The Changing Roles of Agricultural Extension to Achieve Food Security and Improve Rural Livelihoods in Imo State, Nigeria

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Abstract: This research work, the changing roles of agricultural extension to achieve food security and improve rural livelihoods presents an overview of current opportunities and challenges facing efforts to increase the impact of rural and agricultural extension on the lives of rural dwellers who depend on agriculture for their livelihoods. The traditional role of technology transfer to farmers is gone since it has not met the changing nature of agriculture and even the farmers. The approaches and roles utilized have changed dramatically to reach and impact on people. This study discusses the traditional roles of extension which could not meet the needs, demands and aspirations of local farmers who produce the food we eat. We also studied the general problems preventing extension from achieving its set goals. The paper critically studied the changing and or current roles of extension-designed to help farmers and also the programmes and strategies for achieving sustainable food security.
[Chikaire, J., Nnadi, F.N., Nwakwasi, R.N., **Ejiogu-Okereke,N. The Changing Roles of Agricultural Extension to Achieve Food Security and Improve Rural Livelihoods in Imo State, Nigeria.** Researcher, 2011; 3 (10): 41-48] (ISSN:1553-9865), http://www.sciencepub.net/researcher.

Keywords: Extension, food security, livelihood, sustainability, Nigeria.

1. Introduction

Extension is a non formal educational function that applies to any institution that disseminates information and advice with the intention of promoting knowledge, attitudes, skills and aspirations, although the term "extension tends to be associated with agriculture and rural development (Alex, Zijp and Byerlee, 2001). No matter what the name of the system, approach or programme (e.g., cooperative extension, advisory services, Special Programme for Food Security, technical assistance or technology transfer), the function remains that of extension: the transfer and exchange of practical information.

At the same time, extension is a political and organizational instrument utilized to facilitate development. Its purposes may differ, from technology transfer by companies organized around specific, usually mono-cropping farm systems to problem-solving educational approaches to participatory programmes aimed at alleviating poverty and advancing community involvement in the process of development. Internationally, extension's institutional (and at present generally pluralistic) systems tend to differ from country to country.

Most ministries of agriculture have an extension unit that deals mainly with crops and mixed agricultural systems, as well as separate technical divisions (livestock, forestry, fisheries, etc) some of which also provide extension services. During the 1970s and 80s, efforts were made to unify ministerial agricultural extension operations but with limited success. This same diversity and separation of agricultural extension activities exists in international organizations.

Extension is multidisciplinary. It combines educational methodologies, communication and group techniques in promoting agricultural and rural development. It includes technology transfer, facilitation, and advisory services as well as information services and adult education. It is dependent for success on other agricultural development processes such as marketing and credit services, not to mention economic policy and physical infrastructure. In short, it is a function that is dependent for success on other factors, including other services and institutions. In many cases its success depends on the ability to shift programme direction and development to stakeholders and programme users.

When systematically and effectively provided, extension is known to enhance social and economic development. Technological change and the knowledge system that underpins it, is a critical factor in development (World Bank 2003a). Despite the difficulty of isolating its impact on agricultural productivity and growth from that of other factors, many studies have demonstrated the high economic returns of investments in agricultural dissemination. Investment in agricultural research and extension is thus a crucial

input of agricultural growth (Anderson and Feder 2003). However, "agricultural extension services in developing countries are currently grossly underfunded to undertake the activities required for achieving food security while protecting the productive resource base in order to keep up with population and economic growth" (Gallagher 2002).

In a rapidly changing world, food and agricultural innovation systems in developing countries are facing new and increasingly complex challenges. Fighting poverty, ensuring food and nutrition security while protecting the environment discovery and innovation occurs changes constantly and this influences the organization and social process of innovation. The Research and Development (R&D) community responds to the changing needs and emerging challenges by developing innovative tools and approaches. Since the introduction of technology transfer model, the R&D arena in the developing world has seen a number of paradigm shifts. The economic of most developing counties is dependent on rural based small-scale agriculture whose productivity is not increasing (in some cases, even declining) contributing towards household food insecurity, malnutrition and poverty. The ever-increasing decline in agricultural production has been attributed to a number of factors, one of which has been inappropriate and/or ineffective dissemination of technologies.

Agriculture has already reached the limits of land and water, and so future increase in food production must exploit biological yields on existing land. In Asia, the growth rate fostered by the Green Revolution has slowed. In Africa, per capita food production has declined in most years since 1970. In many parts of Latin America and the Caribbean, population pressure and extensive agriculture seriously threatens the environment. In the industrialized world, opposition to high input of agriculture is mounting in response to such issues as animal rights, fear of genetically engineered products, and soil and water pollution. Extension funding and delivery face difficulties inherent in the extension mandate due to the magnitude of the task, dependence on wider policy and other agency functions, problems establishing the cause and effect necessary to obtain political and financial support, liability for public service functions beyond agricultural knowledge and information transfer, fiscal sustainability, and interaction with knowledge generation.

For a long time, development of agriculture in developing countries mainly consisted of farmers and communities being told still remains a major challenge facing global development practitioners today.. New mechanisms to foster development and diffusion of innovation are needed to strengthen the ways in which information, knowledge and technology are developed and disseminated to ensure that the global changes benefit smallholder farmers, food insecure households and other vulnerable group (Anandajayasekeram *et al.,* 2008). The scientific methods of experimentation and discovery have not changed since the 19th century, nor will they change. However, the environment in which what to do, often by institutions and agents who have not taken sufficient time to understand their real needs and practices. Over the last two decades, government and non-governmental organizations have recognized the need to move away from instruction and blue print solutions, towards more participatory approaches which involve communities in setting and fulfilling their own development goals and solutions. hence, the system-oriented and participatory approaches are being increasingly integrated into the emerging research and development (R&D) paradigm (Anandajayasekeram *et al.,* 2008).

The environments of agricultural extension has been changing with more focus on food and nutrition security, poverty alleviation, entry of new actors such as the private sector and NGOs in the delivery of extension services, changed R&D paradigms and bottom-up approaches for end user involvement decision-making. However, while the public spending on extension has been shrinking, the role of government in extension services delivery is also being examined sometimes separating the financing of extension programs from the delivery of extension services. Alongside a new approach has been emerging: considering extension as facilitation and producers (farmers) as clients, sponsors and stakeholders rather than beneficiaries. The key trends reflect global socioeconomic change and driven by key concepts such as participations client orientation, decentralization as welt as developments in modern information and communication technology.

The design of agricultural extension programs in developing countries has been the subject of heated debate. Guided by these debates, extension services have undergone several transformations in the past few decades (Byerlee 1994). Agricultural Research and Technology Development is also undergoing a paradigm shift, in which the environment under which agricultural research and extension systems are operating is affecting their organizational structure, management

style and field operations. Basic trends of these environmental changes are based on multiple partnerships, multilevel participation and the enlargement of the scene national to supra-national levels. Under these circumstances, both agricultural research and agricultural extension policies are going obsolete with regard to new options (SDR 2005). The new paradigm is based on the premise that the non-adoption of technologies is not due to ignorance of the farmers but due to deficiencies iii the technology and the process that, generated it, especially inadequate participation in all stages of the process by those intended to benefit. In this new paradigm, farmers analyze choose, experiment and evaluate, while outsiders convene, catalyze, advise, search, supply and provide support and consultancy.

Today participation has become a widely accepted strategy for conducting R&D projects, yet it is understood in many different ways. Some people define participation as any 'voluntary or other forms of contributions by rural people to pre-determined programs or project'. Activities such as participation in a survey, serving as key informant, or participation in an experiment which is researcher-managed could be described as participation. On the other hand, participation can be considered as a product (end) as well as a process (means). As a product, the act of participation is an objective in itself, and is one of the indicators of success as it refers to the empowerment of individuals and communities in terms of acquiring skills, knowledge and experience, leading to greater self-reliance. However, when viewed is a process, participation refers to the action used to achieve a stated objective, i.e. cooperation and collaboration which helps to ensure sustainability of program /project/development (World Bank, 2006). In view of the above, this paper thus sought to identify the generic problems of extension; the traditional and changing role of extension and extension programmes/strategies for attain food security.

2. Methodology

Imo State lies between latitude $5^0 12^0$ and $5^0 56^0$ North of the equator and between longitudes $6^0 38^0$ and $7^0 25^0$ east of the Greenwich Meridian. The state occupies a land mass of about 5,530 square kilometers with a total population of about 4,500,987 million persons in 2011 projected from the 2006 census figure (NPC, 2006; FGN, 2009). The state shares boundaries in the north with Anambra state, south and west with rivers state, while to the east, it shares boundary with Abia State (IMSG, 2001).

The state has two dominant season-rainy and dry season. Rain falls between April to October, while dry season starts from November to early March, though early rain starts March.

The people are known for their traditional hospitality, reverse as the cradle of peaceful co-existence and famed for their cultural affinity. Imo Staten is endowed with abundant human resources. With here central location, and abundant natural resources, the state is an attractive investment centre for various types of industries including agro-allied petrochemical mineral-based tourism (IMSG, 2001).

The researchers purposively selected 60 (sixty) extension agents/ workers from the state Ministry of Agriculture and 60 (sixty) contact farmers from the list provided by the Agricultural Development Project Office (ADP). This gives 3 total of one hundred and twenty (120) respondents. Information was sought using well structure questionnaire and oral discussion and interview with the contact farmers and extension workers especially where such issue if not contained in the printed questionnaire. Using descriptive tools of analysis the researcher discussed and interpreted the findings.

3. Problems of agricultural Extension

Table 1, at a glance reveals the numerous problems of agricultural extension practice in Imo State, Nigeria. Inadequacy and instability of funding, poor logistics support, lack of clientele participation in programme planning, development and executive, and untimely supply of farm inputs are the most positive of the problems with a high mean of more than 4.05. Unstable, institutional and policy programmes also pose a problem due to government instability and lack of continuity with a high mean of 4.25. Other problems are low extension staff of farmer ratio, irregular evaluation and monitoring, inappropriate and insufficient technology for farmers use, ineffective agricultural research-extension linkage, use of poorly trained staff and dilution of extension agents roles are all problems of agricultural extension.

In support of the above, (Biggs and Smith, 1998; Hall and Nahdy, 1999; Ashby *et al.,* 2000; and Chema *et al.,* 2003; Agba, 2005) said that public funded research organization are constrained by recruitment freezes or lack of finance to hire new staff, budgetary constraints that focus on short-term activities, lack of strong national or rural development policies in favour of resource-poor stallholders and sustainability. This situation has resulted in organizational inefficiencies, lack of

adequate stakeholder participation, inadequate staff motivation and limited research and service output (Feder *et al.,* 2001). The most important issues is here funding: as less money is available through budget allocations, more and more research institutes have be look for alternative sources of funds.

4. Traditional roles of Agricultural Extension

Table 2 reveals the traditional roles of agricultural extension since its formation and discovery. It shows that single commodity focused extension, top-down approach, farmers as passive learners, extension agent doing it alone, technology transfer of inputs, training farmers and prescriptive form of extension are the traditional roles of extension with responses above 70%. Other roles are improving farm productivity only, provision of market information, and fixed/uniform approaches to extension delivery.

Looking at these roles, one could find out that they no longer fit into our changing technological and fast moving era. According to Anadajayasekaram *et al.,* (2008), extension services were traditionally assumed to be the conducts for transferring technologies developed by the research system to the farmers. The system however, has been under severe attack for not being able to contribute to desired developmental impacted in developing countries. With changing circumstances of agriculture and increasing trends of globalizing, commercialization and drive towards sustainability, extension is being looked upon to play an expanded role with a diverse set of objectives to actually impact on people lives. Over the past two decades, the agricultural research and development system has undergone drastic transformation and societies have moved towards an accelerated agricultural modernization and macro-economic reduction of public services. this is due to the entrants of numerous extension service producers and the changing nature of time. At present agricultural extension is undergoing critical and objective reform.

The above findings are in line with Anadajayasekaram *et al.,* (2008), that the policy and institutional context in which agricultural research and innovation occurs has changed dramatically. Rapid changes continue to take place in the structure and authority of governments the global economy, the structure of the farming sector and in the global and local food industries and retract business. The institutional landscape is also changing dramatically. The civil society, farmers organization and NGOs are increasingly playing an important role in agricultural research and development. The cross cultural linkages between agriculture and other sectors (such as water, health, energy and education) are becoming very important.

5. Widened Roles of Extension for Food Security

Table 3 indicates that the role of extension has thus widened to include issues in rural areas that go beyond agriculture as indicated above. Some of these tasks are unlikely to be undertaken by the types of organization normally associated with extension. A transnational mobile phone service provider may offer access to climate information and rural legal service, non-governmental organization (NGOs) may provide farmers with essential advice on land tenure are regulatory issues. Some tasks, such as hoe sciences and natural resource management, are often undertaken through partnerships between governmental agricultural extension agencies and other actors such as ministries of health or the environment and others.

Table 3 shows that extension has assum 4 new roles in the transformation and development .. agriculture. Empowerment with 90% response, community organizing (100%), human resource development (91.6%), problem – solving and education (87.5%), participatory focused (100%), reducing vulnerability to give the poor a voice to be heard (95.8%), innovation services (70.8%) transfer of technology in multiple directions for sustainable agricultural production, transformation and marketing 9100%) and poverty reduction and environmental conservation with 81.6% are new roles of extension in order to induce voluntary change among rural people. This is in line with Anadajayasekaram *et al.,* (2008) who posited that extension should be seen as a function to be performed by a variety of players, at different levels, with mandate to include farmer mobilization, organization and education. Creating a more realistic, cyclical and dynamic model information exchange and knowledge dissemination whereby farmers, researchers, educators and extensionists are all engaged in the generation of new knowledge, and in its transfer, and in its use. Allowing projects to develop a learning mode, engaging all the stakeholders and taking some risks by including experimental information technologies in projects to link research institutes, extension managers, farmers organizations and others to each other and to the rest of the world.

Again, Chamala and Mortiss (1990) said extension workers, role is to help farmers and rural communities organize themselves and take charge

empowerment) of their growth and development, this helps to develop group management skills. Extension now supports rural livelihoods; improve farm and non-farm income; develop market instead of giving information only use diverse and evolving approaches, facilitate evolution of learning by doing and experimentation, (Sulaiman and Hall, 2004) and encourage capacity to improve planning and managerial capability of rural farmers.

Agricultural extension service therefore is a key actor in the agricultural innovation system. With its strong and wide grassroots presence, it remains the major source of knowledge for farmers in developing countries. An effective agriculture extension system will need to provide a broad range of services (advisory, technology transfer, training and information) on w die variety of actions (agriculture, marketing and social organization) needed by rural people so that they can better manage their agricultural systems and livelihoods. The agricultural sector is expected to play a significant role in poverty alleviation, food and nutrition security, while at the same time protecting the environment.

6. Extension Programmes/Strategies for Food Security

Table 4 provides respondents view of extension programmes and strategies for reaching poor farmers to improve their livelihood and achieve food security. The table revealed respondents positive view of extension programmes/strategies aimed at improving their socio-economic condition. The special programme for food security (SPFS) has the highest mean of 4.80, followed by Information and Communication Technology (ICT) and participatory approach with 4.65 and 4.66 respectively. Other strategies are strengthening producer capacity with carious skills and knowledge farming systems approach, sustainable livelihood approach, human capital development, decentralization, demand-driven, market-led.

The meaning of the above, is that although agriculture remains the backbone of the economy in developing countries, extension is expected to diversify its services beyond agricultural production. There is a wider scope for extension than that relating directly to agricultural production. The old term agricultural extension is gradually being replaced by rural and livelihood extension. The role of extension in poverty reduction is not to be seen only in crop or livestock production, but in livelihood diversification. It embraces production, the wider production context, and wider aspects of livelihood in a range of possible roles.

This is in line with Qamar (2003) who posited that differentiated extension strategies are required if movements are to reduce poverty among the rural poor because poverty is a multidimensional phenomenon. To date, various approaches recognize diverse livelihoods eg., the "sustainable livelihoods approach" (LSA) and the "farming systems approach" (FSA. These are in addition to the Special Programme for Food Security, which fosters a production/irrigation approach while incorporating elements of both LSA and FSA. These different programmes tend to overlap in their goals. However, LSA places emphasis on vulnerability and tends to be a social approach. FSA focuses on the farm household and is a more technical approach. Special Programme for Food Security concentrates on food security and income generation related to agriculture, and is of particular interest to the present document because it is essentially an agricultural extension programme that focuses on the rural poor (World Bank, 2003a).

SPFS projects differ according to the particular situation of the geographic region, its natural resources and the characteristics of the people involved in the project. It is also affected by other elements such as project leadership a 5 government policies.

The programme lays out five major corporate strategies:

(1) Contributing to the eradication of food insecurity and rural poverty;
(2) Promoting developing and reinforcing policy and regulatory frameworks for food, agriculture, in the supply and availability of food fisheries and forestry;
(3) Creating sustainable increases d forestry sectors;
(4) Supporting the stock, fisheries an and other products from the crop, live conservation, improvement and sustainable use of natural resources for food and agriculture; and
(5) Improving decision making through the provision information and assessments and fostering knowledge management for food and agriculture.

The ultimate solution to combating hunger and food insecurity at the national, as well as the global level is to provide undernourished people with opportunities to earn adequate income and to assure an abundant supply of food from either domestic production or imports, or both (FAO 2002). Income generation is essential for improved and sustainable livelihoods. Extension, as already noted,

can also serve as an indicator and stimulant to incipient commercial development. Policy needs to take an explicit and realistic view of why particular groups and areas remain marginalized Farrington *et al.,* 2002). Whatever the explicit reasons or combination of reasons, these multidimensional problems result in the vulnerability of the person; they affect the family, the community and ultimately the nation. Their reality also affects the role of agricultural and non-agricultural extension (World Bank, 2003b).

Extension is extremely important in helping to confront problems of availability, access, and utilization. It helps to enhance the productivity and consecutively the production of food. It can assist in providing opportunities for income generation. And, it generally provides improvement of nutritional advice through home economics programmes and enhances the quality of rural life by way of community development.

7. Conclusion

Agricultural sector in the development world is changing rapidly and is driven by a number of external and global factors. The challenges facing the sector are ever increasing and becoming more complex each passing day. Low extension staff to farmer, problem of finding, commitment, inadequate planning and other logistics hinder the sector greatly. We now witness a change from the traditional top-down approach to participatory bottom-up approach. Individuals, governments, non-governmental organizations and other relevant bodies are now in extension service provision. Adapting and adopting extension packages through the various programmes of extension will enhance food security.

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Table 1: Perceived Problems of Agricultural Extension

Problem	X
Inadequacy and instability of funding	4.29
Poor logistics support	4.10
Use of poorly trained personal	2.56
Low extension staff of farmer ration	3.70
Lack of clientele participation	4.78
Irregular evaluation of programme	3.21
Inappropriate/insufficient technologies	3.37
Ineffective agric research-extension linkage	3.54
Dilution of extension agents roles	2.83
Untimely supply of farm inputs	4.05
Unstable, policy institutional, programmes	4.25

Table 2: Traditional Roles of Extension N=120

Roles	Frequency	Percentage
Single commodity-focused extension	100	83.3
Top-down approach of extension	110	91.6
Farmers being passive/receptors only	107	89.1
Improving farm productivity only	80	66.6
Extension agent doing it alone	103	85.8
Technology transfer of inputs only	85	70.8
Provision of market information	60	50.0
Fixed/uniform approaches	75	62.5
Training farmers only	89	74.1
Approach prescriptive/blue print	90	75.0

Table 3: Changing roles for achieving food security N=120

Current roles	Frequency	Percentage
Empowerment	108	90.0
Community organizing	120	100.0
Human resource development	110	91.6
Problem solving and education	105	87.5
Participatory focused extension approach	120	100
Innovation services	85	70.8
Reducing vulnerability	115	95.8
Technology transfer in multiple direction	120	100
Poverty reduction/environmental conservation	98	81.6
Legal and fiscal advice	60	50.0

Mediating in conflict over natural resources	73	60.8
Nutrition and home economics education	91	75.8
Facilitating linkages among diverse actors	82	68.3
Testing and practical adaptation of new inputs	100	83.3
Information of climate/weather change	103	85.8
Implementing new policies/programme of governments	87	72.5

Table 4: Programmes/Strategies for Food Security

Programmes/Strategies	Mean
Sustainable livelihood approach	3.41
Farming systems approach	3.58
Special programme for food security	4.80
Strengthening producer capacity	4.0
Development of human and social capital	3.28
Establishing social safety nets for the poor	3.10
Information and communication technology	4.65
Group participatory programme	4.66
Decentralization of extension\/pluralism	3.29
Making extension demand-driven	3.62
Making extension market-led	3.48

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