Food and Agriculture Organization
of the United Nations

Analysis of public expenditure in support of the food and agriculture sector in Ghana, 2006-2012

November 2014

Monitoring and Analysing Food and Agricultural Policies (MAFAP)

Analysis of public expenditure in support of the food and agriculture sector in Ghana, 2006-2012

November 2014

This document is a product of the Monitoring and Analysing Food and Agricultural Policies programme (MAFAP). It may be updated as new data becomes available. The data in this document was collected from the Ministry of Food and Agriculture, the Ministry of Finance and development partners.

MAFAP is implemented by the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Organisation for Economic Co-operation and Development (OECD) and national partners in participating countries. It is financially supported by the Bill and Melinda Gates Foundation (BMGF), the United States Agency for International Development (USAID), the Dutch Cooperation and FAO.

The description presented in this document is the result of the partnerships established in the context of the MAFAP programme with governments of participating countries and a variety of national institutions.

This document was prepared by Léopold Ghins (FAO), with support from Megan Witwer (FAO) and Federica Angelucci (FAO). Lambert Abusah (MOFA) reviewed the document and provided valuable comments.

For more information: **www.fao.org/in-action/mafap**

Recommended citation:
FAO. 2014. *Analysis of Public Expenditure in Support of the Food and Agriculture Sector in Ghana, 2006-2012: A preliminary assessment.* Technical notes series, MAFAP, by Ghins, L., Rome.

Contents

LIST OF FIGURES

LIST OF BOXES

LIST OF TABLES

ACRONYMS

ADPO: Agriculture Development Policy Operation

ADVANCE: Agricultural Development and Value Chain Enhancement

AFD: Agence Française de Développement

AGSSIP: Agricultural Services Sub-Sector Investment Project

ASTI: Agricultural Science & Technology Indicators

CIDA: Canadian International Development Agency

COCOBOD: Ghana Cocoa Board

COFOG: Classification of the Functions of Government

CBRDP: Community-Based Rural Development Project

DEU: Delegation of the European Union

EIU: Economist Intelligence Unit

EFA: total public expenditure in support of the food and agriculture sector, excluding administrative costs.

EFAAC: total public expenditure in support of the food and agriculture sector, including administrative costs

EU: European Union

FABS: Food and Agriculture Budgetary Support

FAO: Food and Agriculture Organization of the United Nations

FBO: Farmer-Based Organisation

GFSSP: Government Fertilizer and Seed Subsidy Program

GoG: Government of Ghana

HIPC: Heavily Indebted Poor Countries

INLAND VALLEY: Inland Valley Rice Development Project (INLAND VALLEY)

MAFAP: Monitoring and Analysing Food and Agricultural Policies

METASIP: Medium Term Agriculture Sector Investment Plan

MOFA: Ministry of Food and Agriculture

MOFEP: Ministry of Finance

NAFCO: National Food Buffer Stock Company

NERICA: Nerica Rice Dissemination Project

OECD: Organisation for Economic Cooperation and Development

ROPP: Rubber Outgrower Plantation Project

TSP: Transport Sector Project

UNICEF: United Nations' Children's Fund

USAID: United States Agency for International Development

WAAP: West Africa Agricultural Productivity Program

WB: World Bank

YIA: Youth In Agriculture

SUMMARY

This technical note offers an in-depth study of the level, composition and coherence of public expenditure in support of food and agriculture in Ghana using data collected from the Ministry of Food and Agriculture (MOFA), the Ministry of Finance (MOFEP) and 13 development partners active in the country[1]. The study uses the MAFAP methodology for agriculture public expenditure analysis (MAFAP, 2013) and covers the 2006-2012 period. The summary of the study is presented below.

First of all, the share of total public expenditure in support of food and agriculture, including administrative costs (EFAAC) within total public expenditure was rather low between 2006 and 2012, fluctuating between 3 and 5 percent. Secondly, the composition of total public expenditure in support of food and agriculture, excluding administrative costs (EFA) varied significantly during these years. The MAFAP methodology distinguishes between agriculture-specific expenditure (monetary transfers that are specific to the agricultural sector, i.e. agriculture is the only, or principal, beneficiary of a given expenditure measure) and agriculture-supportive expenditure (public expenditures that are not specific to agriculture, but which have a strong influence on agricultural sector development)[2]. The distribution of EFA between agriculture-specific and agriculture-supportive expenditure evolved from being equilibrated in 2006 to being biased towards agriculture-specific expenditure in 2012, which shows that public investments towards agriculture have been specializing through time. Within agriculture-specific expenditure, a major trend was the substantial increase in the share dedicated to payments to producers in the form of fertilizer subsidies from 2006 to 2012. Concomitantly, the share of agriculture-specific expenditure allocated to agricultural research and knowledge transfer activities (training, technical assistance and extension) decreased sharply, and the proportion of spending on marketing and agricultural infrastructures went up. The driving factor behind this expenditure pattern appears to be a change in the main components of World Bank-funded interventions in the agriculture sector following the introduction of the Medium Term Agriculture Sector Investment Plan (METASIP) by the Government of Ghana (GoG) in 2009.

Within agriculture-supportive expenditure, the share of rural infrastructures declined across the 2006-2012 period, while the share of rural health increased. The resources allocated to infrastructures (the sum of spending on agricultural and rural infrastructures, in reference to the MAFAP methodology[3]) in support of the food and agriculture sector declined over the reviewed period, driven by the drop in spending on agricultural infrastructure.

The MAFAP methodology also permits to disaggregate agriculture-specific expenditures in function of the commodity they support. The results show that, in 2006-2012, the majority of agriculture-specific expenditures in Ghana took the form of transversal support to all commodities, mainly in the context of the Government Fertilizer and Seed Subsidy Program (GFSSP). Besides, rice and rubber were also targeted by specific budgetary transfers. In particular, substantial expenditures were incurred by the National Food Buffer Stock Company (NAFCO) for rice purchases.

Administrative costs seem to absorb a large strand of the public support to food and agriculture in Ghana, as they represented about 35 percent of EFAAC, on average between 2006 and 2012. Moreover, EFAAC appears to originate predominantly from donor sources, especially the World

[1] See SCOPE section below and Annex 2 for additional details.
[2] The full MAFAP public expenditure classification table is given in Annex 1.
[3] See Annex 1 for the distinction between agricultural and rural infrastructure.

Bank, CIDA, the EU and USAID. Indeed, donor spending (on- and off-budget) constituted about 80 percent of EFAAC, on average over the reviewed period. When considering only on-budget expenditure, the share of donor spending within EFAAC, on average for 2006-2012, declines to 60 percent and follows a downward trend.

Several recommendations are derived from these findings. First of all, the percentage of total public expenditure dedicated to EFA is very low and the Ghanaian authorities should consider increasing it. Secondly, it seems crucial to undertake an in-depth evaluation of the GFSSP and of NAFCO given the increasing amount of resources allocated to these programs. Thirdly, additional budgetary efforts should be made towards agricultural research, knowledge transfer activities and rural roads, as it is recognized that investing in these categories is strongly supportive of agricultural growth in the long run. Fourthly, it is essential for the GoG and development partners to jointly reflect on how the share of administrative costs within EFAAC could be reduced to increase the efficiency of the public support to the sector. Finally, the high share of donor spending within EFAAC and the strong concentration of donors questions the sustainability of public support to the sector. Increasing the amount of GoG-supported activities would certainly help in reducing reliance on external funds.

PURPOSE

The purpose of this technical note is to analyse the efficiency of public expenditures in support of food and agriculture in Ghana. The technical note does not intend to provide an in-depth analysis of the relationship between sector performance and public expenditures, nor does it provide an impact assessment of projects and programmes covered in the analysis. Instead, it focuses on a detailed analysis of the level, composition and coherence of public expenditure in support of food and agriculture in the country. The objective of such an analysis is to identify the patterns of support to food and agriculture sub-sectors (research, input subsidies, infrastructure...) and commodities over time, by type and sources of funding.

METHODOLOGY

This technical note uses the MAFAP methodology for analysing public expenditures in support of food and agriculture. The MAFAP methodology allows identifying, disaggregating and classifying all public expenditures in support of food and agriculture in the country, following a typology derived from the Organization for Economic Co-operation and Development (OECD) classification of public expenditures in support of agriculture (OECD, 2010). The MAFAP methodology entails the classification of all projects and programmes in support of food and agriculture in the country, based on the nature of the support to the sector that is provided under each project/programme activities. In general, MAFAP distinguishes between expenditures that are agriculture-specific (direct support for the agricultural sector) and agriculture-supportive (indirect support for the agricultural sector). In addition, within the agriculture-specific category, a distinction is made between support for producers and other agents in the value chain (e.g. input subsidies), and general or collective support for the sector (e.g. research). A more detailed description of the MAFAP classification, together with a brief explanation of its specificity, can be found in Annex 1. The MAFAP methodology provides the disaggregation of public expenditures per funding source (aid and government), per implementing agency, and the distinction between recurrent and capital expenditure, administrative and policy transfers, budgeted and actual expenditure. The methodology also allows determining the share of public expenditure going to each commodity in the country. More information on the methodology can be found in the methodological guidelines, available on the MAFAP website[4].

SCOPE

The study made here considers budgeted and actual expenditures on projects and programs in support of the food and agriculture sector in Ghana for the 2006-2012 period. It makes the distinction between on- and off-budget expenditure, donor and national spending, recurrent and investment spending and loans and grants. A Ghana MAFAP public expenditure database was constructed by listing all the recorded projects and programmes in support of food and agriculture, together with their respective activities, in a single file. Subsequently, the corresponding subsectors, commodities, funding sources, government level and MAFAP categories (see Box 1) were attributed to each of these activities. The final database consists of more than 2000 classified items.

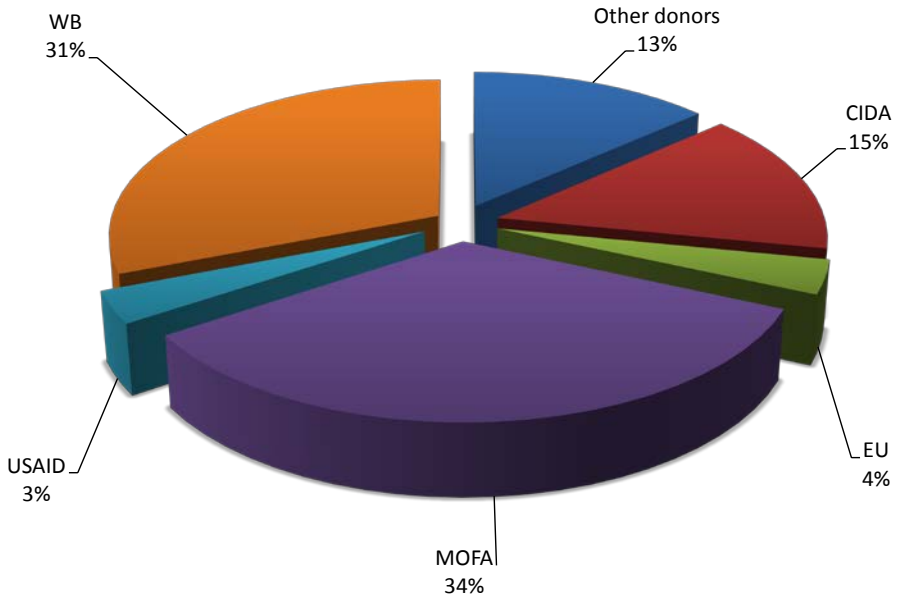
[4] Please see : http://www.fao.org/in-action/mafap/products/tool-methodology/en/

Data sources

The data used in this technical note originates mainly from the Ministry of Food and Agriculture (MOFA) and from the Ministry of Finance (MOFEP). However, the data was complemented by figures collected directly from 13 development partners. The full list of data sources is given in Annex 2.

From the collected data, the authors selected the budgetary transfers that should count as total public expenditure in support of food and agriculture, including administrative costs (EFAAC), following the MAFAP methodology. Removing the identified administrative costs from EFAAC gives total public expenditure in support of food and agriculture, excluding administrative costs (EFA). The distribution of EFA across data sources is of interest (Figure 1). These data sources do not always coincide with the effective funding source. For instance, some expenditure data on projects and programmes reported by MOFA may not concern expenditures made by the Government of Ghana through MOFA but rather expenditures made by a development partner on a project or programme implemented by MOFA. However, the distribution already provides with an approximation of the funding structure of the food and agriculture sector, knowing that the share of EFA originating from MOFA will probably be lower in practice.

Figure 1. Total public expenditure in support of food and agriculture in Ghana, excluding administrative costs (EFA/policy transfers), major expenditure data sources, average 2006-20125.



Source: MAFAP, 2014

Within EFA, the biggest share of expenditure data transited through MOFA and was published in the form of yearly financial reports. These expenditures include the ones incurred by core programmes like the Government Fertilizer and Seed Subsidy Program (GFSSP), the National Food Buffer Stock Company (NAFCO), the Block Farm/Youth in Action (YIA) programme and the National Cockerel Project (NCP).

[5] Based on nominal amounts in GHC.

Data constraints

Since MAFAP uses expenditure data on projects and programmes in support of the food and agriculture sector as the building block of its public expenditure databases, the natural starting point to collect the Ghana data was to examine whether these figures were accessible within MOFA. However, the MOFA Finance Directorate, which reports agriculture expenditure data through yearly financial reports, currently provides with an economic, and not functional, classification of expenditures. Economic classification allocates expenditures by economic type (compensation of employees, use of goods and services, consumption of fixed capital, etc.), while functional classification disaggregates spending according to purpose (health, education, etc.)[6]. Therefore, the accessible MOFA data had to be adapted before being inserted into the MAFAP database. Indeed, its structure does not permit to easily allocate expenditure amounts to the MAFAP classification categories. Moreover, yearly amounts per project or program were accessible as aggregates, whereas MAFAP is typically looking for expenditure amounts per activity within each project or programme.

In this context, it was decided to collect data directly from the major development partners active in the country, knowing that donor spending represents at least half of the total public support to the food and agriculture sector in Ghana[7]. The information collected in this way should complement what is given in MOFA's Financial Reports to provide with an accurate picture of budgetary transfers to the sector. Hence, MOFA data was used with adaptations (for instance, by making estimations of the share absorbed by each activity within the aggregated expenditures of a project or program, for each year) when disaggregated donor data was not accessible. Nevertheless, this approach led to the following constraints:

- **Underestimation of national spending**: when collecting data from donors, the authors asked for all the relevant expenditure in regards to the MAFAP classification table and to the listed categories (agriculture-specific and agriculture-supportive expenditure). However, obtaining full coverage of the corresponding national expenditures would have required including data from other national institutions (in addition to MOFA) in the database[8]. MAFAP did not obtain data from national institutions other than MOFA. Some spending figures were accessible in the MOFEP Budget Statements (see the "Role of development aid in public expenditure in support of the food and agriculture sector" section below), but the authors were unable to disaggregate them according to the MAFAP categories. Finally, the authors did not include expenditure data on the cocoa sub-sector (Ghana Cocoa Board, COCOBOD) in the database.

[6] See IMF (2014), p. 4 and p. 146.

[7] Using data from WB (2013c) reveals that the share of donor spending within agricultural budget was of 38 percent on average for the 2006-2012 period. However, the WB uses a more restrictive definition of agriculture spending ("COFOG+") than MAFAP. Moreover, this percentage only applies to on-budget expenditure. Therefore, when considering the MAFAP definition of agriculture and including off-budget spending, it seems reasonable to assume that donor spending covered at least 50 percent of total public support to the food and agriculture sector between 2006 and 2012. A more detailed analysis of the role of aid within public spending on agriculture is done in the "Role of development aid in public expenditure in support of the food and agriculture sector" section below.

[8] These national institutions include the Ministry of Fisheries and Aquaculture Development, the Ministry of Roads and Highways, the Ministry of Water Resources, the Ministry of Lands, Forestry and Mines, the Ministry of Local Government and Rural Development, the Ministry of Health, the Ministry of Manpower, Youth & Employment and the Ministry of Education and Sports.

- **Use of proxies for disaggregation**: as mentioned above, no disaggregation of expenditures within projects and programmes is available in the Financial Reports provided by the MOFA Finance Directorate. Therefore, some assumptions were made to break down the total yearly expenditure for some projects or programmes to their corresponding activities. For instance, the Block Farming/Youth in Action Programme funded by the Government of Ghana (GoG) has four components (block farm, aquaculture, livestock and agribusiness). It was assumed that each of these four components received the same share of total project expenditures in each year. Even when using donor data, a precise disaggregation of expenditure was not always available. Hence, the resulting distribution of total public support to food and agriculture across the MAFAP categories should be viewed as an estimate and might not exactly match effective expenditure patterns.
- **Omission of certain development partners**: the authors were not able to obtain data from the African Development Bank (AFDB), the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO), the Department for International Development (DFID) and the Alliance for a Green Revolution in Africa (AGRA).

It should be noted that the identification of these data constraints is, by itself, an output of the analysis and that it can be used to formulate policy recommendations (see the "CONCLUSIONS AND RECOMMENDATIONS" section).

RESULTS AND ANALYSIS

General trends in the global budget

Total public expenditures in Ghana grew steadily from 2006 to 2012. Actual spending grew more than budget allocations over the period (Table 1). Total public expenditures reached GHC 20.9 billion for actual spending in 2012. When considering real figures, expressed in constant 2006 terms, the growth rates still remain substantial. Total actual public spending has more than doubled between 2006 and 2012.

Table 1. Total public expenditures in Ghana: budget allocations and actual spending, in millions of GHC, 2006-2012

	2006	2007	2008	2009	2010	2011	2012	Growth 2006-2012
Budget allocation	3.9	6.0	6.8	8.7	10.8	13.5	19.0	391.1%
Actual spending	4.0	5.7	8.9	8.7	11.5	13.8	20.9	419.3%
Budget allocation (constant 2006 GHC)	3.9	5.4	5.3	5.6	6.3	7.3	9.4	142.9%
Actual spending (constant 2006 GHC)	4.0	5.1	6.9	5.6	6.8	7.5	10.4	156.8%

Source: MOFEP (2014a). See detail in Annex 3.

General trends in public expenditure in support of the food and agriculture sector

The trends in total public expenditures are also observed for total public expenditure in support of the food and agriculture sector, including administrative costs (EFAAC). The growth rate of actual expenditures, both in nominal and real terms, was superior to the growth rate of budget allocations. When considering real values, we see that EFAAC more than doubled from 2006 to 2012. It suggests that the relative share of EFAAC within total public expenditures remained stable during the period.

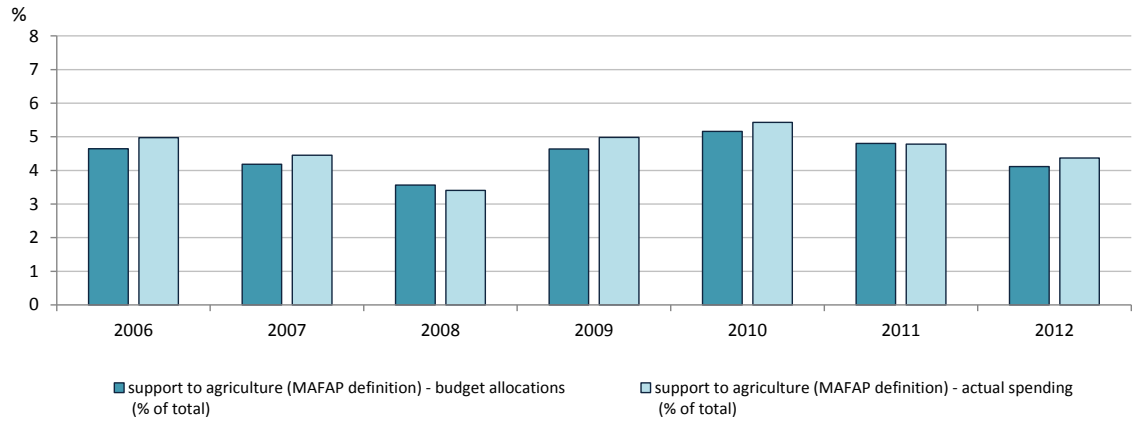
Table 2. Total public expenditures in support of the food and agriculture sector, including administrative costs (EFAAC) in Ghana: budget allocations and actual spending, in millions of GHC, 2006-2012

	2006	2007	2008	2009	2010	2011	2012	Growth 2006-2012
Budget allocation	180.1	249.1	244.4	402.8	556.4	649.7	783.0	334.8%
Actual spending	200.8	252.0	302.4	432.3	626.3	661.5	914.8	355.6%
Budget allocation (constant 2006 GHC)	180.1	225.0	189.4	261.8	326.6	350.8	387.3	115.0%
Actual spending (constant 2006 GHC)	200.8	227.5	234.4	280.9	367.6	357.2	452.5	125.3%

Source: MOFEP (2014a). See detail in Annex 3.

This is verified if one looks at the evolution of the share of EFAAC within total public expenditures in Ghana, which mainly fluctuated between 4 and 5 percent during the 2006-2012 period (Figure 2). The sole significant movement occurred in 2008, as the share dropped to about 3.5 percent, both in budgeted and actual terms.

Figure 2. Public expenditure in support of the food and agriculture sector, including administrative costs (EFAAC) as a share of total public expenditures in Ghana, budgeted and actual spending, in %, 2006-2012



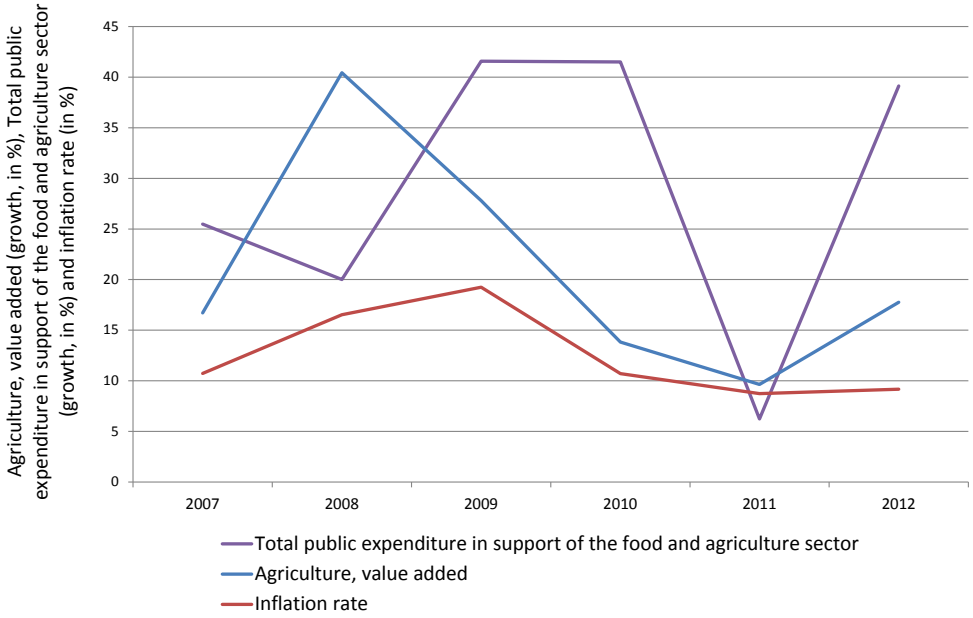
Source: MAFAP, 2014.

This plunge occurred as total public expenditures (the denominator) increased by about 56 percent between 2007 and 2008, while EFAAC (the numerator) increased by only 20 percent. The decline in the rate of increase of EFAAC can also explain the 2008 drop. Between 2006 and 2007, the increase in EFAAC (actual spending) was about 25 percent, while between 2007 and 2008, this rate of increase was of 20 percent. This diminution can be partly attributed to a decline in the disbursements made by the "Road Sector Development Project" funded by the World Bank (GHC 39 million in 2007, but only GHC 11 million in 2008).

The comparison of EFAAC growth rates in Ghana with the growth rates of the value added of the agricultural sector shows that there appears to be a congruence between EFAAC and agriculture value added growth rates from 2009 on (Figure 3). It is difficult to determine which variable affects the other: the significant growth in the value added of the agricultural sector between 2007 and 2008 may have induced the government to increase EFAAC at higher rate subsequently in 2009.

Conversely, the slight decrease of EFAAC growth from 2009 to 2010 could have caused the drop in the growth of agriculture value added that is observed in 2010.

Figure 3. Growth of public expenditure in support of food and agriculture, including administrative costs (EFAAC), growth of agriculture value added and inflation rate in Ghana, in %, 2007-2012.



Source : MAFAP, 2014, and WDI, 2014. Growth rates of EFAAC and agriculture value added were computed from series expressed in nominal GHC.

Another factor that appears to play a role in the movements of the Ghana EFAAC growth rates is the country inflation rate. The upward movement of the EFAAC growth rate in 2009 and its fall in 2011 can be associated to comparable movements in the inflation rate. However, these observations should be tempered since a more detailed econometric research using longer time-series would be required to determine the relationship between growth in EFAAC and growth in agriculture value added.

Overall, the figures show that, with the exception of 2008, the financing of the agricultural sector in Ghana, for the 2006-2012 period, has been weakly affected by sector-specific events or policies. The sector has kept its relative share within total public expenditures throughout the period. In this sense, understanding the main trends and driving factors of EFAAC in Ghana requires to look at more disaggregated expenditure figures. Table 3 offers a breakdown of total expenditure in support of the food and agriculture sector, excluding administrative costs (EFA) in Ghana using MAFAP categories.

Table 3. Total public expenditures in support of food and agriculture, excluding administrative costs (EFA/policy transfers) in Ghana (actual spending), in millions of GHC, 2006-2012.

	2006	2007	2008	2009	2010	2011	2012
I. Agriculture-specific expenditure	76.1	62.0	88.8	137.6	269.5	360.6	416.3
I.1 Payments to agents in the food and agriculture sector	31.7	18.4	35.3	71.7	118.7	179.8	182.5
I.1.1. Payments to producers	29.7	15.9	31.0	56.1	101.5	164.0	149.2
A. Production subsidies based on outputs	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B. Input subsidies	29.7	15.9	31.0	56.1	101.5	164.0	149.2
B1. Variable inputs	11.1	6.1	10.7	22.2	57.8	100.8	117.1
B2. Capital (including on-farm irrigation and infrastructure)	10.4	6.7	16.0	21.4	25.7	42.2	17.3
B3. On-farm services	8.2	3.2	4.3	12.4	18.0	21.0	14.8
C. Income support	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D. Other payments to producers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I.1.2. Payments to consumers	1.9	2.3	2.7	14.9	14.3	14.7	31.9
E. Food aid	1.5	1.6	1.7	4.0	7.3	9.4	19.8
F. Cash transfers	0.0	0.0	0.0	0.0	2.5	1.0	6.7
G. School feeding programmes	0.5	0.7	1.0	10.9	4.6	4.3	5.4
H. Other payments to consumers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I.1.3. Payments to input suppliers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I.1.4. Payments to processors	0.1	0.1	1.6	0.7	2.8	1.1	1.4
I.1.5. Payments to traders	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I.1.6. Payments to transporters	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I.2 General support to the food and agriculture sector	44.4	43.6	53.5	66.0	150.9	180.9	233.8
I. Agricultural research	11.7	11.9	11.7	11.8	23.2	23.7	38.8
J. Technical assistance	2.0	2.4	6.7	5.4	14.4	8.8	9.8
K. Training	11.7	11.9	15.9	21.5	56.1	43.2	52.9
L. Extension/technology transfer	7.1	7.8	2.8	7.0	6.0	5.8	13.9
M. Inspection	0.5	0.2	0.6	1.8	3.6	7.4	6.9
N. Agricultural infrastructure	8.5	7.3	11.1	9.5	15.9	46.9	44.9
N1. Feeder roads	0.7	0.3	0.7	2.3	4.6	6.1	19.9
N2. Off-farm irrigation	0.5	1.1	0.9	2.8	3.7	32.6	20.9
N3. Other off-farm infrastructure	7.3	5.9	9.6	4.4	7.6	8.2	4.1
O. Storage/public stockholding	0.0	0.1	0.3	1.8	14.1	8.9	7.9
P. Marketing	1.1	0.3	4.5	7.0	16.4	34.6	36.3
Q. Other general support to the food and agriculture sector	1.7	1.7	0.0	0.1	1.2	1.6	22.4
II. Agriculture-supportive expenditure	71.3	116.5	81.5	117.8	141.3	100.1	191.9
R. Rural education	9.3	15.0	12.2	17.2	23.5	41.9	4.7
S. Rural health	5.0	16.7	23.7	28.6	42.1	23.0	91.4
T. Rural infrastructure	52.7	49.8	18.2	4.3	28.2	8.5	33.3
T1. Rural roads	50.0	40.4	12.4	0.4	2.8	1.7	16.4
T2. Rural water and sanitation	2.4	7.3	3.4	2.1	23.5	3.8	12.4
T3. Rural energy	0.1	1.2	1.3	1.4	1.6	2.6	4.1
T4. Other rural infrastructure	0.1	1.0	1.1	0.4	0.3	0.4	0.4
U. Other support to the rural sector	4.4	35.0	27.4	67.7	47.4	26.7	62.4
III. Total expenditure on agriculture and rural development (policy transfers)	147.4	178.5	170.4	255.4	410.8	460.8	608.2

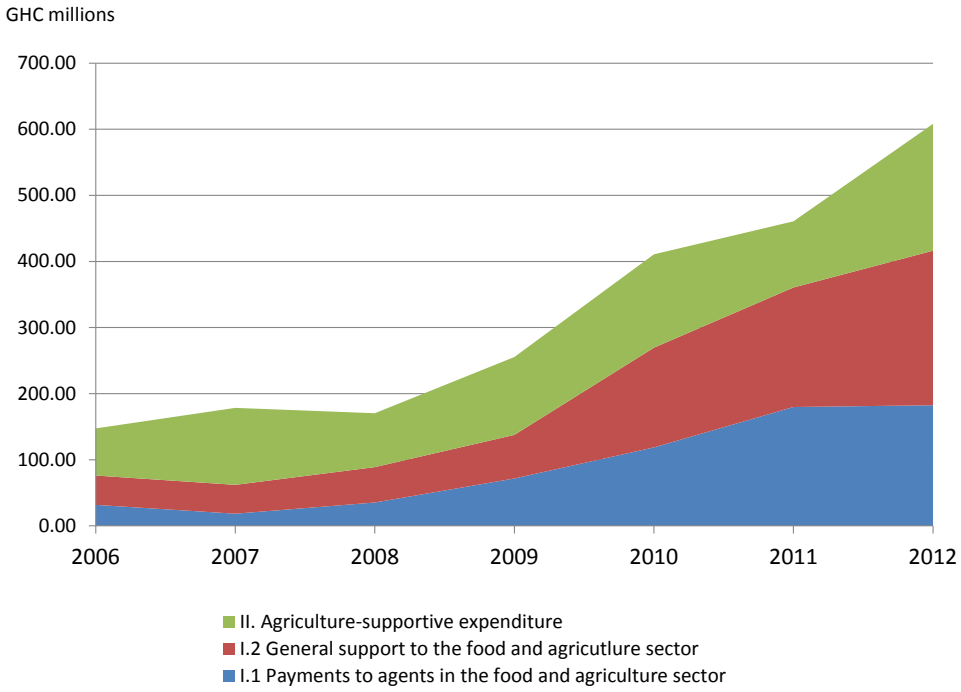
Source: MAFAP, 2014. See Annex 1 for methodological details.

Composition of public expenditure in support of the food and agriculture sector

As explained in the METHODOLOGY section above and in Annex 1, MAFAP distinguishes between expenditures that are agriculture-specific (direct support for the agricultural sector) and agriculture-supportive (indirect support for the agricultural sector). In addition, within the agriculture-specific category, a distinction is made between support for producers and other agents in the value chain (e.g. input subsidies), and general or collective support for the sector (e.g. research).

Looking at agriculture-specific and agriculture-supportive expenditure levels in Ghana reveals that, on average for the 2006-2012 period, the respective shares of agriculture-specific and agriculture-supportive expenditures in EFA were of 65 and 35 percent. In 2006, agricultural-specific and agricultural-supportive expenditure had about the same value. However, the proportion of agricultural-specific expenditure increased steadily over the period to reach about 70 percent of EFA in 2012 (Figure 4).

Figure 4. Composition of total expenditure in support of the food and agriculture sector, excluding administrative costs (EFA/policy transfers) in Ghana, agriculture-specific expenditures (general support and payments to agents) and agriculture-supportive expenditures, in nominal terms and millions of GHC, 2006-2012



Source: MAFAP, 2014

Agriculture-specific public expenditure

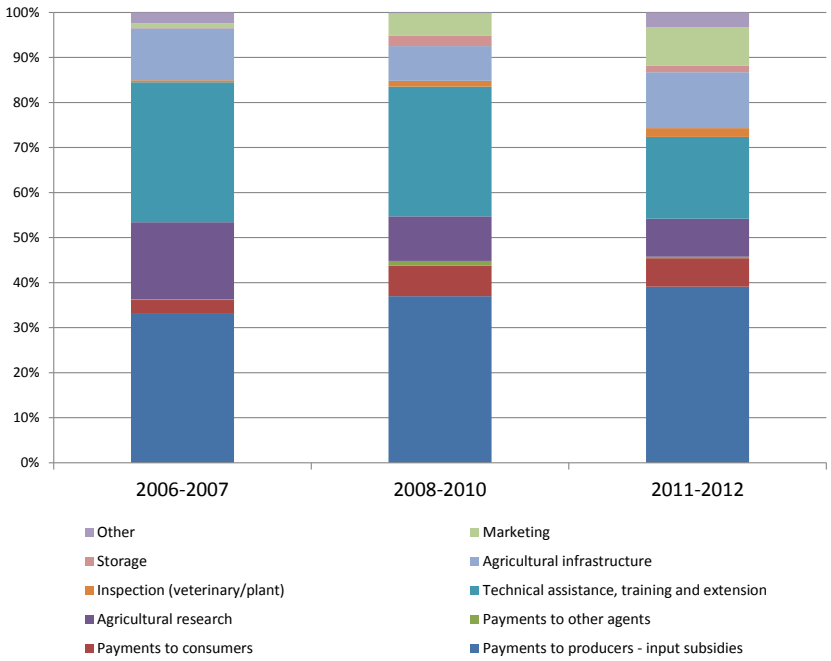
Between 2006 and 2012, on average, about 40 percent of agriculture-specific expenditure consisted in payments to agents[9]. Payments to producers accounted for 95 percent of the latter. The

[9] Payments to agents are defined as monetary transfers to individual agents in the agro-food sector (see Annex 1).

remainder of agriculture-specific expenditure was spent on general sector support[10]. Few variations in this distribution are observed throughout the period.

Looking at a disaggregation of agriculture-specific expenditure reveals that, within general support, the major spending categories were "technical assistance, training and extension", "agricultural research", "agricultural infrastructure" and "marketing" (Figure 5). On average, for 2006-2012, "payments to producers" is clearly the most important category, capturing about 38 percent of agriculture-specific expenditure.

Figure 5. Agriculture-specific expenditures in Ghana, 2006-2012[11]



Source: MAFAP, 2014

Let us observe the composition of payments to producers in more detail. Starting from an equilibrated distribution in 2006, there is an upward trend from 2008 on the relative share of variable inputs that leads to a prevalence (about 70 percent) of this category in 2012 (Figure 6). The driving factor behind this trend is the introduction of a substantial Government Fertilizer and Seed Subsidy Program (GFSSP) in 2008, whose expenditures increased gradually to reach about GHC 115 million in 2012. The GFSSP was a response to the 2007-2008 global food crisis and is still on-going. The GFSSP funds originate from various sources. For instance, in 2010, funds from the Canadian International Development Agency (CIDA) Food and Agriculture Budgetary Support (FABS) programme and the World Bank Heavily Indebted Poor Countries (HIPC) initiative were channelled to GFSSP (MOFA, 2010, 2012). In 2011 and 2012, respectively, about GHC 66 million (close to 70 percent of policy transfers in the form of variable inputs) and GHC 94 million (about 80 percent of policy

[10] General sector support is defined as public expenditures generating monetary transfers to agents of the agro-food sector collectively (see Annex 1).

[11] "Payments to producers", "agricultural research", "agricultural infrastructure" and "marketing" respectively correspond to categories I.I.4, I, N and P in Table 4 above. "Technical assistance, training and extension" is the sum of the J, K and L categories in Table 4 above.

transfers in the form of variable inputs) were spent on GFSSP using sectorial budget support inflows from the World Bank.

Figure 6. Share of variable inputs, capital and on-farm services in payments to producers in Ghana, 2006-2012.

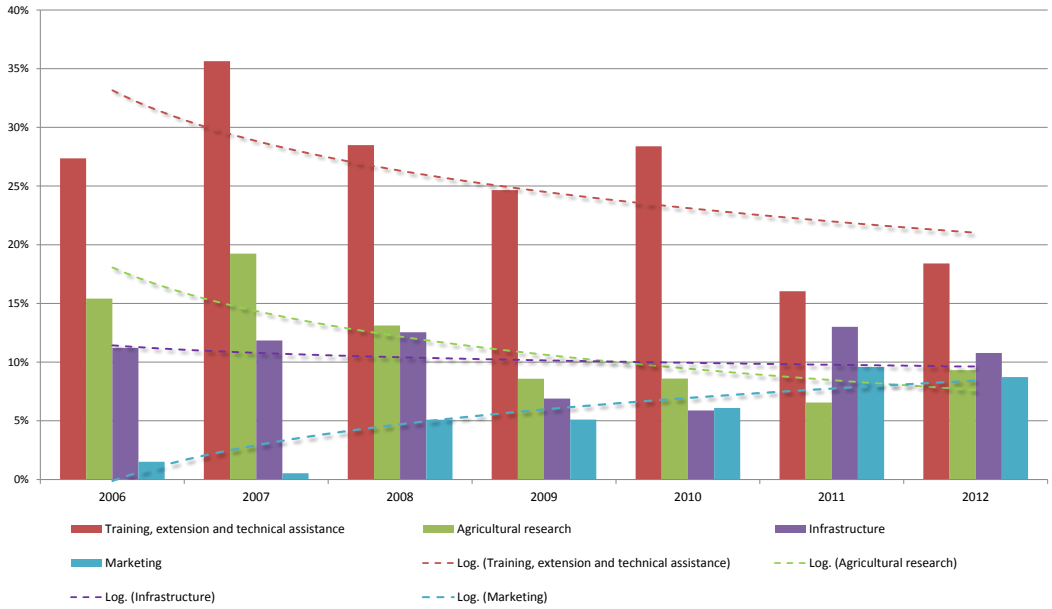
Source: MAFAP, 2014

Although the GFSSP has a positive impact on output yields, it is recognized that it constitutes a substantial cost in terms of public resources (WB, 2013c, p. 12-13). In 2010, the total cost of the programme reached about GHC 30 million and represented more than 15 percent of MOFA's expenditure. A study called "Evaluation of Special Initiatives" was undertaken by the GoG in 2012 and covered the GFSSP. It estimated that the cost of the programme to MOFA could attain 35 percent of MOFA's budget in 2020 and recommended an exit strategy for the government while ensuring the sustainability of the support given to farmers (WB, 2013c).

Within general sector support, noticeable trends from 2006 to 2012 are the decline of the relative shares of the "agricultural research" and "technical assistance, training and extension" categories. By contrast, the shares of "marketing" and "agricultural infrastructure" increased markedly in 2011 and 2012, with respect to 2010 (Figure 7). The drop observed in the "training, extension and technical assistance" share in 2011 can be partly attributed to the diminution of the funds allocated to the "Block farm" component (a training activity) of the MOFA Youth In Agriculture Program through CIDA's FABS[12] (MOFA, 2011).

[12] The data collected by MAFAP indicates that payments released under FABS ended in 2012.

Figure 7. Trends in public expenditure categories within agriculture-specific spending in Ghana, 2006-2012.



Source: MAFAP, 2014

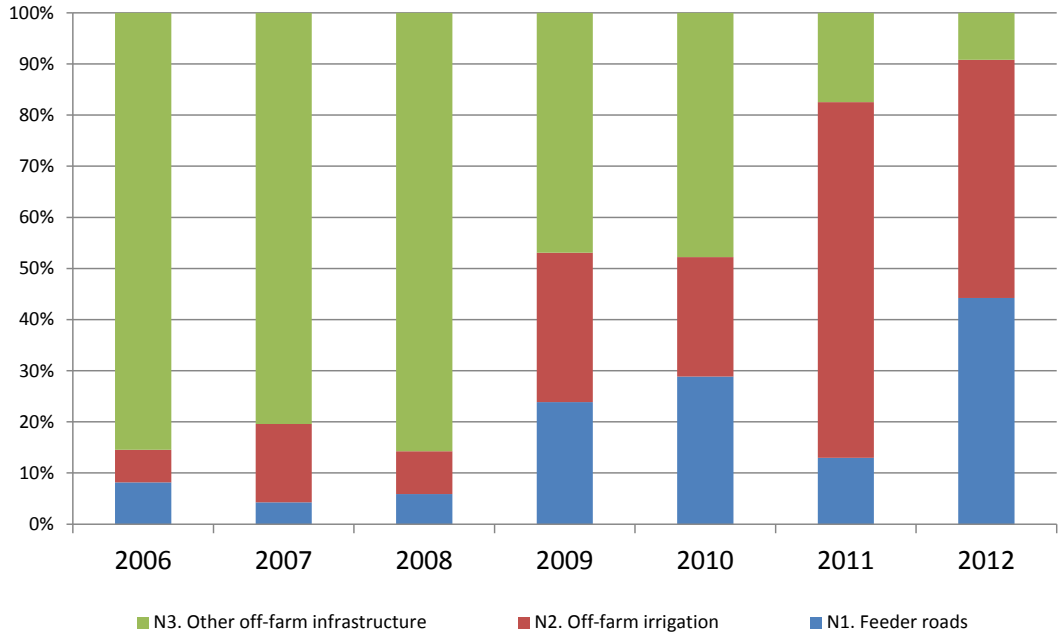
Another factor behind the 2011 drop in "training, extension and technical assistance" is a change in the components of the World Bank Agriculture Development Policy Operations (ADPOs). The 2010 Second ADPO funded activities that amounted to about 25 percent of "training, extension and technical assistance". In 2011 and 2012, the Third and Fourth ADPOs were undertaken and withdrew attention from educational activities to focus on marketing and agricultural infrastructure. Through these interventions, about GHC 17 million were allocated to "market and value chain development" and "irrigation and other infrastructure", respectively, both in 2011 and 2012[13]. For the "marketing" category, the arrival of the ADPO resources was the major cause of the increase in share size in 2011-2012 that can be observed in Figure 7. Indeed, ADPO funds represented about 50 percent of marketing expenditure in 2011-2012, the remainder originating from 50 smaller activities.

For agricultural infrastructure, the World Bank initiated a Transport Sector Project (TSP) in 2009, under which strong investments in feeder roads were made in 2011-2012. For these years, the TSP and the ADPOs made up about 50 percent of spending on agricultural infrastructure. The composition of payments to agricultural infrastructure reflects these changes (Figure 8). Between 2006 and 2009, such payments were dominated by the World Bank "Community-Based Rural Development" project[14], which explains the important size of the "other off-farm infrastructure" category, before irrigation and feeder roads become prevalent through the ADPOs. Between 2006 and 2012, spending on agricultural infrastructure was thus dominated by World Bank funds.

[13] This shift in priorities is a consequence of the adoption of the Medium Term Agriculture Sector Investment Plan (METASIP) in October 2009 and of the progressive alignment of the World Bank funding to the new indicated priorities. In particular, the Third and Fourth ADPOs supported the targets outlined in the GSGDA 2010-2013, which aim at developing commercial agriculture (WB, 2013a, p. 2-3).

[14] The expenditures of the Community-Based Rural Development project were allotted by MAFAP to the "other off-farm infrastructure" category since they concerned various types of infrastructure (feeder roads but also off-farm irrigation and post-harvest facilities) and no information was available for additional disaggregation (WB, 2004).

Figure 8. Share of feeder roads, off-farm irrigation and other off-farm infrastructure in spending on agricultural infrastructure in Ghana, 2006-2012.



Source: MAFAP, 2014

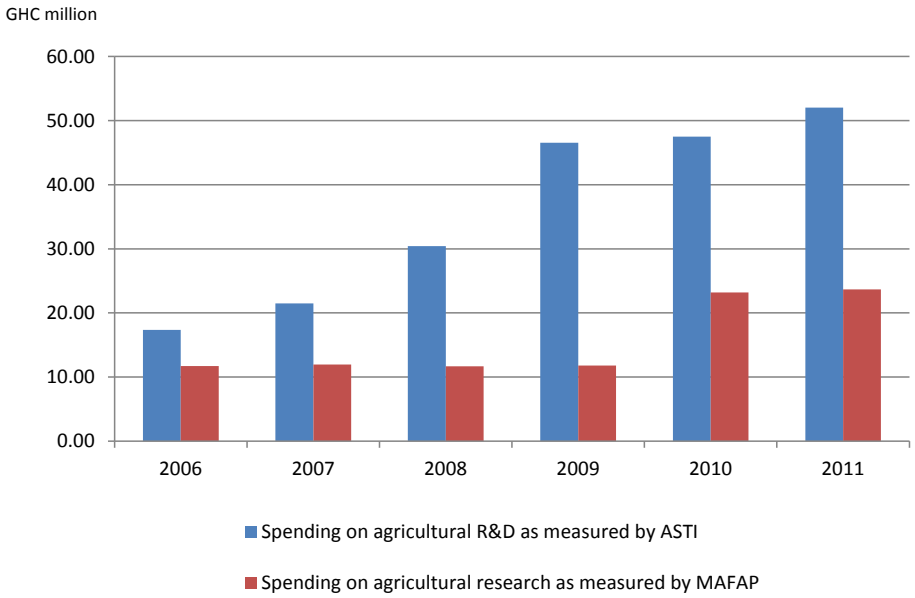
Another category of interest is "agricultural research". Drops in its relative share can be observed in 2008 and 2009, before the percentage stagnates until 2012. They are a consequence of the diminution of spending under the Agricultural Services Sub-Sector Investment Project (AGSSIP)[15] in 2008 with respect to 2007. No other disbursements were done under AGSSIP after 2008. AGSSIP was dedicated to improving capacity and service delivery within the agricultural sector. It included dissemination activities and supported the development of farmer-based organisations (FBOs)[16]. In subsequent years, agricultural research received increased funding from other programmes. For instance, in 2012, about GHC 9 million were allocated to agricultural research under the West Africa Agricultural Productivity Program (WAAPP), which focuses on agricultural technology development and dissemination, especially for cassava[17]. Also in 2012, about GHC 4 million were channelled to research through the USAID-supported Borlaug Higher Education Agricultural Research Development (BHEARD) project. However substantial, the increase in spending on agricultural research from 2010 to 2012 was not high enough to reverse the 2006-2012 downward trend that is visible in Figure 7.

Another data provider on agricultural research spending is IFPRI's ASTI initiative which, for Ghana, provides yearly figures for the 2001-2011 period (ASTI, 2014b). If one considers the nominal public expenditures directed towards agricultural research, as reported by ASTI for 2006-2011, and compare these amounts with those reported by MAFAP, one observes that ASTI displays higher levels of spending (Figure 9). This is probably due to the fact that ASTI includes the wages of administrative and technical staff in addition to the salaries of researchers and to capital spending on

[15] Jointly supported by the EU, CIDA and the World Bank.
[16] See project description on the World Bank's website: http://www.worldbank.org/projects/P000968/agricultural-services-subsector-investment-project?lang=en&tab=overview (visited on April 30, 2014).
[17] See PPMED DP matrix, MOFEP donor programme database and WB (2013c).

agricultural research in its indicator. These expenditure items are considered as administrative costs in the MAFAP classification. Moreover, ASTI includes the amounts perceived by research institutions for the provision of goods and services, by contrast with MAFAP, which only considers budgetary transfers from the government and from donors (ASTI, 2014a). In any case, the observed trend is similar, whether one looks at the ASTI or MAFAP figures. The stagnation in 2010-2011 corroborates the decline in the share of agricultural research within agriculture-specific spending diagnosed in Figure 7 above.

Figure 9. Public expenditure for agricultural research, using MAFAP and ASTI data, in nominal terms, in millions of GHC, 2006-2011.



Source: MAFAP, ASTI, 2014b

In sum, between 2006 and 2012, the composition of agriculture-specific expenditure was dominated by payments to producers, training, extension and technical assistance, agricultural research, agricultural infrastructure and marketing. Over the period, the shares of payments to producers in the form of variable input subsidies (essentially through the GFSSP), agricultural infrastructure and marketing increased to the expense of agricultural research and training, extension and technical assistance. This evolution can be attributed to the introduction of the Medium Term Agriculture Sector Investment Plan (METASIP) in 2009, which induced a modification on the spending pattern of some key donors (header World Bank).

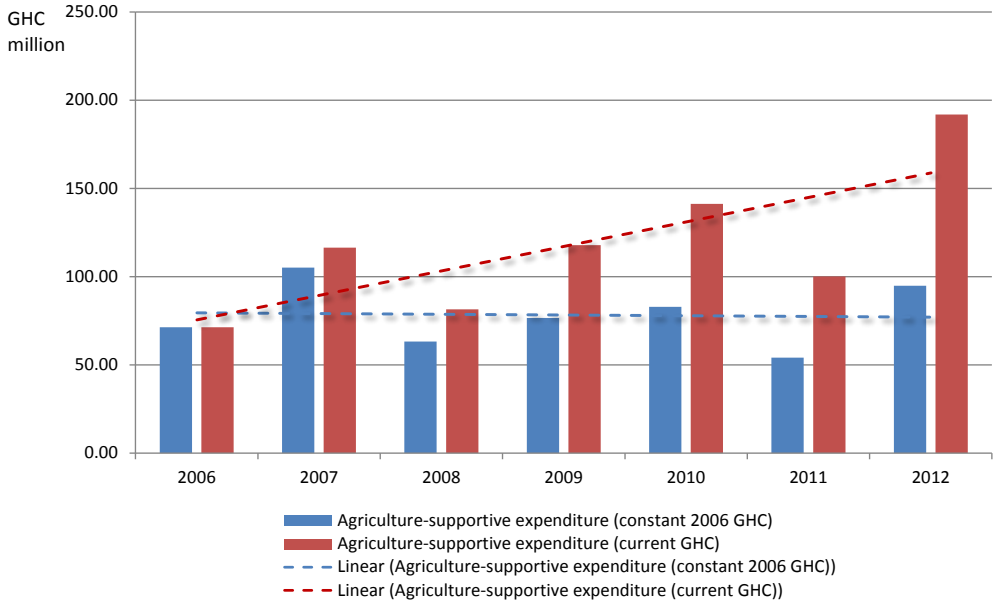
Agriculture-supportive public expenditure

In addition to agriculture-specific expenditure, MAFAP considers "agriculture-supportive" or "rural development" expenditure. These transfers are not specific to agriculture, but have a strong influence on agricultural sector development (MAFAP, 2013). They include spending on rural education, rural health and rural infrastructure. The latter category comprises rural roads, water and sanitation (e.g. wells, water reservoirs, etc.) and energy (e.g. dams, plants, renewable energy initiatives, etc.).

EFA has been dominated by agriculture-specific expenditure over the 2006-2012 period, and this dominance became even more pronounced in 2011-2012 (Figure 4). In these years, agriculture-

supportive expenditure fluctuated between 20 and 30 percent of EFA. Looking at the expenditure amounts reveals that, although the transfers exhibit an increasing trend when expressed in nominal terms, they stagnate if one considers real figures (Figure 10).

Figure 10. Agriculture-supportive expenditure in Ghana, in millions of GHC, in nominal and real terms, 2006-2012.



Source: MAFAP, 2014

Using agriculture-specific expenditure to support the food and agriculture sector appears to have been the preferred strategy of the Ghanaian government and the donor community, especially for recent years. A possible explanation of the trend is, again, the introduction of the METASIP in 2009. It provided a detailed framework for agricultural investment, which induced donors to link their interventions to the development objectives stated in it. This is likely to have reinforced the tendency to focus on the agricultural sector when investing in rural areas.

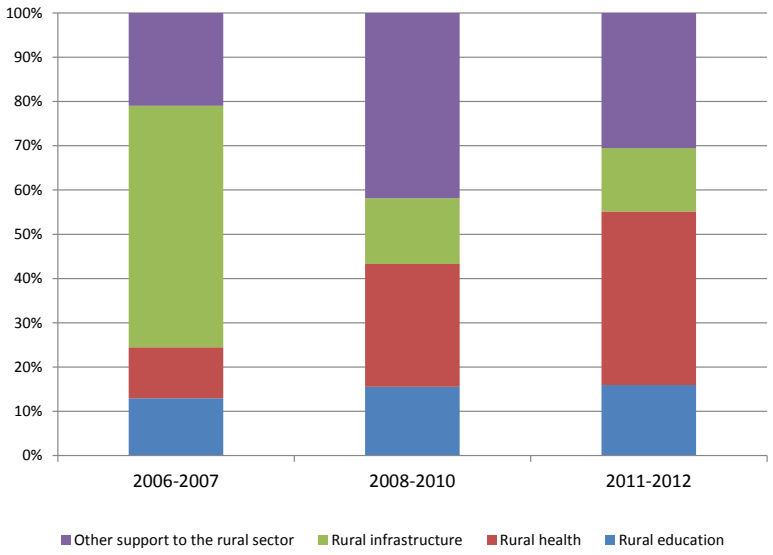
However, the analysis has to be tempered by taking data constraints into account. Data on rural development expenditure is more difficult to collect than agriculture-specific data. Indeed, it is scattered across a number of ministries and implementing agencies[18]. Therefore, the MAFAP Ghana public expenditure database is likely to omit a portion of agriculture-supportive expenditure.

The composition of rural development expenditure has been balanced during between 2006 and 2012 (Figure 11). On average, rural health and rural infrastructure were the two dominant identifiable categories, respectively representing 28 and 24 percent of agriculture-supportive expenditure. The increase in rural health was driven by the "health and nutrition" activities

[18] As explained in the SCOPE section above, in addition to MOFA, these include the Ministry of Fisheries and Aquaculture Development, the Ministry of Roads and Highways, the Ministry of Water Resources, the Ministry of Lands, Forestry and Mines, the Ministry of Local Government and Rural Development, the Ministry of Health, the Ministry of Manpower, Youth & Employment and the Ministry of Education and Sports. For what concerns donors, the MAFAP data collection process was biased towards agriculture-specific expenditures since the focal points that were contacted by MAFAP to obtain expenditure data were mostly heads of agricultural programmes, these latter usually not including activities that would fall into the MAFAP rural development categories. Hence, access to expenditure data on rural development from donors by the MAFAP team was often difficult.

undertaken in the context of the UNICEF Ghana Country Programme which peaked at about GHC 30 million in 2010 and, on average between 2006 and 2012, constituted 35 percent of the category.

Figure 11. Composition of agriculture-supportive expenditure in Ghana, averages for 2006-2007, 2008-2010 and 2011-2012[19]

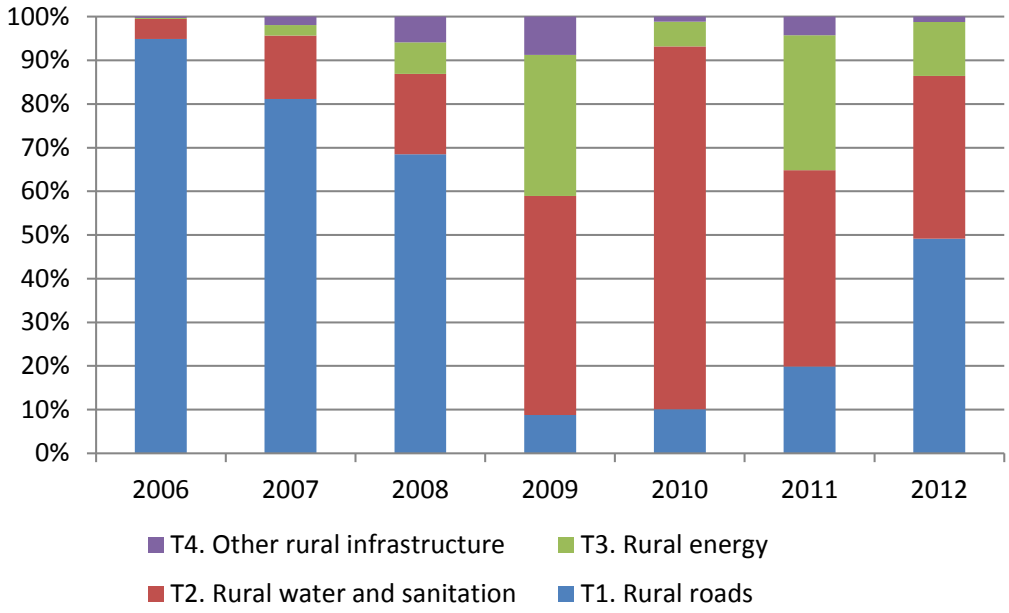


Source: MAFAP, 2014

By contrast, the relative importance of spending on rural infrastructure has been shrinking. Between 2006 and 2008, substantial transfers were executed in the context of a "Road Sector Development Project" implemented by the Ministry of Roads and Highways with support from the World Bank. After that, the composition of rural infrastructure expenditure was dominated by spending on rural water and sanitation up to 2010, before attaining a more balanced distribution (Figure 12). Concomitantly, the size of rural infrastructure expenditure declined both in absolute and relative terms, its share in agriculture-supportive expenditure floating between 5 and 20 percent up to 2012 (Figure 13).

[19] "Rural education", "Rural health", "Rural infrastructure" and "Other support to the rural sector" respectively correspond to categories R, S, T and U in Table 4 above. Category shares were computed using absolute, nominal amounts.

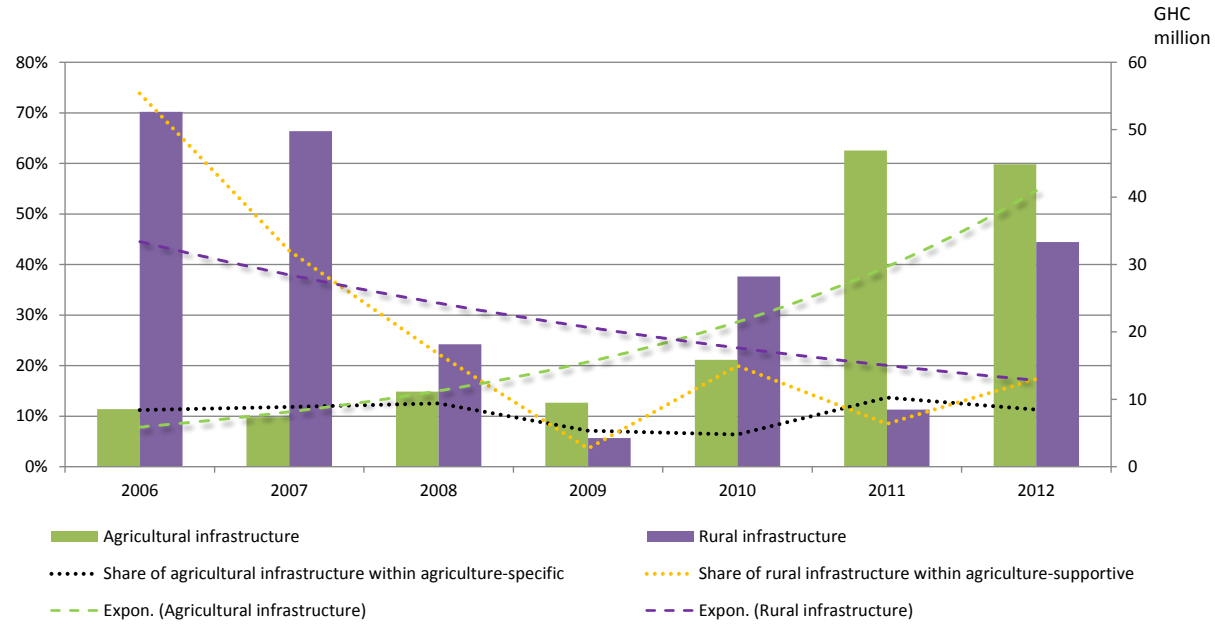
Figure 12. Share of rural roads, rural water and sanitation, rural energy and other rural infrastructure in spending on rural infrastructure in Ghana, 2006-2012.



Source: MAFAP, 2014

In general, transfers directed towards infrastructures in support of the agricultural sector diminished between 2006 and 2012. The percentage of agricultural-specific expenditure allocated to *agricultural* infrastructure (feeder roads, off-farm irrigation and other agriculture-specific infrastructure) remained stable during the period, although the spending on this category increased in nominal terms. At the same time, spending on *rural* infrastructure declined considerably, both in nominal terms and as a share of agriculture-supportive spending (Figure 13). It appears that support to infrastructure in rural areas as a whole (agricultural and rural) gradually focused towards the agricultural sector. The increase in agricultural infrastructure spending has benefited to feeder roads and off-farm irrigation, while spending on rural roads is the main cause of the downward trend in rural infrastructure expenditure (Figure 8 and Figure 12).

Figure 13. Agricultural and rural infrastructure in absolute, nominal terms (right axis) and share of the agriculture-specific and agriculture-supportive expenditure (left axis), in % and millions of GHC, 2006-2012.



Source: MAFAP, 2014

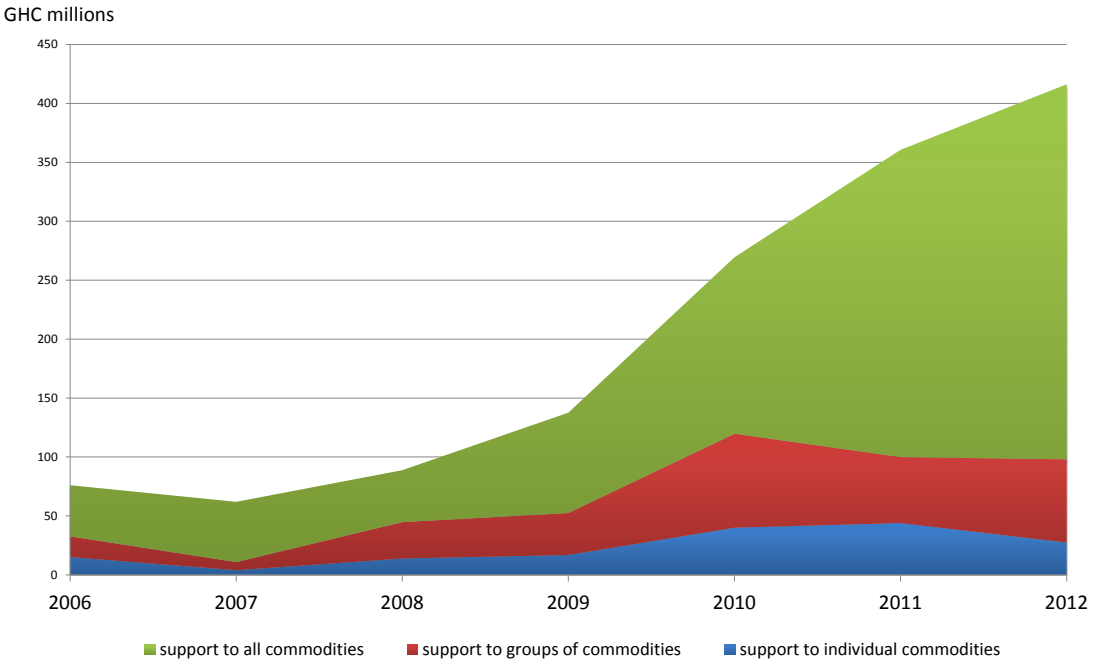
Public expenditure on key commodities

In this section, we study the disaggregation of agriculture-specific expenditure across the commodities it intends to support. We distinguish between payments directed towards single commodities, groups of commodities and all commodities. Each expenditure measure included in the MAFAP Ghana public expenditure database has been attributed either to a single commodity (rice, maize, cotton, etc.), to a group of commodities (food crops, fish, etc.) or to all commodities. The latter classification is attributed if the expenditure measure is not related to a single product or to a set of products[20].

In Ghana, between 2006 and 2012, most expenditure measures that directly benefited the agricultural sector were directed towards all commodities. This group accounted for, on average for the period, about 65 percent of agriculture-specific expenditure (Figure 14). The corresponding shares for groups of commodities and for single commodities were of 22 percent and 13 percent, respectively.

[20] For instance, the creation of a feeder road can affect the production process of multiple commodities.

Figure 14. Agriculture-specific spending in Ghana disaggregated by commodity support, in nominal terms and millions of GHC, 2006-2012.



Source: MAFAP, 2014

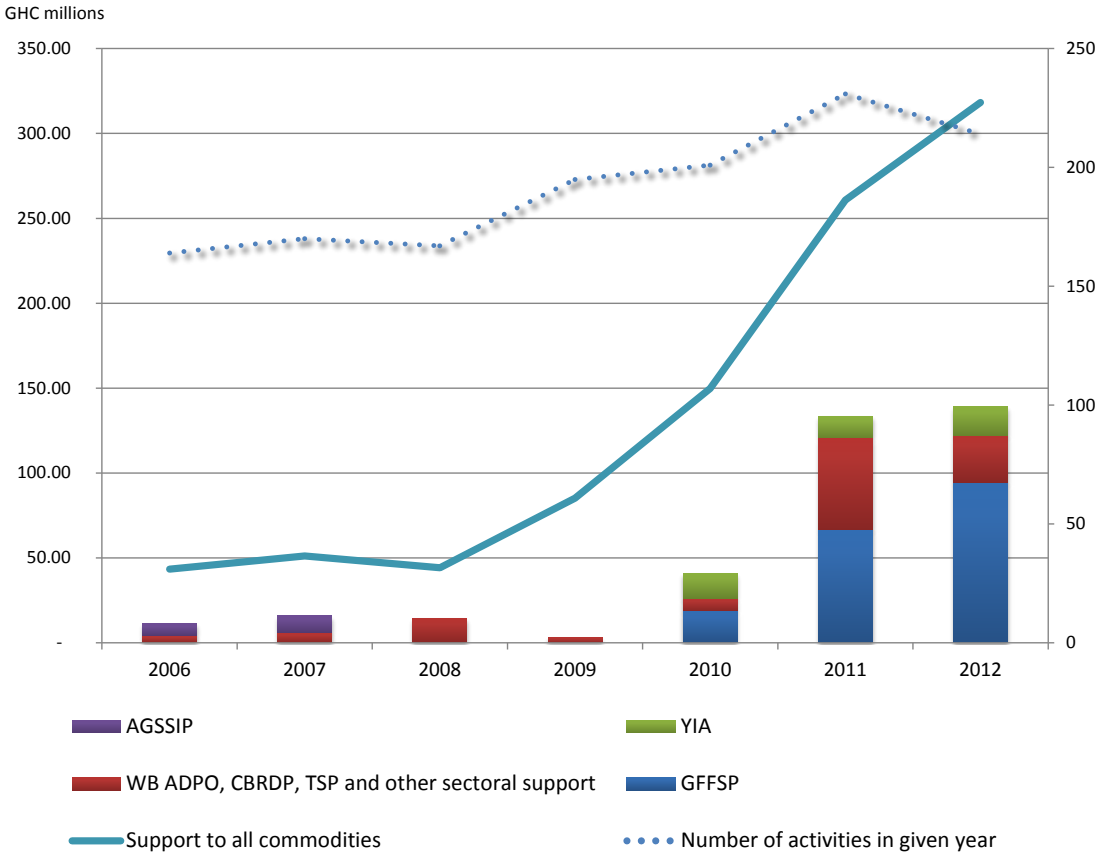
In addition, the dominance of support to all commodities has been reinforcing through time. In 2012, it represented about 75 percent of agriculture-specific expenditure, while this proportion was of about 60 percent in 2006. Clearly, Ghanaian authorities seem to prefer transversal commodity support over support to groups of products or selected value chains.

The surge in the support to all commodities in 2011-2012 is due, on the one hand, to the substantial expenditures incurred in the context of the GFSSP, using funds from the World Bank sectorial budget support. On the other hand, it is due to other World Bank-supported initiatives (including the ADPOs, the Community-Based Rural Development Project and the Transport Sector Project). Overall, although the number of activities[21] directed towards "all commodities" was high in 2006-2012, a set of 6 core programmes[22] represented about 30 percent of total agriculture-specific expenditure on all commodities, on average for the period (Figure 15).

[21] The number of activities directed towards all commodities for a given year is computed by taking the sum of all activities (expenditure measures) having incurred positive payments in that year. A project or programme can include several activities. For instance, MAFAP recorded 4 activities for the MOFA Block Farm/Youth In Action (YIA) programme: (i) block farm/crops, (ii) aquaculture, (iii) livestock/poultry and (iv) agribusiness (MOFA, 2012).

[22] These 6 core programmes were the following: GFSSP, WB ADPOs, Community-Based Rural Development Project, Transport Sector Project, YIA and AGSSIP.

Figure 15. Agriculture-specific expenditure on all commodities in Ghana, total spending and spending from 6 major projects, in nominal terms, 2006-2012, in millions of GHC (left axis), and number of activities targeting all commodities per year, 2006-2012 (right axis).



Source: MAFAP, 2014

In addition, expenditures incurred within these 6 core programmes seem to be the driving factor behind the general trend observed in the support to all commodities. In Ghana, interventions benefiting all commodities are therefore mostly undertaken in the context of broad development programmes. This raises the question of the sustainability of this support, especially when one considers the importance of the World Bank in the core agricultural programmes. It directly supports 3 out of the 6 programmes identified above, but it also funds a consequent share of other MOFA-implemented programmes like GFFSP through sectorial budget support. The analysis also reveals that GFFSP has gained importance from 2010 on. In 2012, it represented about 30 percent of the support to all commodities. Indeed, GFFSP is not considered to be directed towards specific commodities. For instance, MOFA (2012, p. 30) indicates that the programme affected "most (…) staple foods, (…) maize, rice and soybeans". Given the substantial resources dedicated to the GFFSP, both in relative and absolute terms, the assessment of that programme's impact should be a key component of an agricultural policy quality evaluation in Ghana.

Even if the share of agricultural-specific expenditure dedicated to all commodities has been the highest between 2006 and 2012, spending was also allocated to single commodities and to groups of commodities. Looking at these two categories jointly reveals that the support they benefited from was bell-shaped throughout the period, with a peak in 2010. For that year, spending on single

commodities and groups of commodities together represented about 45 percent of agricultural-specific expenditure, while this share went down to 26 percent on average in 2011-2012.

In terms of single commodities, Ghanaian authorities have allocated resources to 7 major products that, on average for 2006-2012, received more than 95 percent of spending on single commodities. Rice and rubber occupy the largest shares, together representing about 50 percent of spending on single commodities (Table 4).

Table 4. Share of the main commodities into expenditures targeting single commodities in Ghana, averages for 2006-2009, 2010-2012, and 2006-2012[23].

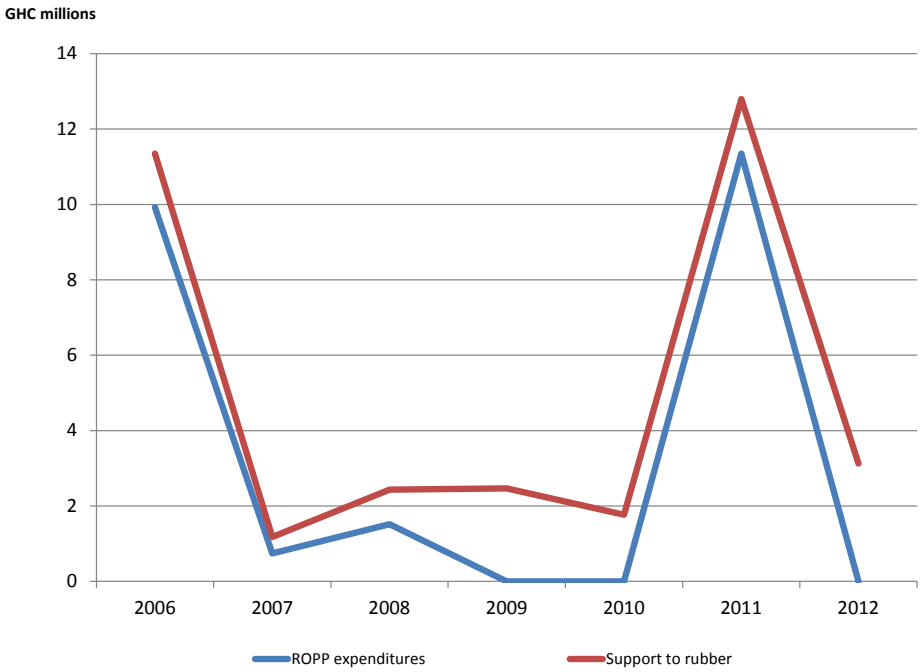
Commodities	2006-2009	2010-2012	2006-2012
Rice	20%	30%	27%
Rubber	35%	16%	22%
Livestock	5%	15%	12%
Cashew nut	15%	9%	11%
Maize	2%	13%	10%
Pineapple	9%	6%	7%
Oil palm	8%	5%	6%
Other commodities	2%	3%	2%

Source: MAFAP, 2014

The driving factor of the support to rubber was the Rubber Outgrower Plantation Project (ROPP) of the Agence Française de Développement (AFD). ROPP's major activity consisted in planting rubber trees (Figure 16) and its expenditures represented about 80 percent of spending on the commodity in 2006-2008 and 2011. Nonetheless, no ROPP expenditures were recorded in 2010 and 2012, which explains the lower average share of support for rubber in 2010-2012 (Table 4).

[23] Displayed commodities have a share of at least 5 percent on average for 2006-2012.

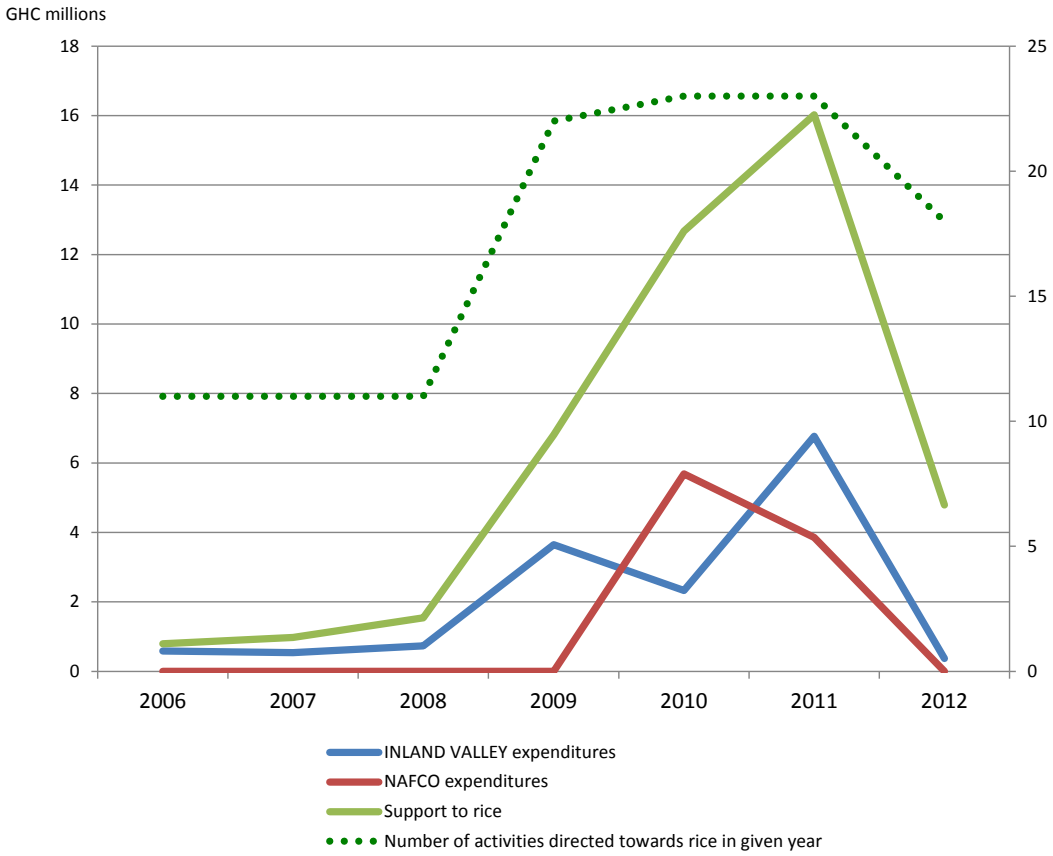
Figure 16. Agricultural-specific expenditure in support of rubber in Ghana and ROPP expenditures, in nominal terms, 2006-2012.



Source: MAFAP, 2014

Strong attention has also been dedicated to rice between 2006 and 2012. It received the largest share of agricultural-specific expenditure dedicated to single commodities. Two major initiatives determined the expenditure pattern for that product: the Inland Valley Rice Development Project (INLAND VALLEY), which was implemented by MOFA, and the activities of the National Food Buffer Stock Company (NAFCO) (Figure 17).

Figure 17. Agriculture-specific expenditure in support of rice in Ghana and expenditures from the INLAND VALLEY and NAFCO initiatives, in nominal terms and millions of GHC, 2006-2012 (left axis), and number of activities targeting rice per year, 2006-2012 (right axis).

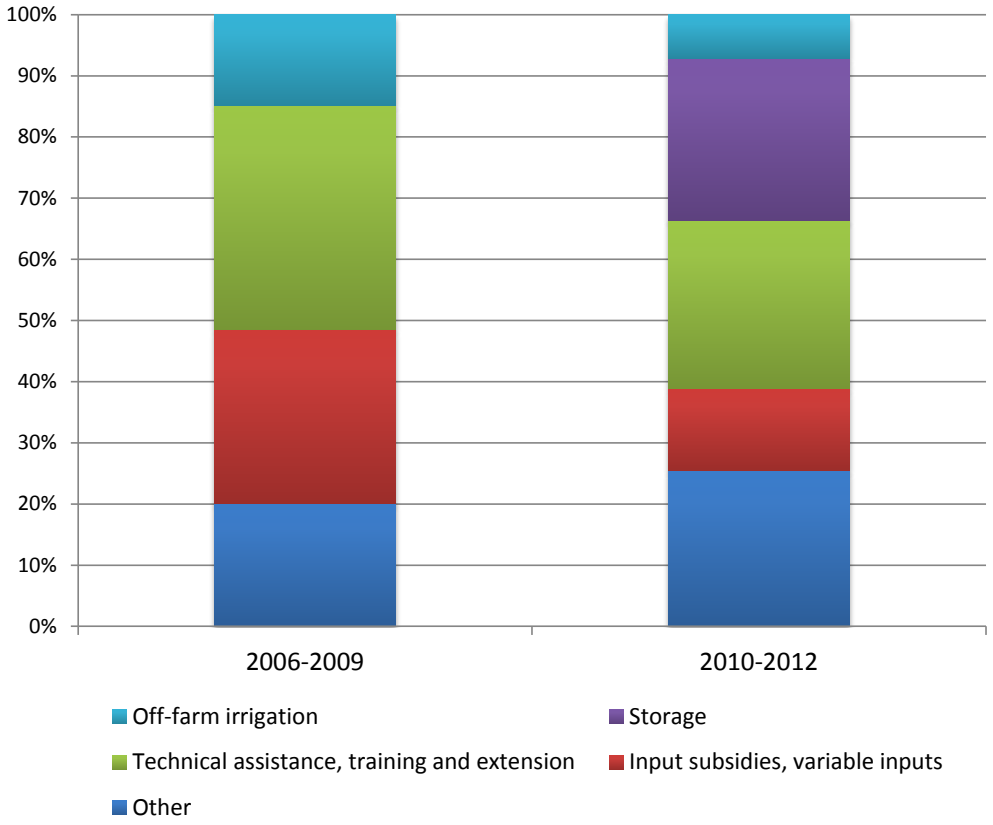


Source: MAFAP, 2014

More than half of the total support to rice was channelled through these two initiatives between 2006 and 2011. In 2012, the drop in the expenditures incurred by INLAND VALLEY and NAFCO led to a corresponding major drop in total support to rice. From 2008 on, support to rice was scattered across more than 20 activities. Hence, INLAND VALLEY and NAFCO are clearly the two major channels through which Ghanaian authorities allocate resources to rice. The 2012 drop in NAFCO expenditures is due to the low quantities of rice bought by the company in that year. In principle, NAFCO purchases rice, maize and soya beans at fixed prices and stores it to "guarantee an assured income (…) and ready market (…) to farmers, (…) mop up excess produce from all farmers in order to reduce post-harvest losses resulting from spoilage due to poor storage (…) and manage [the] government's emergency food security [plan]" (MOFA, 2012). However, in 2012, the NAFCO fixed price for rice was much lower than the market price, thereby hampering NAFCO purchases (MOFA, 2012). The majority of NAFCO funds were used to purchase maize in that year.

Support to rice took different forms. Between 2006 and 2009, it was balanced across input subsidies, irrigation and educational activities, mainly undertaken in the context of INLAND VALLEY (Figure 18). The establishment of NAFCO did not significantly affect this distribution. The transfers executed by NAFCO are visible when one examines the 2010-2012 composition. Indeed, a substantial amount of NAFCO "storage" expenditure, which was not observed in 2006-2009, appears during the 2010-2012 period.

Figure 18. Composition of agricultural-specific expenditures allocated to rice in Ghana, averages for 2006-2009 and 2010-2012[24]



Source: MAFAP, 2014

In terms of transfers to groups of commodities[25], the most important ones were directed towards food crops, on average between 2006 and 2012. These transfers were mainly executed in the context of the Second ADPO of the World Bank. This intervention had several sectorial objectives: food security, producer income growth and stability, sustainable land management, agricultural research and institutional coordination (WB, 2011). The objectives concerned food crops primarily (including beans, cassava, yam and sweet potatoes), as they are fundamental for food security and for the farmers' incomes.

[24] "Input subsidies, variable inputs", "off-farm irrigation" and "storage" respectively correspond to categories B1, N2 and O in table Table 3 above. "Technical assistance, training and extension" is the sum of categories J, K and L in Table 3 above. The "other" category includes categories I, N1 and P in Table 3 above.

[25] It is important to note that the groups of commodities identified by MAFAP are not standardized. Indeed, the MAFAP Ghana public expenditure database was constructed on the basis of expenditures structured by project or program. Therefore, the identification of commodity groups was done on the basis of the information reported in the supporting documents of these projects or programs or given in the descriptions obtained from national institutions. For instance, the "goat, sheep, pig, cattle" group is given as such in the description of the MOFA "Livestock Development Project", which is available in the "PPMED Development Partner (DP) Matrix". All the spending associated to that group arose from this project. Hence, the analysis made here only gives an indication on which groups are favoured by projects and programs directed towards the agricultural sector in the country.

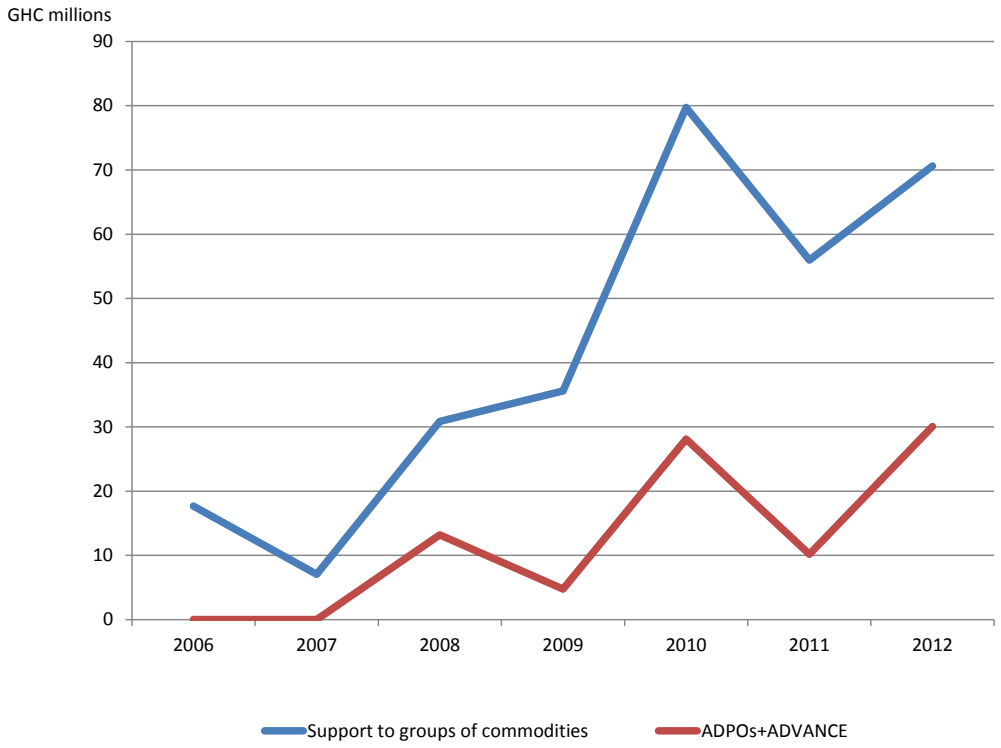
Table 5. Share of the main groups of commodities into expenditures targeting groups of commodities in Ghana, averages for 2006-2009, 2010-2012, and 2006-2012[26].

Groups of commodities	2006-2009	2010-2012	2006-2012
Food crops	39%	18%	24%
Fish	2%	22%	16%
Maize, rice, soybean	5%	15%	12%
Goat, sheep, pig, cattle	13%	9%	10%
Annual and perennial crops	14%	5%	8%
Mango, pineapple, citrus, guinea fowl, chili, cotton, grasscutter	8%	7%	7%
Forestry	9%	3%	5%
Other groups	10%	21%	17%

Source: MAFAP, 2014

Another important group is fish. The significant growth of spending on fish in 2011-2012 is due to a transfer of about GHC 18 million to fisheries under the Fourth World Bank ADPO in 2012. The support received by maize, rice and soybean, which also exhibits an increasing trend over the period, is due to USAID's interventions in the context of the Agricultural Development and Value Chain Enhancement (ADVANCE) project. The ADPOs and the ADVANCE project taken together appear to be the driving factor behind the 2006-2012 expenditure pattern for groups of commodities in Ghana (Figure 19).

Figure 19. Agriculture-specific expenditure in support of groups of commodities in Ghana and expenditures from the ADPO and ADVANCE initiatives, in nominal terms and millions of GHC, 2006-2012.



Source: MAFAP, 2014

[26] Displayed commodities have a share of at least 5 percent on average for 2006-2012.

Overall, during the period, policy transfers to agricultural commodities mainly took the form of transversal support to all commodities, indistinctly. In recent years (2011-2012), this tendency was reinforced by the introduction of the GFFSP, which, in 2012, was the policy measure channelling the largest share of agriculture-specific expenditure. However, expenditure measures also targeted single and groups of commodities. Jointly, on average for 2006-2012, single and groups of commodities benefited from about 35 percent of agriculture-specific expenditure. Within single commodities, rice received the highest amount of resources during the period. In particular, substantial rice purchases were made by NAFCO in recent years, which led to an increase in spending on this commodity. For groups of commodities, food crops and fish were the primary targets of the observed interventions.

Hence, although the support to agricultural commodities between 2006 and 2012 was equilibrated on average, transfers are increasingly taking the form of fertilizer subsidies. Together with NAFCO's activities, this shift towards additional fertilizer subsidies constitutes the core of the Ghanaian authorities' policy towards the sector. Transfers to groups of commodities are less affected by this tendency, but they are mainly done by donors and are off-budget.

Nature of public expenditure in support of the food and agriculture sector

The MAFAP methodology for public expenditure analysis differentiates between policy transfers and administrative costs. Policy transfers are counted as all budgetary transfers that are associated to a good or a service supporting the agricultural sector – including for instance salaries of extension workers. The sum of these transfers gives our EFA indicator. On the other hand, MAFAP counts as administrative costs[27] the expenditures that correspond to running costs faced by Ministries (including personal emoluments), training of Ministry staff or the costs associated to the design of agricultural policies (MAFAP, 2013, p. 46). Adding these costs to EFA gives the EFAAC indicator[28].

In Ghana, administrative costs related to policy transfers towards the agricultural sector represented a large share of EFAAC throughout the period (Table 6). The percentage oscillated between 25 and 45 percent of total spending, a value that is high compared to other MAFAP countries[29].

[27] Note that the administrative costs identified by MAFAP in Ghana are those related to projects and programmes directed towards the agricultural sector. MAFAP does not systematically consider administrative costs incurred independently from these projects and programmes (e.g. recurrent payments in the form of personal emoluments within a line Ministry). Moreover, a substantial amount of off-budget expenditure was captured in the MAFAP Ghana public expenditure database used for this analysis. Hence, the administrative costs reported by MAFAP are likely to differ from the administrative costs reported by Ghanaian authorities.

[28] This paragraph is adapted from Lanos et al. (2014), p. 43.

[29] For instance, in Ethiopia, the corresponding percentage oscillated between 10 and 15 percent during the period (Lanos et al., 2014).

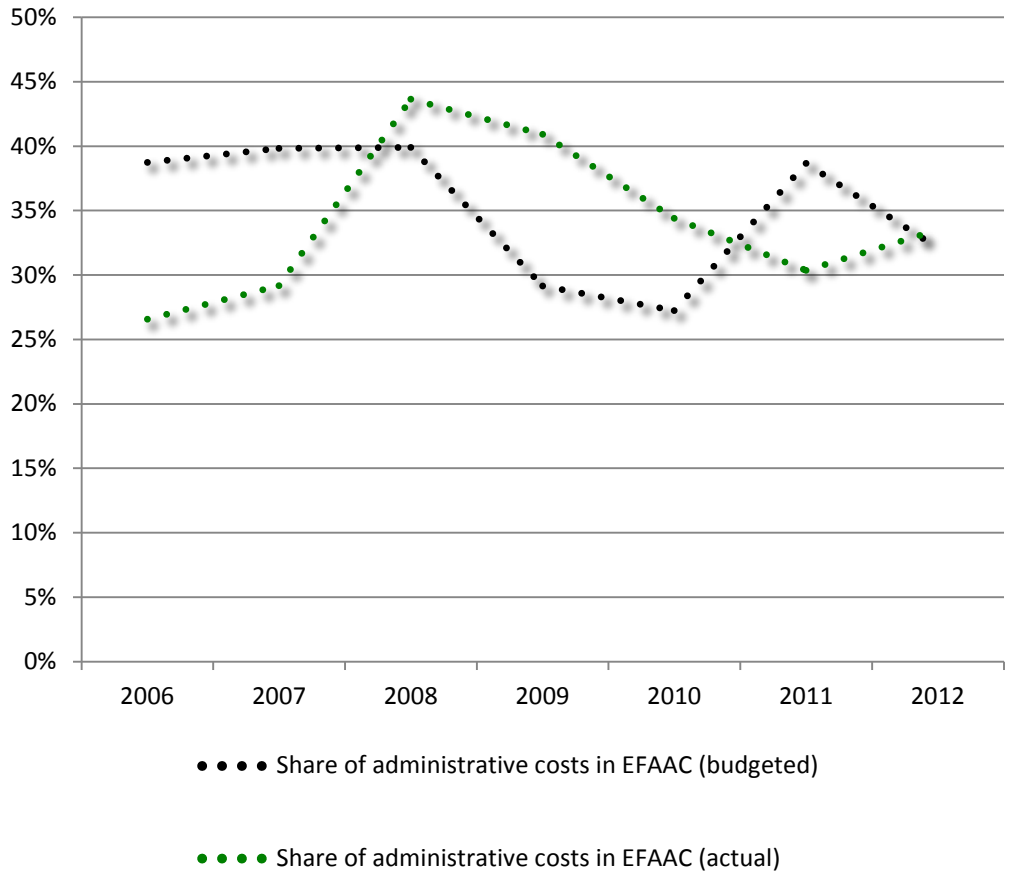
Table 6. Total public expenditure in support of food and agriculture (EFA/policy transfers) and administrative costs in Ghana, in nominal terms, budgeted and actual, in millions of GHC, 2006-2012.

	2006	2007	2008	2009	2010	2011	2012
Budgeted amounts							
(I) Policy transfers (EFA), nominal	110,3	149,9	146,8	285,3	404,8	398,4	531,8
(II) Identifiable administrative costs	69,8	99,2	97,6	117,5	151,6	251,2	251,2
(I/(I+II)) Share of administrative costs in EFAAC	39%	40%	40%	29%	27%	39%	32%
Actual spending							
(I) Policy transfers (EFA), nominal	147,4	178,5	170,4	255,4	410,8	460,8	608,2
(II) Identifiable administrative costs	53,4	73,5	132,0	176,8	215,5	200,8	306,6
(I/(I+II))Share of administrative costs in EFAAC	27%	29%	44%	41%	34%	30%	34%

Source: MAFAP, 2014

Whether the budgeted share of EFAAC allocated to administrative costs is usually lower or higher than the actual share is not clear. The budgeted percentage of administrative costs was higher than the actual one in 2006, 2007 and 2011 (Figure 20). The reverse happened 2008-2010 and 2012. However, the actual share of EFAAC dedicated to administrative costs exhibits an increasing trend for the 2006-2012 period, while this trend is decreasing when considering budgeted figures.

Figure 20. Share of administrative costs in total public expenditure in support of the food and agriculture sector, including administrative costs (EFAAC) in Ghana, 2006-2012[30].



Source: MAFAP, 2014

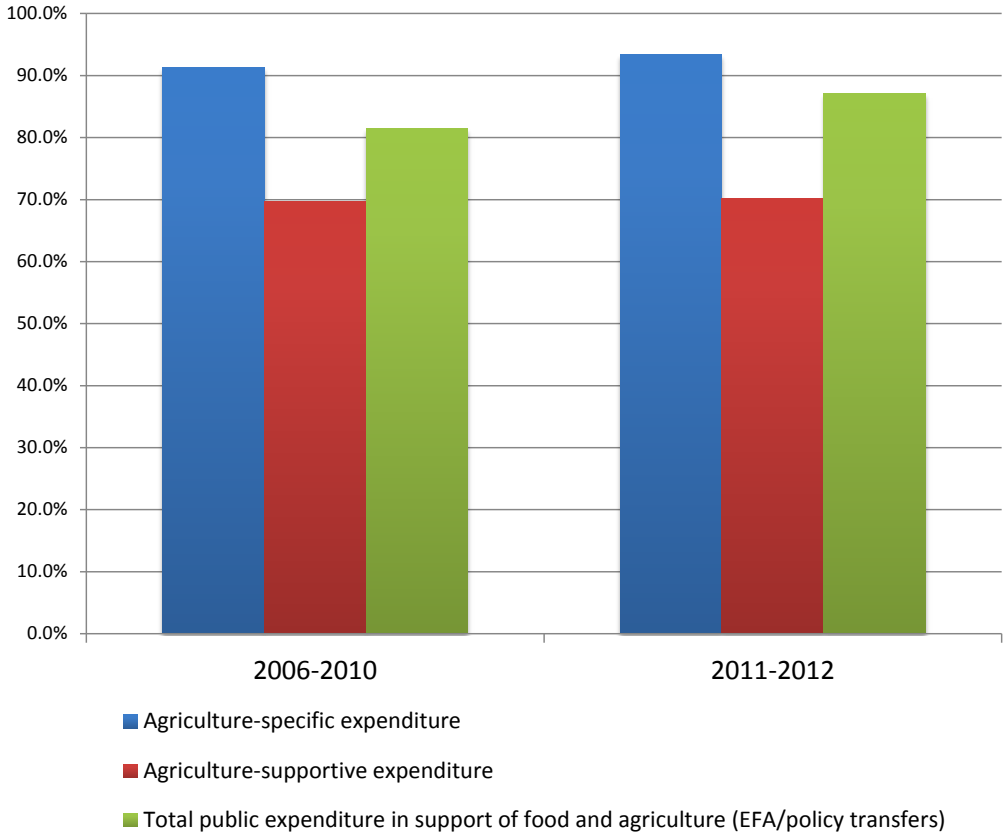
[30] Based on nominal amounts in GHC.

Even if an important downward movement in the actual share of EFAAC spent on administrative costs is observed between 2008 and 2011, the data reveals that this type of expenditure is too high in the country. Additional efforts from the Ghanaian authorities and the development partners to reduce the share of EFAAC absorbed by administrative costs would result in efficiency gains and additional resources to be transferred to agents in the sector.

Role of development aid in public expenditure in support of the food and agriculture sector

MAFAP collected both on- and off-budget agriculture expenditure data for the purpose of this study. The share of aid within EFA (including on- and off-budget expenditure) was high between 2006 and 2012. It amounted to about 90 percent of agriculture-specific expenditure and for about 70 percent of agriculture-supportive expenditure, on average for 2006-2012. Moreover, the share of donor expenditure in EFA increased slightly across the period, going from an average of about 81 percent in 2006-2010 to an average of about 87 percent in 2011-2012 (Figure 21).

Figure 21. Share of aid in agriculture-specific expenditure, share of aid in agriculture-supportive expenditure and share of aid in total public expenditure in support of food and agriculture in Ghana, over the 2006-2010 and 2011-2012 periods, in %[31].



Source: MAFAP, 2014

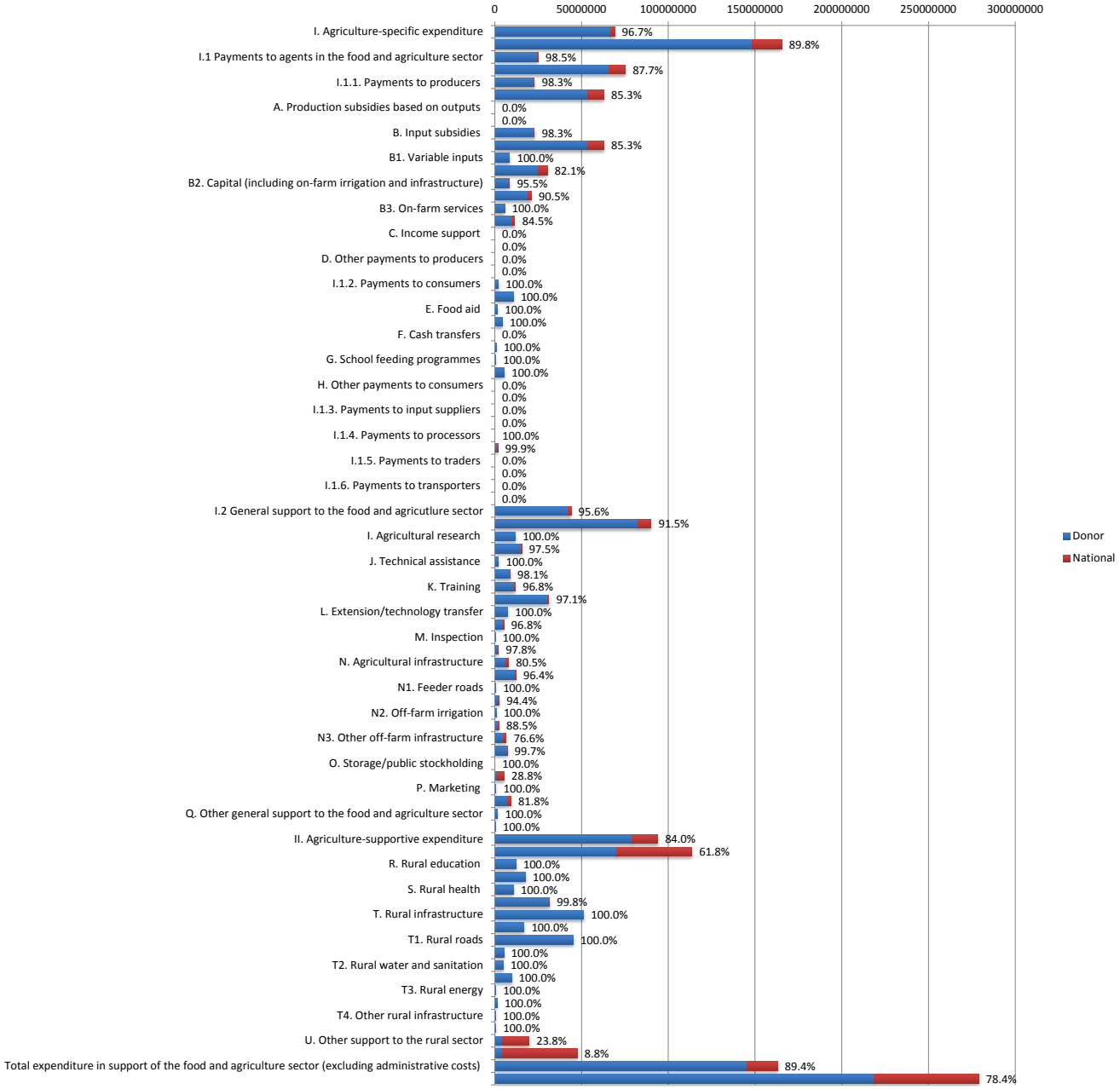
The reliance of public support to agriculture on external funds, in Ghana, is therefore substantial. The increase in the quantity of donor resources directed towards to agriculture in recent years shows that development partners have a high interest in the country. It is also a consequence of the good

[31] Based on nominal amounts in GHC.

economic outlook for the coming years (AFDB et al., 2012). However, the increase in the share of aid in EFA also questions the sustainability of the implemented policies. It shows the need for national authorities and development partners to jointly reflect on the way in which agents in the agricultural sector can be efficiently and effectively supported through policy transfers in the long run.

In terms of composition, for agriculture-specific expenditure, the categories that received most national spending on average during 2006-2012 were payments to producers (I.1.1) and storage (O) (Figure 22). The importance of national expenditure within payments to producers is due to fertilizer subsidy schemes and to the GFSSP, which was one of the leading programmes of MOFA since 2010. The substantial amount of national spending in storage reflects the transfers made through NAFCO for the constitution of the buffer stock. For agriculture-supportive expenditure, a high share of national spending appears in the "other support to the rural sector" category. It is the result of a MAFAP estimation regarding national contribution to rural development. Since disaggregated national expenditures on rural health, rural education and rural infrastructures were difficult to obtain, an aggregated estimation of transfers to line ministries active in rural development (see footnote 18) was done on the basis of the amounts given in the Ministry of Finance (MOFEP Budget Statements). The estimated amounts are high (floating between GHC 30 and 60 million between 2006 and 2012) and the effectively disbursed amounts are probably even higher. Nevertheless, there remains a clear dominance of donor expenditure within agriculture-supportive expenditure over the period.

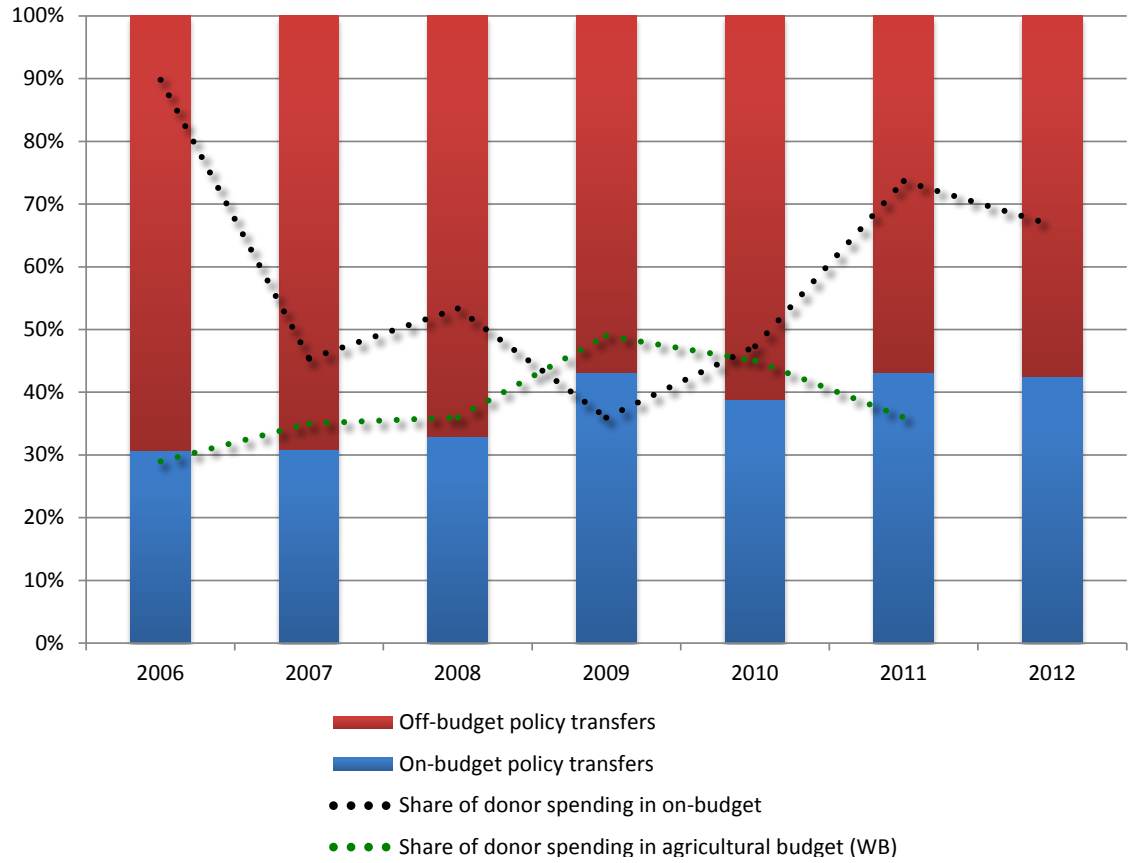
Figure 22. Share of aid in total public expenditure in support of food and agriculture (EFA/policy transfers) in Ghana, by category between the 2006-2010 period and 2011-2012 (in nominal GHC and percentage)



Source: MAFAP, 2014

As made clear in the SCOPE section above, the dataset used for this analysis contains a substantial amount of off-budget expenditures. Because these off-budget funds fully originate from donor sources, it is useful to look at the share of off-budget expenditure within total expenditure, and at the share of aid within on-budget expenditure. In fact, the share of off-budget expenditure within EFA has decreased from 2006 to 2012. In addition, the share of donor expenditure within on-budget expenditure, while having varied considerably across the period, has decreased overall between 2006 and 2012 (Figure 23). The share of donor spending in on-budget EFA oscillates around 70 percent in recent years, and decreased from 2011 to 2012.

Figure 23. Share of on- and off-budget expenditure in total public expenditure in support of food and agriculture in Ghana, excluding administrative costs (EFA/policy transfers), 2006-2012[32].



Source: MAFAP, 2014

These percentages are still high, especially when one compares them with the figures usually found in the literature. In WB (2013c), the share of donor spending in the agricultural budget oscillates between 30 and 50 percent between 2006 and 2011. Nonetheless, both MAFAP and the World Bank values indicate a decreasing trend in recent years for the share of donor spending within on-budget agricultural expenditure. Therefore, while donor spending on agriculture is high in Ghana, the evidence on the role of aid is mixed: on the one hand, the share of aid within EFA seems to be expanding recently; on the other hand, when looking at on-budget funds only, the share of aid within total expenditure in support of food and agriculture has decreased on average between 2006 and 2012 and, between 2011 and 2012, the proportion of national spending appears to have increased.

One has to highlight that the World Bank definition of agricultural budget is different from the one used by MAFAP, which encompasses agriculture-specific and agriculture-supportive expenditure. This is a first element permitting to understand why the figures reported in the analysis made here and in WB (2013c) are different. Moreover, the accounting level used in the data collection process can influence the computation of the share of donor spending. Using data from the MOFA financial reports can lead to classify funds as "national expenditure" when they concern projects or programs that were implemented by national institutions. However, the funds used in these projects or programs can originate from donor-funded budget support channelled to MOFA by MOFEP. Determining the origin of such funds from the available information often proves difficult and

[32] Based on absolute, nominal amounts in GHC.

requires making assumptions. Divergences across such assumptions is another element that can explain disparities in the figures that are reported in the literature, for instance within the present study and WB (2013c). It makes the case for clearer reporting from MOFA, using a project or program-based approach and providing with an economic classification of expenditure.

For what concerns the distribution of aid across donors, the World Bank occupies the largest share[33]. In addition to sectorial budget support, major initiatives like the ADPOs, the CBRDP or the TSP led the World Bank to disburse an average of GHC 96 million per year during the 2006-2012 period. In these years, this amount represented nearly the half of total average yearly donor spending on agriculture and rural development in Ghana. The second largest donor is CIDA, followed by the EU and USAID. The reliance of the Ghanaian agricultural sector on aid appears to be even heavier when knowing that more than the half of yearly EFA originated from 4 major donors between 2006 and 2012. These 4 major donors represented about 80 percent of total donor spending on the sector, on average for that period.

[33] See discussion in the SCOPE section.

CONCLUSIONS AND RECOMMENDATIONS

The Ghana agriculture sector exhibited strong performance in recent years. The growth in agricultural value added fluctuated between 7 and 20 percent in 2007-2012. In 2011-2012, agricultural GDP growth stood around 5 percent, mainly led by the expansion of crop production (AFDB et al., 2012). Primary estimations for 2013-2014 present similar figures (MOFEP, 2014) and projected values for the coming years are also high (EIU, 2014). Therefore, the adoption of the METASIP by the GoG in 2009 and the set of policies that ensued from it seem to bear appreciable fruits. Accordingly, this study has shown that EFAAC levels were substantial in Ghana between 2006 and 2012. In nominal and real terms, policy transfers to food and agriculture increased steadily over the period. In addition, donor support to the sector remains high in the country, showing the commitment of external partners and their positive prospects in regards to rural development.

Against this background, the present analysis permits to derive a number of insights. First, the share of EFAAC within total public expenditure fluctuated between 3 and 5 percent over the reviewed period, a low value. The stagnation of this indicator shows that the attention of Ghanaian authorities for food and agriculture did not particularly increase in recent years, relatively to other domains of public intervention. This stands in contrast with the prevailing role of agricultural growth within general GDP growth in the country (AFDB et al., 2012). Agricultural spending is also recognized as having the biggest positive influence on economic growth and poverty reduction in Africa (Fan et al., 2009). Lastly, although the indicators used for the MAFAP public expenditure analyses are not primarily intended to track compliance with the CAADP 10 percent target[34], the spirit of the Maputo/Malabo declaration is clearly supportive of an increase in the share of public resources dedicated to the food and agriculture sector.

Second, the composition of EFA varied across the analysed years. The major trend is that of increasing payments to producers, in the form of fertilizer subsidies, as the main policy instrument to attain development objectives. The introduction of the GFSSP following the 2007-2008 global food crisis played a major role in this evolution. While input subsidies represented about 30 percent of agriculture-specific expenditure on average for 2006-2007, this share went up to about 40 percent in 2011-2012. Other noticeable trends were a diminution of the relative share of agriculture-specific expenditure dedicated to agricultural research and to training, technical assistance and extension. On average for 2006-2007, these expenditure items together accounted for about 50 percent of agriculture-specific spending. This share fell to about 25 percent in 2011-2012. By contrast, in relative terms, spending on agricultural infrastructure (mainly on feeder roads) remained high over the period, and spending on marketing increased markedly. Together, these two categories captured about 20 percent of agriculture-specific expenditure in 2011-2012 while in 2006-2007, the percentage was about 10 percent. The shift from research and knowledge transfer activities to investments in feeder roads and market access was mainly driven by a change in the components of World-Bank supported initiatives (chiefly the ADPOs, the CBRDP and TSP) which represented more than 50 percent of agriculture specific expenditure from 2009-2010 on. It was partly a consequence of the introduction of the METASIP which established agricultural infrastructures and marketing as major policy objectives and recommended donor alignment to the new focus areas.

[34] See discussion in Annex 1.

Although spending on agricultural infrastructure maintained itself in the EFA composition over the reviewed period, investment in rural infrastructure, essentially towards rural roads, declined concomitantly, both in relative and nominal terms. Therefore, in general, resource allocation to infrastructures in rural areas (the sum of spending on *agricultural* and *rural* infrastructures, according to the MAFAP terminology) diminished between 2006 and 2012. More resources were dedicated to rural health, but this did not prevent the level of agriculture-supportive expenditure to stagnate in real terms. Therefore, the Ghanaian policy makers' strategy seems to consist in intervening directly in favour of the agricultural sector, principally through fertilizer subsidies, rather than supporting it indirectly through expenditures on rural development.

This spending pattern can be questioned. Indeed, it has been extensively argued that fertilizer subsidies should be used with caution. For instance, their efficiency appears to be conditional to the simultaneous implementation of measures aiming to ensure equal farmer access to the fertilizer schemes. Moreover, the use of targeted fertilizer subsidies (towards specific regions or commodities) has been shown to be more efficient than broad-based, transversal programmes like the GFSSP. Finally, clear exit strategies for such programmes have to be defined, as they often prove to be very costly and unsupportive of agriculture development in the long run (Filipski and Maylor, 2011, Druilhe and Barreiro-Hurlé, 2012). Regarding the observed downward trend in spending on agricultural research and activities dedicated to knowledge transfer, it could also be sub-optimal as there is evidence that spending on agricultural research and extension has a strong positive influence on agricultural productivity (Fan and Zhang, 2008). Although increased spending on rural health, which has been identified as being supportive of rural growth, has been recorded in Ghana, investments in rural roads have decreased. The latter have been shown to lead to particularly high benefits for what concerns rural incomes, consumption and productivity (Fan et al., 2009).

Third, EFA in Ghana is predominantly directed towards all commodities, which is again a consequence of the weighty fertilizer subsidy programmes that benefit most staple foods. However, on average, a bit more than a third of agriculture-specific expenditure was allocated to single and groups of commodities. Within these more targeted measures, major interventions concerned rubber (essentially through ROPP) and rice (essentially through the INLAND VALLEY, NAFCO and, to a lesser extent, NERICA interventions). In recent years, rice purchases through NAFCO gained momentum, peaking at nearly GHC 7 million in 2011. As the importance of the NAFCO activities within the policy transfers on rice and maize increases, it becomes even more important to evaluate the overall welfare impact of this expenditure measure.

Fourth, the share of administrative costs within EFAAC is considerable, representing about 35 percent of EFAAC on average for 2006-2012. This indicator is much higher for Ghana than for other MAFAP countries, indicating that substantial efforts have to be made by the GoG and the development partners to reduce these costs in the future, in order to increase policy efficiency and the effective size of budgetary transfers to agents in the sector.

Fifth, the reliance on donor funds to support the food and agriculture sector is hefty. Spending from external sources represented about 80 percent of EFA on average for 2006-2012. When considering only on-budget EFA, the percentage is smaller and exhibits a downward trend over the reviewed period. On average for 2010-2012, the share of donor expenditure within on-budget EFA was of about 60 percent. This proportion remains very high and, even if it reflects the high interest and

commitment of external partners to support agriculture in Ghana, it also questions the sustainability of the support provided to the sector. In addition, donor funding chiefly originates from 4 key donors (led by World Bank), which is an additional risk in regards to sustainability.

In general, the Ghanaian agriculture has positive prospects and exhibits good aggregated performance. The policies targeting the sector show that significant efforts are made, both from GoG and donor sides, to support the sector. Nevertheless, given its importance in the overall Ghanaian economy, the GoG could dedicate additional attention to food and agriculture by increasing the level of EFA, especially using national resources. Moreover, the composition of EFA could be modified to better serve stated development objectives, as discussed above. There appears to be considerable room for improvement as regards the efficiency of policies directed the food and agriculture sector in Ghana.

Recommendations

- Increase the share of total public expenditure allocated to the food and agriculture sector, in accordance with the leading role of the sector in national GDP growth and with the benefits related to agricultural spending in regards to rural incomes, productivity and poverty reduction;
- Undertake an in-depth evaluation of the fertilizer subsidy schemes implemented in the country, especially GFSSP, given the increasing importance of these expenditure measures within EFA. This evaluation should permit to (i) define more targeted areas or commodities for the subsidies, (ii) determine whether the existing fertilizer subsidy programmes could be complemented by market policies in order to avoid distortive effects and (iii) establish an exit strategy for the GoG to avoid too high costs and adverse effects of the policy on agricultural development in the long run.
- Explore how EFA composition, in the context of the Ghana Vision 2020, the METASIP and the other relevant strategic frameworks can be rebalanced in order to allocate additional resources to agricultural research and to activities dedicated to knowledge transfers. Special attention should be given to agricultural and rural infrastructures, whose aggregate funding has experienced a downward trend between 2006 and 2012.
- Carry out an assessment of the welfare and market effects of NAFCO activities (purchases, storage, etc.), given their increasing importance within budgetary transfers towards rice and maize.
- Reduce the share of EFA dedicated to administrative costs by increasing the efficiency of the way in which policy measures are implemented. This effort should be shared with development partners as a considerable share of the administrative costs measured in this study were reported by donors.
- Reduce the aid dependency of total public spending in support of food and agriculture in Ghana. Ideally, this should be accompanied by a modification of the donor funding structure in order to diminish the reliance on a few isolated donors and attain a more equilibrated distribution of funding sources.
- Improve data collection, management and analysis in regards to EFA in Ghana. This should include (i) offering access to a functional classification of agricultural expenditures, chiefly within the MOFA Finance Directorate, (ii) collecting and reporting disaggregated expenditures per activity for each project and programme directed towards the sector, (iii)

harmonizing accounting systems across the different line ministries involved in agriculture and rural development and creating a user-friendly data interface for dissemination, (iv) including expenditures incurred by public companies (like COCOBOD) in MOFA's financial reporting and (v) improving expenditure data collection from development partners in order to reduce the share of off-budget expenditure data.

REFERENCES

AFDB, OECD, UNDP, UNECA (2012), "Ghana", African Economic Outlook Series.

ASTI (2014a), ''Practicioner's Guide for National and Regional Focal Points. ASTI Methodology and Data Collection Standards''.

ASTI (2014b), "Ghana country webpage", URL: http://www.asti.cgiar.org/ghana (visited on November 26, 2014).

AU/NEPAD (2005), "Guidance Note for Agricultural Tracking System in African Countries", South Africa, September 2005.

Benin, S. (2014), "Identifying Agricultural Expenditures within the Public Financial Accounts and Coding System in Ghana", *IFPRI Discussion Paper*, n. 01365, August 2014.

Benin, S., and Yu, B. (2013). Complying the Maputo Declaration Target: Trends in public agricultural expenditures and implications for pursuit of optima allocation of public agricultural spending. *ReSAKSS Annual Trends and Outlook Report 2012*. International Food Policy Research Institute (IFPRI).

Druilhe, Z. and Barreiro-Hurlé, J. (2012), "Fertilizer subsidies in sub-Saharan Africa", *ESA Working Paper*, n. 12-04, July 2012, FAO, Rome.

EIU (2014), "Ghana Country Report", generated on November 26, 2014, available online at http://country.eiu.com/ghana (visited on November 26, 2014).

Fan, S., Mogues, T. and Benin, S. (2009), "Setting Priorities for Public Spending for Agricultural and Rural Development in Africa", *IFPRI Policy Brief*, April 2009, IFPRI, Washington DC.

Fan, S., & Zhang, X. (2008). "Public Expenditure, Growth and Poverty Reduction in Rural Uganda", *African Development Review*, 20(3), 466–496.

Filipski, M. and Taylor, E. (2011), "A simulation impact evaluation of rural income transfers in Malawi and Ghana", Davis, USA, University of California.

IMF (2014), "Government Finance Statistics Manual". Pre-publication draft.

Lanos, B., Mas Aparisi A., Woldeyes, F. (2014). Public expenditures in support of food and agriculture development in the Federal Republic of Ethiopia, 2006/07-2012/13: A preliminary assessment. Technical Notes Series, MAFAP, Addis Ababa.

MAFAP (2013), ''MAFAP Methodological Implementing Guides: Volume II. Analysis of public expenditure on food and agriculture''. MAFAP Technical Notes Series, FAO, Rome, Italy.

Mas Aparisi, A., Ghins, L. and Balié, J. (2014), "Initiatives for the monitoring and analysis of agricultural public expenditure in Africa. A guide for policy-makers" (draft report), MAFAP, FAO, Rome.

MOFA (2010), "Financial Report and Accounts – 2010", prepared by: Finance Directorate, Republic of Ghana.

MOFA (2011), “Annual Financial Report and Accounting”, prepared by: Finance Directorate, Republic of Ghana.

MOFA (2012), “Annual Financial Report and Accounts: 2012”, prepared by: Finance Directorate, Republic of Ghana.

MOFEP (2014a), Budget Statements, available online at http://www.mofep.gov.gh/budget-statements (visited on November 26, 2014).

MOFEP (2014b), “The budget speech of the budget statement and economic policy of the government of ghana for the 2015 financial year”, available online at http://www.mofep.gov.gh/sites/default/files/budget/Budget-Speech-2015.pdf (visited on November 26, 2014).

OECD (2008), *OECD’s Producer Support Estimate and Related Indicators of Agricultural Support, Concepts, Calculations, Interpretation and Use (The PSE Manual)*, OECD, Paris.

OECD (2014), “International Development Statistics (IDS) online database”, URL: http://stats.oecd.org/qwids/ (visited on November 26, 2014).

WB (2004), “Resettlement Policy Framework (RPF) for the Strategic Environmental Assessment of the Proposed Community Based Rural Development Project”, available online at http://www.worldbank.org/projects/P111117/community-based-rural-development-project-supplemental?lang=en (visited on November 14, 2014).

WB (2011), “First and Second Agriculture Development Policy Operations : Implementation Completion and Results Report”, available online at http://documents.worldbank.org/curated/en/2011/12/15940665/ghana-first-second-agriculture-development-policy-operations-project (visited on November 26, 2014).

WB (2013a), “Third and Fourth Agriculture Development Policy Operations: Implementation Completion and Results Report”, available online at http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2013/10/09/000356161_20131009142332/Rendered/PDF/ICR29280ICR0Gh000PUBLIC00Box379843B.pdf (visited on November 17, 2014).

WB (2013b), “Country Partnership Strategy for the Republic of Ghana for the period FY13-FY16”, available online at http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2013/09/25/000442464_20130925100825/Rendered/PDF/763690CAS0Ghan000PUBLIC00Box379829B.pdf (visited on November 17, 2014).

WB (2013c), ‘’Basic Agricultural Public Expenditure Diagnostic Review. Ghana’s Ministry of Food and Agriculture’’.

Yu, B. 2012. “SPEED Database: Statistics on public expenditure for economic development.” In 2011 Global Food Policy Report. Washington, DC: International Food Policy Research Institute (IFPRI). http://www.ifpri.org/book-39/ourwork/programs/priorities-public-investment/speed-database (visited on November 26, 2014).

ANNEXES

Annex 1. MAFAP classification[35]

In order to capture all public expenditures in support of the food and agricultural sector, MAFAP has established the following distinctions:

i. A broad distinction between expenditures that are agriculture-specific (direct support for the agricultural sector), agriculture-supportive (indirect support for the agricultural sector) and non-agricultural.
ii. Within the agriculture-specific category, a distinction between support for producers and other agents in the value chain (e.g. input subsidies), and general or collective support for the sector (e.g. research). The agents in the value chain include farmers (producers), input suppliers, processors, consumers, traders and transporters.

The detailed classification of support follows the OECD's principle of classifying policies according to their economic characteristics (i.e. the way they are implemented), which provides the basis for further policy analysis (OECD, 2008). The categories of the MAFAP methodology, however, are designed to reflect the types of policies applied in developing countries. Those categories, proposed in Box 1, have been elaborated based on the experiences of various agencies, including FAO, that have worked on public expenditures in developing countries. Furthermore, drawing on the OECD's experience, the proposed classification seeks, as much as possible, to distinguish between policies providing private goods and those providing public goods, given their different economic effects.

Box 1 – MAFAP classification of public expenditures in support of the food and agricultural sector

I. Agriculture-specific expenditure – monetary transfers that are specific to the agricultural sector, i.e. agriculture is the only, or principal, beneficiary of a given expenditure measure

I.1 Payments to agents in the food and agriculture sector – monetary transfers to **individual** agents of the food and agriculture sector

I.1.1 Payments to producers – monetary transfers to individual agricultural producers (farmers)

A. Production subsidies based on outputs – monetary transfers to agricultural producers that are based on current output of a specific agricultural commodity

B. Input subsidies – monetary transfers to agricultural producers that are based on on-farm use of inputs:

B1 - Variable inputs (seeds, fertiliser, energy, credit, other) – monetary transfers reducing the on-farm cost of a specific variable input or a mix of variable inputs

B2 - Capital (machinery and equipment, on-farm irrigation, other basic on-farm infrastructure) – monetary transfers reducing the on-farm investment cost of farm buildings, equipment, plantations, irrigation, drainage and soil improvements

B3 - On-farm services (pest and disease control/veterinary services, on-farm training, technical assistance, extension etc., other) – monetary transfers reducing the cost of technical assistance and training provided to individual farmers

C. Income support – monetary transfers to agricultural producers based on their level of income

D. Other payments to producers – monetary transfers to agricultural producers individually for which there is insufficient information to allocate them into above listed categories

I.1.2 Payments to consumers – monetary transfers to final consumers of agricultural commodities individually in the form of:

[35] This section is adapted from MAFAP (2013), p. 11-13.

E. Food aid – monetary transfers to final consumers to reduce the cost of food

F. Cash transfers – monetary transfers to final consumers to increase their food consumption expenditure

G. School feeding programmes – monetary transfers to final consumers to provide free or reduced-cost food in schools

H. Other payments to consumers – monetary transfers to final consumers individually for which there is insufficient information to allocate them into above listed categories

I.1.3 Payments to input suppliers – monetary transfers to agricultural input suppliers individually

I.1.4 Payments to processors – monetary transfers to agricultural commodities processors individually

I.1.5 Payments to traders – monetary transfers to agricultural traders individually

I.1.6 Payments to transporters – monetary transfers to agricultural commodities transporters individually

I.2 General support to the food and agriculture sector – public expenditures generating monetary transfers to agents of the food and agriculture sector **collectively**

I. Agricultural research – public expenditures financing research activities improving agricultural production

J. Technical assistance – public expenditures financing technical assistance for agricultural sector agents collectively

K. Training – public expenditures financing agricultural training

L. Extension/technology transfer – public expenditures financing provision of extension services

M. Inspection (veterinary/plant) – public expenditures financing control of quality and safety of food, agricultural inputs and the environment

N. Agricultural infrastructure - public expenditures financing off-farm collective infrastructure

N1. Feeder roads - public expenditure financing roads mainly dedicated to agricultural activity

N2. Off-farm irrigation - public expenditure financing irrigation infrastructure

N3. Other off-farm infrastructure - public expenditure financing agricultural infrastructures that are neither feeder roads or irrigation infrastructures

O. Storage/public stockholding – public expenditures financing public storage of food and agriculture products

P. Marketing – public expenditures financing assistance in marketing of food and agriculture products

Q. Other general support to the food and agriculture sector – other transfers to agents in the food and agriculture sector collectively for which there is insufficient information to allocate them into the above listed categories

II. Agriculture-supportive expenditure – public expenditures that are not specific to agriculture, but which have a strong influence on agricultural sector development

R. Rural education – public expenditures on education in rural areas

S. Rural health – public expenditures on health services in rural areas

T. Rural infrastructure - public expenditures on rural infrastructure

T1. Rural roads - public expenditure financing roads dedicated to rural development

T2. Rural water - public expenditures financing rural water and sanitation facilities

T3. Rural energy - public expenditure financing rural energy

T4. Other rural infrastructure - other public expenditures on rural infrastructures benefiting agricultural sector development for which there is insufficient information to allocate them into above listed categories

U. Other support to the rural sector – other public expenditures on rural areas benefiting agricultural sector development for which there is insufficient information to allocate them into above listed categories

III. Total public expenditure in support of the food and agriculture sector, excluding administrative costs (EFA/policy transfers) - sum of agricultural-specific and agricultural-supportive expenditures

Identifiable administrative costs - administration costs include costs of formulation, implementation and evaluation of agricultural policies. They are not policy transfers as such. However, when support is provided via services, e.g. Extension, training, research or inspection, expenses associated with delivery of the services, e.g. Salaries of extension advisors, salaries of inspection officers or researchers should be included in this category.

Total public expenditure in support of the food and agriculture sector, including administrative costs (EFAAC) - Sum of policy transfers and identifiable administrative costs

Other classifications can be used for PEA analysis. These include the Classification of the Functions of the Government (COFOG), which is recommended by the African Union (AU) and the New Economic Partnership for Africa's Development (NEPAD) in its 2005 Guidance Note (AU/NEPAD, 2005). The MAFAP classification is COFOG-compatible, although its categories do not directly refer to COFOG categories. Moreover, MAFAP uses a different definition of agriculture spending (corresponding to EFAAC in Box 1 above) than the one recommended by the AU/NEPAD, since its primary objective is to undertake PEA analysis. Therefore, the values on the share of EFAAC within total public budget provided in this study are not intended to monitor progress against the Maputo/Malabo target. In addition to COFOG and the recommendations of the Guidance Note, other definitions of PEA are used by the initiatives dedicated to PEA monitoring and analysis in Africa. Additional information on the differences between the MAFAP PEA methodology and the ones used by other PEA initiatives can be found in Mas Aparisi et al. (2014).

For what concerns Ghana, in addition to national institutions, the major initiatives that offer access PEA data are the following:

- The World Bank, through the "Strengthening National Comprehensive Agricultural Public Expenditure in Sub-Saharan Africa (SNCAPE)" initiative. The project produced an in-depth analysis of PEA in 2013 (WB, 2013c).
- The Regional Strategic and Analysis Knowledge Support System (ReSAKSS), in their synthesis reports (Benin and Yu, 2013).
- IFPRI, in their SPEED database (Yu, 2012) and in selected research papers (e.g. Benin, 2014).
- The Agricultural Science and Technology Indicators (ASTI) initiative, for agriculture research expenditure (ASTI, 2014b).
- The OECD International Development Statistics (IDS)/Creditor Reporting System (CRS) initiative, which reports data on donor spending on the food and agriculture sector in Ghana (OECD, 2014).

Annex 2. Data sources

The data used in the technical note originates from the following sources:

- Ministry of Food and Agriculture (MOFA): Finance Directorate (FD) (Financial Reports) and Policy, Planning, Monitoring and Evaluation Directorate (PPMED) (Development Partner (DP) matrix)
- Ministry of Finance (MOFEP): Budget Statements and Donor Programme Database
- Food and Agriculture Organization of the United Nations (FAO) Field Programme Management Information System (FPMIS)
- Agence Française de Développement (AFD) Ghana Office
- World Food Programme (WFP) Ghana Office
- International Fund for Agricultural Development (IFAD) Ghana Office
- United Nations Children's Fund (UNICEF) Ghana Office
- Danish International Development Agency (DANIDA) Ghana Office
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Ghana Office
- Japan International Cooperation Agency (JICA) Ghana Office
- The Embassy of the Netherlands in Accra, Ghana
- The World Bank (WB) Ghana Office and "Projects and Operations" portal (http://www.worldbank.org/projects/)
- United States Agency for International Development (USAID) Ghana Office
- Canadian International Development Agency (CIDA) Ghana Office
- The Delegation of the European Union (DEU) in Ghana

Annex 3. General trends: hypotheses taken

The following working hypotheses were introduced to obtain the values given in Table 1

- Table 1

Real expenditures were obtained by deflating using the Consumer Price Index (CPI), whose values for 2006-2012 in Ghana were downloaded from the WDI database.

The data on total public expenditure was extracted from the MOFEP Budget Statements (MOFEP, 2014) by making the assumptions listed in Table 7. These assumptions were made after a discussion between MAFAP and MOFEP. MAFAP holds full responsibility of the assumptions taken.

Table 7. Extraction of data from the MOFEP Budget Statements: hypotheses taken

MOFEP Budget Statements indicators	MAFAP assumption
Total exp. & net lending	=Total public expenditure
Budget	=Budget allocation
Projected Outturn	=Actual spending

Source: Authors

- Table 2

Total expenditure in support of the food and agriculture sector, including administrative costs (EFAAC) is the sum of item III and of administrative costs as described in Box 1 above.

Food and Agriculture Organization
of the United Nations

Monitoring and Analysing Food and Agricultural Policies
www.fao.org/in-action/mafap

I4530E/1/04.15