

## How the Policy Environment Influences Value Chain Linkage: A Comparative Study of Cocoa and Pineapple in Ghana

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### ABSTRACT

This paper takes its point of departure from the school of thought that linkages in agricultural commodity value chains may hold the key to making actors in the chain innovative. Ghana's agricultural export sector is characterized by two main types of export: traditional and non-traditional. The traditional agricultural export sector is driven largely by the cocoa industry, while the pineapple industry represents one of the leading commodity industries in the non-traditional export sector. Using a multiple case study methodology, the paper seeks to examine how the policy environment could strengthen value chain linkages and make activities in the value chains more competitive. The study was derived from interactions with actors in the cocoa and pineapple value chains, namely input suppliers, producers, buyers, processors and some support services providers and regulatory agencies. The intention was to assemble their perceptions as interpreted in their own settings. The study showed how the existing policy on research, extension and marketing had encouraged better linkages horizontally and vertically among actors in the pineapple value chain. On the other hand, the policy underpinned by a public sector leadership in the cocoa value chain, had lowered the motivation for stronger linkages in the cocoa value chain. In terms of policy implication, the study makes a strong case for more participation of private sector actors as it is more likely to expand the platform for more interactive learning among actors for their mutual benefit.

**Keywords:** Policy environment, value chain, linkages, cocoa, pineapple, export, private sector, Ghana

### INTRODUCTION

Ghana's agricultural export sector is characterized by two main types of export: traditional and non-traditional. The traditional agricultural export sector is driven largely by the cocoa industry, while the pineapple industry represents one of the leading commodity industries in the non-traditional export sector. Commodities such as cocoa and pineapple have been strategic to Ghana's economy given their potential to contribute

towards national export drive, foreign exchange earnings and poverty alleviation, especially for smallholder producers.

This paper proposes that the policy environment may have implications for the nature of linkages, networking and interactions among actors, which subsequently may determine the capacity of actors to respond to challenges in the industry. Actors in agricultural commodity value chains may not possess all the requisite capabilities and resources;

they therefore have to integrate into networks or partnerships with one another to address any potential inadequacies that may militate against progress (Rycroft & Kash, 1999; Christensen & Raymor, 2003). Thus, a successful attempt at responding to challenges and enhancing competitiveness may be determined by the extent to which actors in the value chain establish linkages to form networks, and how these networks gather sufficient variations in capabilities and resources from diverse agents. The effectiveness of the network is dependent on the collective capacity to facilitate exchange of information and other resources. In the technology of network analysis, Buchman (2002), describes this capacity as the network 'navigability' and notes that this capacity depends on the existence of central actors (i.e. well-connected actors) interacting among themselves and on the environment (i.e. laws or markets) on which the networks operate.

The conceptual framework underpinning this study proposes that the kind of emerging linkages among value chain actors may be a product of the prevailing policy environment, which may stimulate the capacity to respond to challenges through the provision of the right incentives, resources (including new knowledge from research) and support structures (education, financial systems etc.). In doing an analysis of the agricultural innovation system, Hall, Janseen, Pehu & Rajalahti (2006) note that it is necessary to examine the impact on producers and other actors of policies that directly affect the agricultural sector (agricultural research and extension arrangements), as well as of policies that are designed to affect the inputs to the sector (industrial policies and educational policies), the incentives to producers and to companies (tax policies, land use policies, transport policies and tariff policies) as well as policies that affect the opportunities for learning.

The paper explores ways in which the prevailing policy environment in Ghana with respect to research and development, extension and marketing, promotes linkages among actors in the cocoa and pineapple value chains. Rajalahti *et al* (2008) did a similar study of how the policy environment had opened up marketing opportunities for the export of pineapple in Ghana, and concluded that policies that favoured market liberalization and improved availability of finance enabled entrepreneurs to take advantage of the situation to invest in pineapple export. The policy environment is considered a key supporter of innovative capacity, and consequently tells on how the actors in the sector can take advantage of the situation. However, Rajalahti *et al* (2008) believe that an enabling environment alone may not be sufficient when the sector remains uncoordinated, and when attitudes and practices among actors work against it.

Emphasizing the importance of linkages, Merrill-Sands & Kaimowitz (1990) note that the agricultural technology system requires an interactive technology system in which farmers, researchers, extension agents, input suppliers, non-governmental organisations and other agencies work together in a coordinated manner. To buttress this point, Altaye (2012) stresses that the absence of a well-formulated, properly defined linkage strategies with the active involvement of farmers, may limit the setting of the right research and extension agenda.

Using the seed supply systems in Ethiopia, Altaye & Mohammed (2013), note that effective and efficient supply of quality seed requires an integrated efforts of seed system actors; a situation they described as a "missing link" in the seed supply system in the country. In support of this thinking, Alemu (2010) conclude that the linkages between seed value chain actors are extremely important areas, which are under-emphasized by the seed systems actors of Ethiopia.

Conceptually, this paper posits that the kind of linkage is a function of the existing policy environment. It therefore seeks to provide some clarity about ways in which the policy environment determines the nature of linkages within agricultural value chains within the framework of the agricultural innovation system, which is considered the result of a process of networking and interactive learning among heterogeneous set of actors such as farmers, input suppliers, traders, processors, researchers, extensionists, government officials and civil society organisations (Leeuwis, 2004; Hall *et al.*, 2006; Roling, 2010).

## MATERIALS AND METHODS

### Case Selection

The study adopted the multiple case study approach with emphasis on the cocoa and pineapple case studies. The choice of these two commodity industries was premised on their contribution to government export drive, foreign exchange earnings and poverty alleviation initiatives especially among smallholder producers. These two commodities over the last decade have made significant contributions to Ghana's economy. For instance, the Institute for Statistics and Social Economic Research (ISSER) in its Report for 2008 observed that since 2001, cocoa had contributed a significant part of the agricultural productivity gains and the country had enjoyed strong growth in the horticulture industry. The Report added that both cocoa and horticulture, including pineapple, are smallholder-based, and the poverty reduction associated with recent growth appeared particularly strong among the cash crop growers. This picture painted by the Report largely still persists, and underscores the strategic importance of these export commodities for which they were selected.

### Description of Study Areas

The study was largely conducted nationwide; however, the Eastern Region of Ghana served as the information-rich location where the researchers spent a considerable amount of time in the data gathering work. The Eastern Region occupies a central geographical location in terms of the cultivation of the two agricultural commodities, cocoa and pineapple. The Region is especially reputed to have one of the best types of soil for the production of cocoa (Appiah *et al.*, 1997; Ahenkorah *et al.*, 1987). Two specific locations in the Eastern Region, namely the Akuapem South District and the Tafo Cocoa District, were further selected as the specific study sites for the data gathering work, given their importance in respect of the production of the two commodities.

### Sampling and Data Gathering Methods

Being a case study, the research employed a combination of quantitative and qualitative data gathering methods to make for triangulation. The sampling methods were similarly a combination of probability and non-probability methods.

For the qualitative aspects, eight focus group discussion sessions were carried out in the two respective study sites. In respect of cocoa, four focus group sessions were conducted in the Tafo Cocoa District, while for pineapple; four sessions were undertaken in the Akuapem South District. These methods were supplemented with other qualitative data gathering methods comprising in-depth interview sessions with value chain actors (buyers, processors, input suppliers, and farmer-based organisations), value chain supporters (agricultural extension agents, research and development organisations, and banks) and value chain influencers (Ghana Standards Authority, Food and Drugs Authority, Ghana

Export Promotion Authority and the Ghana Cocoa Board).

For the quantitative aspects of the study, a survey using structured questionnaires was administered through interviews to 325 small-scale cocoa farmers and 310 small-scale pineapple farmers sampled randomly from a database of cocoa and pineapple farmers supplied by the Tafo Cocoa District and the Akuapem South District of the Ministry of Food and Agriculture respectively.

Additionally, the fieldwork included analysis of documents, some of which were research journals, as well as annual reports and handbooks of selected stakeholder organisations. A visit was carried out to some of the cocoa and pineapple farms and some cocoa and pineapple processing companies for first hand impression of value chain activities.

### **Data Analysis**

The qualitative data were analysed through a descriptive framework designed for organising the two case studies. This involved the formulation of a checklist of issues for the case studies, which led to case study write-ups for the cocoa and pineapple value chains. This was subsequently followed by a cross-case analysis for the two commodities to bring out the differences and important lessons from a comparison of the influence of the policy environment on the activities of the two commodity value chains.

The quantitative data were analysed using the window version of SPSS 17.0. The analysis was mainly univariate, and dealt with descriptive statistic, largely frequencies and percentages.

## **RESULTS AND DISCUSSIONS**

The results are presented in three parts: the first part discusses the policy environment for cocoa and pineapple in respect of research and development (R & D), extension delivery and marketing. The second part continues with the cross-case comparisons and follows up with a discussion of how the policy environment for the two commodities has reflected on value chain linkages. The third part deals with the conclusions and the policy implications of the results.

### **Policy on Research for Cocoa**

R & D activities supporting the cocoa value chain are largely public sector driven, championed by a subsidiary of the Ghana Cocoa Board, the Cocoa Research Institute of Ghana (CRIG). Cocoa is obviously not in competition with other commodities, making cocoa R & D activities better focused, better resourced with a much greater attention. Established in June 1938 at Tafo as the Central Cocoa Research Station of the Department of Agriculture of the then Gold Coast (now Ghana), the CRIG has been mandated to undertake research into all problems relating to the production, processing and utilisation of cocoa, and provide information and advice on all matters relating to the production of the crop (Appiah, 2004).

The public sector leadership in R & D offered by the CRIG has largely made small-holder farmers more likely to be dependent on the local research system, which has over the years delivered such technological packages as the high-yielding, early-maturing and disease resistant cocoa hybrid, as well as the cocoa hi-tech, described by Appiah (2004) as a sustainable cocoa production by which the farmer increases and maintains productivity through soil fertility maintenance at levels that are economically viable, ecologically sound and culturally acceptable.

While the research efforts of the CRIG are targeted more directly at the production level of the cocoa value chain, other public R & D institutions such as the CSIR-Food Research Institute and the Biochemistry and Food Science Departments of the public universities have focused more on the processing of the commodity and indeed offered support to some processing companies such as the state-owned Cocoa Processing Company.

The study of the cocoa value chain however showed little evidence of private sector actors getting involved in cocoa R & D. Cocoa is perceived as a strategic export commodity, and given the prevailing legal and regulatory framework within which the industry has operated over the years, there appears to be enhanced interest for public investment, especially to support production. This perhaps explains the less preponderance of private sector actors in cocoa R & D in the light of public sector leadership in the industry.

### Policy on Research for Pineapple

Pineapple R & D activities are largely private sector driven, championed by the commercial pineapple producers, commercial pineapple processors and some input supplying firms. Commercial farmers such as KORANCO

Farm have developed the capacity to generate their own technological packages, which find expression in periodic on-farm trials to determine appropriate dosages of fertilizer (Koranteng, personal communication, 2011). Similarly, Anwuntem Farms, a medium-scale pineapple farm in the study area has been trying samples of the sugar loaf variety on-farm to determine the feasibility of going into large-scale production of the variety (Anane, personal communication, 2011). The Agronomy Division of Blue Skies Company, a commercial pineapple processor, undertakes on-farm research with its out grower farmers and collectively with the farmers develops technological packages to address specific production challenges.

Public pineapple research is undertaken mainly by the faculties of agriculture of the public universities, the state-owned Council for Scientific and Industrial Research (CSIR) and the Biotechnology and Nuclear Agriculture Research Institute (BNARI) of the Ghana Atomic Energy Commission. A survey of three departments of three public universities and three institutes of three public R & D institutions showed inadequacy of public sector pineapple research in Ghana, in terms of human resource, facilities and priority given to the commodity. The study showed general inadequacy of scientific workers in most of the institutions as reflected in Table 1.

Table 1. Human Resource Profile for key Pineapple R & D Institutions in Ghana

R&D Institution	Total No. Scientists	Gender								
		M	F	PhD	MSc	BSc	21-31	32-42	43-53	Over 54
UCC	2	2	-	1	-	1	1	-	1	-
KNUST	2	2	-	-	2	-	-	-	1	1
UG	3	3	-	2	1	-	-	-	2	1
CSIR-CRI	2*	2	2	-	2	-	-	2	-	-
CSIR-FRI	5**	3	2	2	2	1	-	1	2	2
BNARI-GAC	5	5	-	2	1	2	-	2	3	-

Source: Fieldwork, 2015

#### Notes:

The scientists in the identified institutions are those who spend at least a quarter of their time on pineapple research.

2\* : one of the two is pursuing a PhD research on sweet potato at the University of Ghana

5\*\* : one of the leading scientists has taken up a job at the CSIR Head Office as the Director of Commercialization

UCC: University of Cape Coast; UG: University of Ghana; KNUST: Kwame Nkrumah University of Science & Technology; CSIR-CRI: Crops Research Institute; CSIR-FRI: Food Research Institute; BNARI-GAEC: Biotechnology & Nuclear Agric. Research Institute, Ghana Atomic Energy Commission.

Although the CSIR-Crops Research Institute (CSIR-CRI) remained the only institution with a pineapple research programme, it was ironically observed that the lead pineapple researcher was pursuing a PhD research on an entirely different commodity, sweet potato, at the University of Ghana. The other researcher of the two at the CSIR-CRI was more engaged in vegetable research. A similar picture was observed at the CSIR-Food Research Institute where the leading pineapple researcher had virtually 'abandoned' work on the commodity to take up an appointment at the Head Office of the CSIR as the Director of Commercialization.

At the crop science departments of the public universities, it was a bit of a challenge identifying scientists who spend a quarter of their time on pineapple research. At the Crops Science Department of the University of Ghana, for instance, an examination of the database of all research undertaken by students as of June 2010, showed no documented research work on pineapple at the graduate level (MPhil and PhD), although there were couple of studies on postharvest, pest and disease undertaken by undergraduate students. It was observed that the choice of direction of research at the public universities was largely determined by the market and the interest of students. Given the apparent low levels of pineapple research in the public R & D institutions, commercial pineapple farmers are therefore more likely to solicit foreign sources for technological packages to address key challenges. This situation found expression at one of the commercial farms in the study location, where management of the Farm had to solicit support from Costa Rica to learn more about the technology of growing MD2 pineapple for the export market. This is perhaps because the MD2 is a foreign developed pineapple variety with its own technology of cultivation. Given the imported nature of the technology, there

is therefore a tendency for commercial producers to turn to the source of the technology for help.

In all the three public universities studied, it was only at the Kwame Nkrumah University of Science and Technology, Kumasi, that a department had been created to research specifically into horticultural commodities including pineapple. In the other two public universities (University of Ghana and the University of Cape Coast), pineapple research was undertaken mainly at the crops and soil science departments.

Generally, the direction of pineapple research in Ghana as shown in Table 2 depends on the mandate of the institution and the available research facilities. This explained why BNARI of the GAEC had focused its research more on propagation of planting materials (pineapple plantlets) using its tissue culture facilities as well as research on enhancing shelf life of fresh pineapple through irradiation. On the other hand, the CSIR-FRI, consistent with its mandate, undertakes research inclined more towards the processing of pineapples.

However, one important aspect concerning the direction of pineapple research that was clearly missing, was pineapple breeding. Breeding was completely lost in the database of pineapple research carried out in all the three public universities; rather the key research areas identified were agronomy, postharvest handling, pest/disease and soil fertility management. The only institution that appeared to have started some work on pineapple breeding was the Kumasi-based CSIR-CRI, which had carried out collection of pineapple accessions of sugar loaf variety from the Central, Eastern and Greater Accra regions and done the characterization of these accessions as the first step towards breeding work on pineapple (Baafi, personal communication, 2011).

Table 2: Direction, Source of Funding and Facilities for Pineapple Research in Ghana

R&D Institute	Director of research	Main source of funding	Research facilities
UCC	Agronomy/Pest/Diseases	University Funding/Self-sponsorship (Students)	Basic laboratory facilities, experimental field
KNUST	Postharvest handling/Agronomy	University Funding, Contract Research/Self-sponsorship (Students)	Basic laboratory facilities
UG	Postharvest handling/Agronomy/Pest/Disease	University Funding/Self-sponsorship (Students)	Basic laboratory facilities, Tissue Culture Lab
CSIR-CRI	Agronomy/Pest/Disease, Breeding (just commenced)	Donor Projects, EDIF, Contract Research	Tissue Culture Lab experimental field, Plant House
CSIR-FRI	Processing	Donor Projects/Contract Research	Basic laboratory facilities
BNARI-GAEC	Propagation (multiplication of planting materials)	Preservation Contract Research/ Government funding	Tissue Culture Lab experimental field

Source: Fieldwork, 2015.

The national policy, by and large, tends to favour areas of pineapple research other than breeding, as pineapple variety, from the perspectives of farmers, may not be a production constraint. The pineapple business is export-driven; the preferred export variety is thus determined by the export market as the case of the MD2 pineapple variety. It is instructive to note that the MD2 pineapple variety and the technology of its cultivation represent a typical case of imported new technological package.

### Policy on Extension for Cocoa

The study showed public sector leadership in agricultural extension delivery in support of the cocoa value chain championed by the Cocoa Health and Extension Division (CHED) of the Ghana Cocoa Board. Cocoa extension in Ghana has gone through some transformation over the years. Ghana's Cocoa Sector Development Strategy has been characterized by the shifting of responsibility for cocoa extension delivery from the Cocoa Services Division, then a subsidiary of the Ghana Cocoa Board, to the Ministry of Food and Agriculture (MoFA) (Dormon *et al.*, 2004). With the transfer of the extension mandate from the MoFA to the CHED under a public private partnership arrangement,

extension delivery to the cocoa value chain, especially to smallholder cocoa farmers, appears to be more focused and better resourced. Additionally, there appears to be a much stronger linkage between the main technology generation institution (CRIG) and the main extension delivery institution (CHED) as the two institutions fall under the same mother institution, the Ghana Cocoa Board.

Although cocoa extension delivery is largely public sector driven, the study showed evidence of private sector involvement as demonstrated by some purchasing clerks of licensed cocoa buying companies, and some rural banks. These private cocoa buying companies used free extension delivery support to farmers and the offer of credit in some cases, as a means of motivation to get more farmers to sell to them. This had made cocoa extension delivery directed at the production level of the cocoa value chain largely pluralistic.

### Policy on Extension for Pineapple

Pineapple extension as offered by the public sector operates under the unified extension system, making it less focused and less resourced in comparison with cocoa, as pineapple has to compete with other commodities for attention. The study of the

pineapple value chain however showed a preponderance of private sector actors including commercial producers, commercial processors and some input suppliers offering extension support to the value chain. Thus, pineapple extension can be described as being largely more pluralistic, operating under various arrangements namely, public sector inclined (championed by MoFA), private non-profit sector inclined (championed by some non-governmental organisations) and private for profit sector inclined (championed by commercial producers and processors).

The dwindling government funding for agricultural extension and the call on extension organisations to support farm households' livelihood initiatives, according to Okorley, Gray & Reid (2010), has introduced the concept of 'pluralistic extension delivery' to ensure the efficient and effective use of available resources for sustainable development. Pluralistic extension is explained by Okorley *et al.* (2010) as one in which there is more than one extension service provider in a community. In support of pluralistic extension, Smith (1997); and Rivera & Alex (2004) argued that public extension organisations cannot do everything for farmers, and that there are areas of agricultural extension such as veterinary supplies and pharmaceuticals, agricultural machinery and hybrid seeds, which are best suited to private sector providers.

Minoiu (2003); and Rivera & Alex (2004) suggested that extension services should operate as part of an integrated rural economy that incorporates agriculture and other sectors. The extension organisation would therefore have to view extension activities as an integrated part of a larger extension programme, which is linked to other relevant organisations dealing with research, input supply, training, marketing, and other social services (Adhikorya, 1996). The extension services offered by private sector actors have generally made pluralistic extension a

reality and in particular, helped in addressing the needs of specific client groups such as smallholders.

### **Policy on Marketing for Cocoa and Pineapple**

The marketing of cocoa in Ghana has gone through some transformation since the emergence of the industry. The cocoa marketing system has two components, internal and external. Currently, internal cocoa market is liberalized and regulated by the Ghana Cocoa Board through an Act of Parliament. The Board licenses private companies to purchase cocoa from farmers at a pre-determined margin. The price paid to farmers by the Licensed Buying Companies (LBCs) is determined by the COCOBOD Producer Price Review Committee, which has membership comprising the LBCs, Cocoa Haulers, and Quality Control Division and the Cocoa Marketing Company all of the COCOBOD.

Previously, Produce Buying Company, then a subsidiary of the Ghana Cocoa Board, was the sole purchaser of cocoa beans directly from farmers. However, the liberalization of internal marketing of cocoa started in 1992 with the introduction of private Licensed Buying Companies (LBCs) as competitors to the state-owned monopoly in buying cocoa from farmers. The objective was to improve the operational and financial performance of Ghana's marketing system; to enable higher and competitive producer prices (Laven, 2007; COCOBOD, 2009). As of January 2011 at the time of data collection, there were a total of 27 Licensed Cocoa Buying Companies, one publicly and 26 privately owned.

The liberalized system has obviously brought some benefits to cocoa farmers. According to Laven (2007), the system has led to farmers usually being paid promptly, with the option of selling to another buyer if an LBC is unable to pay promptly. Liberalization



of the internal marketing of cocoa has brought marketing services to the doorsteps of cocoa farmers. More particularly, the introduction of private sector actors in the internal marketing of cocoa had given multiple choices to farmers, and subsequently brought some pressure to bear on license buying companies to respond, in a more proactive manner, to the needs of farmers as part of the overall marketing strategy. As of January 2011, there were 27 licensed private companies participating in the internal marketing of cocoa with one publicly owned (Manu, personal communication, 2011). However, as Laven (2007) had noted research had shown that farmers did not benefit equitably from liberalization of internal marketing, and in spite of the promises made to farmers, only a small number received any services or bonuses from LBCs.

Marketing of pineapples in Ghana, on the other hand, does not enjoy the kind of legal, regulatory and administrative framework that characterizes cocoa marketing. Marketing, both internal and external for pineapple, is largely liberalized, characterized by a strong private sector leadership, which has compelled pineapple farmers virtually “to take their destiny into their own hands” to sell their pineapples. Pineapple farmers do not enjoy guaranteed price for their produce. This situation had translated into making pineapple farmers more aggressive in exploring innovative marketing arrangements to sell their highly perishable pineapples.

### **Policy and Linkages in the Cocoa and Pineapple Value Chains**

Actors of agricultural commodity value chains such as farmers, input suppliers, buyers and processors ought to develop the capacity to address challenges in the industry to be competitive. This capacity takes a multi-

dimensional approach in which there is room for some convergence of resources among actors. Consistent with the innovation systems approach, the capacity of actors to respond to challenges may be a function of the linkages among actors and the opportunity for more interactive learning through information sharing. In line with the conceptual framework adopted by this paper, the nature of existing value chain linkages is a measure of the existing policy environment within which actors operate.

The public sector leadership in the delivery of research and extension at the production level of the cocoa value chain has changed the dynamics of innovative activities among producers in the chain. While the research and extension system has remained largely linear, scale-scale cocoa farmers in the value chain appeared to have become less motivated in exploring solutions outside the local research and extension system. Similarly, the strong public sector oriented regulatory framework for the internal marketing of cocoa appeared to have made cocoa farmers less aggressive in searching innovative marketing arrangements. There is a ready off taker waiting to buy cocoa beans at any time, a situation that seems to take the pressure off small-scale cocoa farmers in the quest to market their produce.

Actors in commodity value chains are more likely to develop the desire to forge linkages if such linkages have the potential of helping to address key challenges. In the light of the strong public sector support for the industry, farmer-input supplier, farmer-buyer, farmer-processor, and farmer-farmer linkages in the cocoa value chain remained weaker in comparison with the pineapple value chain as shown by the result of the survey of small-scale cocoa and pineapple farmers in Table 3.

Table 3. Farmers' perceptions of linkages within the cocoa and pineapple value chains

Nature of linkage	Cocoa		Pineapple	
	Frequency	Percentage	Frequency	Percentage
Farmer-to-Farmer	144	42	296	96
Farmer-to-Input Supplier	147	43	257	83
Farmer-to-Buyer	144	42	276	89
Farmer-to-Processor	141	41	280	90

Source: Fieldwork, 2015.

The rather weak linkages in the cocoa value chain appeared to have made extension delivery to the value chain less pluralistic with less participation of private sector actors. There was little evidence of cocoa processing firms offering extension support to farmers as farmers did not sell directly to processors; a situation that had reduced the motivation for interaction. Similarly, the weak linkages had translated in reducing the desire of farmers to participate in training and field demonstration, important platforms for knowledge and skills acquisition. When farmers were asked to indicate whether they had taken part in training and field demonstration for the last five years, the results were 30% and 14% respectively for cocoa and 93% and 80% respectively for pineapple.

On the other hand, the strong private sector leadership in research, extension and marketing for the pineapple value chain appeared to have strengthened value chain linkages. The study showed that the intense participation of such private sector actors as commercial pineapple farmers, pineapple processing firms and agro-input suppliers had led to a preponderance of value chain activities. These activities had largely made extension delivery more pluralistic with more participation of private sector actors; made value chain actors especially farmers, more innovative and introduced more competitiveness in the value chain. The study, for instance, showed how small-scale farmers had to come together to address the negative effects of the transition on the export market from the smooth cayenne variety to the preferred MD2 variety.

Pineapple farmer-based organisations had been at the forefront in the search for market, entering into some memoranda of understanding for better offers on behalf of their members. This was completely not the case with small-scale cocoa farmers.

## CONCLUSIONS AND POLICY IMPLICATIONS

The findings adduced by this paper indicate how private sector leadership in value chain functions and service provision can engender the kind of linkages that promote choices and create more space for complex systems of interactions and learning behaviours for actors to translate their challenges into innovative activities. The paper further supports the argument that a policy environment that promotes public sector leadership in value chain functions and support services offers little motivation for actors, especially small-scale producers, to forge linkages horizontally and vertically.

In terms of policy implication, the paper makes a strong case for more participation of private sector actors as it is more likely to expand the platform for more interactive learning among actors for their mutual benefit. To build the needed competitiveness through the forging of linkages, it may be necessary to reduce the space for public sector participation in value chain functions and provision of support services as this may reduce the motivation and desire for actors to integrate into networks to address challenges.

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