	Marital status	s1q6
P11	Literacy	s2cq2
P12a	Has [NAME] ever attended school	s2aq1
P12b	What is the highest level of schooling [NAME] is attending	s2aq3
P13a	Engage in any economic activity for pay/profit/family gain	s4aq1
P13b	How was name mainly engaged	(s4aq1,s4aq2, s4aq3) and s4dq1, s4dq2
P13c	Why did name not seek work?	(s4aq1,s4aq2, s4aq3 and s4dq1, s4dq2) and s4dq4 and s4dq10
P14	Occupation	s4aq6
P15a	Industry	s4aq7
P16	Employment status	s4aq20
P17	Employment sector	s4aq21

Table A3.1: Comparison of 2010 PHC and GLSS6 questions (Cont'd)

Census question number	Census question	Corresponding section and question number in GLSS 6
H01	In what type of dwelling does the household live?	s7aq1
H02	What is the main material of the outer walls of this dwelling?	s7fq1
H03	What is the main material of the floor of this dwelling?	s7fq2
H04	What is the main material used for the roof?	s7fq3
H05	What is the present holding/tenancy arrangement of this dwelling?	s7bq1
H06	Who owns the dwelling?	s7bq2
H07a	How many rooms does this household occupy?	s7aq2
H07b	How many of the rooms are used for sleeping?	s7aq3
H07c	Does the household share this sleeping room with other households?	s7aq4
H07d	How many households, including your household, share this sleeping room?	s7aq5
H08	What is the main source of lighting for your dwelling?	s7dq11
H09a	What is the main source of drinking water for the household?	s7dq1a1
H09b	What is the main source of water used by your household for other domestic purposes such as cooking and washing?	s7dq1a2
H10	What is the main source of cooking fuel for this household?	s7dq13
H13a	What type of toilet facility is usually used by the household?	s7dq16a
H13b	Do you share this toilet facility with other households?	s7dq16b
H13c	How many households including your household use this toilet facility?	s7dq16c
H14	How does the household dispose of rubbish (refuse)?	s7dq14
H15	How does your household dispose of liquid waste?	s7dq14b

LEAGUE TABLE OF POVERTY INCIDENCE (Po)

District Name	Region	P_o	Rank	District Name	Region	P_o	Rank	District Name	Region	P_o	Rank	District Name	Region	P_o	Rank
Wa West	UW	92.4	1	Wenchi Municipal	BA	41.2	55	Birim South	ER	27.6	109	Gomoa East	CR	14.5	163
Adaklu	VR	89.7	2	Krachi West	VR	41.1	56	Abura-Asebu-Kwamankese	CR	27.2	110	Tarkwa Nsuaem Municipal	WR	14.5	164
Builsa South	UE	84.4	3	North Dayi	VR	40.6	57	Atiwa	ER	27.1	111	Birim North	ER	14.3	165
East Gonja	NR	84.2	4	Mpohor	WR	40.4	58	Wassa Amenfi East	WR	26.6	112	Bia west	WR	14.3	166
Wa East	UW	83.8	5	Offinso Municipal	AR	40.0	59	Akatsi North	VR	26.5	113	Techiman Municipal	BA	14.2	167
Sissala West	UW	81.2	6	Saboba	NR	39.7	60	Asante Akim North	AR	26.3	114	Ahafo Ano South	AR	14.1	168
Bole	NR	79.4	7	Ho West	VR	39.6	61	Wassa East	WR	25.7	115	Juabeso	WR	13.9	169
Kintampo South	BA	78.3	8	Jasikan	VR	39.1	62	Upper West Akyem	ER	25.6	116	Asunafo South	BA	13.9	170
Banda	BA	78.0	9	Akyem Mansa	ER	38.8	63	Agona East	CR	25.4	117	Atwima Nwabiagya	AR	13.3	171
Kpandai	NR	76.9	10	Tain	BA	38.2	64	South Tongu	VR	25.4	118	Kasena Nankana West	UE	13.1	172
Nandom	UW	73.7	11	Tano South	BA	38.0	65	Afigya Sekyere	AR	25.2	119	Atwima Mponua	AR	12.9	173
Daffiama Bussie	UW	73.6	12	Bosome Freho	AR	37.6	66	Bia East	WR	24.7	120	Sekondi Takoradi Metropolis	WR	12.9	174
Lawra	UW	73.5	13	Afadzato South	VR	36.9	67	Tamale Metropolis	NR	24.6	121	Effutu Municipal	CR	12.3	175
Lambussie Karni	UW	72.6	14	Kwahu East	ER	36.6	68	Assin North Municipal	CR	24.4	122	Asunafo North Municipal	BA	12.0	176
Jirapa	UW	71.4	15	Nkoranza South	BA	36.1	69	Kasena Nankana East	UE	24.2	123	Ajumako-Enyan-Essiam	CR	11.7	177
Mamprugu Moagduri	NR	71.2	16	Zabzugu	NR	36.0	70	Asikuma-Odoben Brakwa	CR	24.0	124	Asante Akim Central Municipal	AR	11.5	178
Nadowli-Kaleo	UW	68.5	17	Gushiegu	NR	35.7	71	Assin South	CR	23.6	125	Dormaa Municipal	BA	11.4	179
Bawku West	UE	68.1	18	Wa Municipal	UW	35.5	72	Ketu North	VR	23.5	126	Ada West	GAR	11.1	180
Bongo	UE	67.4	19	Asutifi North	BA	35.4	73	Sekyere Central	AR	22.8	127	West Akim Municipal	ER	11.0	181
Kadjebi	VR	66.8	20	Dormaa East	BA	35.3	74	Birim Municipal	ER	22.8	128	Sefwi Bibiani-Ahwiaso Bekwai	WR	10.8	182
Nabdam	UE	63.0	21	Chereponi	NR	34.7	75	Gomoa West	CR	22.6	129	East Akim Municipal	ER	10.6	183
Sawla-Tuna-Kalba	NR	62.5	22	Nanumba South	NR	33.9	76	Asante Akim South	AR	22.0	130	Akatsi South	VR	10.5	184
Agotime Ziope	VR	62.1	23	Ewutu Senya	CR	33.6	77	Ho Municipal	VR	21.9	131	Ga Central Municipal	GAR	10.1	185
Gonja Central	NR	61.2	24	Central Tongu	VR	33.4	78	Adansi South	AR	21.9	132	Adenta Municipal	GAR	10.1	186
Kwahu Afram Plains South	ER	59.7	25	Atebubu Amantin	BA	33.3	79	Shama	WR	21.7	133	Dormaa West	BA	9.9	187
Sekyere Afram Plains North	AR	59.6	26	Kpando Municipal	VR	32.4	80	Sefwi Akontombra	WR	21.4	134	Amansie West	AR	9.6	188
Talensi	UE	56.5	27	Karaga	NR	32.3	81	Asutifi South	BA	21.3	135	Ga West Municipal	GAR	8.9	189
Shai Osudoku	GAR	55.1	28	Kumbumgu	NR	32.3	82	Ejisu Juaben Municipal	AR	20.9	136	Aowin	WR	8.9	190
Bunkpurugu Yonyo	NR	54.8	29	Yendi Municipal	NR	32.2	83	Tano North	BA	20.8	137	Tema Metropolis	GAR	8.7	191

District Name	Region	P_o	Rank	District Name	Region	P_o	Rank	District Name	Region	P_o	Rank	District Name	Region	P_o	Rank
Garu Tempane	UE	54.5	30	Savelugu Nanton	NR	32.2	84	Jaman South	BA	20.5	138	TwifoAti Morkwa	CR	7.9	192
Builsa North	UE	54.3	31	Nzema East	WR	32.2	85	Awutu Senya East Municipal	CR	20.3	139	Wassa Amenfi West	WR	6.9	193
North Gonja	NR	53.8	32	Kintampo North Municipal	BA	31.8	86	Asuogyaman	ER	19.9	140	Suhum Municipal	ER	6.5	194
West Gonja	NR	52.7	33	Kwahu Afram Plains North	ER	31.7	87	Ellembelle	WR	19.9	141	Nsawam Adoagyiri Municipal	ER	6.3	195
Krachi Nchumuru	VR	52.6	34	Nkwanta South	VR	31.7	88	Amansie Central	AR	19.8	142	Kwabre East	AR	6.2	196
Wassa Amenfi Central	WR	51.9	35	Hohoe Municipal	VR	31.6	89	Sunyani Municipal	BA	19.4	143	Suaman	WR	6.0	197
North Tongu	VR	51.7	36	Nanumba North	NR	31.6	90	Akwapem North	ER	19.3	144	Ada East	GAR	5.9	198
Krachi East	VR	50.6	37	Biakoye	VR	31.6	91	Ahanta West	WR	19.3	145	Bosumtwi	AR	5.8	199
Nkwanta North	VR	49.9	38	Ningo Prampram	GAR	31.2	92	Jaman North	BA	18.8	146	Kumasi Metropolis	AR	5.3	200
Ekumfi	CR	48.4	39	Ayensuano	ER	30.9	93	Sefwi Wiawso	WR	18.7	147	Obuasi Municipal	AR	5.3	201
Kwahu South	ER	48.0	40	Nkoranza North	BA	30.9	94	Twifo Heman Lower Denkyira	CR	18.7	148	Atwima Kwanwoma	AR	4.9	202
Sissala East	UW	47.3	41	Jomoro	WR	30.7	95	Komenda-Edina-Egyafo-Abirem	CR	18.6	149	Ga East Municipal	GAR	4.8	203
Ejura Sekye Dumasi	AR	47.0	42	Upper Denkyira East Municipal	CR	30.6	96	Adansi North	AR	18.4	150	Denkyembuor	ER	4.6	204
Ahafo Ano North	AR	46.4	43	Mamprusi West	NR	30.4	97	Kwahu West Municipal	ER	18.2	151	New Juaben Municipal	ER	4.6	205
Sene West	BA	45.8	44	Mfantsiman	CR	29.8	98	Fanteakwa	ER	18.1	152	Ashaiman Municipal	GAR	4.4	206
Mamprusi East	NR	44.5	45	Bekwai Municipal	AR	29.8	99	Prestea/Huni Valley	WR	17.4	153	Agona West Municipal	CR	4.4	207
Mion	NR	44.3	46	Mampong Municipal	AR	29.5	100	Sekyere East	AR	17.4	154	Ledzokuku/Krowor Mun.	GAR	4.2	208
Upper Manya	ER	43.6	47	Sunyani West	BA	29.5	101	Kwaebibirem	ER	16.6	155	Afigya Kwabre	AR	4.0	209
Binduri	UE	43.3	48	Offinso North	AR	29.4	102	Akwapim South	ER	16.5	156	Kpone Katamanso	GAR	3.5	210
Pusiga	UE	43.3	49	Sene East	BA	29.3	103	Yilo Krobo	ER	15.9	157	Upper Denkyira West	CR	3.3	211
Pru	BA	43.1	50	Sagnerigu Municipal	NR	29.3	104	Techiman North	BA	15.7	158	Asokore Mampong Municipal	AR	3.3	212
Tatale	NR	43.1	51	Sekyere Afram Plains	AR	28.9	105	Ketu South	VR	15.3	159	La Nkwantanang Madina Mun.	GAR	2.8	213
Tolon	NR	42.7	52	Berekum Municipal	BA	28.0	106	Ga South Municipal	GAR	15.2	160	Cape Coast Metropolis	CR	2.6	214
Bodi	WR	42.5	53	Bolgatanga Municipal	UE	27.9	107	Lower Manya	ER	14.8	161	Accra Metropolis	GAR	2.6	215
Bawku Municipal	UE	42.0	54	South Dayi	VR	27.7	108	Keta Municapal	VR	14.6	162	La Dade Kotopon Municipal	GAR	1.3	216