# DYNAMICS OF POVERTY AND INEQUALITY AMONG CROP FARMERS IN GHANA

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## Abstract

*The study examined the nature of poverty and inequality in Ghana by using Ghana Living Standards Survey Six (GLSS 6) data and qualitative data collected in Kwaebibirem District of the Eastern region of the country. Poverty and inequality are niches for certain categories of people located in specific geographical locations and in certain types of employment. The study found that in rural agrarian areas, farmers, especially those who cultivate food crops are the poorest in the country. Socio-cultural factors such as land ownership structures, intra-household decision making dynamics, climatic conditions, and lack of infrastructure to support rural agriculture explain poverty as differentiated by geography, gender and crop types. We recommend that programmes that aim at reducing poverty and inequality target affected agro ecological zones, food crop farmers and women who are the populations mostly hit by poverty. Policies and programmes such as One Village One Dam (1V1D), Planting for Food and Jobs (PFJ) and One District, One Factory(1D1F) which articulate government's aspirations for agriculture and industrial development are framed to respond to specific questions that relate to agricultural production and marketing in the country. Therefore, these programmes must focus on the social segments of the society that are the poorest in the country.*

**Keywords: Ghana, Poverty, Inequality, Crop farmers, Gend**

## Introduction

Ghana has made significant progress relative to other Sub-Saharan African countries in the last two decades, reducing poverty by more than half from 56.6% in 1992 to 24.2% in 2013, according to the 2016 UNICEF Ghana report on poverty and inequality (Cooke; Hague & McKay, 2016). Similarly, the country also has relatively high living standards compared with many other countries in SSA. However, the improvement in living conditions is not evenly spread among farmers across sectors and ecological zones in the country. In particular the agricultural sector and smallholder food crop farmers are identified as having a high number of people living below the poverty line. (Ghana Statistical Service, 2007; 2013). Nonetheless, some studies have reported a rise in the number of medium-scale farms in the country, suggesting it is as a result of improved socio-economic conditions, and the ability of smallholder farmers to scale the many barriers

affecting them (Houssou; Chapoto & Asante-Addo, 2016). Accordingly, policy prescriptions aimed at ameliorating the incidence of poverty will need to target rural areas where the majority of the population is engaged in agriculture production.

The contribution of agriculture to the economy of Ghana continues to be significant even though its share of GDP has declined over the years. However, the agricultural sector is still the highest employer of most people in Ghana as about 52% of households in Ghana operate a farm and this figure is higher in some ecological zones in the country according to the Ghana Living Standards Survey Round 6 (Ghana Statistical Service, 2014). In rural areas, about 83% of households engage in agriculture production. Despite its substantial contribution to the food security needs, revenue for the state and ensuring socioeconomic wellbeing of many people, farmers and agriculture wage workers are amongst the

poorest in the country (Ghana Statistical Service, 2007; 2013). While the broad overview gives a picture of the sector, a more detailed analysis presents a picture of extreme inequality within the sector itself. This inequality can be observed geographically, ecologically and between men and women.

Another important marker of the income inequality in the agricultural sector can be explained by the type of crops that farmers cultivate. The orthodox literature on Ghana's agrarian livelihoods often creates a dual system of cash cropping and food cropping to indicate the structural differences that distinguish farmers of these crops. Hence cocoa, oil palm and rubber are pegged against food crops consumed domestically. Many of these studies emanate from post colonialist and dependency schools that link the lag in food crop production to the colonial structures that favoured production that meets the needs of the metropole. Several books and chapters have been dedicated to discussing how cocoa in particular and oil palm to some extent, have created both wealth and chaos (Hill, 1986; Mikell, 1992; Berry, 1993; Amanor, 2010).

Similarly, in the past three decades, considerable attention has been shifted to horticultural crops and the inherent welfare issues in the sector. It is expected that the export of horticultural crops will bring improved incomes. Another area of distinction is in the size of farms where farm sizes are below 2 hectares in general. Since colonial times, Ghana's agricultural sector has been smallholder-led. However, the last two decades have seen the rise of medium to large farms mainly by foreign investors, urban-based absentee farmers and rural land owning classes. This new dimension of agriculture production has put in sharper perspective, changing gender, land and labour relations in general (Tsikata & Yaro, 2014; Yaro, Teye & Torvikey, 2017).

The segmentation of the agricultural sector based on cash versus food, small farms versus large farms, export vrs non-export crop production and the positioning of men and women in it is a proxy in determining welfare issues such as income inequality and poverty in the sector. However, an extension of the indicators could provide much detail about the sector. This is where we propose to interrogate various data to enable us characterise the nature of income inequality and poverty amongst food crop farmers in Ghana. The study thus seeks to unravel the drivers that entrench poverty and heighten inequality among food crop farmers in Ghana.

**Agrarian Poverty in Ghana: A Theoretical Note**
Poverty is a social phenomenon that is caused by many factors. It has many dimensions and may be characterized by low income, malnutrition, ill health, illiteracy, powerlessness and insecurity, among others (Mosse, 2010). The impact of the different factors may combine to keep individuals or households in a state of material deprivation, powerlessness, isolation, physical weakness and vulnerability. Many strategies and programmes have been rolled out to address this canker of poverty in Ghana with little success (Sultan and Schrofer, 2008). While the aims of the many poverty interventions have been to impact the lives of the poor and vulnerable in ways that would empower them to improve their livelihoods and well-being, these programs lacked adequate theoretical understanding of the phenomenon of poverty. A better understanding of the notion of poverty requires that more attention be paid to the complex relationship between the diverse factors that combine to create and sustain it. However, less attention has been given to explaining the constant conditions and expressions of poverty – the causes of poverty and the social mechanisms through which poverty persists, especially those that fall beyond the narrowly conceptualized income- consumption issues, or even individual entitlements mediated by legal frameworks and market operations (Mosse, 2010; Green and Hulme, 2005).

As it is the case elsewhere in the world, the incidence of poverty has been largely studied through the lenses of microeconomic frameworks. The rationale for this approach to the study of poverty has been that, it provides empirical insight into the phenomenon allowing policy makers and politicians to formulate adequate policy measures to arrest the situation (Green and Hulme, 2005). This microeconomic approach and its professed solutions are yet to better the lot of the over a billion poor persons the world over (See Tsikata and Yaro, 2014; Mosse, 2010). In Ghana, it is estimated that about a quarter of the population - 6.4 million live in poverty (Cooke; Hague & McKay, 2016). Boateng et al. (1990) conducted the first analysis of poverty trends in Ghana, relying on the half-year results of the first Ghana Living Standards Survey conducted in

1987/88. A major finding from their study was the fact that about 65% of the very poor were rural dwellers. This trend has persisted till date, with majority of the poor population residing in the rural areas (See Ghana Statistical Service, 2014). In this study, a combination of quantitative and qualitative data was used to explain the remits of poverty in agrarian Ghana and rural households' own understanding of what determines poverty in their communities. The self-definition part, which is used to support the quantitative data, is to be able to hear the voices of the people through their lived experiences.

**Methodology**

The study used the mixed methods approach to explore the dynamics of income distribution among farmers as well as socioeconomic drivers that reinforce inequality and poverty among them. Specific explanatory variables examined include crop type, geographic location, and gender. These were measured against agricultural workers (farmers) income to understand how income differences among smallholder farmers in Ghana are affected or shaped by sociodemographic, environmental and other economic factors. In addition, we explored gender, power relations and the institutional setting to understand how these shape farmers' production and profits. Again, other indicators of inequality such as access to productive assets (land) were explored to explain relational dynamics contributing to inequality and polarisation among farmers. Using quantitative secondary data, descriptive statistics-means, variances, and standard deviations were computed to tease out the nature and trend of inequality among farmers in Ghana, mainly within the context of gender, crop type, agro-ecological zone and the rural-urban split.

The study does not intend to use rigorous quantitative analytical models, as there are many of such studies available on the subject of inequality (See Lu, et al., 2017; Annim et al., 2012; Canagarajah et al., 1998; Zanden et al., 2014). Hence, to establish evidence of relationships between our dependent and independent variables, a multiple linear regression approach was adopted to estimate the effect that our independent variables have on the income and wellbeing of farmers in general. Our linear regression model is given as:

$$\Delta Y_1 = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots \beta n X n + \varepsilon_i$$

Where $\Delta Y_1$ represents change in income of smallholder farmers, $\alpha$ is the constant term and represents the default income level without the effect of the explanatory variables, $\beta_1 X_1$, $\beta_2 X_2$, $\beta_3 X_3$, $\dots \beta n X n$ represent the index scores of our explanatory variables, and $\varepsilon_i$ is the unobserved error term in the dataset.

Multiple linear regression is used for simplicity and ease of understanding as our main focus in this study is to influence policy, inclusive growth and development. In doing this, some basic assumptions must be met. The first assumption is normality - the independent variables must be normally distributed. Another linear regression assumption is that the relationship between the dependent and independent variables is linear. This was checked by examining scatterplots of the dependent and independent variables. The purpose of generating these statistics is to provide the basis and direction to delve into the socially and contextually reinforcing issues that promote socioeconomic exclusion and widened-inequality among those at the lower end of society. The dynamics of inequality, polarisation and poverty is our primary focus in this study hence much of the analysis focused on examining the socioeconomic, cultural and environmental factors that affect farmers' access to productive resources and define their socioeconomic wellbeing via different pathways.

Data were sourced from the Ghana Living Standards Survey (GLSS) round 6 conducted in 2012/13. The GLSS 6 is the latest available comprehensive national data on living standards and economic situations of Ghanaians covering all sectors of the economy. The GLSS contains data on farming and crop types cultivated in Ghana as well as percentage of household income that is derived from farming. Again, analysed income share from farming differs across different ecological zones, also from the GLSS dataset.

As indicated earlier, the study seeks to compare income levels and inequality among farmers cultivating different crop types, farmers living in different ecological zones as well as farmers in rural and urban areas. Conventional data suggest smallholder farmers cultivate about two hectares of farmland (See Chamberlin, 2007). However, in analysing the dynamics of change in Ghana's farm structure, Houssou; Chapoto and Asante-Addo (2016) suggest smallholder farmers as farmers

cultivating up to five hectares of land, medium scale farmers are those cultivating 5-20 hectares of farmland while farmers with farm sizes above 20 hectares are classified as large-scale farmers. This latter categorization is useful in the context of this study as it is more encompassing and helps us to better understand the dynamics of agrarian poverty in rural Ghana.

To understand the living experiences of rural households, we had interviews with farmers in the Kwaebibirem District of the Eastern Region of Ghana to understand the determinants of poverty in their communities. The District was chosen because its agriculture structure represents the many different sub-sectors within the sector. Farmers in the district cultivate a range of crops from tree crops such as cocoa and oil palm, to fruits, vegetables and other food crops such as plantain and cassava. Besides, it is home to three big oil palm processing facilities, medium to small-scale processors and therefore a good measure of agriculture linking industry.

**Variable Selection and Measures of Poverty and Inequality**

Many studies have found poverty and inequality to be higher among farmers than people employed in other non-farm sectors in Sub-Saharan Africa including Ghana (Sohoulande et al., 2017; Novignon, 2017; OECD, 2015). This is exemplified by inequalities in income and resource distribution. Accurate measurement of poverty and income has, however, proved to be a difficult task, leading to the development and use of several approaches, with each of them having their own strengths and weaknesses. Traditionally, income estimates have been used to attempt an explanation of poverty via income size or distribution and its spread among populations or sectors of interest (Foster et al., 2013). However, the use of income estimates has been heavily criticized on grounds of precision, oversimplification and ignoring contextual variations.

Due to the complexity surrounding poverty and inequality measurements, and the seemingly narrow view of using income estimates, most academic and policy researchers alike tend to favour the use of more rounded approach, commonly referred to as the multidimensional approach. The multidimensional approach goes beyond income estimates to take into account non-income measures and context-specific scenarios. The multidimensional approach appears to be the preferred choice for most researchers, even though it is not without limitations. In short, there is no single measure of poverty and inequality without blemish. The choice, therefore, is dependent on the focus and purpose of the measurement.

Despite the challenges outlined above, this study seeks to use the income approach to analyze how inequality plays out among farmers in different ecological zones and in different crop sub-sectors. The choice of using income serves the purpose of our analysis as our focus is not on accurate quantitative measures of geographic and crop sub-sector inequalities. Rather, to have an overview of ecological and sector differences as grounds to assess why farming profitability is generally low for farmers and why variations exist for farmers in different zones even if they cultivate the same crop. Gender, area of residence, crop type and ecological zones constitute our variables of interest (explanatory variables) to analyze the causes of income differences among farmers. These variables were selected due to a belief in the literature that they have direct effect on earnings for smallholder farmers. Gender, for example, has been widely cited as having an effect on access to land, which is central to farming. The type of crops farmers cultivate is also important to investigate because different production and marketing regimes exist for different crops. While certain crops such as cocoa, have well institutionalized market structures, the same cannot be said for other crops. Perhaps, this is why cocoa is affectionately referred to as a cash crop, even though all other crops can be exchanged for cash. Therefore, it is believed that the type of crop a farmer cultivates also explains the income differences. The ecological zones in the country also come with different opportunities and constraints for farmers, and it will be interesting to learn how the different ecological and climatic conditions impact on farmers' earnings. Therefore, in explaining the observed income differences, ecological regions are taken into account as a potential contributing factor.

**Unravelling Poverty and Inequality in Ghana**
The issues of poverty are cultural, economic and social in nature. In general, people define themselves and others define them. Thus, both self-classification of poverty and conceptual and theoretical - based

definitions are relevant in expanding the remits of understanding poverty as a phenomenon. In developing countries such as Ghana, a person's location can imbue them to certain kinds of vulnerabilities that expose them to poverty. The statistical analysis on poverty by income as summarised in Table 1 below, shows how location is important in determining the nature of poverty in the country. While income is used as a measure of poverty, the sector of employment, area of residence and ecological zone are additional markers that distinguish poor populations from non-poor populations. Generally, urban areas have higher incomes than rural areas, with the GAMA recording the highest average annual household income.

Income disparity between rural and urban areas and between different geographic areas is also significant (Table 1). The savannah zones have the lowest level of income, followed by the rural areas along the coast.

Income from agriculture is highest for households in the rural forest zone (GHS2, 107.5), followed by households in the urban forest zones (GHS1, 800) and then the GAMA area (GHS1, 511.7). The rest of the ecological zones have annual mean incomes (net) from agriculture <GHS1, 000 with the rural coastal households having the least average annual income (GHS342.07). The data show wide disparity in incomes between agricultural households living in different ecological regions (Table 1).

**Table 1: Yearly Average Household Income from Agriculture by Ecological Zone**

| Ecological Zone | Net income from agric | Total Household expenditure (Real) | Farm Status | Home consumption |
|---|---|---|---|---|
| Accra (GAMA) | 1511.719 | 9450.4415 | 1.0088 | 2042.5989 |
| Urban Coastal | 745.6313 | 9824.2174 | 1.0104 | 1237.7577 |
| Urban Forest | 1799.9518 | 7979.6633 | 1.0195 | 1556.2868 |
| Urban Savannah | 566.3696 | 7580.1962 | 1.0048 | 1349.2692 |
| Rural Coastal | 342.0656 | 8319.6452 | 1.0112 | 1049.9658 |
| Rural Forest | 2107.4748 | 8778.6462 | 1.0313 | 1800.7673 |
| Rural Savannah | 582.7905 | 7060.3193 | 1.0053 | 1117.7502 |

Source: Authors Calculations Based on Data Set from GLSS 6 (2013).

The responses from our focus group discussions cohere with the statistical findings already discussed in terms of employment type, location and poverty. The conceptualization of poverty was a dicey issue among the interviewees in the study area. Participants proclaimed that they live within their means; even though they do not have enough cash flow and modern assets to exhibit as a sign of wealth, they have sufficient food from farming for sustenance. Consequently, the understanding of poverty is largely associated with the levels of income within agriculture households. Even though sufficient food from agriculture production assures sustenance, households with a member having formal education and working in the formal sector were described as better off as such members cushion the entire household.

Also, the understanding of poverty was related to laziness. Participants professed that in some households, members are generally lazy and do not want to have anything to do with farming. In situations like these, the household is not able to provide for the survival of members and other members of the community are also not willing to support. For instance, a participant in an all -female Focus Group Discussion said:

> *A poor household is one in which members are not involved in any farming activity which is the major economic activity in this community and have not been to school to be able to work in other sectors as well. This may usually happen when members of the household are sick and are unable to carry out any farming activity or sometimes just being lazy and do not want to farm (All Female FGD, Bomso,10/05/2018)*

With changes in the environment and land use, the conditions of farmers could be worsening. The reason being that the major economic and livelihood

activity (farming) of the people is at crossings as the looming calamity of climate change, land degradation due to artisanal mining, lack of government support, poor road networks, cultivation of only food crops, smallness and insularity of farms, and the occurrence of pest and diseases were redefining the farming systems and largely generating unemployment.

From the responses collated, it was observed that climate indicators (prolonged drought, storm surges, declined rainfall and strong harmattan) were adversely affecting farming activities and generating climate-induced poverty. Despite the fact that some of the participants indicated to have been engaged in off-farm jobs including trading and palm oil production as a means of complementing their main livelihood strategy (farming), it is certain that these activities were not common with most of the farming households. Destruction of farmlands and decline in crop productivity were persistent inducing community members to shun farming. A participant corroborated this by saying:

> *When you are not fortunate enough, the wind blows away what you have cultivated on your farm and then you are left with nothing. That is how farmers like us are working everyday yet we don't have nothing to show for it. Just last year, I cultivated water yam and plantain. The farm was doing very well until we entered the harmattan season. All the plantains I had cultivated in the farm died. I spent almost Ghc400 in cultivating the land and after everything, I was able to get Ghc18 from that farm. Only Ghc18. How then do you move on in life when this happens? (All Female FGD, Bomso,10/05/2018).*

According to Dzanku (2015), many rural households in Ghana are livelihood transient. The vulnerabilities of agricultural livelihoods, make the state of livelihood transiency an important phenomenon especially for farmers whose crops do not have direct state intervention.

Home consumption and expenditure are also contingent on various intersections such as employment type, gender and geography. Table 1 also compares real household expenditure and home consumption as well as average agricultural lands owned by households. The results show that average yearly household expenditure and consumption is lowest for rural coastal residents (GHS1, 049.97) and followed by rural savannah residents (GHS1, 117.75). Consistently, data from official sources suggest the coastal and savannah regions have low levels of income from agriculture and low levels of home consumption (See Ghana Statistical Service, 2007 & 2014). Among other reasons, the probable factors that account for this consistent observation is the dwindling levels of soil fertility, the encroachment of agricultural lands for other commercial and social purposes, and chiefly, the nature of policy and programme interventions in the agricultural sector by government and international organisations. In the coastal region, the pressures of urbanization along with the emergence and rapid growth of the tourism and hydrocarbon industries in the region have resulted in the appropriation of arable land for non-farming purposes thereby displacing farmers off their sources of livelihood. Likewise, in the savannah areas, urbanization is leading to the loss of farmlands for housing and other infrastructure purposes.

Consistent with existing studies (Whitehead and Tsikata, 2003; Awumbila 2006; Yaro, 2010), land access is an aspect of farmers' welfare. The data shows that access to land is not the same for all farmers. While, the average agricultural land (in hectares) shows most farmers cultivate on small scale, households in the forest zones have relatively bigger land sizes (0.6556 hectares and 0.44327 hectares for rural and urban forest households respectively). Again, the savannah regions recorded the smallest average land sizes-0.13605 hectares for urban savannah households and 0.16501 hectares for rural savannah households. In terms of acreage, farmers on average cultivate just about one acre (Table 1). In all, for all ecological zones, rural households have higher average farmlands than urban households. Nonetheless, the incidence of poverty is higher in the rural ecological zones than in the urban areas as a result of land grabbing activities and poor marketing structures that make it difficult for smallholder farmers to get their goods to the commercial centres to attract favourable market prices. This shows that agriculture land size alone does not solve the poverty situation. A multiplicity of factors such as lack of effective marketing

structures, transport infrastructure, especially in the rural areas expose farmers to the whims of other market players.

The smallness and insularity of farms as well as the cultivation of only food crops was a major contributing factor to poverty in the area. Over the years, small farms in Africa have been associated with people with less income to purchase modern smart technologies that will facilitate easier and faster work (Harper, 2015; Titus & Adefisayo, 2012). In this regard, farming in rural communities has been limited to survival and practised in smallness (Belletti, 2015; Aworh, 2015). It is not strange this was the case of the people of Kwaebibirem area. As a result of the smallness and insularity, farming was only limited to food crops including maize, yam, cassava and plantain. Cash crop farming is not ruled out of the context as some participants were also engaged in the cultivation of cocoa, citrus and oil palm. However, the poverty alleviation effect of the cash crop farming was insufficient as it was only done by the perceived wealthy farmers who could afford inputs and labour cost. In Ghana, just like elsewhere in the world, money is needed to pay for many things not produced by farmers and also to pay for services. Farmers need cash to pay hospital bills, children's school fees, purchase consumer items and even to transport their farm produce to the market. Thus, when farmers earn very low incomes from their produce and do not receive adequate remittances or state-sponsored cash transfers, they experience vulnerabilities that expose them to poverty. Even when farmers produce enough food to last for the season, the distress food sale which makes them to 'sell low' and 'buy high' exacerbate their poverty as they would have to spend higher on food purchases later in the year.

By sector of employment, the data shows a wide disparity between wage income and agriculture income. Though agriculture comes as the second highest source of income for households, its mean (GHS1, 247.95), is significantly lower than income from wages which recorded a mean of GHS5, 246.76. Yet, the standard deviation suggests a wide income disparity among farmers as well (see Table 2). Agriculture is also predominantly a rural activity. Rural dwellers depend on agriculture more for their income and livelihoods than urban residents. Across the ecological zones, by income, farmers in the rural savannah belts recorded highest average annual income from agriculture (mean=2284), indicating they are the most dependent on agriculture for a living. Put differently, this data suggests smallholder farmers in the savannah region put more efforts into farming to enable them make decent living out of their labour. The forest belt which followed had a mean income ofGHS2179 while farmers in the GAMA area had the lowest income from agriculture with a mean income of GHS137. Table 2 presents the mean incomes by sector and by ecological zone.

**Table 2: Average Income by Sector of Employment and Ecological Zone**

| Income Source | Accra (GAMA) | Other Urban | Rural Coastal | Rural Forest | Rural Savannah |
|---|---|---|---|---|---|
| | | | Mean Income | | |
| Total household wage income | 7936.723 (18207.769) | 7029.8834 (22163.729) | 4442.4283 (10946.057) | 4813.6287 (23508.604) | 2412.7977 (12694.404) |
| Net income from agric | 137.926 (2547.654) | 278.6506 (8433.371) | 720.7829 (7734.774) | 2179.851 (5925.951) | 2284.3411 (14994.361) |
| Net income from nf enterprise | -66.348 (298.953) | -54.3328 (322.783) | -45.1551 (239.409) | -60 (192.096) | -13.4623 (79.957) |
| Rental come | 467.1997 (851.729) | 462.606 (7067.359) | 254.0341 (761.645) | 317.8968 (1125.698) | 551.4902 (2149.948) |
| Remittances income | 255.6697 (1235.047) | 414.2027 (2064.104) | 251.6799 (756.158) | 186.8802 (544.860) | 108.4064 (438.668) |
| Other (miscellaneous) income | 111.5442 (1088.344) | 185.9279 (2124.250) | 57.9122 (505.434) | 139.1706 (2617.563) | 72.1513 (2452.006) |

***Standard deviations are in parentheses***
Source: Authors Based on GLSS 6(2013) Dataset

Generally, tree crop farmers recorded higher incomes relative to farmers growing other crops across all ecological zones except the savannah and GAMA zones where roots/fruits/vegetables fetch higher income than other crop types. Dzanku (2018) opines that the poverty incidence among food crop farmers can be explained by the fact that they sell their produce low when they have it or when food is in abundance and have to buy high during the lean season. In rural areas, tree crop farmers in the rural coastal zone recorded higher average income (GHS1,306) than their counterparts in coastal and savannah zones - means of GHS947 and GHS636 respectively (see Table 3). The data suggests that, for farmers in the same crop category, income levels differ depending on location and agro-ecological zones. One possible explanation to this could be the climatic differences in the ecological zones. In the forest zones where there is double maxima rainfall pattern, the dry season is short, averaging about four months. This means farmers are able to work on their fields for more months and could earn more income than their counterparts in the savannah regions who comparatively have prolonged dry season and relatively fewer rainy months. Aside the seasonality, soil fertility could also be a factor and for the same crop, yields might differ for different ecological zones. Again, because there are no regularized markets for crops other than cocoa, earnings depend on availability of buyers and prevailing demand. Consequently, the supply forces relating to a particular crop in the ecological regions could differ significantly from time to time. Boosting agricultural income for farmers will require investment in appropriate technologies for all year-round farming and a market system that assure farmers a guaranteed market and prices for their produce throughout the year.

**Table 3: Income by Crop Type, Geographic Location and Gender**

| Ecological Zone | Revenue from tree crops | revenue from sale of roots/fruit/veg | revenue from other agricultural income | revenue from transformed crops |
|---|---|---|---|---|
| Accra (GAMA) | 604.4313 (1438.8712) | 1270.8185 (8800.41672) | 14.6184 (85.81769) | 216.3118 (1430.70432) |
| Urban Coastal | 1430.7692 (2717.47606) | 1044.6682 (2534.55457) | 10.7876 (68.35146) | 86.8519 (1968.90282) |
| Urban Forest | 1042.1772 (2471.03438) | 1416.7305 (19557.38117) | 11.4401 (86.12529) | 66.9286 (821.11672) |
| Urban Savannah | 588.9334 (1604.26245) | 283.9231 (1177.2171) | 3.773 (68.76675) | 115.2752 (2178.03704) |
| Rural Coastal | 1306.0546 (3849.49993) | 753.5438 (2794.82179) | 22.507 (250.57436) | 671.8541 (14042.85188) |
| Rural Forest | 1254.3428 (2912.622) | 1416.9782 (8276.94844) | 131.1224 (7279.54508) | 78.6523 (1540.08447) |
| Rural Savannah | 557.1289 (1459.02652) | 351.5563 (2335.42917) | 3.5036 (27.62393) | 49.7908 (757.63554) |
| Gender of Household Head | | | | |
| Male | 1070.3939 (2605.72823) | 1209.0682 (12119.92218) | 50.9625 (4124.04088) | 148.5877 (4532.68503) |
| Female | 447.6645 (1305.74906) | 400.8461 (2392.08251) | 2.6376 (40.69059) | 74.2738 (1409.17277) |

*Standard deviations are in parenthesis*
*S*ource: Authors calculated from GLSS 6(2013) Dataset

Research participants in the Kwaebibirim area decried the lack of infrastructure such as road networks which make it difficult to get food items to the market on time. Other productive resources such as credit, farm inputs and also extension services were hard to access. It is a well-known fact that development is motivated by government action, in the absence of government support, societies may find it difficult to develop and meet economic targets especially in the developing world (GSS, 2014). Even though, it is not out of place to note that the people of Kwaebibirem area were making the maximum efforts to establish and sustain their livelihoods, the absence and/or inadequacy of external support was a bane to livelihood enhancement and poverty alleviation. And a research participant emphasised this point by saying,

> *As my brother has already said, we lack support from the government for finance, farming equipment, roads among others. If a farmer acquires land and is in need of a loan to help cultivate the land, they will struggle to secure the loan from the various financial institutions regardless of the number of applications he or she would write. Farming now is changing and require lots of capital to make it very successful. Farmers need chemicals and fertilizers to support their farming activities. Interestingly, the government supports farmers in other regions especially the Brong Ahafo region but we in this area do not receive any financial help from the government. Some of these farmers in the other regions are giving funds as much as 15,000cedis to invest in their farming business and they become very successful farmers but we in this district and community do not receive any of these supports from the government. Personally, I don't trust anything any government says regarding support for farmers because we don't get to see any of these supports and help they talk about. At times, I am made to believe that we in this district are not part of Ghana (All Male FGD, Bomso,10/05/2018)*

Land degradation, pests and diseases are also challenges affecting farming activities and wellbeing of farm households. It was established that most of the farmlands are no more fertile due to prolonged use. Continuous farming on these farmlands has generated soil infertility. Pests and disease occurrence has also been on the ascendency destroying crops and leaving farmers with little or no yield. An interviewee stated:

> *I think there is a problem with our lands in the area. Our lands are gradually losing their fertility and so we need the agriculture extension officers to come take a look at them for us. Also, these days when we grow maize, some locusts and insects attack them and destroy everything we cultivate. There's a maize farm just behind this building. You can go and take a look at it for yourself. You'd see how locusts and other insects are destroying the farm because the farmer does not have the means to buy chemicals to spray the farm (All Male FGD, Bomso, 10/05/2018).*

Table 3 also compares average income for men and women in the various crop categories. The data shows wide income disparity between male and female - headed households. While major sources of agricultural income for both male and female-headed households are from tree crops (cocoa, cashew, oil palm, rubber etc.) and roots crops (yam, cassava, etc) fruits (mango, pineapple, coconut, citrus etc) and vegetables (tomatoes, cabbage, okro, pepper, etc) their average incomes from the crops are significantly different. The average income from tree crops for male - headed households was GHS1,070 while that of females was only GHS448. Average income from other crops also shows a similar unequal pattern. Females on average recorded a yearly income of GHS400.85 from roots, fruits and vegetable crops while their male counterparts recorded GHS1, 209 from the same source.

There were instances of inequality in the community. Even though, it was clear that modernization was introducing a different dimension of thinking, helping people embrace the concept of equality and inequality existed due to predefined socio-cultural structures. The main drivers of inequality were land

ownership and power/authority. For many years in Ghanaian societies, tradition has assigned ownership of land to the male (Britwum; Tsikata; Akorsu and Aberese Ako, 2014)). This phenomenon still exists as women can only own lands by permission of their husbands or other male relations in many agrarian areas in the country (Whitehead and Tsikata, 2003). In the study area which is matrilineal, both men and women could access family land but the final decision on the land rests on the man. Men also have the privilege to own personal lands as compared to women. Apart from the inequality regarding the ownership of land, the men are also predisposed to more income as compared to the women. The men in the family could own private farms aside the family farm which means more income for them compared to women. Men are therefore able to engage in leisure activities and own more household property hence generating inequality. A female interviewee stated:

> A man has the privilege to own his personal farm [Mmarima Fuo] aside the family farm but women cannot. There are instances where women can own their own farms but this is always through rent or used with permission from the husband. Because of that the men always have more income than the women (All Male FGD, Bomso, 10/05/2018).

Apart from land ownership, the total exhibition of power/authority by men also generated inequality. Men were mostly the heads of the household which predisposed them to take major decisions on behalf of the household. Some of the participants were of the view that in recent times, joint decision making is closing the power of authority and transforming gender relations in households. For instance, men discuss with their wives the type of crops to cultivate in a season. Nonetheless, total power rests with men. Income accrued from farming activities by both the man and woman is kept by the man and the man decides on its usage. In some instances, the man spends the income earned from the household farm arbitrarily.

These power dimensions have implication for finances and agriculture expenditure as input use significantly changes the farm yield for men and women (Dzanku, 2017). This is because, the one who controls the income, is privileged to invest in his farm. The man's farm is usually mainstreamed and seen as the most important.

**Linear Regression Analysis**

As indicated in the methodology section, our outcome variable of interest is net income from agriculture reported by GLSS 6 dataset. Our explanatory variables include income from the sale of root/fruit/vegetable crops, tree crops, agricultural land owned by household, area of residence coded as dummy variable (1=rural, 0=urban), ecological zone-GAMA, rural forest, rural savannah, rural coastal, urban forest, urban coastal, urban savannah (also coded as dummies where 1 equals living in a particular ecological zone, 0 equals all farmers not living in that ecological zone), gender (1=male, 0=female).

First, the correlation between the outcome variable and continuous independent variables were checked and both met the linear collinearity assumption, justifying their fit to be included in the model. Again, the normal distribution of our continuous independent variables was checked and they were all normally distributed, except income from tree crops which was slightly skewed though positively correlated. Therefore, it was still maintained in the model.

When all the variables described above were put in a linear regression model, the overall model was found to be significant, meaning, at least one variable in the model explains or influences the outcome variable. The R-squared of 0.876 meant that approximately 88% of the variability of agricultural income is accounted for by the variables in the model. See Table 4.

**Table 4: Linear Regression Coefficients**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| 1 | (Constant) | 1766.114 | 419.92 | | 4.206 | 0.00 | | |
| | Revenue from tree crops | 0.728 | 0.032 | 0.138 | 22.968 | 0.00 | 0.967 | 1.034 |
| | revenue from sale of roots/fruit/veg | 1.014 | 0.007 | 0.858 | 145.234 | 0.00 | 0.997 | 1.003 |
| | Agricultural land owned by household (ha) | 27.995 | 13.275 | 0.013 | 2.109 | 0.035 | 0.985 | 1.015 |
| | Gender of Household Head | -380.079 | 342.706 | -0.011 | -1.109 | 0.267 | 0.352 | 2.84 |
| | Area of residence | -322.353 | 224.783 | -0.009 | -1.434 | 0.152 | 0.991 | 1.009 |
| | Urban Coastal region | -10.92 | 479.81 | 0 | -0.023 | 0.982 | 0.786 | 1.272 |
| | Urban Forest region | -370.584 | 285.829 | -0.012 | -1.297 | 0.195 | 0.424 | 2.36 |
| | Urban Savannah region | -478.998 | 439.789 | -0.009 | -1.089 | 0.276 | 0.545 | 1.836 |
| | Rural Coastal region | -817.853 | 407.822 | -0.014 | -2.005 | 0.045 | 0.706 | 1.417 |
| | Rural Forest region | 145.52 | 279.273 | 0.005 | 0.521 | 0.602 | 0.399 | 2.504 |
| | Rural Savannah region | -795.626 | 389.395 | -0.024 | -2.043 | 0.041 | 0.258 | 3.879 |

a. Dependent Variable: Net Income from Agriculture

Source: Authors Cclculated from GLSS 6(2013) Dataset

While the model was significant, the coefficients of gender, urban coastal, urban forest, urban savannah, rural forest, rural savannah and GAMA were found to be insignificant. Therefore, at the second stage, we trimmed the model to fit by eliminating the unrelated variables. Thus, in our final regression model, income tree crop sale, income from the sale of root/fruits/vegetable crops, agricultural land owned, rural coastal and rural savannah were maintained as independent variables against net income from agriculture as the outcome variable. The final regression results are presented in Table 5.

**Table 5: Final Regression Coefficients**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| 1 | (Constant) | 1248.567 | 99.179 | | 12.589 | 0.000 | | |
| | Revenue from tree crops | 0.73 | 0.032 | 0.138 | 23.144 | 0.000 | 0.978 | 1.022 |
| | revenue from sale of roots/fruit/veg | 1.015 | 0.007 | 0.859 | 145.285 | 0.000 | 0.998 | 1.002 |
| | Agricultural land owned by household (ha) | 28.375 | 13.27 | 0.013 | 2.138 | 0.033 | 0.986 | 1.014 |
| | Rural Coastal region | -740.252 | 345.515 | -0.013 | -2.142 | 0.032 | 0.984 | 1.017 |
| | Rural Savannah region | -423.331 | 200.061 | -0.013 | -2.116 | 0.034 | 0.977 | 1.024 |

a. Dependent Variable: Net Income from Agriculture

Source: Authors calculated from GLSS 6(2013) Dataset

Table 5 presents the regression coefficients for each of our explanatory variables and their explanation of power in relation to the outcome variable (agricultural income). A unit increase in income from roots/ fruit/vegetable crops is associated with 0.86 increase in agricultural income. This is statistically significant (p<0.001). Also, a unit increase in income from tree crops is associated with 0.14 increase in agricultural income (p<0.001). The size of agricultural land owned also relates positively to income derived from the sector with coefficient of 0.13 and significant at the 5% confidence level. In terms of the ecological zones, both rural costal and rural savannah regions have negative relationships to agricultural income. The ecological regions need further interrogation. Though most of the ecological zones, especially the urban areas did not appear significant in the regression analysis, certain contextual factors such as climate variability, rainfall patterns, soil fertility among them and present varying difficulties for smallholder farmers in each of the zones. It is therefore imperative to study these zones contextually and to intensify the supply of agricultural technologies relevant to making agriculture more productive and reliable in each zone. The fact that none of the ecological zones is significant could be explained by the fact that they are affected by the urban linkages such as the available markets, good roads and other socioeconomic infrastructure that support farmers' livelihoods compared to the rural areas which lack such infrastructure.

Historically, coastal and savannah rural areas are amongst the poorest in the county. This could result from different factors including poor soil fertility, lack of alternative livelihood activities or non-farm income generating activities and seasonality of economic activities there. The ability to bridge these gaps will constitute a significant push forward towards reducing poverty in these areas.

**Poverty and Inequality Dynamics**
The spread of poverty and inequality is not uniform in Ghana. There are a number of competing factors that account for the level and severity of poverty and socioeconomic exclusion. Some of these factors include the geography, gender and sector of employment among others. For farmers, the type of crop being cultivated is also a contributing factor to determine earnings and by extension level of poverty and inequality. This section explores the dynamics of poverty based on the above factors.

First, the GLSS 6 data shows that the incidence of poverty is highest among agricultural workers and farmers (see Figure 1). Poverty affects more rural households than urban households and also more endemic in the savannah region compared to other ecological zones. Though expenditure and other indicators appear to be higher for male - headed households than female - headed households, poverty incidence among male - headed households appear to be higher than that of female - headed households. This invites us to see the class dimensions of poverty and not see poverty only as a gendered phenomenon. Since 1980s, some feminist studies have proposed intersectional analysis of the dimensions of poverty (Sarvasy & Van Allen, 1984; Chant, 2009).
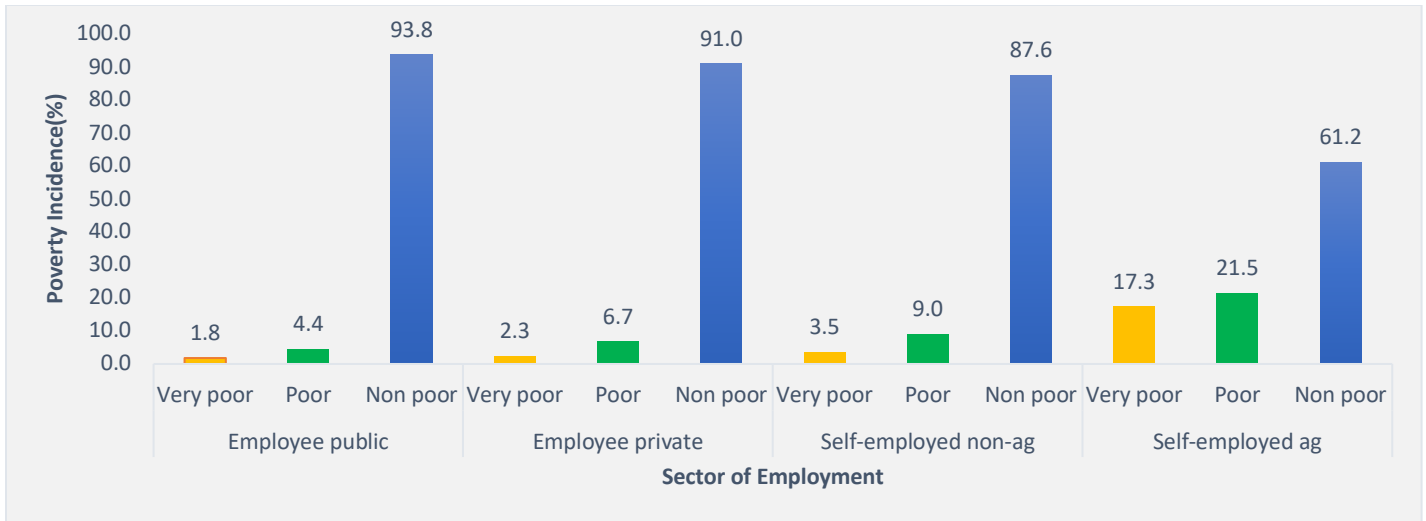
**Figure 1: Poverty by Sector of Employment**
Source: Calculated from GLSS 6(2013) Dataset

It is interesting to acknowledge that poverty is relatively higher among male-headed households than female-headed households. In male-headed households, 26% are poor and very poor combined while the corresponding figure for the female-headed households is approximately 19% (see Figure 2). While more male-headed households are believed to be living in poverty than female-headed households, the same cannot be said about income from crops and household expenditures (Tables 4 and 8). Income from crop is significantly lower for female-headed households than male-headed households. Again, average yearly expenditures are also significantly lower for females.
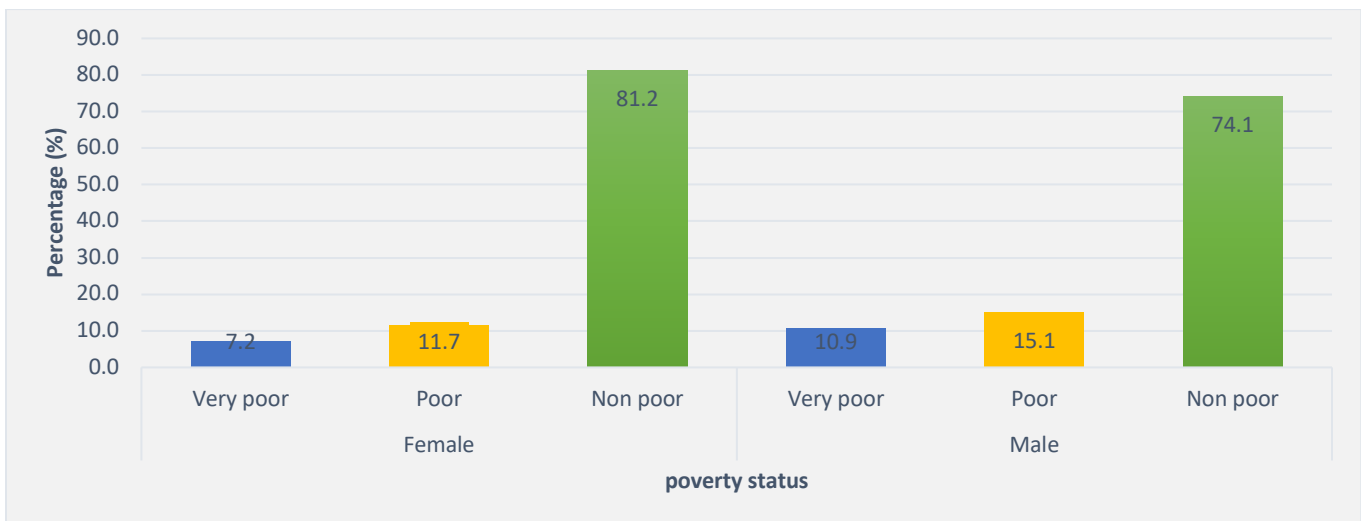


**Figure 2: Poverty by Gender of Household Head**
Source: Authors; calculated from GLSS 6(2013) Dataset

In terms of the ecological regions, absolute poverty is highest in the urban forest region (13.9%) followed by the savannah regions (11%). A similar pattern is observed for those who are moderately poor. While the data suggests a higher percentage of poor people in the forest zones, this is not consistent with reported average income and consumption (see Table 1). In terms of average income, the savannah zones have the lowest income levels followed by the coastal belt. The reverse is the case for average household consumption, where the coastal belt has the lowest average consumption figures followed by the savannah regions.
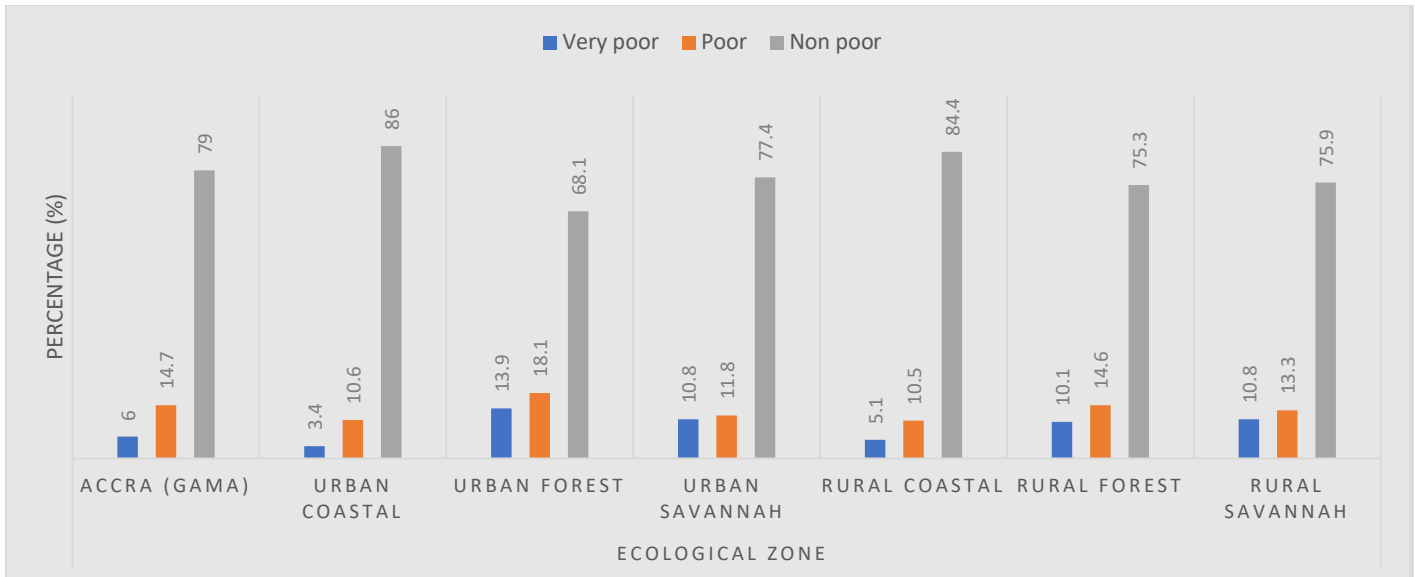
**Figure 3: Poverty by Ecological Zones**
Source: Authors; calculatedbased on dataset from GLSS 6 (2013).

## The Agrarian Discontent

The complexity of events surrounding farming in the study communities induces discontent towards agriculture. Farming, as a trade, needs to be attractive and lucrative to those involved in it (Schmidt, Magigi, & Godfrey, 2015). Nonetheless, a certain kind of unanimity within the interviews points to the direction that certain malignant occurrences including price volatility/price fixing, poor transportation/road networks, changes in weather patterns and perceived lucrativeness of other sectors are major causes of farmer discontent. It was found that, although the prices of the foodstuffs sent to the market are determined by the forces of demand and supply, some commodities such as maize, yam, and tomatoes have market queens playing active roles in price determination and even the availability of the foodstuffs on the market. Since farmers occupy the bottom of the chain in terms of earnings from the agricultural sector, farming has been deemed as not lucrative. The perception of other sectors being lucrative has also generated discontent in the agricultural sector although it is the major livelihood activities for many across the country.

For instance, farmers see trading as important and highly lucrative and some farmers contemplate abandoning their farms to start trading while others think about combining the two economic activities to diversify risk. In any case, many farmers are also traders and this is within the livelihood diversification strategy of households.

However, one must be reminded that, many traders trade in agriculture produce. Besides, in rural areas, a good agriculture year affects trade in many ways-both negative and positive depending on the type of crop in question and the associated demand and supply conditions. For small scale farmers, a good year with plenty of harvest does not necessarily mean more income, in fact, in some instances, it turns out to be hard luck for the farmers who cultivate crops that are considered perishable since excess production leads to a sharp decline in prices due to the oversupply and limited buyers. Because there is no guaranteed market or prices for these crops and farmers have no option of storing them for future sales, they will have to sell them at low prices leaving them worse in the production chain while others are left to rot. This has been and continues to be the bane of most smallholder farmers cultivating fruits, vegetables and roots and other crops that do not have a well institutionalized market. The situation is, however, different for farmers who cultivate trees crops such as cocoa which has a guaranteed market and farm gate price at the beginning of the harvesting year. Here, a good harvest means more money for the farmers.

Investments in agricultural technology could serve about half of this problem for crop farmers in Ghana. Specifically, investing in storage facilities that could store perishable commodities for future sales will be a great relief to farmers. That way, they can keep

their produce when there is no market for it and release them when there is demand and competitive price for them. Again, production technology is also key here. Because small scale farming is mostly rain-fed, active farming by smallholder farmers is largely seasonal following the natural rainfall pattern even though the potential exists for all year-round farming. For this reason, farming income is also seasonal and farmers have to resort to other means of surviving in the remaining days of the year when there is no rain for farming. In the savannah regions, the dry season could last for about six months and throughout this period farmers have to stay off their fields. A situation which could explain the general low income for small scale farmers and why farmers in the savannah regions appear to have the highest levels of poverty. Investing in irrigation schemes through the construction of dams and water harvesting technology will help farmers cultivate all year round. This is a necessary condition to reduce poverty and inequality among smallholder farmers.

## Conclusion

Poverty and inequality in Ghana are systemic and structural in nature. These two phenomena are characterised by the gender, location, and employment type of the population. Yet, within these variables are also further disaggregation and segmentation of the way poverty and inequality are distributed across the country. Our study has shown that, there is rural-urban divide in terms of the distribution of poverty, the intra-geographical zones show severity in the Savanah and coastal areas than in the other rural areas. A further aggregation shows that households in agriculture are the poorest with food crop farmers taking the bigger share of the poverty. While the study shows that male-headed households are poorer than female-headed households, income and consumption data reverse this finding. As we have discussed, socio-cultural factors such as land ownership and decision-making factors, climatic conditions, state interventions and many other factors influence the poverty and inequality incidences that various segments of the population experience.

## Policy Implications

With these findings, we propose that existing policies that seek to improve the lot of poor people across the country and reduce inequality be assessed and realigned based on some of the key areas such as crop sub-sector, geography and gender that we have discussed. Similarly, government and policy makers, should institute affirmative action especially in rural agrarian areas and also target women in these areas to reverse the poverty and inequality trends that have been observed.

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