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Abstract

The CBEA concept is an alternative to community-based extension intervention aimed at addressing the inadequacy of formal extension services provision to rural poor farmers of the Northern Regions of Ghana. The study sought to find out the extent to which the Community-Based Extension Agent has improved access to extension services to rural farmers. The study used qualitative and quantitative methods such as, Focus Group Discussions, Key Informants, In-depth interviews, Household and Institutional Questionnaires to collect and analyses data. The findings are that: there are vibrant Community Based Extension Agents established providing extension services in crop, livestock and environmental issues in the study District; farmers groups are linked to external agents and other stakeholders for access to credit facilities; the CBEAs were found to be the main link between the community and external agents; the most dominant extension services delivery carried out by the CBEAs in the entire study district were in crop production, livestock production and bushfire management; there are well established criteria for selecting Community Based Extension Agents, and community Based Extension Agents were least motivated. The study recommends among others that: motivation packages such as bicycles would facilitate the movement CBEAs to reach out to majority of the farmers. There is also the need to link CBEAs to relevant institutions/organizations for support and establishment of mechanisms to generate funds to support activities. Finally, stakeholders and organization need to intensify community sensitization and awareness creation on activities of CBEAs.

Key words: Agricultural Extension, Community –Based, Extension Agents, Extension Service Delivery

Introduction

In Ghana, agriculture remains the backbone of the economy, accounting for the largest portion of Gross Domestic Product (GDP), 50-60 percent of government revenue and 70 percent of a labour force (FAO, 2008). Agricultural extension which is one of the pillars for development plays an important catalytic role in agricultural and rural development efforts in Ghana. It serves as the source of information on new technologies for farming communities which when adopted can improve production, incomes and standards of living. Moreover, agricultural extension provides a channel through which farmers' problems could be identified for research and formulation of agricultural policies to the benefit of rural communities. The extension system constitutes a framework through which farmers are organized into functional groups in order to gain access to production resources such as credit, inputs, marketing services and information on government development programmes (DFID, 2001).

Several organizations are involved in extension service provision in Ghana. These include public-funded institutions such as the Ministry of Food and Agriculture; agricultural related commercial companies or marketing boards such as Cotton Company Ltd, a variety of Non-Governmental Organizations (NGOs), Farmers' associations, and private agro-chemical input suppliers.

The main approach used by the formal sector (Ministry of Food and Agriculture) in agricultural extension service delivery is: Training and Visit (T&V), Contact Farmer or Farmer-to-Farmer and Transfer of Technology approach to extension service delivery to ensure that farmers adequately access information for enhanced production. However, these approaches have not been effective in terms of making available the appropriate technologies or the necessary agricultural information to the poor rural farmers.

In the northern part of Ghana, many developmental agencies such as Church Based NGOs like the Presbyterian Agriculture Stations (PAS), Catholic Agriculture Projects, Adventist Relief Agency (ADRA), Assemblies of God Relief and Development Services (AGREDS) and CARE International are promoting alternative extension service delivery to augment the efforts of agricultural extension offered by Ministry of Food and Agriculture through Community Based Extension Agents.

The Community-Based Extension Agents (CBEAs) as an intervention to agricultural delivery has been piloted by Care International, Ghana, and other organizations in selected communities in Northern Ghana to address the inadequacy of extension services provision to the rural poor farmers of the three regions in Northern Ghana. The CBEAs concept builds on the mechanisms for extension acquisition at the community level and evolve around persons who are 'experts' on different aspects of indigenous knowledge in farming, community-based institutions and systems that exist for training and skills acquisition, knowledge and information sharing as well as conflict prevention, management and resolution in the farming system. This study is to identify role(s) played by major stakeholders in the promotion and provision of agricultural extension services and technologies through the Community-Based Extension Agents, Examine the nature and structures of operations of the Community Based Extension Agents, Explore farmers' perception of the Community Based Extension Agents on agricultural production

Literature Review

Introduction

This paper reviews concepts and theories relevant to the study. Arguments are made on key concepts and theories that provided the framework as perceived differently by different scholars. Major concepts and theories such as Agricultural Extension, Community-Based Extension Agents, Farmers' Indigenous Knowledge in Extension Service Delivery, Extension Approaches, Policy on Agricultural Extension, Roles of Major Stakeholders in Agricultural Extension Services and Farmers' Perceptions of Agricultural Extension Services are reviewed.

Agricultural Extension as an Intervention to Rural Development

Agricultural extension is an approach to agricultural development and an instrument for achieving rural development policy goals. Although there are many different goals for extension programmes, most programmes are designed as systems of communication to change the behaviour of rural people or as systems of communication to change the knowledge of rural people (Roling, 1990).

According to Leeuwis (2004), extension which originally came from the academia during the 1840s and the early 1900s in the West connotes teacher/student relationship, depicts a top-down approach to problem-solving and inducing change in voluntary behaviours. Thus, extension agent having been trained assumes the position of an expert who transmits information to the farmer who listens, receives and responds accordingly. If farmers and other rural people direct the extension towards their own needs, then the purpose of extension is changing knowledge. This knowledge helps rural people make their own decisions regarding farming practices.

Often, farmers pretend to think and act in line with the interventionist, whereas in reality and to a large extent, follow their own internal logic; maintain their Cosmo vision and have their own values. Farmers in many parts of the world are always seeking ways to improve their farming systems and to adapt their practices to changing agro-ecological and socioeconomic conditions. Technological transfer is an integral part of the extension process, involving the transfer and spread of farming information from the researcher via subject matter specialist and the extension worker to the farmers. Farmers adopt, adapt and formulate new ideas and innovations, that are tried out in different settings, evaluated and assessed the results on which decisions are made for improving farming. These factors, with the exception of population growth have made traditional adaptation and adjustment mechanisms unfeasible and ineffective (Jodha, 1990). Agricultural development programmes underestimated the expertise of farmers. This could be attributed to lack of process-thinking and this has contributed to poor technology utilization (Ison, 1990). Process-thinking has the potential of drawing on the experiences of farmers (Spore 2004) as well as easing the overlap of interests. Extension as a service is a process for sharing information, through in-service training joint programming and maximizing the human resource potential within its own structure thus enabling farmers to gain experiences in farm business management and thus empowering them to demonstrate to other farmers the business approach to farming. Extension as a service recognizes the interconnectedness of all elements involved and coordinates them for better benefits.

Farmers' Indigenous Knowledge in Extension Service Delivery

As a mainstay of developing and even developed economies, agriculture has been a well-researched area. Its contribution to various countries remains very substantial. Studies have been conducted on agricultural production and related services provision. Farmers'

Indigenous Knowledge (FIK), however, is a relatively new area of study. In recent time, major critical and substantial research has been focused on FIK (Rajasekaran, 1993). Such studies were targeted at revitalizing FIK and advocating for its incorporation into development efforts since it is a resource that can enhance (agricultural) production. However, very little studies or research, if any at all, connects agricultural extension to FIK (Hounkonnou, 2001). This is indicative that local initiatives are still by-passed; relevant support resources are not linked to or supportive of grassroots efforts.

The Agricultural Extension Services Department under the Ministry of Food and Agriculture and COCOBOD are the official public institution responsible for the provision of agricultural information, technologies and innovations to farmers in Ghana. The private sector, which provides extension services for the agriculture sector include commodity-based organizations such as the cotton companies and input dealers that have a profit motive and so do not look at the whole farming system of the poor rural farmer but focuses on a particular sub sector that is of interest to them. Thus, agricultural extension is best termed knowledge-generation and exchange. As knowledge-generation and exchange (rethinking and reflecting on the interactive process), both the end and the process are relevant and should be emphasized.

Agricultural development through extension started a long time ago and took different forms or approaches; from the centralized top-down to that of participation (Spore, 2003). There have been public and private sector efforts to improve the lot of farmers and attain national food self-sufficiency (Warren, 1991). Farmers were not involved in this extension development process until the 1980s even though farmers know a great deal about their farming situation and needs than anyone else (Spore, 2003; Warren, 1991). These extension approaches or modes include the scheme, technical change, target category, functional group and institution building. The delivery mechanisms are the Training and Visit (T&V), contract farming, farmer-field-school (ffs) and farmer-to-farmer extension (Hanyani-Mlambo, 1995).

Extension Approaches

There are many approaches to extension and these are; the scheme approach, technical change approach, target category approach, functional group approach, institution building approach, training and visit approach, farmer-field-school approach, and farmer-to-farmer extension approach.

Functional Group Approach

The functional approach is another extension approach which uses groups. It strengthens farmers' capacity to demand services and resources appropriate to their needs through the countervailing power. It empowers or supports small-scale farmers to exercise some real control of development efforts such that they respond to their own definition of development or of their own interests (Jiggins & Rolings, 1982). This is not very prominent except lately where cotton farmers in the Sissala area teamed up and demanded fair prices and treatment among others from the cotton company and these were granted them.

In Burkina Faso and Mali, such functional groups as Union Nationale des Producteurs de cotton du Burkina-UNPCD and Association des Organizations Professionelles Paysannes-AOPP respectively exist which intercede with government to protect farmers' interest (Spore, 2004). This approach seeks to promote better relationship between internal (small-scale farmers or smallholders) and external supporters of development which is a shift from the traditional development trend where there exists power imbalance. The ability of a group to perform cannot be underestimated and this is why most projects advocate working with groups. Unfortunately, these groups had never originated from traditional or indigenous groupings and hence the poor performance of these groups. According to Hounkonnou (2001), indigenous groupings have the potential of growing to a status that meet the productivity, well-being and empowerment concern of the rural people. It requires some conscious efforts to deal with or arrive at groups that are grounded by the indigenous knowledge systems of the location. It is only such groups that are creditable and can greatly influence development.

Training and Visit (T&V) Approach

The training and visit (T&V) system is an extension management system that was developed for the World Bank by Daniel Benor (Benor & Harrison, 1977). It was aimed at upgrading the technical content of field extension activities, while making agents' activities more predictable - and thus more accessible - to farmers. The idea was to increase the effectiveness of agricultural extension services through comprehensively structured training, delivery and administrative systems. In the approach, "proven agricultural practices", usually from international and national research centres, are translated into packages of practice recommendations. These are then passed down the extension organization's hierarchy from subject matter specialists to agricultural extension officers, who adapt recommendations to their specific areas before passing them on to village-level extension workers. Extension workers then pass the recommendations to contact farmers, who diffuse them to other farmers.

T&V is thus a delivery mechanism via which technical information on agriculture is impacted or given to

farmers. The technical information or technology is usually generated through scientific means at the agricultural research stations and this technology is transferred to farmers who are perceived as recipients and should be taught relevant technical advice through the extension agents who have been empowered with this technology. Thus, it creates an information-flow between the research stations, subject matter specialists, extension agents, contact farmers and followers. T&V has been widely adopted due to its impressive results (Benor & Baxter, 1984). In Ghana, T&V was intensively practiced in the days of the Farmers' Services Company (FASCOM) and Upper Region Agriculture Development Programme (URADEP) but very limited successes were chalked due to the unilateral analysis of farmers' situation (Millar, 1992). As an extension delivery tool, it is designed to achieve rapid results and attracts as little cost as possible.

T&V proved to be an excellent extension management system in irrigation projects like the Tono, Vea and Bontanga irrigation areas, which followed strict timetables, but had only limited success in dry land farming. It contributed to increased cash crop production by smallholder farmers. Farmers are generalists in their activities and the biophysical environment makes it impossible to follow a strict timetable (Hanyani-Mlambo, 1995).

This technology generation process never involves the farmer who is an active participant in the farming process. Limited farmer participation causes it to follow a top-down orientation, resulting in inappropriate and irrelevant technologies; the flow of information frequently stopped at the contact farmer/group level; and only a small proportion of farming families benefited, leading to inequalities The indigenous knowledge system of the smallholder was never considered or given a value and hence the limited successes. The rural poor who really need help were not being reached. The system has been criticized for being too mechanical in its implementation and for lacking the flexibility to make it more relevant to the needs and environment of smallholder farmers (Pazvakavambwa, 1994). Under such circumstance, the technology which is meant for the farmer may be resisted or rejected after the farmer has taken it through a 'process'. The 'transfer' which also depicts giver and receiver scenario falls short of the real life situation of the farmer.

Farmer-Field-School (FFS) Approach

It is another form of extension delivery mechanism through which technical information or technology is passed on or imparted to farmers. It originated from Asia in the late 1980s stemming from the fact that inputs were grossly abused and an informed decision needed to be taken in this regards. It is a school without walls situation organized by/for farmers in a field where farmers meet regularly to:

- Learn and share experiences;
- Learn and develop agro-skills and farm management tools; and
- Implement the 4 key principles of FFS i.e. growing a healthy crop season-long, monitoring the field regularly, conserving benefits and farmers becoming experts in their own fields (Gallagher, 2003).

The farmers and the agricultural officials learn together during the process. It deals with groups that have a common interest who meet regularly to study or learn a particular topic. The learning is based on experiential, participatory and hands-on-work (Ingevall et al. (2003).

According to Pimbert and Wakeford (2003), FFS is a form of social learning, negotiation and effective collective action by and for farmers and their communities, focusing on society's relationship with nature and assuming that all rural people, even the poor, have assets. It is a platform for both learning and empowerment (CIP-UPWARD, 2003). Learning is a consequence of experience and people only become responsible when they have assumed responsibility and experience success (Pretty, 2002).

Farmer-field-school is composite since it promotes technology generation or development, adoption and diffusion. It does meet the real needs or life situations of farmers especially those with limited access to external inputs for increased production. It draws on farmers' own knowledge and innovativeness and has the potential of bringing farmers and outsiders together in a common research process, building on farmers' own capacity to generate technologies and modify practices and complementing conventional scientific forms of experimentation (Coleman, 1990). It has been proven to be an effective tool/mechanism for cultivating farmer learning and empowerment since farmers are encouraged to develop their critical thinking leading to greater self-sufficiency. It could also facilitate the formation of community-based organizations. Notwithstanding, maintaining the quality in their implementation and ensuring that the core principles of the approach are sustained, continue to be challenging (Ingevall et. al., 2003).

In the experience of Ghana, the interest of farmers has been high and evaluation indicated that participants (farmers and agricultural officers) learnt a lot. However, this failed to reflect in the results, no scaling up of the successful experiences. This is a reflection of inappropriateness or its not being grounded in the

indigenous knowledge system of the smallholder and hence the non-adoption (Kipo, 1990). In FFS, the involvement of the farmer is supposed to be quite high and accords him or her, the position to deliver his or her skills as in farmer-to-farmer extension.

Farmer-to-Farmer Extension Approach

The farmer-to-farmer approach is another extension delivery mechanism but between farmers (in the context of a farmer-environment). The farmers who are village extensionists usually do the extension of technologies. No one else could ever display as much enthusiasm for the technology as a farmer who has just tripled his or her yields by using it. One will never know a village farmer's way of thinking, or his or her priorities and value system, quite like a neighbouring farmer. In addition, one from the outside cannot understand what will motivate a farmer to change better than a neighbouring farmer who has just made some major changes will. Nor will any professional ever have as much credibility with poor farmers as a neighbour who can show them his or her fields with their greatly improved yields (Bunch, 1990).

This delivery mechanism, very frequently requires absolutely no cash expense and development agencies are using village agricultural extensionists (Bunch, 1990). MOFA recruited farmers as village extensionists, provided them with bicycles and their performance is not impressive. As much as the proximity of these recruited extensionists to the targets is quite high, the performance will also be influenced by their status in the community. Thus the recruitment has to be influenced by the indigenous knowledge system of the area for an enhanced performance. The flow of farmers' findings tends to be slow, especially when there are limited means to bring farmers together even though the more appropriate the innovation for a wider spectrum of farmers, the quicker the news of it seems to spread from farmer to farmer **(**Muleme, 1994**)**. Building of the facilitation skills is imperative since it greatly influences the outcome of the delivery mechanism as well as individuals' relationships. The next is the consideration of policy on agricultural extension.

Policy on Agricultural Extension

The agricultural policy pursued during the colonial period was aimed at advising and assisting farmers to produce larger and better crops for export to the neglect of food crops or non-export crops. According to Millar (2004), sufficient revenue was generated which addressed basic food requirements in the urban and cash crops production areas through the importation of staples from external markets. The foreign earnings from the export-crops could have been used for something either than importation of staples if equal attention was given to the home agricultural sector for the production of staples. The policy of Convention People Party had a different focus. It was directed at promoting rapid agricultural development through the establishment of state farms, which used mechanized agricultural systems and agricultural development corporations (Millar, (2004).

This policy demonstrated the power of government since urban unemployment was mitigated and the department of agriculture was abolished. The abolition of the extension service denied smallholders the service, which could have promoted or augmented the production of food crops to sustain the country. Between the 1961 and1982, the directions of policy pursued was also different. It was in favour of large-scale production and industrial based on imported raw materials rather than industrialization based on agricultural surpluses (home-agriculture). This direction promoted production and marketing of agricultural commodities but to the neglect of the smallholder, who form the majority in the agricultural sector. (Millar, 2004).

Not all the policies discussed so far favoured the smallholder except the one between 1981 and 1992 even though not completely. This policy sought to build a conducive and enabling environment which promotes agricultural growth and development in terms of promoting national food security, creating rural employment opportunities where the smallholder dominates, providing agricultural-industrial linkages and a balanced regional agricultural development with emphasis on indigenous practices and resources. Sustainability and indigenous practices were especially focused by the research and the extension department (Millar, 2004). Even with this, very limited practical demonstrations or opportunities existed for the smallholders to realize their potentials, which is crucial.

The goal of the Ministry of Food and Agriculture (MOFA) has been to create an environment for sustainable growth and development in the sector. In line with this goal, policies and programmes since the 1990s have been formulated and guided rigidly by the Medium Term Agricultural Development Programme (MTADP), which was geared towards institutional reforms. It aims at shifting attention to smallholder with emphasis on indigenous practices and resources. Based on the MTADP, the Accelerated Agricultural Growth and Development Strategy (AAGDS) were formulated. The AAGDS has, however been silent on the indigenous knowledge of farmers (Government of Ghana/MOFA, 2002). The Food and Agricultural Sector Development Policy (FASDEP) in all recognizes donor conditionalities and the dwindling nature of external funding for agricultural programmes/projects and thus advocate for the effective and efficient utilization of available

resources. It failed, however, to explicitly capture IK as a resource, which is abundant in the smallholder. IK has not been captured in areas of intervention identified in FASDEP. Technology development is quite vivid in MOFA's mission statement and the appropriateness of this developed technology should be vigorously pursued since it is key. Warren & Rajasekaran (1993:1) acknowledge this in their assertion that "Indigenous knowledge in Third World agriculture is considerable and too often overlooked".

The development efforts of governments (of Ghana) especially in the agricultural sector have been tremendous (FASDEP, 2002) but without much success (Millar, 1992). Effective and efficient utilization of available resources has been advocated. This calls for efficient collaboration of all stakeholders (policy makers, implementers and farmers). The potential (resourcefulness) of each of these stakeholders should not be underestimated.

The developed technology would be appropriate and well-fitting to the local conditions if it is grounded on indigenous knowledge systems. According to the World Forum on Food Sovereignty (Spore, 2007:1) "people have the right to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agricultural systems". This is with particular reference to the smallholders who are endowed with indigenous knowledge.

Community-Based Extension Agents

In Ghana, farmers learn how to do farming from childhood, as children constitute an important part of the family's work force. Throughout life, they consult elders and more experienced farmers when they face problems in farming. This transfer of farm knowledge from one farmer to another takes place in many ways including informal conversations in everyday life, through farmer group discussions, during cooperative farming and while visiting other farmers. Farmers have their own vocabulary, tools and processes for learning and sharing and they easily accept things learnt in their own context. The indigenous farming practices have been developed, practiced and transferred over several generations. Few changes have taken place in these practices to meet the ever changing and challenging socio economic conditions.

The general awareness and efforts to achieve consistent and sustainable farming practices have been piloted in diverse ways. MoFA has been the main body facilitating the process of eradicating the gaps of farm knowledge and transferring appropriate technology to farmers. MoFA employs extension officers to spread new technologies to farmers. The ratio is currently one extension officer to 1500 farmers, which is too high to provide sufficient service to the farmers. Lack of access to appropriate and affordable extension services is one of the serious constraints to increasing production and productivity by the rural farmer in the Northern region. Agricultural extension in the north is mainly provided by the Ministry of Food and Agriculture through the Extension service department. Attempts are being made to improve extension delivery by MOFA through the implementation of the new extension policy.

CARE International and its partners have been implementing the CBES in selected districts in the northern part of Ghana. The system which is built on indigenous knowledge systems has helped communities and some poor farmers to respond to some of the underlying causes of the livelihood insecurity by developing on an extension approach that promotes self-reliance and problem solving among the poor farmers, thus empowering rural communities and their farm families. The establishment of a functional and self-sustaining community based extension system with community members serving as extension agents was seen by CARE International to be a possible option to complementing the efforts of government in providing relevant extension education and service to farmers.

The system also supports communities to revitalize the knowledge systems and by linking them to up to the formal extension system for support thus helping poor farmers to build systems that can be sustainable, appropriate and responsive to their needs. The CBES seeks to strengthen the capacity of some experienced farmers in the communities by facilitating them to share and transfer the indigenous farming knowledge in the community. CBES groups in the communities helped them to identify gaps in the farming knowledge and find solutions, and providing training, which strengthens the groups such as team building leadership. The FASE project is implemented in 6 places in Ghana through partner organisations in these areas, and in the Northern region, the Presbyterian Agricultural Station at Lanbgensi in the East Mamprusi district is the partner that has been partnering CARE International to implement the CBES.

Roles of Major Stakeholders in Agricultural Extension Services

A major role of agricultural extension in developing countries has been to disseminate technologies generated by public sector research organizations through appropriate dissemination strategies such as demonstrations, field visits, farmers' meetings, use of media etc. The theory behind this approach had been the 'diffusion of innovation' model suggested by Rogers (1962). This kind of extension models are usually top-

down structures, often located within the ministry of agriculture. One of the examples is the *Training and Visit (T&V) system* promoted by the World Bank in 1970s. This system had been established as public sector service extension services and became a major model for providing and managing extension in many developing countries.

New approaches such as *Farmer Field Schools (FFS)* and the *Agricultural Knowledge and Information System (AKIS)* have been developed. Direct farm level links were stressed between researchers and farmers. More recently, the notion of extension as part of a wider system has emerged. For example, the 'interdependence model' (Bennett, 1992) and the 'innovation systems framework' (Lundvall, 1992) offer more inclusive ways of thinking about the actors and the institutional context in which the generation, diffusion and use of new knowledge takes place. The system of actors and process not only includes research and extension, but also technology users, private companies, NGOs and supportive structures such as markets and credit (Sulaiman et al. 2006).

Farmers Perception of Agricultural Extension Services

Agricultural development implies a shift from traditional methods of production to new, science- based methods of production that include new technological components, such as new varieties, cultural practices, commercial fertilizers and pesticides as well as new crops and new farming systems (Madukwe and Erie, 1999). Consequently, a wide range of policies and approaches have been formulated in most of most developing countries to reverse the worsening food and agricultural trends towards sustained agricultural growth. This has necessitated putting in place a combination of factors comprising the right technology, effective extension, access to physical inputs, adequate market support services and some infrastructures to improve agricultural productivity and raise the standard of living of rural dwellers. However, a common feature of these strategies according to Poole et al. (1994), is that government runs agricultural extension services devoted to augment small holder productivity by promoting the adoption of new scientific farming practices through educational procedures.

The agricultural extension service operates from the backdrop belief that increased agricultural productivity depends primarily upon the acceptance of improved cultural and technological change at the rural farm level and that peasant farmers can achieve higher farm yields only if they adopt recommended scientific farming techniques in place of their traditional practices. But Asiabaka and Mwangi (2001) have expressed the view "'that for farmers of different agricultural zones to adopt a new technology, they must be aware of the technology, have a valid and up-to-date information on the technology, the applicability of the technology to their farming system and receive the technical assistance necessary for the technology". Thus, Obinne and Anyanwu. (1991) and Rogers (1995), have posited that successful adoption of improved farming techniques is predicated upon rural farmers acquiring the required knowledge and understanding of these technologies, a process most effectively accomplished by the agricultural extension service.

Challenges of the Extension System

In many of the Sub-Saharan African countries, smallholders are characterized by poor adoption of technologies. According to Lipton (1988), this is partly explained by the absence of 'smallholder-friendly' research findings to some extent. Another argument is that research stations in Africa have tended to develop ideas with too little attention to smallholder labour supplies, to the riskiness of the innovations, to the likely availability of inputs, or to the presence of markets and to the economic attractiveness of recommendations.

Arokoyo (1998) pointed out that for a variety of reasons, the performance and output of national agricultural research and extension system in West and Central Africa has not been commensurate with the size, scope and level of investment in the system, as evidenced by farmers' poor productivity, incessant and intractable food shortage and the accompanying high food prices. More recently, the low performance of the agricultural sector is rather viewed as a system problem, which is prevalent within the research – extension – farmer – input system.

There has been evidence of failures of the public and private sectors in agricultural extension. Public extension services are under pressure for their own poor performance. They are often criticized for being: inefficient and ineffective; lacking clear objectives, motivation, and incentives; being poorly managed and not accountable to clients; and lacking relevant technologies (Haug, 1999). Accountability to clients is lacking in top-down bureaucracies and prevents farmers from influencing extension agendas, which lack relevance to clients. Another problem is financial sustainability, especially if cost recovery is not pursued. After donor-funded programs end, extension agencies are left with an increased number of agents, which often leads to budget reduction, and ultimately ineffective extension services. One important strategy to address these failures in agricultural extension is to involve NGOs, farmer based organisations, and private sector agencies in the management and execution of extension services. To make extension more demand driven, the following

strategies can be considered: 1) decentralisation, to make public agency more responsive to local needs; 2) contracting, to overcome some of the state failures such as bureaucracy and generate incentive; 3) cost recovery, to improve financial sustainability and demand orientation; 4) participatory extension approaches, to encourage farmer participation.

Methodolgy

Data Collection

The study employed both qualitative and quantitative research design approaches in data collection. Two classifications of interviews (unstructured and structured) were used in the study. In using the unstructured interview approach, also known as the in-depth interview, a framework (focus group discussion guide) was developed to direct the interview process. The rationale for using this approach was to enable us collectively engage with group of respondents within which questions can be formulated and asked spontaneously as the interview progress. This approach also allowed the respondents to freely express their opinion. Hence, this approach was intended to solicit in-depth information on values, believes and practices, norms and historical events in relation to community based extension farming practices. Other methods include the use of semi structured questionnaires and key informant interviews to capture a wide range of information/data especially on the issues of sources of resources, motivational issues, criteria for selection of CBEAs among others.

The questionnaire (structured) approach was also adopted and use on both the formal and non-formal institutions. The choice of using the questionnaire is based on the fact that: the target respondents are literate and scattered over the geographical area. Hence, self-administered questionnaires were used to elicit information from heads of formal institutions including NGOs promoting community based extension system delivery. On the other hand questionnaires were also administered to the non-literate respondents.

Major sources of secondary data included documentary review. Documents here are used to mean information on magazines, books, journals, and the internet among others on the subject. Aside, information was also sort from government agencies and non-governmental organizations that are linked to the subject matter. These triangulatory data collection approach proved useful in the unravelling of critical issues that could never have been obtained through the use of any one data collection instrument.

Sampling and Sample Size

Purposive sampling technique was used to identify 'expert' farmers'/CBEAs (indigenous specialist in livestock, crop farming etc) in agriculture service delivery in the district. The district under study is composed of two traditional areas or zones-Lawra and Nandom. Randomly, ten communities were sampled, at least five from each traditional areas or zones. One hundred (100) expert farmers/CBEAs and fifty (50) key informants were purposively identified and interviewed. Information was also collected from agencies such as Forestry Services Division (FSD), Ministry of Food and Agriculture, District Assembly as well as other NGOs operating in the district pertaining to their relationship with the Community-Based Extension Agents. A sample of 30 staff of governmental and non-governmental agencies was interviewed.

Data Processing and Analysis

The data analysis employed both qualitative and quantitative approaches to examine key issues at stake. In the data collection process, qualitative field notes captured on daily basis on events, conversations, interviews and stories on traditional coping mechanisms and strategies during group discussions and interactions with specialized groups were analysed after each day's work. In quantitative analysis, simple quantitative operations from questionnaires were tabulated and processed. The use of graphs, frequencies, percentiles, and averages attracted statistical considerations. Charts, frequencies, percentages and averages were generated using SPSS (Leech, L. N., Barret, K. C. & Morgan, and G.A. 2005).

Results and Discussion

Introduction

The chapter presents the results and discussions of the study. The results are presented in the form of tables and charts according to the objectives of the study.

Characteristics of Respondents

This section presents results of the socio-demographic characteristics of the traditional authorities in terms of age, sex, status of respondents and occupation.

Age of Respondents

Table 1 depicts the age groups of the respondents ranging from less than 19 years to 60 years and above.

Table 1: **Distribution of Age of Farmers**

Age	Frequency	Percent
Less than 19	2	2.6
20-29	20	26.0
30-39	25	32.5
40-49	19	24.6
50-59	8	10.4
Above 60	3	3.9
Total	**77**	**100.0**

Source: Field Data, 2011

Only 3.9 percent and 2.6 percent of the respondents were more than 60 years or below 19 years respectively. More than one-third (32.5%) were within 30-39 age grouping. Observation revealed that the aged is a receptor of knowledge, hence, in the traditional area, the aged is often respected and seen as authorities in their various fields of endeavors while the younger ones learn from them, as such, they occupy relevant leadership positions in the community either by succession, inheritance or parents vocation.

Occupation of Farmers

The nature of occupation of farmers may affect negatively or positively CBE system delivery in the district. Apart from farming which almost represents 60 percent (59. 7%) of respondents, 4.8 percent were into shea-butter processing, while 2.4 percent were engaged in charcoal production. The remaining 33.1 percent were CBEAs.

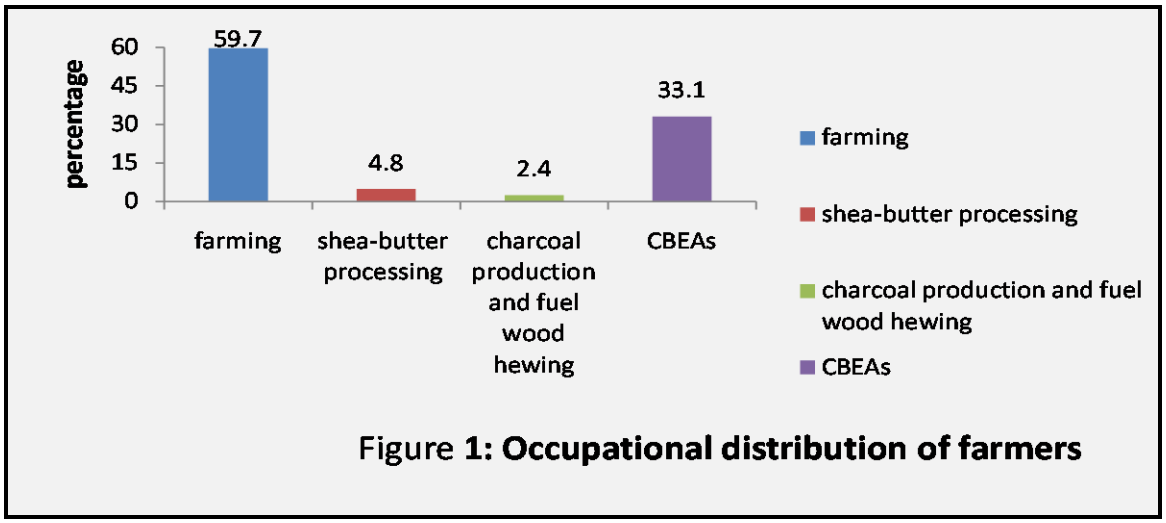

Figure 1: Occupational distribution of farmers

Source: Field Data, 2011

Forms of Extension Services

The most dominant extension services delivery that run through the entire study district were in crop production, livestock production and bushfire management. In crop production, specific activities engaged by the CBEAs include; manure harvesting, composting, *striga* management, refuse dump management for manure, bonding and agro-forestry. In livestock production activities identified include de-worming, animal traction, housing, feed storage and preparation of local salt leak and medication of livestock. Bushfire management practices were the main environmental issues address by the CBEAs.

Table 2: Forms of Extension Services Provided by Care International

Forms of Extension services	Frequency	Percent
Crop Production	38	38
Animal Production	32	32
Bushfire Management	20	30.
Total	**100**	**100**

Source: Field Data, 2011

The study revealed that, the nature of Community Based Extension Services provided involved the provision of knowledge, skills and information on crop production, animal production and bush fire management. Crop

production recorded the highest (38%) of the total responses, followed by animal production (33.3%), while bush fire management recorded the lowest of (30%). These findings are consistent with the livelihood sources of a typical community in Northern Ghana like those in the Lawra/Nandom District where majority of the population live on subsistence crop and animal production (Care International, 2006).

Modes of Operation

The flow diagram illustrated in figure 2, revealed that Community Based Extension Agents use group meetings, sensitization and cash mobilization to propagate/ disseminate its activities.

Dissemination of Information, Sensitization and Cash Mobilization

The CBEAs serve as the main channel of dissemination of information on new farming and animal husbandry practices, group meeting, sensitization, and cash mobilization for their communities. The Community Based Extension Agents (CBEAs) organize meetings to plan and implement their activities. This is to ensure that community extension agents have common understanding of new farming practices and implement similar extension models in the communities. These are usually done through community fora. House –to – house sensitization and education of farmers on new and improved ways of farming was also identified as the mode of sensitization. Finally, CBEAs also help mobilize credit from NGOs, rural banks and other lenders for farmers to purchase farm inputs and other implements.

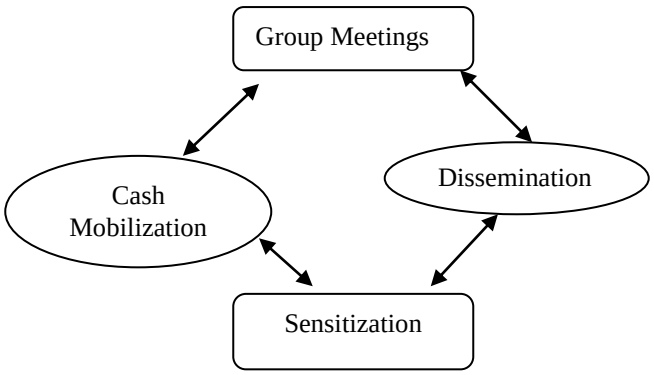

Figure 2: Dissemination of Mode and Operations of CBES
Source: Field Data, 2011

Membership Composition and Criteria for Selecting Members of CBEAs

The respondents indicated that the members of the CBEAs are mainly local community farmers who are perceived to have some expert knowledge in livestock and crop production. In some few cases traditional leaders were also said to be selected to function as a community based extension agent. The criteria for selecting members are shown in Table 3.

Table 3: Criteria for selecting members of the CBEA

Criteria	Frequency	Percent
Must be a resident of the community	38	23.5
Prepared to offer voluntary services to farmers	52	32.0
Proven expert in crop and livestock production	50	30.9
Ability to work with other members	22	13.6
Total	**162**	**100.0**

Source: Field Data, 2011

From Table 3, 32.0 percent of the farmers indicated they were prepared to offer voluntary services to farmers as the criteria for selecting Community Based-Extension Agents. This is followed by proven expert in crop and livestock production (30.9%). The rest, must be a resident of the community and ability to work with other members, attracted percentages of 23.5percent and 13.6 percent respectively. Based on the above criteria, individuals at the community level voluntarily offered themselves to provide community services. It was observed in all the communities in the district that, the CBEAs were built on existing community groups; hence, their activities are often confused with other activities. For example, the same CBEA group is been used by ADRA in the communities to disseminate and educate communities on health related issues.

CBEAs and linkages with Stakeholders

CBEAs also facilitate and link communities to external agents and partners for other technical and agronomic practices that are beyond their capacities. The CBEA groups acknowledged that there were very strong linkages between them and the community as well as other stakeholder. However, they seem to have weak relationship with stakeholders such as, MOFA, FSD in the District.

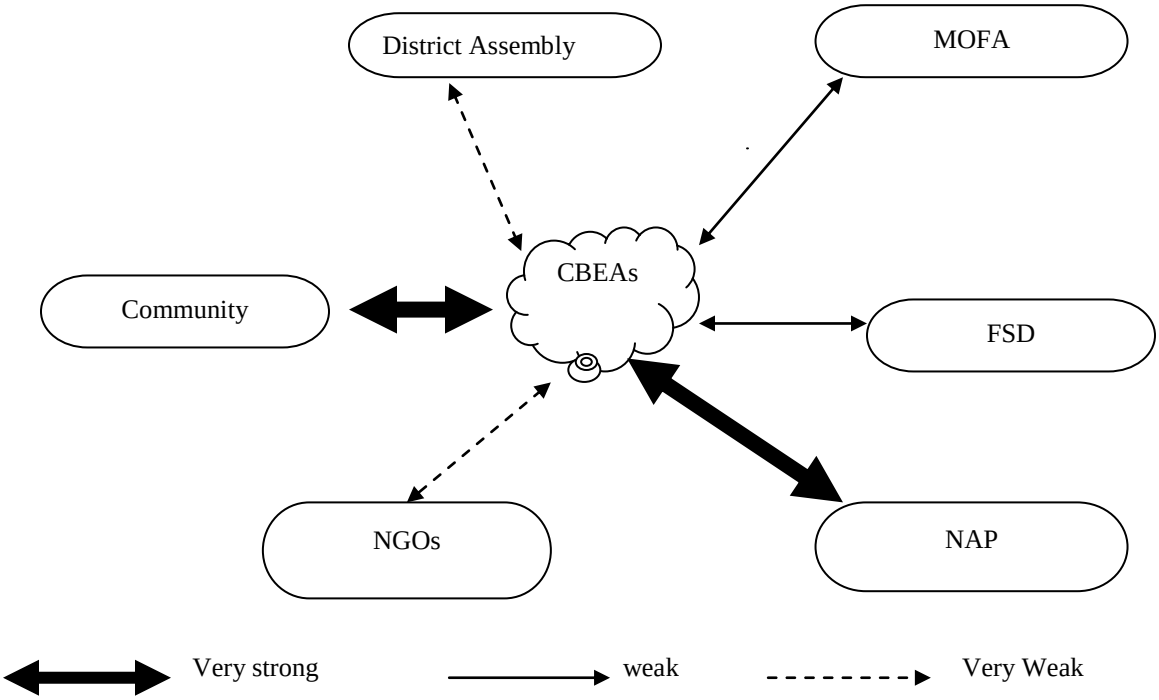

Figure 3: CBEAs and linkages with stakeholders

Source: Field Data, 2011

The groups of CBEAs visited acknowledged that there is a very strong linkage between them, the community, and the Nandom Agricultural Project (NAP). Community Institutions such as the Chiefs, sub-Chiefs, the 'Magazia' and youth leaders are very supportive of the CBEAs and facilitate their work by mobilizing people for the dissemination and sharing of information. They have weak links with District Assembly and NGOs. These weak relationships were manifested during an interview with the Director of MOFA.

Even though MOFA acknowledged the laudable idea of the CBES they think they have not been involved adequately in their activities. Interview with the MOFA director indicates that apart from few meetings attended at the Presbyterian Agricultural station, at no stage in the formation process of the CBEAs were they involved. In support of this, the Director said "*We do not know of the operation of CBEAs providing extension services, if we were aware, my boys would have been providing backstopping."* Engagement with the DA also shows that they are broadly aware of the partnership between Care and NAP in the activities of the CBEAs but are not knowledgeable of the existence and the functioning of the CBEAs. They indicated strong links with NAP as reported by the District Coordinating Director, "*they invite as for workshops, we also consider them as one of our decentralized departments, therefore our links with them are very strong".* Even though communities reported association of Church Development Projects (ACDEP) providing services to them, they seem to have very weak linkages with the CBEAs. Their strategy has been direct engagement with the community.

Institutional Structures for the Functioning of CBEAs

Figure 4 shows the structural relationship for the functioning of the CBEAs in the study district. In the structure, the spiritual world is seen as the driving force that regulates their performances as well as other institutions they work with. The chief, placed at the highest level of the structure, is the traditional political figure who performs administration and judiciary functions in relation to the CBES. According to Millar (2003) the power position of the chief is mitigated by several parallel institutional structures.

The spiritual world has a strong link with the Tindana and institutions such as the Rain makers, Soothsayers, Diviners, Fetish priest and Sorcerers that has a spiritual role to play in the CBES delivery but a weak link with the chief. The study shows that, Tindanas are the descendants of the pioneer settlers and the ultimate authority regarding land and its resources in the district. They are therefore the only ones who are supposed to know and are known to the spirits of the land.

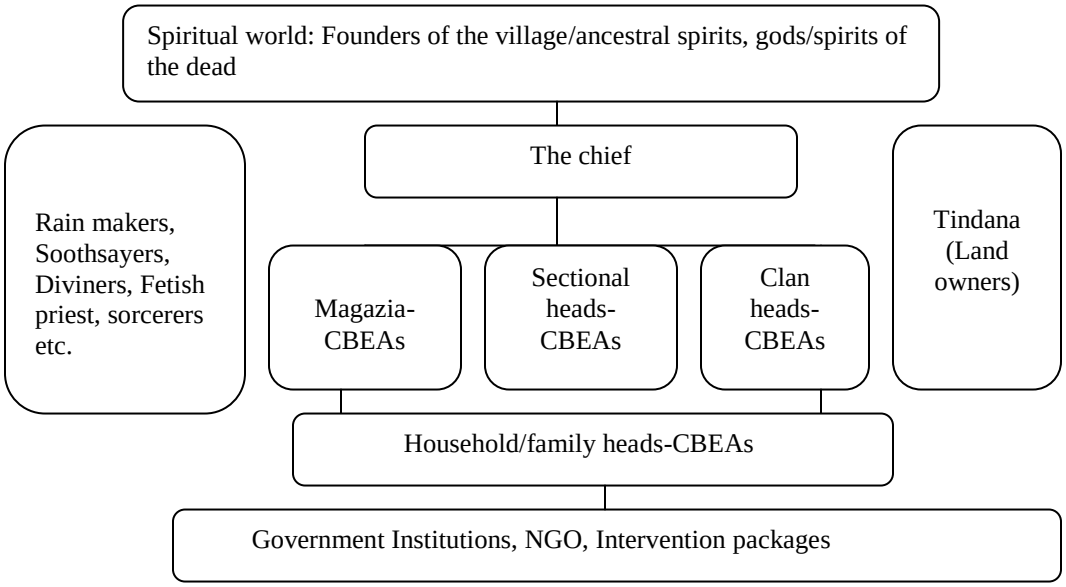

Figure 4: Structure Supporting the Functioning of CBEAs.

Source: Field Survey, 2011

The clan and sectional heads who are also members of the CBEAs described in Focus Group Discussions in the above structure as performing sacrifices, managing sacred grove, allocating household lands to individuals and families and hold land and its resources in trust at the household level.

The family/household heads are empowered by the support of their family members. The families/individuals from the land holding groups hold the customary free hold interests in land (Kasanga, 1994). A stranger, not-subject of a clan, tribe or, 'skin', who wishes to acquire land must first seek the permission of a chief to settle in the area. If permission is granted, the stranger may contact any land holder or, most frequently, a family head for land as a gift or on some contractual basis. These same structures, according to respondents are also used for conflict prevention, resolution and management that borders on the operations of CBEAs in the district. Down the structure are service providers, both from governmental and non-governmental organizations who were disclosed as collaborating with the above institutions in the area of advocacy, policy influencing and formulation in relation to the functioning of the CBEAs

Role of Major Stakeholders in the Promotion of the CBES

The study identified various stakeholders in the study area who are seen performing various roles in the district for effective functioning of the CBES which are summed in Table 4.

Table 4: Stakeholders and roles under the CBES

Stakeholders	Roles
Community Institutions	▪ Identify CBES in the community ▪ Join and cooperate with CBEAs for the effective execution of the CBES ▪ Identification of expects farmers to provide CBES ▪ Provide incentive support for CBEAs.
Presbyterian Agricultural Station	▪ Provide necessary training in record keeping, communication skills, and field demonstration for CBEAs ▪ Link CBEAs with other stakeholders. ▪ Monitor the performance of the CBEAs and provide refresher training.
MoFA	▪ Provide technical support in the area of crop and livestock production.
Forestry Commission	▪ Provide training in tree management and nursery raising ▪ Guide CBEAs to source seedlings from relevant institutions ▪ Supply CBEAs with poly bags ▪ Give CBEAs training in mixing soils and bagging seedlings
District Assembly ADRA	▪ Provide incentive support for CBEAs ▪ Provide credit and input support to CBEAs and the wider community. ▪ Support CBEAs with mango seedlings

Source: Field Data, 2011

Motivation to CBEAs

Table 5 illustrates some of the things respondents mentioned motivates the CBEAs to undertake their duties in order to ensure that the Community Based Extension Systems functions well.

Table 5: Motivators to CBEAs

Motivation	Frequency	Percent
Labour support in farming and building	39	31.2
Sharing of seeds and other farm inputs with members	11	8.8
Members are recognized and respected in the community	36	28.8
Small payment for services offered to farmers e.g. de-worming	11	8.8
Financial support from credit unions – loans	17	13.6
Unity among members	11	8.8
Total	**125**	**100.0**

Source: Field Data, 2011

From Table 5, it can be seen that 31.2 percent of the respondents indicated that labour support in farming and building are the most motivational factors mentioned by the CBEAs. Other forms of motivation mentioned includes; sharing of seeds and other farm inputs with members (8.8%); members recognized and respected in the community (28.8%), small payments for services offered to farmers (8.8%), financial support from credit union-loans(13.6%) and unity among members (8.8%). CBEAs indicated that they were not motivated in the form of cash but their enthusiasm to work for the development of their communities was paramount. To support this, one participant (CBEA) in Tempiela, *Alhassan quotes* this from a beneficiary during one of their community sessions: *"At first we used to say that we are going to buy an animal and rear and leave it to fend on its own in our houses. This did not connote any care for the animals that we were raising. Livestock management was generally poor. But now, there is a business mind to it and animals stocks are better taken care of".* This statement according to the CBEAs inspires them to work hard. Other issues of motivation that came up are as follows; Security in belonging to the group, in bad times other group members come to help, individual members benefits from training (personal development), reduced outbreak of livestock mortality, cooperation and

encouragement from the chief, reduced livestock theft cases, and the ability to share and solve own problems.

Perception about Community-Based Extension Agents (CBEAs)

From the research it was revealed that 92.2percent of respondents indicated that their expectations upon hearing about the CBEAs for the first time in the community have been met. It was revealed however, that those who indicated that their expectation has not been met (7.8%) did not actually understand the concept of the CBEAs properly. Some of the things respondents mentioned as their expectations upon hearing about the CBEAs for the first time in the community include; improvement in livestock health, increased in crop yield, financial and inputs support to farmers such as fertilizer, improved seeds, build capacity of farmers to improve on their farming and animal production practices. Some of the reasons respondents stated to buttress their claim whether their expectations have been met or not are shown in Table 6.

Table 6: Reasons why Respondent's Expectations have been met or not

Reasons	Frequency	Percent
Animal health has improved in the community	25	21.2
Crop yield has increased	18	15.3
Support has been given to farmer groups such as small ruminants, bullocks and donkey cats	24	20.3
Farmers have been trained on livestock management skills	26	22.1
Farmer groups have been linked to stakeholders/agencies for financial support	11	9.3
Food aid was provided as expected to farmers	11	9.3
CBEAs are not paid as I expected	3	2.5
Total	**118**	**100.0**

Source: Field Data, 2011

From Table 6, only 2.5 percent of respondents stated that the CBEAs are not paid as they expected. This reflects the opinion of the 7.8 percent who said their expectation was not met. As noted, such people did not understand the concept of the CBES and therefore expected that the CBEAs would to be employed by the implementing organization and paid as full time workers.

The findings have also confirmed that the community-based extension system (CBES) piloted by CARE as an alternative to formal extension service delivery has been found to be appropriate in achieving its objective of increasing access to extension services for poor rural farmers. Clearly, farmers were able to share their opinions on some of the benefits of the CBES as against the formal system of extension as presented in Table 7.

Table 7: Benefits of CBEAs against the formal system of extension

Benefits	Frequency	Percent
CBEAs are always in the community and easy to reach for their services thereby reaching out to many farmers	36	38.3
The use of local resources	8	8.5
The use of indigenous knowledge and methods	21	22.3
Free or low cost for paying for services	5	5.3
groups are linked to stakeholders and agencies for help in various forms such as loans, seeds, fertilizer	12	12.8
Strong and caring relationship with stakeholders and partners e.g. care, PAS-L	6	6.4
many farmers now know how to identify and treat common diseases of animals due to continuous training	6	6.4
Total	**94**	**100.0**

Source: Field Data, 2011

From the Table 7, one can say 38.3 percent of the respondents acknowledged that the CBEAs reach out to more farmers than the formal system of extension service delivery. This confirms the argument put forward in the problem statement of this dissertation that, one of the reasons CARE International piloted the CBES was due to the fact that the formal system of extension service delivery (i.e. MOFA) has not been able to reach out to many farmers resulting in high extension agent to farmer - ratio estimated at 1:1500.

Another significant point worth noting is the fact that, 22.3 percent of respondents noted that the CBES uses indigenous knowledge and methods in the delivery of extension services. This is an important factor in determining the acceptability of technologies and improved farming methods in communities. Indeed, in recent times the use of local resource and indigenous knowledge is topical in major development dialogues.

Summary, Conclusions and Recommendations

The main findings of the study are;

- The modal age group of the farmers is the elderly within age group 30-39. Reasons were attributed to gerontocracy in the traditional leadership system which allows for the elderly in succession as a result of their experiential knowledge in various fields of authority.
- The predominantly cultural practice is subsistence farming. Majority of respondents (59.7%) are into farming as the main occupation. Shea-butter processing (4.8%) constitutes the third most important occupation in the district. Charcoal production constitutes a small proportion (2.4%) of the occupation of the farmers. The remaining 33.1percent of the respondent were CBEAs.
- The most dominant extension services delivery carried out by the CBEAs in the entire study area were in crop production, livestock production and bushfire management.
- In crop production, specific activities engaged by farmers include; manure harvesting, composting, *striga* management, refuse dump management for manure, bonding and agro-forestry.
- In livestock production activities identified include; De-worming, animal traction, housing, feed storage and preparation of local salt leak and medication of livestock and environmental management practices been the main concerns for bushfire management.
- Membership of the CBEAs is mainly residents of the community who offer voluntary services. The criteria for selecting members among others include; being a members of the community, preparedness to offer voluntary services, proven expertise in crop and livestock production and ability to work with other members outside the group.
- The CBEAs reach out to community members on new farming and animal husbandry practices through information dissemination, sensitization at group meetings in their communities.
- The CBEAs were found to be the main link between the community and external agents. It was however, reported that they have strong links with the community and NGOs (PAS-L) but weak links with DA, MOFA and FSD.
- The study identified institutions such as traditional authorities, the district assembly, Ministry of Food and Agriculture, the Forestry Services Commission and the Presbytarian Agricultural Station among others as performing various roles in the district to enhance effective implementation of the CBES.
- Some motivations for work in the district by the CBEAs were enumerated as follows; the desire to make a change in the lives of their community members was a key motivation for their work, the praises they also receive from the traditional authorities and the community for the good things they are doing gives boost their moral to work harder, community members are very co-operative and willing to give their support to enhance their performance the fact that they have been recognized by the District Assembly, PAS-S and MoFA as partners in development is a motivation for work, immediate response of community members when call upon to assist CBEAs on their farms;
- The study found that 92.2percent of respondents indicated that their expectations about the CBEAs in the district have been met to a large extent. Reason for saying their expectations have been met among includes; improvement in livestock health, increased crop and livestock yields, financial and inputs support to farmers such as fertilizer, improved seeds, link between crop cultivation and animal production clearer now build capacity of farmers to improve on their farming and animal production practices.

The following conclusions were drawn from the study:

- There are vibrant Community Based Extension Agents established providing extension services in crop, livestock and environmental issues in the study District. Traditional institutions and beneficiaries are supportive and effectively involved in the implementation of the CBES. Farmers groups are linked to external agents and other stakeholders for access to credit facilities. These credits are used in the purchase of farm inputs and improved variety of planting seeds.
- The most dominant extension services delivery carried out by the CBEAs in the study area were in crop production, livestock production and bushfire management; and
- The CBEAs were found to be the main link between the community and external agents

Based on the findings, the following recommendations are made;

- To ensure sustainability and also provide the necessary motivation for CBEAs to be interested in

delivering efficient services, there is the need to link CBEAs to relevant institutions/organizations for support or facilitate pilot communities to put in place mechanisms of generating the necessary funds to support their activities;

- The need to strengthen the capacity of the CBEAs to provide holistic extension services through dialogue with MOFA;
- Roles of CBEAs are confused with other roles. Other NGOs using the same CBEA group in their service delivery and providing incentives subsume their roles as CBE service providers. The need to separate CBEAs from existing groups in communities;
- The need to forge functional collaboration with coordinating units of the District Assembly as well as the decentralized departments (MOFA and FC) such that they can have the motivation to offer the necessary support services to CBEAs. They seem not to be properly involved in implementation of the CBES. Partnership with other organizations (MOFA and FC) will work better when the relationship transcends beyond informal relationship; and
- that stakeholders should intensify community sensitization and awareness creation. As noted above some communities still cling to the old unproductive farming practices. Hence continuous training and education of communities would help create their awareness to abandon unproductive ways of farming and adopt new and improved farming technologies.

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