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The Role of Agriculture in the Development Process: Recent Experiences from Ghana

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Abstract: Economic policies have had important implications for the role of agriculture in the socio-economic development of Ghana because of agriculture's dominance of the economy. The performance of the agricultural sector has generally directed the overall economic performance since independence. The policy of market deregulation in Ghana, including agricultural markets, has not achieved the expected results due to many constraints, the key of which are institutional failures and the slow response of the private sector to take up the agricultural input markets. These have been compounded by the rain-fed agriculture that is predominant in Ghana, such that bad rainfall years have been characterized by low harvests of staple food crops and high food prices, and vice versa. This has resulted in high price volatility during the post liberalization years. In addition, under developed rural financial markets make it such that farmers are unable to invest much in new technologies and agricultural land development, thereby increasing pressure on farmlands as population increases. The paper highlights the key role of agriculture, including environmental, poverty alleviation, food security, buffer, social viability, and cultural perceptions. The failure of policy to adequately address the myriad of problems confronting agriculture has been in part because of institutional failure, and in part due to bottlenecks in the distribution system. Future agricultural research and policies should therefore target developing rural institutions, in particular, agricultural institutions, to respond adequately to new technologies and improvements in agricultural production, processing and distribution.

Introduction

There exists a significant level of diversity in the roles that agriculture plays in the socio-economic development of nations, particularly developing countries whose economies are largely agrarian. The nature, magnitude and policy implications of these roles differ across and within ecological zones. Both the direct roles and related externalities are affected by several factors, including the ecological zones, farming types, technologies used and people's perceptions. In order to adequately articulate the roles of agriculture within the Ghanaian context, this study looks at two main farming systems: first is the forest zone with cocoa as the main crop (cocoa-based farming system), and second, the northern savannah zone where yam and maize production are the main base activities (yam-maize based farming system).

The Agricultural Sector in Ghana

Ghana's economy is basically agrarian, and agriculture is undoubtedly the largest sector. The rate of the country's economic growth seems to be linked to the performance of the agricultural sector. For example, in 1990 the GDP grew by only 3.3% because the agricultural sector's growth rate that year was a negative 2%; but when in 1991 the GDP for agriculture grew by 5.8%, that for the entire economy also grew by 5.3%. Since that time agricultural GDP growth rate has stayed under 5%, and the GDP for the entire economy has also been 5% or less.

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Agriculture contributes substantially to government revenue mainly through duties paid on the export of agricultural commodities, especially cocoa; and it has been the major contributor to Ghana's foreign exchange earnings for several years. Until 1992, agriculture accounted for the highest proportion of total foreign exchange earned in the country. This role has been performed through exports of agricultural commodities and conservation of foreign exchange by producing import-substituting food and raw materials. Between 1999 and 2002 for example, the agricultural sector contributed 38.5%, 35.4%, 33.9%, and 35.5%, respectively, to the country's foreign exchange earnings.

After a persistent decline of the economy during the 1970s, an economic recovery programme (ERP) and related structural adjustment programme (SAP) embarked upon by the government with the assistance of the Bretton Woods institutions reversed the declining trend. However, agricultural growth has been rather unstable over the 1984-2000 period. The period 1989 – 1992 recorded a low agricultural average growth rate of 1.6%, with negative rates of -2% and -0.6% in 1990 and 1992, respectively. Between 1992 and 2000 agricultural growth improved, peaking at 5.2% in 1996, but declined again to only 2.1% in 2000, before recovering again (Table 1).

Table 1 Sector Contributions to GDP at Constant 1993 Prices (%) and Growth Rates (%)

Year/Period	Sector Contributions to GDP			
	Agriculture	Services	Industry	All Sectors
1996	40.8	31.3	27.9	
1997	40.4	31.6	28.0	
1998	40.6	32.1	27.4	
1999	40.5	31.9	27.6	
2000	39.6	32.7	27.8	
2001	39.6	33.0	27.4	
2002	39.5	33.0	27.5	
Ave 1995-99	40.6	31.7	27.7	
	Sector Growth Rates (%)			
1996	5.2	4.2	4.8	4.6
1997	4.3	6.5	6.4	4.2
1998	5.1	6.0	3.2	4.7
1999	3.9	5.0	4.9	4.4
2000	2.1	5.4	3.8	3.7
2001	4.0	5.1	2.9	4.2
2002	4.4	4.7	4.7	4.5
Ave 1990-94	1.1	7.0	4.1	4.3
Ave 1995-99	4.4	5.3	4.7	4.4

Source: ISSER 2003. The State of the Ghanaian Economy in 2002. University of Ghana.

Major Farming Systems in Ghana

Ghana, a relatively small country with an area of about 238,533 km² (about the size of Britain), lies in the center of the West African coastline. It is a tropical country consisting of three broad ecological zones, which are the forest, forest-savanna transition, and the savanna zones. These broad categories are further divided into the coastal savanna, rainforest/semi-deciduous forest, forest-savanna transition, guinea savanna and sudan savanna.

The forest zone, comprising the tropical high rain forest and semi-deciduous forest, covers about one-third of the country (8.2 million hectares), and supports two-thirds of the country's population. Most of the economic activities of the country are also located here, including activities associated with cocoa, minerals, oil palm, rubber, and timber. It has a bimodal rainfall that ranges from 1,300 mm to 2,100 mm annually (World Bank, 1988). The northern savannah zone covers about 66% (15.7 million hectares) of the

country's total area. This zone has a uni-modal rainfall pattern that is erratic and usually unpredictable, and ranges between 900 mm and 1,200 mm per annum. Industrial crops such as cotton and sheanuts, along with food crops such as rice, maize, sorghum, millet and yam are important here. The forest-savannah transition lies in-between the forest and savannah zones. It is a blend of the forest and savannah zones, and noted for cereals, particularly maize, as well as root and tuber crop production.

The major farming systems in Ghana are to a large extent defined by the agro-ecological zones; and they include: (1) Rotational Bush Fallow Systems, (2) Permanent Tree Crop System (such as cocoa-based system), (3) Compound Farming System, (4) Mixed Farming System (such as maize-yam based system), and (5) Special Horticultural Farming System. These farming systems have peculiar characteristics that also generate environmental externalities (Table 2).

Table 2: Farming Systems in Ghana and their Environmental Impacts

Farming System	Environmental Impact	
	Positive	Negative
Relational Bush Fallow System	Water retention, soil fertility promotion, flood prevention	Soil erosion, deforestation and rural landscape degradation
Permanent Tree Crop Farming System	Soil erosion prevention, ground water recharge, watershed and catchment area protection, carbon sequestration and beautification of the rural landscape	-
Compound Farming System	Soil conservation, soil erosion prevention	Leaching, eutrophication
Mixed Farming System	Carbon sequestration	Soil erosion, nutrient and water loss from the soil
Special Horticultural Farming System	-	Soil erosion, eutrophication, depletion of nutrients from sandy soils.

The rotational bush fallow system is characterized by clearing and burning of the vegetative cover. It is the dominant farming system throughout Ghana. The permanent tree crops farming system is characterized by the cultivation of permanent tree crops usually a monocrop such as cocoa, citrus, oil palm, avocado, rubber, coffee and mango. Cocoa is however the most extensively cultivated tree crop in this farming system. Compound farming systems are practiced mainly in the interior savanna zone where most farms are cultivated within close vicinity of villages. The mixed farming systems integrate the rotational bush fallow system and the permanent tree crop system. This farming system is mainly practiced in the high rain forest and the semi-deciduous forest zones. Horticultural farming systems in Ghana are dominated by crops such as pineapples, pawpaw and exotic vegetables, which are mainly grown for export.

The Major Roles of Agriculture

The study considered seven major areas in which agriculture plays significant roles in the socio-economic development of the country, namely: the policy context, environmental roles, poverty reduction roles, food security roles, buffer roles, social viability roles, and cultural perception roles. Some analyses were conducted under each of these broad areas to provide evidence and insights into the multiple roles agriculture plays.

Environmental roles of agriculture

Agriculture plays multifunctional roles in relation to the environment. Each of the farming systems generates both positive and negative environmental externalities as already noted. In addition to producing crops and livestock which can be traded in the market, positive externalities such as contribution of tree cover for the conservation and improved quality of the soil, reduction in greenhouse gas emissions through carbon sequestration, protection of watershed and catchment areas, erosion control, soil fertility restoration and enhancement of the beauty of forest landscapes are generated. On the other hand, a number of negative environmental externalities are also generated, which include different types of soil erosion, sedimentation, siltation, flooding and eutrophication. The policy effects of the environmental roles of these agricultural externalities in Ghana have been significant.

Two farming systems, namely: tree crop (cocoa) based farming system in the forest zone and a yam/maize based farming system in the savannah zone was selected for in-dept analysis. The two zones naturally have distinct farming systems with the variety and representativeness of the Ghanaian situation. Contingent Valuation Method (CVM) and Replacement Cost Method (RCM) were used in measuring the physical dimensions of the environmental externalities. A structured questionnaire was used to collect survey data for the CVM. The questionnaire was structured essentially to capture the maximum amount of money the respondent will be willing to pay for the overall benefits, that is, improvement of scenery, prevention of soil erosion, improvement of wild life, supply of fuel wood, preservation of soil fertility, improvement of water retention and increase of soil fertility, arising from a hectare of an agro-forestry farm. In addition, interviews were conducted with selected stakeholders. These interviews and secondary sources provided the information and data required for the recovery cost estimation of environmental functions.

The CVM valuation showed that in the case of the tree-crop farming system (forest zone), the most important factors influencing the maximum willingness to pay for agro-forestry attributes include improved scenery, increased soil fertility, improved water retention, soil erosion prevention, gender of the farmer and the age of the farmer. The age of the farmer is highly significant at the 1% level while that of gender is also significant at the 5% level. On the other hand, the significant factors determining the maximum willingness to pay in the mixed farming system (sudan savannah zone) are household income, supply of fuel wood and age. The RCM valuations showed that in the long run, it is more expensive to restore environmental attributes through measures that include dam construction and agro-forestry in the sudan savannah, than simple agro-forestry projects that rely on rainfall conditions (forest system), as well as supplementary irrigation from hand-dug wells (savannah system).

Policies that have emphasized the intensity of input use have involved finding ways to convince more farmers to adopt technologies such as improved seed varieties, input packages and better farming practices. But inadequate knowledge of the use of fertilizers and agrochemicals have more often than not led to their misuse, leading to environmental degradation.

Poverty reduction roles of agriculture

A description of the distribution of poverty in Ghana between 1991 and 1999, using consumption expenditure estimates from the Ghana Living Standards Survey data has been done. The growth linkages model is then used to analyze the effects of agricultural growth on poverty reduction in Ghana. Studies on income distribution in the 1960s and 1970s showed that incomes in rural Ghana were generally lower than incomes in the urban areas (Boateng et al, 1989; Rourke, 1971; Dutta Roy et al., 1968). An application of Quality of Life indices also showed rural Ghana to be worse off than urban Ghana (Awusabo, 1981/82).

Using a composite index of development as an indicator of poverty, Ewusi (1976) found that northern Ghana was the least developed, with indices less than 10% of that of Accra. Bequele (1980) cited in Boateng et al, also confirmed the higher poverty levels of northern Ghana relative to the south with the 1970 and 1974 Agricultural census data. This difference in poverty levels has been attributed to differences in resource endowments, and capacities to respond to new economic opportunities. An analysis of data of the 1974/75 household budget survey (Ewusi, 1984) found that poverty among illiterate household heads was higher than among literate ones; larger households were also associated with higher poverty levels.

Poverty among farmers was also higher than that of other occupations. A final result which Boateng et al considered unexpected was that the incidence of poverty among males was higher than among females. Poverty levels have declined since 1991 with the most significant declines occurring among export crop farmers, and formal private sector workers (Table 3).

Table 3 Summary of Poverty Patterns in Ghana (1991/92 – 1998/99)

Population Group	Poverty incidence % (1998/99)	% change in poverty incidence (1991-1999)	Growth effect of poverty change (1991-1999)	% change in Inequality (1991 –1999)	Responsiveness of P_0 to welfare change (1998/99)
National	39.5	-25.0	-13.6	4.05	-1.8
Rural	49.5	-21.9	-55.3	7.89	-2.25
Urban	19.0	-31.4	-25.7	0.58	-1.01
Coastal	28.0	-26.3	-14.3	5.97	-2.48
Forest	32.6	-37.3	-17.1	-4.34	-1.88
Savannah	64.9	-2.2	-1.7	7.20	-4.45
Male	41.0	-25.3	-14.0	3.5	-
Female	35.2	-18.3	-10.6	7.1	-
Public sector Employees	22.7	-34.6	-0.09	-8.2	-1.29
Private formal Employees	11.3	-62.7	-0.11	-6.23	-0.64
Private informal Employees	25.2	-34.7	-0.07	3.34	-1.28
Export farmers	38.7	-39.5	-0.25	-11.24	-2.04
Food crop farmers	59.4	-12.8	-0.09	10.78	-2.55
Non-farm self-employees	28.6	-25.5	-0.09	1.99	-1.44

Source: Computed from GLSS data, 1991/92 and 1998/99

Food crop farmers in the savanna zones, the poorest groups in the country, made the least improvements in their poverty levels. Poverty reduction among these groups was limited by depth and increases in inequality over the period of estimation. Estimated growth multiplier (national sample) for the non-farm sector is 3.17 compared to 2.46 for the farm sector. However, for each multiplier, the farm sector contributes more to the induced demand. The multipliers are largest for poorest groups and above the national sample. Poorest income groups and their expenditures on farm non-tradables are the sources of growth multipliers. Multipliers show inelastic responses to changes in savings rates, value added shares and technological variables, the exception being those related to the poor. Policies and strategies that enhance incomes of the poor and facilitate the production of farm non-tradables are most likely to generate the greatest impact on growth and poverty reduction.

Food security role of domestic agriculture

Food security can be perceived at the global, national, household and individual levels. The food security at a higher level does not guarantee the food security at the subsequent lower level(s), and the major food security issues differ at the respective levels. It is observed often that while global food production was adequate, many developing countries were faced with inadequate food. Their restrained access to the adequate global food supply is caused mainly by limitation of foreign exchange and household income. At

the household level, the major food security issues are incomes, food and non-food prices, inflation, etc, that impact on access to adequate quantities of the available food (Table 4). In many developing countries, in particular, where the net food supply is adequate at the national level, many households still face food security problems. At the individual level, the main food security issues are nutritional adequacy of food intake, which reflects in malnutrition, calorie intake, physical growth, etc.

Table 4: Household Expenditure on Purchased and Imputed Home Produced Foods (Percentage)

Locality	1988/89			1998/99		
	Pur-chased	Home Produced	Total	Pur-chased	Home Produced	Total
Accra	98.4	1.6	100.0	99.3	0.7	100.0
Other Urban	85.9	14.1	100.0	94.1	5.9	100.0
Rural Coastal	87.9	12.1	100.0	82.9	17.1	100.0
Rural Forest	67.3	32.7	100.0	70.1	29.9	100.0
Rural Savanna	47.8	52.2	100.0	58.5	43.5	100.0

Source: Ghana Statistical Service (1996, 2000) GLSS Reports of Rounds Two and Four

The agricultural sector makes both direct and indirect contributions to food security in the country. The direct contribution is largely in the form of making food available by supplying all or part of the food commodities required for consumption annually. It also contributes to the foreign exchange earnings, which provide the capacity of the country to import the short fall in the domestic food production to meet demand. The indirect contributions to food security include creating employment opportunities for the economically active population to earn incomes needed to access the available food. The agricultural sector further contributes considerably to the level of food prices, which is a major factor in the household access to adequate and variety of food.

Generally, poor households spend higher proportions of their incomes on food than the non-poor households. The share of the staple crops in the food budget declined from 44% in 1991/92 to 38% in 1998/99 (Tables 5, & 6). The increased household food budget on fish, meat and poultry products suggests a gradual shift in food consumption from carbohydrate products to those with relatively higher protein content. The food budget on prepared meals increased also from 7.2% to 11.1% during the same period. Many Ghanaian households produce part of the food they consume. The food types that households produced the least for their own consumption was edible oil (Tables 7).

Table 5 Household Expenditure on Food Types, 1991/92 and 1998/99 (Percentage)

Food Type	Expenditure	
	1991/92	1998/99
Roots, Tubers and Plantain	27.4	22.8
Cereals and Products	16.5	15.6
Fish		
Meat	14.8	17.4
Poultry	5.3	5.5
Dairy Products	3.1	3.4
Vegetables	1.3	1.8
Pulses and Nuts	9.5	9.0
	6.1	4.4
Edible Oils		
Spices	3.5	3.9
Fruits	1.5	1.3
	-	-
Prepared Meals		

Miscellaneous	7.2	11.1
All	1.8	1.9
	100.0	100.0

Source: Ghana Statistical Service (1995 and 2000) -Reports on GLSS Third and Fourth Rounds

Table 6: Purchased and Home Produced Food by Food Type

Food Type	1991/1992			1998/1999		
	Pur- chased	Home Produced	Total	Pur- chased	Home Produced	Total
Cereals and Products	64.2	35.8	100.0	82.4	17.6	100.0
Roots, Tubers and Plantain	33.9	66.1	100.0	50.0	50.0	100.0
Pulses and Nuts	51.8	48.2	100.0	77.0	23.0	100.0
Vegetables	68.4	31.6	100.0	84.8	15.2	100.0
Fruits	42.7	57.3	100.0	84.7	15.3	100.0
Edible Oils	91.4	8.6	100.0	95.6	4.4	100.0
Meat	85.9	14.1	100.0	88.0	12.0	100.0
Poultry	53.7	46.3	100.0	84.0	16.0	100.0
Fish	97.9	2.1	100.0	95.0	5.0	100.0
Dairy Products	98.1	1.9	100.0	99.9	0.1	100.0

Source: Ghana Statistical Service (1995, 2000) GLSS Reports, Rounds Three and Four

Table 7: Household Coping Strategies for Food Security (Percentage)

Coping Strategy	Daily	3-6 times/ Week	1-2 times/ Week	<1 time/ Week	Never	Total
1. Rely on less preferred /less expensive food	1.6	16.9	29.9	28.8	22.8	100.0
2. Borrow food or borrow money to buy food	0.2	2.2	5.9	10.6	81.1	100.0
3. Purchase food on Credit	0.2	7.6	8.5	10.8	72.9	100.0
4. Rely on friends/relatives outside household	4.3	8.1	9.3	14.3	64.0	100.0
5. Limit portion size at meal time	0.7	8.1	21.0	26.0	44.3	100.0
6. Purchase street food with available cash	1.8	17.4	21.0	24.8	35.0	100.0
7. Limit adult intake for adequacy of children	1.6	12.0	24.6	27.5	34.3	100.0
8. Reduce number of meals per day	1.4	4.8	10.8	18.8	64.2	100.0
9. Skip meals whole day	0.0	0.2	0.5	0.9	98.4	100.0

Source: Maxwell et al (2000).

Table 8: Estimates of Ghana's Food Import Capacity (1990 to 2000)

Year	Food Imports (FI) (⁰⁰⁰ US\$)	Export Revenues minus Debt Repayments (ER- DR) (⁰⁰⁰ US\$)	Net Food Trade (⁰⁰⁰ US\$)	FI / ER-DR %
1990	107,000	626,000	-102,545	17.1
1991	150,000	818,000	-147,075	18.3
1992	164,000	791,000	-159,587	20.7

1993		105,000	905,000	-100,052	11.6
1994		133,000	1,020,000	-124,840	13.0
1995		105,000	1,180,000	-94,870	8.9
1996		104,000	1,620,000	-83,527	6.4
1997		85,300	1,500,000	-68,379	5.7
1998		136,000	1,960,000	-126,922	6.9
1999		162,000	1,960,000	-149,597	8.3
2000		175,000	2,060,000	-157,958	8.5
2001		239,000	-	-227,964	-
Ave	1990-2000	129,663	1,312,727	-128,610	11.4
Ave	1996-2000	132,460	1,820,000	-117,277	7.2

Source: FAO Stats, Rome

Due to the generally high level of self-sufficiency in domestic food supply, the per capita level of food self-sufficiency can be used as a proxy for the national food security index. The available data show that the level of food security declined steadily from 1980 to 1983; and the food security position improved almost steadily throughout the 1990s. In order to estimate Ghana's food import capacity, the country's food imports (cereals, dairy products, meat and oils) are compared with her export revenues minus debt repayments during the 1990s. The figures from the Net Food Trade indicate that Ghana has been a net food importer throughout the 1990s. However, the ratio of food imports to total export earnings has been low, less than 25% during the first half of the 1990s and less than 10% during the second half of that decade (Table 8). This implies that even though a net food importer, Ghana has a high capacity to import food to augment short falls in domestic production, indicating of food security at the national level.

Food security externalities can be perceived in terms of deterioration of environmental factors that pose threat or increase the cost of achieving food security. The externalities that affect food security include irregular pattern of climatic conditions, particularly rainfall and drought, soil degradation, poor condition of farm-to-market roads, bushfires, outbreak of diseases and pests, ill health of farm labour, increased non-food prices (inflation), rural-urban migration, level of formal education, government policies, and internal ethnic conflicts and wars. For example, many government policies have intended and unintended effects on food security. Also, not all food security externalities are negative to the achievement of food security, even though food security externalities are usually perceived in terms of deterioration of environmental factors and adherence to cultural attitudes and traditionalism that pose threat or increase the cost of achieving food security.

Social viability and buffer roles of agriculture

The impact of the macroeconomic crisis and the attendant policy remedies induced several dislocations in the labor market. Thousands of formal sector employees were retrenched. Unemployment increased. Job switching from formal to informal sector activities increased. The retrenched workers were directed specifically into the agricultural sector. The period also saw significant reverse migration flows from urban (non-agricultural) back to rural (agricultural) areas. Several coping strategies to the macro-crisis were activated. Formal state-sponsored pension and social security schemes as well as state-sponsored social relief programs to buffer the dislocations in the labor market were provided. The extended family system and voluntary or compulsory (savings) associations provided informal social protection.

The agricultural sector proved to be a safety net and acted as a buffer for non-agricultural dependent households in the urban and rural areas in times of the macroeconomic crises along two ways. Firstly, it allowed migrated relatives that have become unemployed the opportunity to come back to the farm and be more or less temporarily employed. Secondly, direct intra-households transfer from rural to urban households increased whilst urban to rural household transfers declined (Table 9). A remittance function was used for the analysis, and also a probit model to estimate the unemployment risk of an individual or household head. The range of positive roles that agriculture played in the context of Ghana's socio-

economic development over the macro-crisis (principally economic growth and food security roles) are widely perceived as the fundamental contributions of agriculture. At the macro level, during the crisis period, the agricultural sector helped increase exports and government tax revenue, domestic food supply and helped in raising per-capita incomes. At the micro-level, rural to urban remittances increased whilst the agricultural sector expanded to accommodate the retrenched labor force.

However, the agricultural sector played other important roles that impacted on the sustainable economic and social development of the economy that can be considered as externalities and important contributions to public goods. The most important positive externality role played by the agricultural sector during the Ghanaian macro-crisis is the Social Security role. Evidence adduced shows that the *rural farm family served as migrants' insurance policy towards unemployment in the absence of formal unemployment insurance*. Whilst households to migrated family members remittance behavior support the altruistic incentive to remit, migrants remittance behavior support the self-insurance motive confirming the hypothesis that in the absence of formal unemployment insurance, the migrant's insurance policy towards unemployment is increased remittance to rural farm family to provide support at times of crisis.

Table 9: Estimated Total Annual Income from Remittances of Persons (Bil 1991Cedis)

Locality	Urban		Rural		Abroad		Total	
	GLSS 3	GLSS 4	GLSS 3	GLSS 4	GLSS 3	GLSS 4	GLSS 3	GLSS 4
Urban	18	42.4	2	2.9	16	45.6	35	92.3
Rural	9	26.3	13	12.2	4	11.9	25	50.3
Total	27	70.1	15	15.1	20	57.4	60	142.6

Note: Figures are converted to real 1991 cedis using national CPI.

Another important role that agriculture plays in the social viability context is its potential to enhance the attractiveness of living in rural areas, a phenomenon evidenced by reduced rates of migration from rural to urban areas over the long term. The scale of rural-urban migration and the proportion it makes up of all migration has been increasing over the years. The variations in population density reflect ecological factors (climate, soil types and the incidence of disease) and long standing historical influences as well as current responses to economic conditions. The rate of migration for males and females has been almost the same with the rate falling from 56.8% and 56.4% in 1991/92 to 51.4% and 52.8% in 1998/99, respectively (Tables 14a & 14b). Work does not appear to be a strong pull factor in migratory behaviour in Ghana, although the percentage of migrants in this class increased from 24.0% in 1991/92 to 27.6% in 1998/99. Agriculture is the main employment sector of migrants and yet the sector remains the slowest growing sector.

Econometric analysis based on the Ghana Living Standards Survey (GLSS) carried out by the Ghana Statistical Service with assistance from the World Bank in 1998/99 using logistic regression showed that income of households and availability of basic amenities (including water and electricity) explained the probability to migrate from the rural to urban areas. The level of education did not play any role in decision to migrate. Similarly, time spent at the health facility and going to school were not also significant.

Agricultural transformation in Ghana was analyzed by studying the impact of migration on agricultural output. The evidence shows that urbanization mainly caused by rural-urban migration has increased over the last three decades. It also reveals that rural-urban migration has had negative impact on agriculture output in Ghana. Transformation of agriculture in Ghana is inadequate and it is not serving as a pull effect to the extent expected. The contribution of domestic agriculture to national social viability has been low. The return to agricultural investments has been low. This is generally attributed to inadequate public policies, including distorted macroeconomic and sectoral policies or structural constraints such as poor infrastructure, research and extension. Many of Ghana's agricultural societies have not benefited from major agricultural policy direction and therefore have not been able to lift themselves out of deprivation.

Cultural perception of the roles of agriculture

The purpose of the cultural perceptions study was to capture the symbolic importance of agriculture in its various manifestations, and to explore the dissonance in views of agriculture between the urban elite, the media and farmers. The three study areas were chosen to represent the ethnic and ecological history of Ghana, and hence different aspects or dimensions of the national culture. In Ghana, ethnic groups are not very mixed in the rural geography, and thus each study location is also associated with a specific ethnic group, which in the study included one Akan group, the Akwapem; the coastal Ga-Dangme; and the northern chieftaincy group, the Mamprusi.

The meaning and value of agriculture in Ghana varies significantly by crop, livestock and fisheries. Perennial crops, with the prime example being cocoa, are placed in a very different category from annual crops. Cocoa has a unique position in the national culture. The fact that Ghana was the largest producer of cocoa in the world and produced the highest grade of cocoa has been a source of significant pride to an emerging nation. Consequently, urban based opinion leaders and southerners all view cocoa farmers as having a much higher status than annual crops farmers. The meaning and value of agriculture in Ghana also varies by gender, with men typically viewing agriculture as holding more promise for the future than women, especially younger women.

Conclusion

The various roles of agriculture are related in terms of how both the positive and negative externalities they generate affect each other. Positive environmental externalities such as contribution of tree cover for the conservation and improved quality of the soil, erosion control, and soil fertility restoration help resource poor farmers to increase their output and therefore income; thereby reducing poverty and promoting food security. Protection of watershed and catchment areas, reduction in greenhouse gas emissions through carbon sequestration, and enhancement of the beauty of forest landscapes that are generated provide the necessary congenial environment to enhance social viability of the rural communities. On the other hand, negative environmental externalities such as different types of soil erosion, sedimentation, siltation, flooding and eutrophication reduce crop yields and therefore farmer incomes, which then increase poverty in the rural communities and make more people vulnerable.

The policy effects of agricultural activities on the environment, such as the promotion of export commodities, the exploitation of timber and forest resources, mining activities, and indiscriminate sale and use of agro-chemicals in Ghana have been negative in many respects. However, trade liberalization and agricultural subsidy removal have limited the use of improved agricultural technologies (for example, high fertilizer prices have increased production cost), and subsequently worsened the extent of soil degradation.

Agriculture as a buffer also helps to support the unemployed, and provides a cushioning for many urban workers during crisis periods. In this way poverty among retrenched and redeployed workers is minimized, and food security for their households ensured as they produce more of their own food and excess for the market. The ability of agriculture to play this buffer role has hinged on the peculiarities of Ghana's agriculture and its performance, such as the dominance of small-scale farmers and land tenure arrangements, which provide natives relatively easy access to family lands (even though for non-natives this could be a major drawback in some areas). The country experienced a worsening in poverty indicators and decline in access to health, education and other social services across all social classes with the poor particularly hardest hit as massive re-deployment/retrenchment of labour from the public sector was undertaken. Agriculture thus provided the urban skilled and un-skilled retrenched labour a buffer against sudden deterioration in their living standards. The policy impact of this buffer role could be enormous, considering the relatively large numbers of public sector retrenched workers.

The social viability role of agriculture in Ghana has manifested itself primarily in agricultural population re-distribution as farmers chased emerging opportunities across ecological zones (e.g. new frontiers for the cultivation of cocoa and other non-traditional export crops). On the one hand, rural urban migration seems to have been on the increase. The policy of diversification of the agricultural system by encouraging people to go into the cultivation of non-traditional export crops is one way of trying to reverse the rural urban drift.

The contributions made by agriculture and the rural world in shaping the national culture, and the interpretations various ethnic groups place on various phenomenon, constitute a significant component of the role played by agriculture in the cultural evolution of Ghana. For example, agriculture in Ghana has been largely considered as “a way of life” particularly for the rural dwellers, rather than as a business. Consequently, traditional practices and social norms have made agriculture generally a “non-enviable” activity compared to other professions, and many people consider agriculture as “the last resort” when all others have failed. The extent to which policy has impacted some of these traditions and social norms to provide socio-economic changes that affect farm households and lifestyles, entrepreneurial development, and business-like approach to agriculture can provide the needed impetus for a new agricultural culture in Ghana. In addition, the symbolic importance of agriculture in its various manifestations (such as a status symbol) and for the various “national culture” actors, and how policy facilitates the shaping of these perceptions to understand the consequences for such symbolic importance, provide avenues for improved interaction between agriculture and its cultural environment.

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