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Realizing the Dream: Agricultural Extension for Rural Livelihoods Development in Ethiopia

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ACRONYMS AND ABBREVIATIONS

ADLI	Agricultural Development Led Industrialization
AEA	Association of Extension Administrators
AKIS	Agricultural Knowledge and Information System
AKS	Agricultural Knowledge System
AIS	Agricultural Innovation System
ARDU	Arsi Rural Development Unit
CADU	Chilalo Agricultural Development Unit
CD	Community Development
CPP	Comprehensive Packages Program
DAs	Development Agents
DFID	Department for International Development
DPPC	Disaster Prevention and Preparedness Commission
EEA/EEPRI	Ethiopian Economic Association/ Ethiopian Economic Policy Research Institute
EMTPs	Extension Management Training Plots
EPID	Extension Project Implementation Department
EHRS	Ethiopia Highlands Reclamation Studies
FAO	Food and Agriculture Organization
FDRE	Federal Remocratic Republic Ethiopia
FSR	Farming Systems Research
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
IFPRI	International Food Policy Research Institute
IPR	Intellectual Property Right
MDGs	Millennium Development Goals
MoA	Ministry of Agriculture
MPP	Minimum Packages Program
NEIP	National Extension Implementation Programme
NGOs	Non Governmental Orgaizations
NSI	National System of Innovation
PADEP	Peasant Agricultural Development Project
PADETES	Participatory Demonstration and Training Extension System
SG-2000	Sasakawa Global 2000
SLA	Sustainable Livelihoods Approach
SMSs	Subject Mater Specalist
SSA	Sub-Saharan Africa
TOT	Transfer of Technology
T & V	Training and Visit
UN	United Nations
WADU	Wolayita Agricultural Development Unit
WTO	World Trade Organization

ABSTRACT

Despite several decades' efforts of agricultural extension services in Ethiopia, rural livelihoods are hardly changed. Moreover, today it is confronted with new challenges as a result of rapid national and global changes. Hence, the role of the conventional agricultural extension is questionable in its ability to support the current rural livelihoods development. In this regard, this paper discuss past extension efforts and the need to revitalize the extension service in Ethiopia in accordance with new developments that influence rural environment.

Keywords: Agricultural extension, Agricultural knowledge and information system, sustainable livelihood approach, Agricultural innovation system

1. INTRODUCTION

The significance of agricultural extension in the broad field of development relates of course to the recognition of agriculture as a critical element in reducing poverty and food security problems. This is particularly true in countries where majority of their people depend on agriculture for their livelihoods. Historical evidence also revealed that "few countries have achieved sustained economic growth without first, or simultaneously developing their agricultural sector" (Birkhoeuser et al., 1991: 607). Countries which have a very advanced agricultural sector today, such as the United States of America, Canada, The Netherlands, Australia and Denmark, have strong agricultural extension services, being provided by public and/or private sector (Qamar, 2005; Rivera, 1991). Cognizant of this fact, the importance of agricultural extension is well recognized, particularly for small-scale, resource-poor farmers (FAO, 1985; Van den Ban and Hawkins, 1988).

Many countries of the world, both developed and developing, have institutionalized and adopted agricultural extension services, particularly after the 1950s to promote agricultural growth and development through use of modern agricultural inputs (Rivera, 1991). In the 1960s and 1970s, agricultural research and extension was seen as a major stimulant to 'agricultural development'; particularly through generation and diffusion of high yielding crop technologies such as that of wheat and rice, which have contributed a lot in bringing success of 'Green Revolution'[1] that increased crop production in some developing countries (Birner et al., 2006) although there were also some undesirable consequences such as widening inequality between beneficiary and non beneficiary of introduced technology (IFPRI, 2002).

However, since the 1980s agricultural extension reached a 'turning point' like any other public sector of the day; it was criticized as being ineffective and inefficient as well as for not being relevant, which in return led to a decline of financial and technical

[1] Green revolution is the term used to describe application of high yielding seeds along with other agricultural inputs such as inorganic fertilizers, agrochemicals and irrigation that led to dramatic yield increase

support (Birner et al., 2006; Rivera, 1991). Besides, as global prices for basic agricultural products were dropping, both academic and donor communities lost interest in supporting agriculture (Timmer, 2005). Hence, "for some time agricultural extension was even seen as something out-dated, to be replaced by...well, that was not quite so clear" (Nagel, 2003:1).

Nevertheless, agriculture and agricultural extension have come back on global development agenda as it is has been learned that most Sub-Saharan Africa (SSA) countries' chances of success in achieving food security and reducing poverty as well as the Millennium Development Goals (MDGs)[2], are largely dependent on agriculture. Hence, 'after years of downsizing and neglect', to date there has been a renewed recognition on the role of agriculture and agricultural extension (Abate, 2007; Alex et al., 2002, 2004; Heemskerk and Wennink, 2004; Nagel, 2003; Timmer, 2005;).

While there is similarity between the previous period and contemporary agricultural extension services, the latter confronts new opportunities and challenges in contrast to the past such as changing view of public sector role, increased commoditization of agricultural products, diversification of rural livelihoods, development of new information and communication technologies (Alex et al., 2002; Rivera, 1991).

In light of these realities and rapidly changing global setting for food and agriculture, there is a pressing need to re-examine the role of agricultural extension in reducing poverty and social inequalities, ensuring food security and promote sustainable use of natural resources (Neuchatel Group, 1999). This is particularly true in Ethiopia, where agricultural extension services extends throughout the country and, public investment in extension provision and expansion is significant relative to many other countries in SSA. Nevertheless, Ethiopian agricultural extension service does not adequately meet the needs of farming communities for many reasons and there has been hardly a significant change in terms of lives of the majority of the rural people as well as agricultural and rural development of the country.

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[2] Millennium Development Goals (MDGs), comprised of eight goals to be achieved by the year 2015 in responding to the world's main development challenges, were adopted by UN member countries during the UN Millennium Summit in September 2000.

Today, there are new challenges emerging that have complicated the already complex smallholder farming practices such as liberalization, global market integration, climate changes and coping with chronic illness such as malaria and HIV/AIDS that affect agriculture directly and/or indirectly. These are coupled with rapid population growth that raises demand for agricultural products and creates pressure on the agricultural sector. Apparently, there is a need to revitalize agricultural extension beyond the conventional technology transfer function to realize the dream of poverty reduction and rural livelihoods development. Moreover, as the government of Ethiopia is currently in a process of undertaking a reform for agricultural extension and other rural development activities, this study is thus, be a timely and a relevant endeavour to provide additional insight and information in the field of the study by adding new perspective to agricultural extension interventions.

This raises several questions. First, how does an agricultural extension service operate in Ethiopia? Second, despite decades of agricultural extension efforts, why do small farmers' livelihoods in Ethiopia hardly changes? Third, what is the optimal role of agricultural extension services in supporting rural livelihoods? This study therefore attempts to analyze the main roles of agricultural extension services in supporting rural livelihood development in Ethiopia, with an emphasis in a context of contemporary rapid global changes.

To this end, the study adopts an analytical framework drawn from Sustainable Livelihoods Approach (SLA) and Agricultural Innovation System (AIS), which help to identify the role of agricultural extension to achieve a broad objective of poverty reduction and rural livelihoods development.

The research is principally based on use of secondary data from various sources. The bulk of the information is extracted from recent study report carried out by the Ethiopian Economic Association/ Ethiopian Economic Policy Research Institute (EEA/EEPRI)[3]. In addition, other relevant works are also reviewed to address the first two questions. Properly addressing the third question requires detailed assessment and specific primary information since rural livelihoods are heterogeneous and there can not be no 'one size fits all' solution; however, this is beyond the scope of this paper.

[3] EEA/EEPRI (2006)

But some indicative evidence and general discussions on how alternative extension approaches can be envisaged with reference to the current of Ethiopian agricultural extension and research activities. Hence, it is hoped that this study could be taken as indicative for future works.

The rest of the paper is organized as follows: Chapter two presents concepts and conceptual framework to analyse role of agricultural extension to the broader goal of reducing poverty and sustainable livelihoods. Chapter three reviews the past and present agricultural extension service by highlighting major historical episode in the country. Chapter four discusses roles of agricultural extension, with reference to contemporary rural livelihood and global changes. Finally, chapter five provides summary and conclusion of the study.

2. AGRICULTURAL EXTENSION AND RURAL LIVELIHOODS

Historically, agricultural extension is assumed to have a key role in bringing agricultural growth and development through promoting technology that can increase productivity and production. Accordingly conventional extension has paid little attention to go beyond technology transfer activities. An increase in agricultural production alone would not ensure sustainable rural livelihood as rural people have diverse livelihood objectives. Hence, provide of services by agricultural extension that can meet various needs of rural people is of paramount importance for sustainable rural livelihoods development.

The purpose of this chapter is to present a brief overview of basic terms, concepts and theories of agricultural extension and rural livelihoods which is used latter to conceptualize the research problem, and develop a framework to analyze the role of agricultural extension in maintaining rural livelihoods.

2.1 The Concept 'Extension'

The notion of transforming knowledge, skills and experiences related to agricultural practices were the age-old practices that have passed from one generation to the other.

> Agricultural extension work has a venerable, albeit largely unrecorded, history. It is a significant social innovation, an important force in agricultural change, which has been created and recreated, adapted and developed over the centuries. Its evolution extends over nearly four thousand years, although its modem forms are largely a product of the past two centuries (Jones and Garforth, 1998: 13).

Classical studies done by Vavilov (1949)[4] and Sauer (1969)[5] and others quoted in Ruttan (1975: 165) indicated that "the international and intercontinental diffusion of cultivated plants, domestic animals, hand tools and husbandry practices was a major source of productivity growth in prehistory and in the classical civilizations". Jones

[4] N. I. Vavilov, "The Origin, Variation, Immunity and Breeding of Cultivated Plants", trans. from the Russian by K. Starr Chester, in *Chronica Botanica* 13, nos. 1-6

[5] Carl O. Sauer, *Agricultural Origins and Dispersals: The domestication of Animals and Foodstuffs*, 2nd ed. Cambridge: Massachusetts Institute of technology Press, 1999

and Garforth 1998) have also expressed that a somehow 'institutionalized' form of agricultural extension activities already existed in ancient Mesopotamia, Egypt and Greece. In general, agricultural knowledge exchange and special 'advisory' roles have been practiced long time ago by some key community leaders and informants such as religious leaders, traders and elders (Leeuwis and Van den Ban, 2004).

The use of the term 'extension', however, emerged recently as an educational development in the context of 'university extension movement' in England during the second half of the nineteenth century. The rationale for such "extension movement" was to extend works of universities beyond the campus to the doorstep of the common people (Arnon, 1989; Jones and Garforth, 1998; Leeuwis and Van den Ban, 2004; Van den Ban and Hawkins, 1988). Later on similar extension activities were initiated elsewhere, especially in the United States; where the term "agricultural extension" was coined for the first time when Cooperative Extension Services were formed in each state by the then land-grant colleges[6]. The land grant college model (where agricultural research, extension and education were linked) has also been adapted and expanded dramatically in several other countries particularly after the Second World War.

A great number of activities are covered by agricultural extension and several other terms are also used to refer to agricultural extension or similar activities in different parts of the world.

> In the UK and Germany, the focus is on 'advisory work' i.e. an expert give advice on the best way to reach the farmers goals, but the decision for selecting the way is left for the farmers, while in the US the term is used to deal with 'educational activities', which seeks to teach people to solve problems themselves (extending information). In the Netherlands, it refers to as 'Voorlichting', which means lighting the path (provide information) to help people find their way while in France they use term 'vulgarisation' that indicates the need for simplifying the message so that the ordinary people can understand it. In Austria, they speak of 'Forderung' to indicate furthering or stimulating people to go in a desirable direction, Korean also used similar term as 'rural guidance'. The Spanish use the world 'capacitacion' which indicates the intention to improve people's abilities and skills (Van den Ban and Hawkins, 1988).

[6] Land-grant universities (also called land-grant colleges or land grant institutions) are American agricultural institutions, which were responsible to educate the people on agriculture and mechanical arts at each state of the United States.

Röling (1988: 36) noted that "the concept, the term and usage of an agricultural extension are unhandy and imprecise" It has been given a variety of meanings and there is no as such a universally agreed definition for the term extension. These in turn lead to different interpretations that have influenced the extension strategies and approaches. Arnon (1989: 690) also recognised "the nature of agricultural extension changes with the roles that are assigned to it by the authorities. The differences in emphasis on varying aspects of these roles are reflected in the different names given to extension activities at different times and in different countries".

As it has been given in table 1, the bottom (verbal) meaning of extension is "to extend", "stretching out" or "outreach" of new technologies to farmers. This is pursued by "university extension" approach that targets to take out agricultural knowledge and technologies out of the university campuses and/or research institutes. However there are some wrong notions about extension. Some think extension is teaching adults but it is meant to assist farmers both adults and youth. Others think that extension is transfer of technology but it is the means of transfer of technology. In transfer of technology the educational component must be involved, unless this happens it would not be successful. Some others consider extension as communication but communication serves as the means for extension.

Broadly speaking the coverage of the term agricultural extension ranges from simple extending of technology to empowering farmers to improve their livelihoods. The approaches and its function would also vary from supply driven to demand driven, simple (linear) to holistic (system), production orientation to problem solving, from agriculture focused to integrated rural development approach and so on. Some focused on technology transfer, while others emphasis lies on empowering farmers. In general, the consensus on the centrality of agricultural extension has not been matched by one on its definition and different authors have used quite different definitions each emphasizing quite different aspects or characteristics of the more general phenomena (see Table 1).

TABLE 1
Selected Definition of Agricultural Extension

Author	Definition
Jones and Garforth, (1998)	Off-college or university extension education to bring the educational advantages of universities to ordinary people
	Adult education- "extending" relevant and useful information to the adult population at large
Arnon (1989)	Extension is an educational activity which seeks to teach people to solve their problems by 'exchanging' information
	Extending the findings and technology of agricultural research to farmers
Adams (1982)	Advice and assistance for farmers to help them improve their methods of production and marketing
Roling (1988)	A professional communication intervention deployed by an institution to induce change in voluntary behaviours with a presumed public or collective utility
Van den Ban and Hawkins (1988)	Use of communication of information to help people form sound opinions and make good decisions
World Bank projects portfolio - World Bank Group (1994); cited in Purcell and Anderson (1997)	The process of helping farmers to become aware of and adopt improved technology from any source to enhance their production, efficiency, income, and welfare.
Purcell and Anderson (1997)	The process of introducing farmers to information and technologies that can improve their production, income and welfare
SDC (1997)	Central in formulating and disseminating knowledge, and in teaching farmers to be competent decision makers
Marsh and Pannell (2000)	Activities relating to technology transfer, education, attitude change, human resource development, and dissemination and collection of information
Jones and Garforth (1998)	An essential mechanism for delivering information and advice as an "input" into modem farming.
Neuchatel Group (1999)	The essence of agricultural extension is to facilitate interplay and nurture synergies within a total information system involving agricultural research, agricultural education and a vast complex of information-providing businesses.
Neuchatel Group (1999)	"Facilitation" as much if not more than "Technology transfer"
Australasia Pacific Extension Network (1999)	Use of communication and adult education processes to help people and communities identify potential improvements to their practices, and then provides them with the skills and resources to effect these improvements
Alex et. al, (2002)	The rural knowledge and innovation system, which is key to informing and influencing these rural household decisions.

Source: Compiled by author

In Ethiopia the term extension is mainly expressed as *sirichit* (meaning dissemination of technology) and *sirtset* (refer to adoption of modern technology). It also uses the English sounds '*extension*' (but its literal meaning refers to 'extension/ technological packages'). Apparently, the term is not properly understood by professionals let alone by the common people.

Another way of looking at agricultural extension is considering it as a public intervention as one of the prime movers of agricultural development as part and parcel of the fundamentals in building a modern nation (Bolding et al, 2003). Röling (1988: 37) stated that " it is not only the differences in terminology that are the sources of confusion in extension concepts but also the political and policy tradition have made a considerable contribution". He further puts different aspects that an extension service is expected to achieve its task depending on different policy traditions as informative, emancipatory, formative and persuasive extension. To conclude, the scope and definition of extension has changed much though its main goal is remained more or less the same (Birner et al., 2006).

Originally when agricultural extension was institutionalized, it was assumed that agricultural development is becoming technology-propelled. Rivera (1991: 3) noted that "the main reason for the agricultural extension service was seen as an effective way to promote agricultural growth and enhance the use of modern inputs in support of import substitution and industrialisation policies". He further stated that available agricultural technologies existed and what was needed is to disseminate them robustly in order to accelerate agricultural development. In this respect, the rise of technological development by agricultural research institutes has stimulated dramatic changes. Consequently importance of agricultural extension as a policy instrument to disseminate available technologies to agrarian society has increased.

This linear (top-down) model, however, is subjected to a debate on its strengths and weakness. It has been criticised that it does not address problems of small holder framers that could not have the capacity to adopt the technology, due to various reasons and therefore creates inequality. Yet, such problems were largely considered as ineffectiveness of extension methods to convey extension messages. Thus, few years ago, improvements with regard to agricultural extension service were dealt with improving of extension and communication methods such as individual, group and/or mass approaches (Moris, 1991). Later, it was realized that lack of involvement of end users also contribute for its failure and there were attempts to encompass a responsive approach which aims to meet farmers' expressed needs but in this case also problem solving still remained in the hand of research-extension hierarchy. Finally, extension development involves interactive in nature that encourages independent learners and a client oriented participatory approach.

2.2 Agricultural Extension from System and Sustainable Livelihoods Perspectives

The fact that advances in agricultural technologies enhanced can stimulate agricultural development and what was required was to disseminate them widely highlighted importance agricultural extension (Dercon et al., 2007; Rivera, 1991). However, increasing agricultural productivity and production alone cannot solve problems of the rural poor. Some even argue that it may also have some draw backs such as widening inequality between those who can afford to adopt the technology and not, create burden or increase vulnerability to some group of the community such as women as well as degradation of natural resources due to inappropriateness of the technology to different group of people or unwise intensive agricultural practices. As a result, it detracted from its primary objectives.

On the other hand, poverty is broadly defined as a multidimensional process and many aspects of poverty such as deprivation and insecurity can not be captured by income and consumption measures alone (Rakodi, 1999). Hence, agricultural extension service that targets to address poverty should have a role apart from its production oriented activities. Recent poverty studies have also noted the need to shift the focus from income and consumption based poverty measures to livelihood strategies to widen and enhance understanding of causes of poverty, people responses to various shocks and stress, and outcomes of policy interventions. In this regard, consideration of rural livelihood strategies is important to enhance people capabilities and deal with securing livelihoods. In this respect, agricultural innovation system (AIS) and sustainable rural livelihoods (SRL) approaches can help for better understanding of the role of extension in a wider perspective.

Agricultural extension as a system perspective

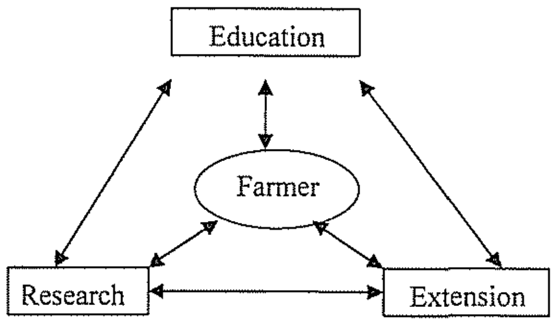
In the 1950s and 1960s, it was widely believed that economic situation of developing countries could be improved through financial inputs and transfer of modern technologies. As a result research and extension system in most countries had tried to address rural communities' problems through a top-down supply driven transfer of technology (ToT) approach. ToT acknowledged a process that technology is developed by a researcher, and then transferred to farmers by extension agents. Farmers here were considered as a passive recipient of technology. In the 1970s, however, it became clear that the "linear model" ToT model did not solve the problems in developing countries due to complex relationship between environment, economy, culture and politics of rural societies. As a result it has been learnt the importance of considering extension sub-system as part of the entire agricultural technology development and transfer system. Hence, it becomes clear that an effective and efficient agricultural process is a result of proper functioning of the entire system. This is known as Agricultural Knowledge and Information System (AKIS).

The concept of AKIS is developed from the concept of agricultural knowledge system (AKS) by Nagel (latter 'information' has been explicitly added to the AKS concept and re-named as AKIS). The concept then was further developed and popularized by Röling during the 1980s (Chema et al., 2003). Roling (1990: 1) defines AKIS as:

> a set of agricultural organizations and/or persons, and the links and interactions between them, engaged in such process as the generation, transformation, transmition, storage, retrieval, integration, diffusion and utilization of knowledge and information processes, with the purpose of working synergically to support decision making, problem solving and innovation in a given country's agriculture or a domain thereof.

The three pillars of AKIS (education, research and extension) are combined in one system known as the "knowledge triangle" to respond to the various needs of the rural people (Chema et al., 2003). In this respect, rural people, especially farmers, are found to be at the center of the knowledge triangle. Moreover, farmers and other rural people are considered as partners of the knowledge system than mere recipients of the knowledge (Chema et al., 2003; FAO and World Bank, 2000). This required effective linkages between different components as it is illustrated in figure 1. FAO and World Bank (2000: 2) pointed out that "while some would argue that it is an old concept already applied by the land-grant universities, the linkage problem is still acute in most countries".

FIGURE 1
The AKIS Model



Source: FAO and World Bank, 2000

However, the AKIS perspective is argued to have some limitations

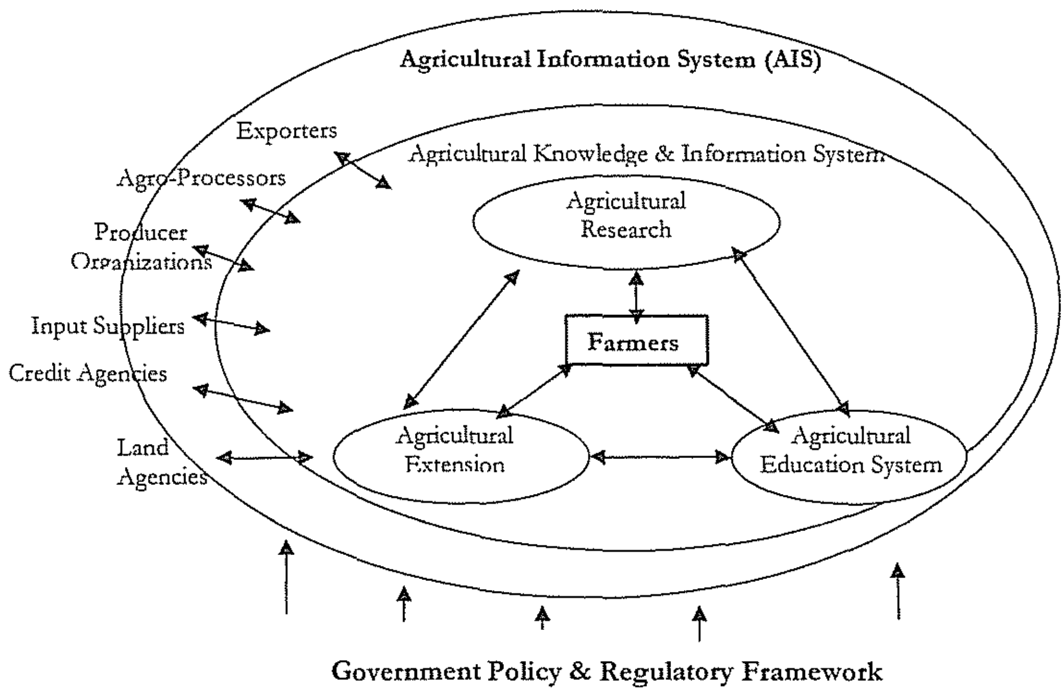
> [T]o conduct analysis beyond the nexus of public sector research, university research, and extension services and to consider heterogeneity among agents, the institutional and historical context that conditions their behaviours, and the learning processes that determine their capacity to change and innovate (Spielman, 2005: 15).

Recently, the concept of innovation system (derived from industrial innovation literature) is appearing in agricultural development literatures. "Innovation systems perspectives on agricultural research and technological change are fast becoming a popular approach to the study of how societies generate, disseminate, and utilize knowledge, and how such systems can be strengthened for greater social benefit" (Spielman, 2005: 1). The origin of innovation systems thinking is based on the idea of a "National System of Innovation (NSI) proposed by Freeman (1987) and Lundvall (1992); as quoted in Hall et al. (2004). Hall and his colleagues are mentioned among the pioneers in applying the NSI concept to agricultural field (Chema et al., 2003). Spielman (2005: 12) defines innovation system is as "a set of interrelated agents, their interactions, and the institutions that condition their behaviour with respect to generating, diffusing, and utilizing knowledge and/or technology". Hence,

> the innovation systems approach broadens the AKIS perspectives by focusing on the processes by which diverse agents engage in generating, disseminating, and utilizing knowledge, the organizational and individual competencies of such agents, the nature and character of their interactions, and the market and non-market institutions that affect the innovation process (Ibid: 15).

AIS emphasizes the importance of examining rural environment which is stimulated by many actors and factors (both internal and external to the innovating entity) as well as the relationships and networks between them in realizing rural livelihoods development (Figure 2).

FIGURE 2
Agricultural Innovation System



Source: Slightly adapted from Rivera et al. (2006) by Birner et al. (2006)

Though agricultural innovation system is emerging to rethink the role and contribution of agricultural research (Hall et al, 2006), it could also be expanded to agricultural extension as a new way of thinking to broaden implications for rural livelihoods development and poverty reduction. Moreover, since the concept of AIS is at its infant stage of development in its application to the agricultural sector, the use of AIS approach would be helpful to explore the problem of agricultural extension from a wider institutional systems perspective, particularly in today's rapid globalization era.

Figure 2 also indicates that AKIS as a sub-system of an AIS and highlights the importance of working in a close partnership by all actors of the AIS. To this end, it is not only agricultural research, extension and education but also several actors such traders, agro-industries, input suppliers, and credit providers would be helpful for successful agricultural innovation and development process.

Sustainable rural livelihoods

Livelihood is more than a mere income and living. Ellis and Allison (2004:3) noted that "it captures not just what people do in order to make a living, but the resources that provide them with the capability to build a satisfactory living, the risk factors that they must consider in managing their resources, and the institutional and policy context that either helps or hinders them in their pursuit of a viable or improving living". The most common definition of livelihood is given by Chambers and Conway where a livelihood "comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living" (Ellis, 2000). Similarly rural livelihoods are generally understood as the ways and means of making a living in rural areas. In this regard, sustainable rural livelihood development requires not only focusing the type of activities in which the rural people earn their income, but also consider how they access and control assets as well as external factors that can have a positive or negative influence.

The modelling of livelihoods has its roots back to peasant study works of Chayanov and other earliest development planning literatures (Soussan et al., 2002). Later it was further developed by farming systems research (FSR), farm management and micro-economic studies. However, the origin of a more concrete sustainable livelihood concept is widely attributed to works of Chambers and Conway. Since the early 1990's, the sustainable livelihoods approach has come into prominence in the development thinking as changing perspectives to address poverty (Ashley and Carney, 1999; Carney, undated; DFID, 1999; Hajdu, 2006; Whitehead, 2002).

> In the livelihoods approach, resources are commonly known as 'assets' or 'capitals'. There are five different asset types owned or accessed by family members: human capital (skills, knowledge, health), physical capital (basic infrastructure), financial capital (money, savings, loan access), natural capital (land, water, forest, etc.), and social capital (networks and associations) (Ellis and Allison, 2004: 3).

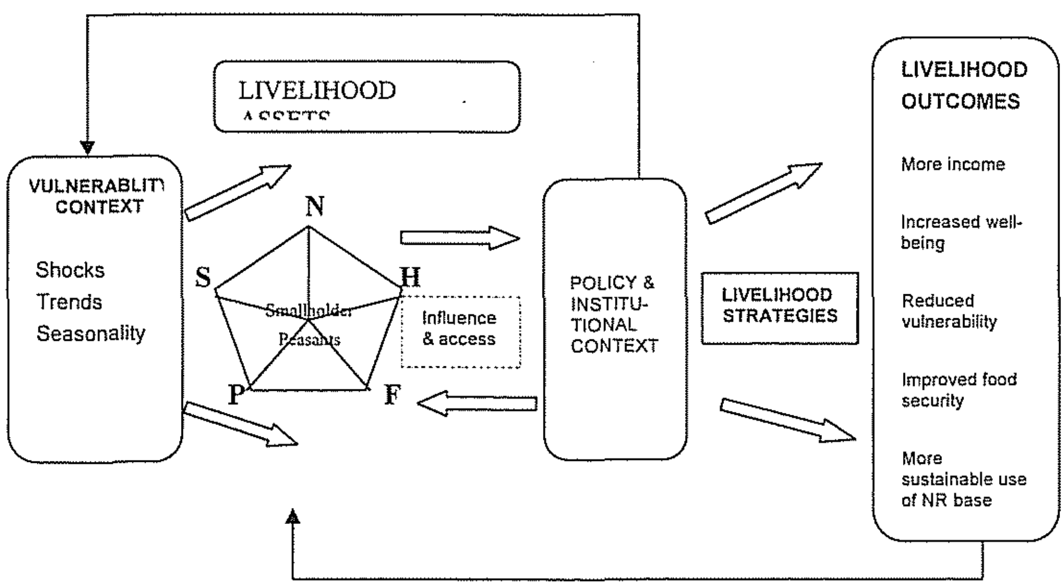
These livelihood assets can also be substituted to each other. For instance, owning land or cattle can serve as a means to acquire financial capital through borrowing, selling or any other mechanism.

> The things people do in pursuit of a living are referred to in the livelihood framework as livelihood 'activities'. The risk factors that surround making a living are summarised as the 'vulnerability context', and the structures associated with government (national and local), authority, laws and rights, democracy and participation, and natural resource management (NRM) institutions are summarised as the 'policy and institutional context'. People's livelihood efforts, conducted within these contexts, result in outcomes: higher or lower material welfare, reduced or raised vulnerability to food insecurity, improving or degrading environmental resources, and so on (Ibid: 4).

Thus, the sustainable rural livelihoods framework (Figure 3) illustrates links between different livelihood assets and strategies as well as how these can be enhanced or constrained by vulnerability and institutional contexts. Hence, the SLA adds value in poverty reduction efforts through explaining how rural people manage their livelihoods. Yet, as "livelihoods are complex and changing, they encompass links between cause and effect, as well as cumulative processes, and these cannot be captured adequately in such a simplified representation" (Ibid: 4).

Similarly, extension services can be one of essential components in the rural livelihoods framework to improve rural livelihoods and reducing poverty in various ways depending on the prevailing situation. This makes the importance of challenging an agricultural extension role not only to provide services that helps to improve productivity and production to support rural livelihoods. Berdegué and Escobar (2002) noted that agricultural policies and programmes that start from extension and research to address poverty reduction can only lead to provide standardized recommendations that seem to be a 'one size fits all' solutions. As a result, analysis of the context of rural poverty and the livelihood strategies that the poor implement in response to their specific conditions is of paramount importance as a focal point. Accordingly they can determine to set possible strategies to realize their potential roles (Ibid). To this end applying a sustainable livelihood approach is believed to help to comprehend the realities of rural livelihoods and highlights the role of agricultural extension in reducing the vulnerability context of small holder farming community, enhance their livelihood assets and facilitate their interactions with various institutions for betterment of their livelihood strategies (Figure, 3). Yet, so far the livelihoods literature has not adequately captured the role of extension in rural livelihoods.

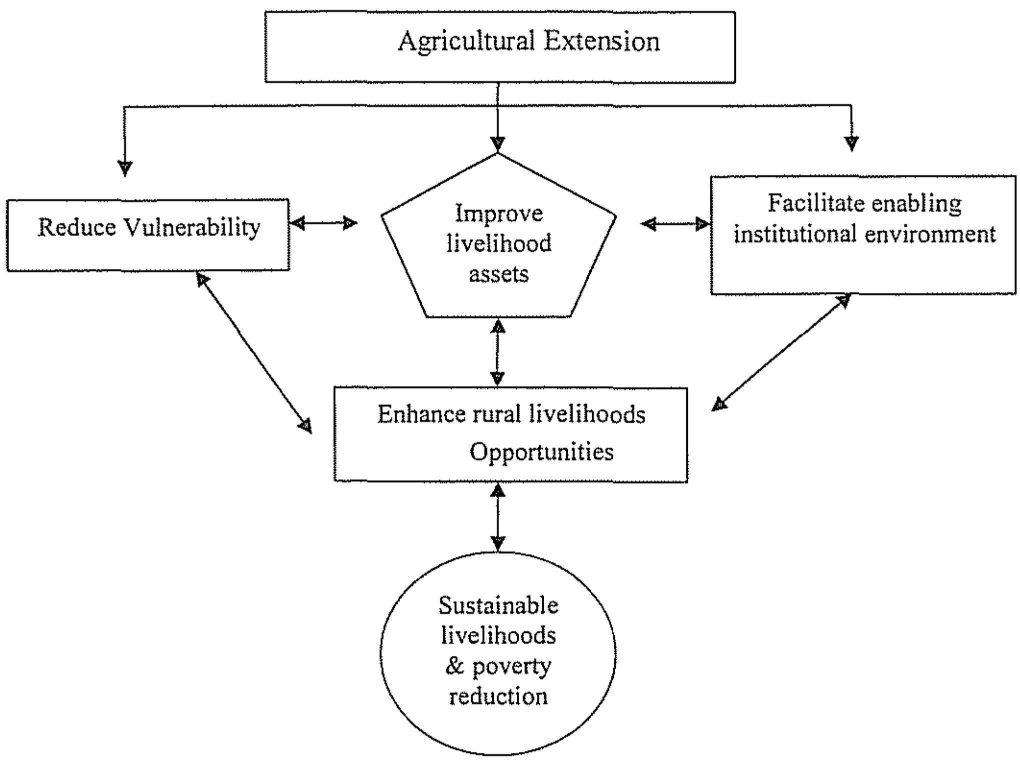
FIGURE 3
The Sustainable Rural Livelihoods Framework



Source: Carney, 1998

Moreover, SLA is not without limitations as some criticized it lacks power, historical and cultural dimensions and fail to give sufficient livelihoods attention to the implications of gender, ethnicity, class, or other types of social differentiation (Adato and Meinzen-Dick, 2002). Others also argue the need to incorporate political assets as it is critical to define "rights" (Baumann, 2000). Some of these issues can be captured by taking the broad perspective of vulnerability that look for power, class, gender and others aspects beyond a stress and shocks though there are limited literature that discusses this issue and indicate how to do it in practice. All these dimensions are important and should be integrated with the framework to understand the role of extension better. But, this is beyond the scope of this study. This study recognizes that the importance of SLA and AIS to understand the whole picture of rural livelihoods and there by to indicate role of extension fitting with complex rural livelihood strategies (Figure 4).

FIGURE 4
Links between agricultural extension and sustainable livelihoods



Source: Own construction

The frameworks in Figure 4 represented in brief in Figure 2 and 3 are derived from the literature of AIS and SLA to illustrate how the agricultural extension service contributes in maintaining sustainable rural livelihoods. The SLA and AIS frameworks emphasize the analysis of complex rural environments and complex relationships among different actors and their implications for reducing rural poverty and performance of the agricultural development interventions. Based on integration of agricultural extension into rural livelihoods strategies and changing current global scenario, the conceptual framework presented in Figure 4 attempts to show how agricultural extension services address new responsibilities, particularly in maintaining rural livelihoods.

To this end, links between agricultural extension and sustainable livelihoods illustrates that extension can be viewed as services that can improve rural people's livelihood assets, reduce their vulnerability, facilitate enabling institutional environments for betterment of rural livelihoods. If this entire works in synergy, rural livelihoods opportunities will be enhanced poverty reduction can be attained. This emphasis the fact that agricultural extension services should move beyond a focus to change production and productivity only to realize sustainable impact on rural livelihoods.

3. AGRICULTURAL EXTENSION IN ETHIOPIA

3.1 Overview of the Agricultural Sector

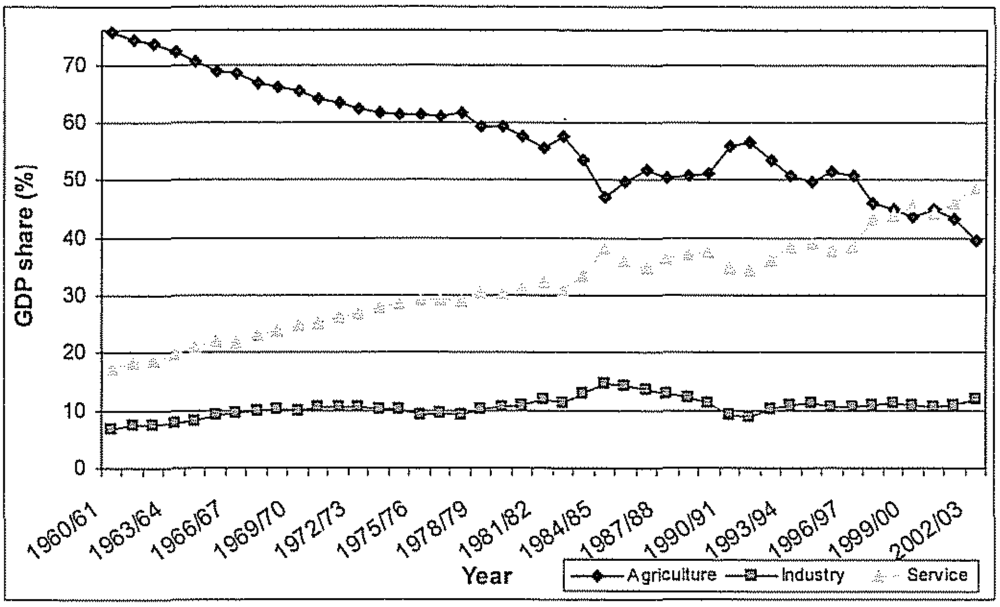
Ethiopia's economy, like many other countries in SSA is primarily agricultural, which contributes the largest share to the country's GDP. The agricultural sector constitutes 85 percent of the population and over 90 percent of the poor, both in a way of life as well as primary source of livelihood (FDRE, 2005). Hence it is critical for ensuring food security and overall development of the country. Cognizant of this fact, the Ethiopian government adopted a development strategy known as Agricultural Development Led Industrialization (ADLI) since 1991, which gives priority to agricultural development.

Over the last four decades, the contribution of agricultural sector to GDP has declined from about 76 percent in 1960/61 to about 39 percent in 2002/3, while that of the service sector rose from 17 percent to 49 percent and the industrial sector slightly increased from 7 percent to 12 percent (Figure 5).

The falling in the share of agricultural sector in total GDP can be considered as if structural transformation has been taking place in the general economy of the country. Nevertheless, the agricultural sector is still the single most important sector that contributes about 90 percent of the export earnings (NBE, 2002) while being the largest "employer" (more than 80 percent) of the population (EEA/EEPRI, 2005). Despite such socio-economic importance, the performance of the sector is very low. Consequently, its contribution to poverty reduction, food security, natural resource management and overall growth and development of the country remains low.

FIGURE 5

Percentage Share of GDP by sectors

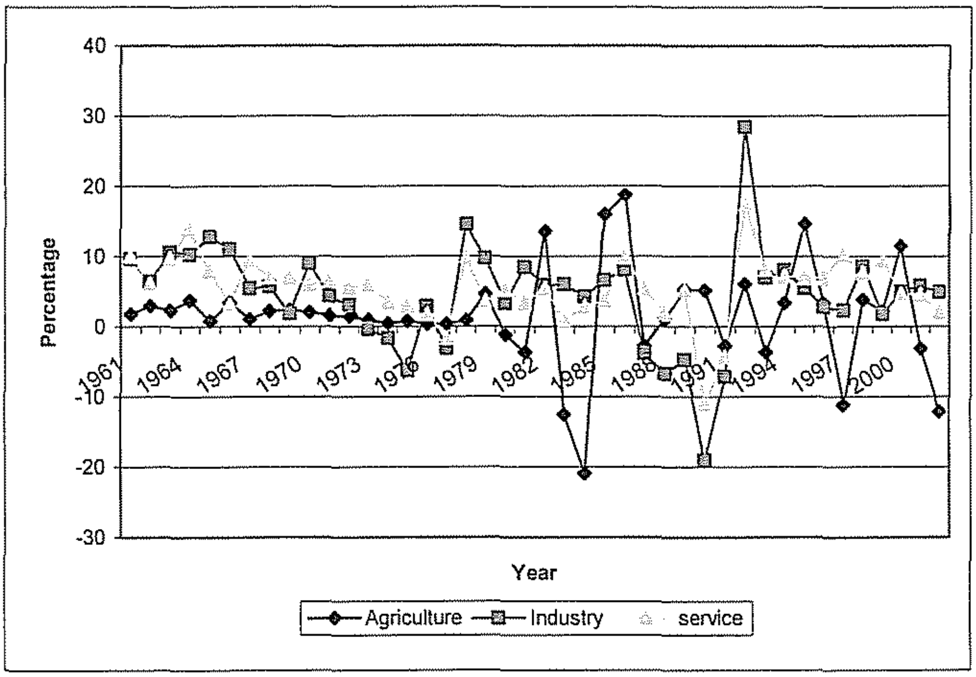


Source: Computed based on Ministry of Finance and Economic Development (MoFED) data

Furthermore, the annual growth rate of the agricultural GDP (for that matter the overall economy and other sectors growth too) was fluctuating from year to year (Figure 6). In 1984 the agricultural performance was low due to the occurrence of drought and in 1995 there was bump harvest due to the presence of a favourable climate. Indeed, the Ethiopian economy is weak and highly influenced by the performance of the agricultural sector and the later often influenced by natural calamities such as drought and man made factors such as war. Demeke (1999: 3) stated that during drought years such as 1982/83 and 1984/85 annual agricultural growth rates failed by 13 and 21 percent; respectively, while growth rates exceeding 14% per annum in favourable weather such as in 1986/87 and 1995/96.

In general, "agricultural growth rates averaged 2% between 1980/81 and 1990/91" (Ibid: 3). In the mean time, total population grew by nearly 3%, exceeding that of the agricultural growth and cause a sharp decline in per capita agricultural production and a rise in incidence of poverty. Consequently, the sector fails to produce enough to feed the alarming population growth of the country (Demeke, 1999; EEA/EEPRI, 2006).

FIGURE 6
GDP Growth by Sector



Source: Computed based on Ministry of Finance and Economic Development (MoFED) data

According to Devereux (2000), food insecurity in Ethiopia can be expressed by the 'physical ecology cluster' that focus on population growth, declining soil fertility and drought as well as the 'political economy cluster' that is to blame for poor government policies, weak markets and institutional failure. Yet, he further states that neither of the two approaches are sufficient to give a full explanation about the Ethiopian agriculture and suggest the need for a holistic 'livelihoods' analysis. In this regard, a SLA and AIS would be helpful to capture other dimensions.

3.2 Development of Agricultural Extension in Ethiopia

Efforts of the Ethiopian government in promoting agricultural development dated as far back to the 1890s. Later the establishment of the Ministry of Agriculture (MoA) in 1908 (Haile et al. 1991) marked for the beginning of activities to modernize Ethiopian agriculture, yet information that indicates its performance is scarce.

The beginning of formal agricultural extension services were linked with the establishment of agricultural institutions in the late 1940s and early 1950s, particularly with that of the then Alemaya College of Agriculture and Mechanical Arts (1953), now Haramaya University following the land grant college model of US where agricultural training, research and extension were fully integrated under one institution (Ayele et al., 2003; Gebrekidan et al., 2004).

The responsibility for coordinating the national extension service, which was based at the then Alemaya College of agriculture was later transferred to the MoA in 1963. Since then the Ethiopian agricultural extension system has evolved significantly and worked under different political and government episode as well as policy frameworks that could strongly influence its activities and roles.

The Imperial Period (Pre 1974)

During the imperial regime, the country had passed three successive five year development plan periods from 1957-1974. The first-five year development plan (1957-1962) put heavy emphasis on a program of rapid industrialization and building up the country's infrastructure. Yet, the agricultural sector received lowest priorities (Rahmato, 2004). "It was believed, though without solid evidence, that growth in food production had kept slightly above population growth ...and was expected to do the same in the plan period without much support (Ibid: 3)". Nevertheless, some two or three years after the launching of the first five year plan, Ethiopia had become a net food importer for the first time in its modern history to meet the growing demand (Dejene, 1997; quoted in Teklewold et. al, 2002).

The second Five Year Development Plan (1963-1967), started to favour the process of agricultural modernization. Agriculture still received less investment allocation than the other sectors, although in relative terms it was better than the previous plan. Moreover, "of the total monetary investment earmarked for agriculture in the plan period, the peasant sector received only 10%, commercial agriculture 53%, and manpower and resource inventory the rest" (Ibid: 3).

In these two five year plan periods a community development (CD) program was adopted as an integrated rural development strategy to speed up the economic growth and development of agriculture. CD was concerned with almost all areas of development such development of agriculture, rural artisan, infrastructure and social welfare activities, using extension concepts as communication strategy. However, due to lack of finance and absence of firm commitment on the part of the government agencies, it was not possible to evolve these development programs into viable integrated rural development projects and another rural development strategy was, thus, sought (Admassie, 1995).

The Third Five Year development Plan (1968-1974) was assumed that agricultural growth can be obtained by rapid development of large scale commercial farms to produce commodities that can be exportable. Yet, "once again the distribution of investment within agriculture itself was heavily weighted in favour of commercial farms which received 58% of development allocations and the peasant sector only 10%" (Rahmato, 2004: 4). To stimulate capital-intensive commercial farming, there had been also several forms of incentives given to large-scale commercial farmers such as exempting them from import duties, provision of land with low rent, tax exemption, funds at subsidies interest rates. However, small scale peasants were not beneficiaries of this investment package (Alemu, 2005).

But, the third five year plan had started a package program to give support to small holder peasant sector. The first package approach[7] was the Comprehensive Packages Program /CPP/ (1967-1975) which was introduced through bilateral and multilateral assistance. CPP focused on few selected high potential areas. Accordingly, the Chilalo Agricultural Development Unit (CADU) was established in 1967 as the first comprehensive package project. The package includes agricultural technology development, dissemination of research results, provision of agricultural inputs, credit and marketing services as well as improvement of infrastructure, vocational education and a cooperative promotion program (Stahl, 1974). "An extension service is established in order to communicate the information from the project to the peasants...agricultural extension agents and model farmers demonstrate the effects of new agricultural techniques, in particular fertilizing" (Ibid: 95).

[7] A package approach is where all essential components such as agricultural technology information, production inputs, credit required for the development program are provided to farmers as a complete set.

The second comprehensive package was Wolayita Agricultural Development Unit (WADU), which was set up in 1970. There were also other Comprehensive Package Projects initiated in other administrative regions. However, CADU and WADU were the prominent ones. There were also several low-profile integrated programs run by government agencies other than MoA in several parts of the country. The main objectives of the programs were: to provide peasants easy access to modern inputs; to promote better farming techniques and farm implements; to organize peasants into cooperatives enabling them better access to credit; to expand normal extension services; to improve marketing facilities and prices for peasant produce; and to build rural public works such as feeder roads, water projects and environmental protection schemes (Rahmato, 2004).

CADU/ ARDU had also been criticized for neglecting resource poor farmers and low potential dry land areas, not gender sensitive as well as for not involving farmers in the planning and implementation of the extension activities (MoA, 1993; cited in Kassa, 2005).

Although the comprehensive package projects have had noticeable influences on improving productivity and encouraging agricultural intensification and specialization in their immediate vicinities as a result of the project, it was also realized later that implementing such projects throughout the country was not feasible because of the large number of workforce required and the high costs involved. It is also stressed by some authors that the comprehensive package projects benefited mainly landowners and commercial farmers as evidenced in the provision of credits and accelerated the eviction of tenants while it encouraged the process of mechanization in large farms (Kassa, 2005; MoA, 1994).

As a result, the Minimum package Programs (MPPs) were initiated in 1970. The MPPs were based upon the concept of concentrating only on few innovations or a minimum package of innovations that were developed and tested in the CPP. The components of MPPs were a set of packages which would change only on agricultural productions. Although the minimum package concept worked well in the limited areas of its operation under first MPP /MPP I/ (1971-74), it had certain shortcomings while it was expanded to cover large areas. According to Gryseels and Anderson (1983) as quoted by Kassa (2005: 33),

> MPP I was focused on crop improvement paying little attention to the livestock sub sector despite its tremendous importance to Ethiopian agriculture. He also mentioned that MPP I largely focused on wheat, maize, tef, barley and sorghum, and the emphasis was on demonstrating the impacts of fertilizer on yield, whereas assistance with the marketing of produce remained very limited.

By the end of 1974, the extension coverage in the country had reached about 16% of the estimated farming population (Rahmato, 2004). Latter, the Imperial regime was overthrown by the military regime that adopted socialism.

The Socialist Period (1974-1991)

The evolution of the socialist regime in Ethiopia was a result of failures of the imperial regime administration that led to a revolutionary movement that took place in early 1974 and changed the political, economic and social contexts of the country. After a committee of armed forces called *Derg* took power, it declared socialism and started to implement several drastic measures and policies. The fundamental policy in rural areas included the Land Reform Proclamation that abolished private ownership of rural land. It also declared that land would be distributed to the tillers without compensation to former owners following the dominant slogan of the time "land to the tillers". It prohibited private ownership of land and transfer of land by sale, exchange, mortgage, lease or other means. Moreover, it also abolished rural wage labour (McCann, 1995; Kassa, 2005).

At the termination of MPP I in 1974, there was a plan to undertake an expansion of MPP I, under MPP II. Nevertheless, the political and institutional instability then did not allow its timely implementation (MoA, 1994). In 1978, the government passed a legislation to organise smallholder farmers into co-operatives. The emphasis was then on the establishment and promotion of producers' and service co-operatives. After efforts were done to adapt it with the new socio-economic and political system of the country, MPP II was reinitiated in 1981 and implemented between 1981 and 1985. Peasants' associations and cooperatives (service and producer cooperatives) were the focal points of implementation. MoA envisaged a more rapid dissemination of technologies by breaking down general extension undertakings into discipline/ commodity basis accordingly to the respective departments such as crop, animal, forestry, and soil and water conservation departments (Gebrekidane, 2004; Kassa, 2005).

> This move was said to have resulted in the fragmentation of efforts, lack of integration, multiple chain of command and proliferation of administrative staff, and bureaucratisation. ... As a result, there also existed confusion regarding the management, coordination, and supervision of extension programs at field level (MoA, 1993, cited in Kassa, 2005: 33).

Moreover, as two departments of the MoA (development and cooperative departments) merged, it demanded additional task for EAs to organize cooperatives. This in turn deteriorated the quality of extension services (Gebrekidane, 2004). MPP was also a very extensive project and thinly distributed to cover the whole country and the result was not so much observed. Besides, the transfer of new technology has been constrained by lack of transport facilities, inadequate financial resources, lack of trained EAs, weak linkage between research and extension and limited capacity to multiply research products to be distributed to farmers (Haile et al. 1991).

The MPP II was not able to meet its stated objectives as a limited number of development agents (DAs) were forced to cover as wide an area as possible without adequate facilities and logistical support. The same agents were overburdened with different tasks, such as promoting producer co-operatives and tasks that contradict with the basic extension elements including collecting taxes and loan repayments (MoA, 1994). The MPPs continued to operate until 1985, when the new extension approach, Training and Visit (T & V) system, was introduced.

The Training and Visit extension system was initiated as a pilot project in 1983 with the assistance of the World Bank. The approach emphasized regular visits to contact farmers by DAs, monthly training of DAs by subject matter specialists (SMSs) and contact of SMSs with researchers every 3 months for seasonal training.

In 1986, Peasant Agricultural Development Project (PADEP) was initiated to promote agricultural development in the dominant smallholder sector. PADEP focused to increase food production and improving farmers' productivity in major grain producing areas. The PADEP acknowledged regional differences with respect to agricultural production and stratified the country into 8 relatively homogeneous agro-ecological zones.

During this period, priority was given to large scale farms, but this time it is producer cooperative / collectivized and state farms. According to Yeshitla (1989) and Gezahegne (1988) cited in Mulugeta (2004:3) "state farms contributed with no more than 4 % of the total agricultural out put, however, they received more than 82 % of total loans distributed to the agricultural sector, and 69 % of the government budget spent on agriculture". This fact was also noticed in other countries, where they had state farms and World Bank (1981:51) provided a general statement as:

> During the 1970's and 80's, a substantial amount of investment was given to state operated large scale farms like many other African countries. The main reasons for such action were due to a believe that only a rapid transition to mechanization, high productivity schemes as practiced in the industrial world would overcome the stagnation linked with the traditional low-input, low-output methods. And second, it was because of while productivity was often lower on state farms, the share of marketable surplus would be much higher. Thus the emphasis was placed on such enterprise in Ethiopia, Congo, Tanzania and Somalia....but most of these ventures did not fulfil expectations and their contribution to growth was small when compared to their cost (World bank, 1981: 51)

Post 1991

After the change of government in 1991 the profile of the Ethiopian economy appeared to be changing. The transition from command socialist economy to a free market economy was initiated. The Government has taken successive macroeconomic and sectoral measures such as liberalization of the economy including structural adjustment measures of exchange rate of the currency and trade reform. In sectoral strategy of rural development, agricultural development was given a top priority and adopted ADLI strategy (Ayele et al. 2003).

Elias and Agajie (2001) as quoted by Kassa (2005:37) "characterized the period after the 1990s as era of institutional pluralism in the history of extension in Ethiopia. They underline the beginning of involvement of farmers and NGOs". Accordingly, the Sasakawa Global 2000 (SG-2000)[8] started its program in 1993 on 160 farmers' maize and wheat Extension Management Training Plots (EMTPs)...With SG-2000, it was reported that some maize farmers had harvested up to 9.4 t/ha, and the average yield of

[8] SG-2000 is an International NGO that launched its program in Ethiopia in 1993.

demonstrations plots was 5.1 t/ha for maize and 2.8 t/ha for wheat. Consequently, SG 2000 has convincingly demonstrated productivity increment when farmers were provided with appropriate technologies and the required inputs are made available to them timely and at reasonable prices. Even though SG 2000 has enabled to increase yield by almost three times more than the traditional practices, there is much greater potential in getting higher yields than what has been realized through the EMTPs (Abate, 1997; Gebrekidan et al, 2004; Quinones et. al, 1996). This made the government and politicians to be committed for supporting agricultural extension.

The modified T&V extension approaches continued to use until Participatory Demonstration and Training System (PADETES) replaced it as the national agricultural extension system in 1995. The T&V extension approach was criticized as for being top down, lacking flexibility, giving priority to state and cooperative farms, large DA-to-farmer ratios, and for being largely donor driven. The T & V approach has also been blamed as it focused on high potential areas neglecting pastoralists and low potential areas, demonstration was carried out on MoA fenced plots and low participation of farmers in agricultural extension service. Moreover, the previous extension management systems were said to be entangled with organizational (as extension services were provided by different Ministries and even by different departments within the same ministry) and administrative problems (increasing number of administrative staff than technical staff and increased bureaucratization). PADETES were supposed to be implemented with primary focus on increasing production and productivity of small scale farmers through better access to improved production technologies such as improved seeds, fertilizer, pesticides and other improved production practices (MoA, 1994).

PADETES adopted the merits of past extension approaches particularly that of T & V and the SG 2000 experience. PADETES was supposed to differ from the previous ones based on the way the extension service systems are structured and organized, the relationship and linkage mechanisms amongst the extension service providers, the range of agricultural services contained in the technical packages, the types of extension methods that are used and the way the extension services are financed. PADETES has been planned and financed by the government. PADETES was initially implemented in some parts of the country as a pilot program, with crop technology packages for high rainfall areas. In the subsequent years, crop technology packages for moisture stress areas, livestock, high economic value crops, post harvest technology packages, agro-forestry, and soil and water conservation packages were included and implemented in the country as a whole.

The extension intervention strategy in PADETES involves a package approach geared towards three different agro-ecologies (reliable moisture, moisture stress and nomadic pastoralists areas). As part of implementing the extension strategy, the Ethiopian government also launched National Extension Implementation Programme (NEIP) in 1994/95. The programme was mainly geared towards assisting small-scale farmers to improve their productivity through disseminating research-generated information and technologies on major food crops such as tef, maize, wheat, sorghum as well as potato and forage crops. The Regional National States of the country were also given full autonomy in the planning, execution, monitoring and evaluation of extension programs.

PADETES as its name implies recognize importance of participation of end users. Accordingly, it gives a space for participation of farmers in the extension program. It allows farmers to participate in evaluation process of the supplied technologies to create awareness and get confidence of the technologies. But, their participation is limited on implementing demonstration activity on their own field unlike the previous approaches that demonstrated in fenced plots owned by MoA and fails to address the demands of the end users. That is to mean it has a very limited level of participation and ends up in promoting few selected crop technologies that may increase productivity for some time but as it is not supported by others mechanisms such as supplying of inputs, credits and market most of the frames went back to use their traditional technology or use part o the recommended technologies (EEA/EEPRI, 2006).

4. RURAL LIVELIHOODS, GLOBALIZATION AND ROLE OF AGRICULTURAL EXTENSION

As majority of Ethiopian population gain their livelihoods from agricultural activities in a variety of ways, their success depends on availability and entitlement to different livelihood assets as well as their livelihood strategy to deal with encountered vulnerabilities. Rural livelihoods development is not taking place in a vacuum but in a context of several socio-economic, political, cultural, environmental and institutional settings both at the local, national and international level. Leading a successful rural livelihood is, thus, determined by a number of factors, particularly in today's rapid globalization era where there is growing integration of world economies. Moreover, unlike the previous periods at the moment agricultural extension service, structure, organization and service could also influenced by international bodies and agreements such as WTO that governs international trade agreements. In this respect, use of holistic unit of analysis such as livelihood and innovation approaches would be useful to understand how rural people struggling to maintain their livelihoods and how different actors interlinked and influence it either positively or negatively.

This chapter attempts to discuss certain rural livelihoods and globalization features that could influence rural livelihoods development. Besides, it also provides insights for optimum role of agricultural extension for current as well as anticipated future in realizing the dream of poverty reduction and sustainable rural livelihood development in Ethiopia.

Key Rural Livelihood Assets and Strategies

Land and labour are considered as crucial livelihood assets for maintaining meaningful rural livelihoods in Ethiopia. Apparently, access to land is one of the important factors as non-farm employment opportunities are very rare in the country. According to FDRE (2001), Ethiopian current development strategy is also based on utilizing available land and human resource as there is acute scarcity of capital. However, land and labour issues are paradoxical. On one hand it has been said that the country posses rich natural resource endowment with huge agricultural potential[9] (fertile land, water resources, large biodiversity, huge livestock and human resources, diverse agro-ecology suitable for different crop and livestock production). On other hand, the low performance of agriculture is mainly reflected by low level of land and labour productivity (EEA/EEPRI, 2005). Furthermore, despite having enormous water resource potential, a substantial proportion of the country land is cultivated with rain-fed and irrigated agriculture covers only 4.6% of the total cultivated land (FDRE, 1997; cited in Beshah, 2003).

During the imperial period majority of land was owned by landlords and this unequal distribution of land forced a substantial number of smallholder farmers to be tenants. In response, Ethiopia took a land reform in 1975 that nationalised all rural land and replaced heterogeneous age-old land tenure system. Accordingly, land is legitimized to be owned by the state with periodic redistribution given to farmers on use-right (usufruct) basis. Besides, the government also took further action to turn large-scale commercial farms into state farms (Alemu, 2005; Kebede, B. 2006). Under the current regime, though it has adopted a free market economy, land is still in the hands of state ownership and declares land ownership issues as a constitutional matter (FDRE, 2001).

Since the undertaking of land reform, some assume that distribution of rural land is relatively equitable in Ethiopia (Rahmato, 1995; cited in Kebede, 2006); while others argue it is not equitable as it is assumed even as compare to some other African countries that allowed private ownership and land market (Githinji and Mersha, 2007; Kebede, 2006).

> The widespread consensus that land is distributed equitably has partly influenced the nature of the debate on land policy in Ethiopia. For example, most of the debate focuses on other issues like security of tenure. The possible increase in inequality is given as an argument against privatization of land with the implicit understanding that inequality can only go higher (Kebede, 2006: 2).

Though the majority of rural people have access to rural lands, they are struggling to meet their basic subsistence needs from an average land holding of less than one

[9] Ethiopia has a total area of 1.1 million square kilometres, with an estimated population of 77 million (Abate, 2007).

hectare of land. FDRE (2005) indicated that average per capita land area for small holders falling from 0.5 hectares per person in the 1960s to 0.11 hectares per person in 1999. The rapid population growth has also resulted extreme shortages of land. Consequently, "informal rental land markets are emerging in an environment of general scarcity of land and uncertain legal context" (Teklu, 2004: 194). It was estimated that about 15 percent of farm households are actively engaged in these informal land markets (Ibid). These kinds of markets are supposed to help farmers

> as a way to pool resources and risks, and balance factors of production at farm level (for example, land to labour or land to oxen). Because non-land factor markets are missing or incomplete, farmers also use these land markets as a substitute for missing or incomplete factor markets, such as credit, oxen and labour markets. By tying together these transactions commonly in share tenancy, these informal land markets provide a vehicle to overcome imbalances in factor proportions at farm level, access to non-land factors such as labour, oxen and credit, and potentially improve production efficiency (Ibid: 171).

Ethiopia is one of the countries that have huge population in SSA but high population size alone could not be helpful unless it would be productive. In places where there are limited land resources, high number of population size, instead, would have negative impacts such as increasing degradation and fragmentation of land. According to World Bank (2005) the marginal productivity of labour is estimated close to zero, particularly in the highland areas of the country. Although, little work has been done it is being felt that a frequent seasonal labor migration of farmers to work in another farmers' farm such as coffee producing areas for earning some income mainly for purchasing oxen and other farm inputs would show as a low productivity of labour on their land with existing available technology forced them to seek another alternatives. Besides, the spread of HIV/AIDS epidemic in rural areas (Bishop-Sambrook, 2004) and malaria would also have a negative implication in using human resources effectively (Ayele et al, 2003). In this regard, being able to work makes the difference between eating and going hungry. Moreover, livestock disease is also considered as a major treat as bit is being one of the key resources particular in pastoral areas.

In addition, "farmers' ability to use their land more effectively and efficiently is influenced by a variety of factors including personal views, family views, technology, profitability, complex, public opinion, research, change agents and marketing" (Kotile and Martin, 1998; quoted by EEA/EEPRI, 2006: 54). Some of these factors can be enhanced through provision of adequate training and education. Several studies that indicate that literate farmers are more likely adopt technology than illiterate ones (Croppenstedt et al., 1998 quoted by Weir and Knight, 2000; Admassie and Asfaw, 1997 quoted in Weir, 1999). However, most Ethiopian farmers are not educated. Besides, Ayele et al (2003) showed that Ethiopian farmers do not send their kids to school even if it is accessible. Instead, most farmers employ them in farming, particularly during peak seasons in rural areas. This might have increased the cost of sending children to school. Obviously this would have a great influence on knowledge based modern agricultural production that requires a skill.

Ethiopia is not also adequately utilized its huge water resource. During the imperial and socialist (*derg*) periods, large-scale and complex water projects were promoted to provide raw materials for the growing agro-industries. The later also showed interest in small-scale irrigation schemes in responding to the 1984/85 famine. However, most of the state-run water projects of the *derg* period were said to be slow, poorly operated and poorly managed (Rahmato, 1999). Recently, small scale water harvesting techniques has been promoted as an additional element of the extension program to alleviate shortage of water problem. However, majority of water harvesting structures were not successful mainly due to construction and implementation problems and part of the problem associated to ambitious targets and goals as well as lack of adequate skilled extension personnel (EEA/EEPRI, 2006; OCHA, 2003). That is to mean Ethiopian agriculture is still based on unreliable rain-fed and rural people live is still at great risk in case of rain shortage.

Rural livelihoods Vulnerabilities

Agriculture in Ethiopia is dominated by small-scale farmers, which accounted for 97% and more than 90% of cultivated area and total agricultural output (MEDaC, 1999; cited in Ayele, 2003). Moreover, it is heavily depend on rainfall, fragmented small plots of land, limited application of agricultural technologies and inputs, its productivity is very low and exposed to vagaries of nature (EEA/EPRI, 2006).

> Small scale resource poor farmers in Ethiopia...are often caught in low-risk/low-return food grains production. With insufficient availability of finance and unpredictable outcomes, they are afraid of and cannot afford to take the risk of diversifying their farming activities from subsistence food production into potentially higher-return activities or of spending their limited cash on purchased agricultural inputs, because if they fail – either because of crop failure, price collapse, or failure of demand, they will not have either the basic food they would otherwise have produced, nor the cash to purchase it, and their families will go hungry (FDRE, 2005: 4).

The small scale farmers are affected by frequent drought and climate change that leads to food insecurity and famine threats. More than 44 percent of the population is estimated to live below the national poverty line equivalent to 45 US cents per day[10] (Ibid).

> Combinations of natural and man-made factors have resulted in a serious and growing food insecurity problem in many parts of the country. About fifteen million people are facing food insecurity that is either chronic or transitory in nature. About five to six million people are chronically food insecure. The remaining ten million are vulnerable, with a weak resilience to any shock. Under any emergency circumstances, the likelihood of these people falling back into food insecurity is high (FDRE, 2005: 51).

Just in two decades time, Ethiopia has experienced seven major droughts (Diao and Pratt, 2006). These even do not give many families adequate time to recover from previous disaster before the other one occurs. Consequently, the latter would wipe out what ever few assets they have remained. Apparently, every year several thousands of people are on the verge of survival.

The proportion of people that have been affected by drought and famine is increasing from 4% in the 1970s to over 20% during 2002/ 2003 (EEA/EEPRI, 2004; cited in PANE, 2006). To make matters worse the numbers of people that face food deficiency surpass the amount of the supply of food aid (Figure 7). Thus, at the present day lifting the rural people out of food insecurity and poverty remains major challenges of development efforts in the country.

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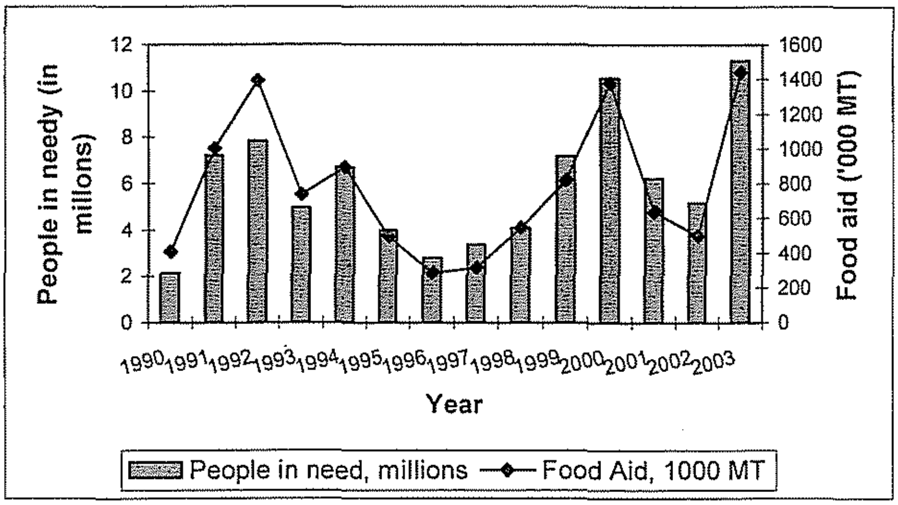
[10] Based on the 2000 poverty analysis

Figure 7
Comparison of people in need and amount of food aid in Ethiopia (1990-2003)



Source: Computed based on Disaster Prevention and Preparedness Commission (DPPC) data

Moreover, the country's soil resource is degraded at an alarming rate.

> The Ethiopia Highlands Reclamation Studies (EHRS) estimated that half of the highland area (27 million ha) was significantly eroded, and another 14 million ha were seriously eroded and left with relatively shallow soils. The study designated over 2 million ha of land to suffer from irreversible erosion, which is said to be unlikely to sustain farming in the future (Constable, 1985; cited in Beshah, 2003: 21).

Hence, though, it can be argued that the famine and shortage of food is happening due to adverse environmental condition, it can also be an indication of deterioration of food production and failing of livelihood strategies to cope with adverse in the case of Ethiopia.

Efforts taken by agricultural extension services of the country so far were to intensify agricultural production of smallholder farmers mainly through application of improved seeds, fertilizer and agro-chemicals. Yet, consumption of fertilizers and improved seeds in the country is still very low (Kelemework and Kassa, 2006). Despite the claim that PADETES has used extensive supply of improved seeds and application of fertilizer, EEA/EEPRI (2006) study reported that about two-thirds of the extension program participants were found to use local. It also indicated a significant number of farmers abandon to use some components of the packages (Ibid). Awulachew and Merrey (Undated) compared the sources of agricultural production growth in Ethiopia and found that during the period 1980-2001 average annual production growth value for cereal, pulses and oil seeds mainly come from expansion of agricultural land/ extensification that is accounted for 0.47 percent and growth in productivity is accounted for 0.14 percent (Table 2). Yet, due to rapid population pressure, agricultural lands expanded to a less productive, highly vulnerable to degradation and steeply mountainous and marginal land. These would have a significant influence on reducing the potential productivity as well as degrading the natural resource management.

TABLE 2

Average cereal, pulse and oil seed yield growth for the period 1980-2001

	Type of crop			
	Cereal	Pulses	Oil seeds	Total average
Average annual production growth	0.74	0.6	0.48	0.61
Growth attributed to land expansion	0.57	0.45	0.38	0.47
Growth attributed to yield increase	0.17	0.15	0.1	0.14

Source: Awulachew and Merrey (Undated)

In general, agricultural extension service was believed to increase land and labour as well as enhance efficient use of water resources through provision of relevant information and technologies. Yet, though, several efforts have been taken in Ethiopia since its inception, changes recorded so far are not encouraging enough in realizing the dream food security and poverty reduction in the country.

Agricultural sector is still characterized by low technology, productivity and high risk (Webb and Braun, 1994; EEA/EEPR, 2006) and has remained underdeveloped in Ethiopia. There are combinations of factors responsible for the poor performance of the Ethiopian agriculture such as limited availability of technologies, lack of credit, high input price and lack of market access or farmers inability to use those technologies.

According to Byerlee et al., (2007) Ethiopian agricultural development faced two major challenges: weak market institutions and infrastructure, and recurrent droughts and high variability in production. Moreover, "the growth that has occurred to date has been erratic at best, and has largely been driven by upswings in rainfall" (Ibid: 3).

Generally, factors that influence Ethiopian agriculture and rural livelihoods vary from agricultural policy related problems to exogenous factors such as drought and war (Ayele et al., 2003). "A recent analysis indicated that farmers are only achieving on average 60 percent of their potential production, given current levels of input use" (World Bank 2006; cited in Byerlee et al., 2007). Besides low technical efficiency, expansion to more marginal areas as population increases, as well as serious problems with soil erosion and degradation are also cited as a cause for productivity decline despite effort of agricultural intensification practices in the country. Annual rate of soil loss on croplands is estimated to be about 42 tones per hectare per year and total loss in average production due to soil degradation is also estimated to 2-3 percent per year (Hurni, 1993; cited in Beshah, 2003).

In addition poor institutional arrangements, inefficient input and output markets, inadequate infrastructure and external market significantly contributed to food insecurity in the country. Excessive dependency of Ethiopian agriculture on rainfall has profound effect on agricultural as well as other sectors and overall fluctuation in GDP corresponds to good or bad weather years.

The extension service and the input supply were important and interlocked factors for promoting technological change and the consequential positive impacts on production, productivity and income enhancement (Negatu, 2000). Adugna and Demeke (2000: 138) indicated that "the use of agricultural inputs especially fertilizer might have been much lower than what it is today if it were not for the availability of credit extended by banks and other financial sources. Over 80% of fertilizer sales in the country are through credit". Nevertheless, the credit market is very weak and farmers had have complaints regarding to time of input provision with a credit, interest rate and pay back period (Ibid; EEA/EEPRI, 2006). Moreover, 87% of the DAs reported that they were involved in fertilizer credit repayment process. However, this would create conflicts between them and farmers and would affect the overall extension program (EEA/EEPRI, 2006). "Indeed, food insecurity in Ethiopia is by and large the result of dependence on low-input, low-output rain fed agriculture and limited diversified livelihoods" (EEA/EEPRI, 2006: 71). According to Devereux S. (2000: 1)

> the food insecurity in Ethiopia asserts that the problem can be simply conceptualised, as follows: a) Landholdings are too small - although unusually evenly distributed - to allow most farming households to achieve food production self-sufficiency; b) Population increase reduces landholdings further and places intolerable stress on an already fragile natural resource base; c) Soil fertility, already very low, is declining due to intensive cultivation and limited application of yield-enhancing inputs; d) Recurrent droughts add food production shocks to abnormally low yields; e) Limited off-farm employment opportunities restrict diversification and migration options, leaving people trapped in increasingly unviable agriculture.

From this discussion, it can be learned that Ethiopian agriculture is not efficiently supported by agricultural services. In general, efforts taken by any of the agricultural extension services to reduce the vulnerability of rural people to different shocks and stress was very minimal instead the focus were on technology transfer activities, particularly to crop technologies. This challenges a half-century age long agricultural extension efforts on why it had not yet able to change small farmers' livelihoods. Hence, it is imperative to consider various kinds of service provision to realize the sustainable rural livelihoods development beyond provision of technology transfer.

Technological and Institutional Innovation

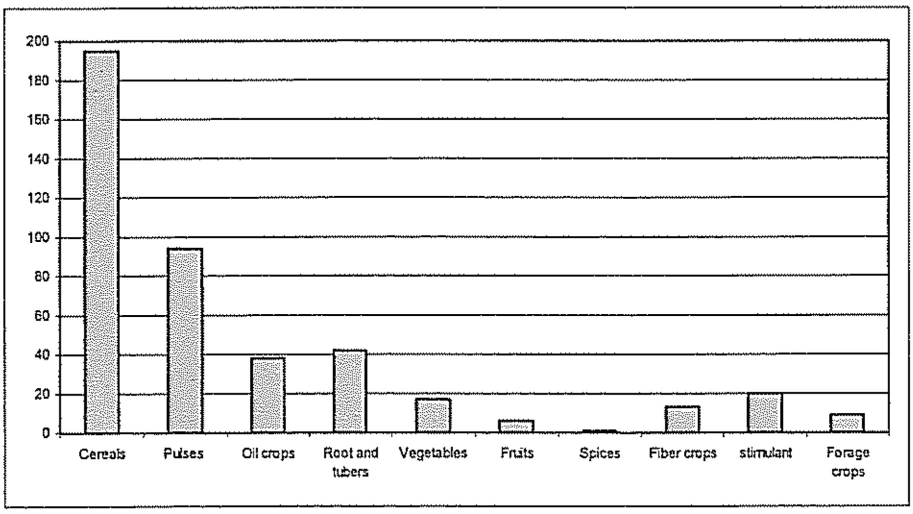
Agro-technological innovation is widely acknowledged as one of the key component for agricultural and rural development. Some even considered technological progress as third factor of production other than labor and capital (Solow, 1957; cited in Ayele, 2000).

> Agricultural technological innovation is closely tied up to supply of inputs, credit, processing, storage, transport, marketing, etc., which call for an institutional innovation. The institutional innovations are mainly available in the form of services...such as agricultural extension, financing, training, seed production and distribution, marketing and market promotion. The services in agricultural innovation assume increasing importance from time to time and are at the same time differentiating because more complex technologies and markets with higher standards and the like (Ibid: 211-212).

In Ethiopia various institutional innovations have been existed. It is also realized those who have relatively greater access to different services such as information, inputs, credit, and markets are better in dealing with their livelihoods than who do not have (Ayele et al., 2003; Davis et al., 2006).

Yet so far the dominant actors in technology development and transfer process of Ethiopia are research and extension institutes. There main activities can be manifested by looking the number of technologies developed and transferred to farmers. In this regard, though there were some technologies developed apart from crop technologies, much of the technologies supplied by the Ethiopian National Agricultural Research System (NARS)[11] were biased to crop technologies (Figure 8) and extension efforts were also concentrated to the same (Figure 9). Thus, the emphasis given by extension service to enhance rural livelihoods beyond transfer of technological package has been very minimal.

FIGURE 8
Number of technologies released by NARS

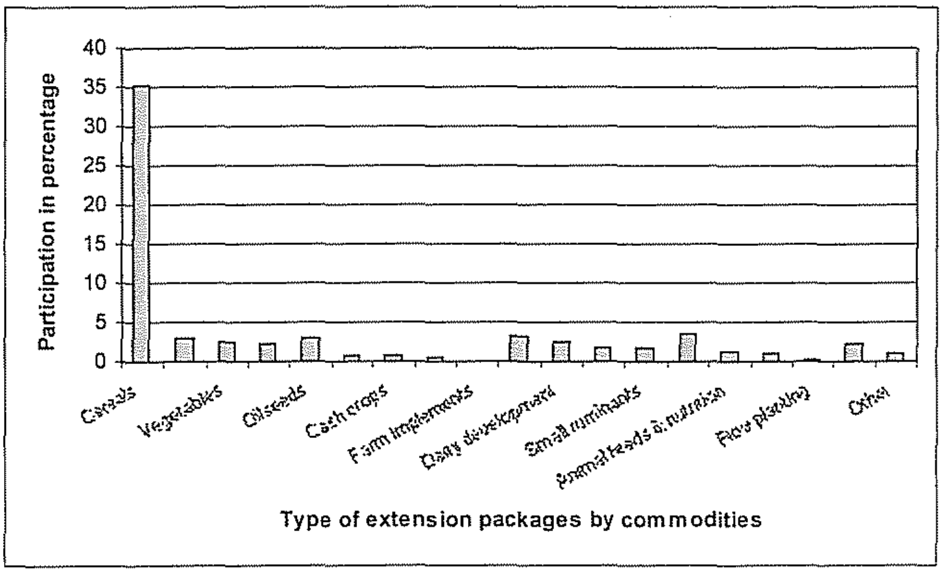


Source: Abate, 2006

[11] Ethiopian NARS consist of Ethiopian Agricultural Research Institute (EIAR), Regional Agricultural Research Institutes (RARIs) and Higher Learning Institutes (HLIs).

Figure 9

Type of extension packages where the respondents participate (N=4585)



Source: EEA/EEPRI, 2006

Two important points could be highlighted form this fact. One is the significance of crop sub-sector in improving food security to majority of the agrarian and urban population. The second is the role of crop sectors as an input for exports and local agro-industries. Though these two points are somehow different, they are not mutually exclusive. However, presence of high number of cereal technologies both in technology development and transfer process indicated the priority given to subsistence consumption so far despite there are some development policies that targets for export and commercial crops. This can also be explained due to limitation of the required skill, capital and infrastructural development for developing as well as promoting commercial commodities. Moreover, there was no forum and discussion that has not indicate the presence of weak linkages among different institutions, particularly that of research and extension, as a major weakness of extension efforts or vice versa (Kelemework and Kassa, 2006). But, agricultural innovation is not following a linear path but complex and interlinked to many factors and actors. And it is not a link between agricultural extension and research institutes but many other institutes that determine for successful rural livelihoods development. Furthermore, there were limited supply of inputs, marketing information, credit access; among others that are mention to hinder development of Ethiopian agriculture (Ayele et al.; 2003; EEA/EPRI, 2006, Kassa, 2005; Kelemework and Kassa, 2006). However, these can not be captured by the existing role of technology transfer, so this highlight the importance of revitalizing agricultural extension services in Ethiopia.

Davis et al., (2006: 2) pointed that

> agriculture in Ethiopia is changing. New players, relationships, and policies are emerging in the sector and influencing the ways in which information is generated, exchanged, and used by smallholders. This growing complexity, characterized by many new technological and institutional innovations, suggests opportunities for small-scale, resource-poor farmers throughout the country. But too little is known about how smallholder innovation will ultimately affect agricultural sector growth, rural livelihoods, and poverty reduction in Ethiopia.

Emerging Issues

The efforts taken by agricultural extension services of the country so far were to intensify agricultural production of smallholder farmers mainly through application of improved seeds, fertilizer and agro-chemicals. However, "dramatic changes are occurring in the agricultural sector today. These changes provide opportunities for some, but threats for others" (Boehlje, 2002:1). As a result of rapid changes in trade liberalization and globalization is said to benefit developing countries from transfer of advanced technologies to alleviate their major developmental problems, use of modern communication devices such as internet and mobile brings a quick interaction and exchange of information among different actors. The current globalization along its opportunities also brings a number of challenges to small holder farmers such as food production for the growing population, food security and intensification; poverty alleviation, income generation and future prospects; sustainability, ecosystems and natural resource management; globalization and market liberalization; multi-functional agriculture; agrarian reform; food safety and chain management; knowledge intensity, knowledge society and commoditization of knowledge (Leeuwis and Van den Ban, 2004).

In Ethiopia after the year 1991, major reform and policy development took place focusing on introducing a market oriented economic development. The policy area covers rationalisation of the role of the state in the economy, encouraging private participation in the economy and trade liberalisation, improving mobilisation of external economy and involving the public in economic management and devaluation (Ayele et al., 2003).

The rapid expansion of globalization urges a country to give strong emphasis to market oriented production. In this respect, two aspects of commercialization activities are emerging in the current agricultural practices: commercialization of the small-scale agriculture via market led production and commercialization via the emergence, growth and expansion of modern agricultural enterprises. In both cases, although some progress is made recently, the export sector is dominated by few commodities (Chanyalew, 2006). A peasant farm targets to produce traditional commercial crops such as oil crops, cotton and pulses; while the private enterprises are rising with horticultural, particularly flower farms.

Since 1991, it open-up the domestic and international market freely, however the already weak peasant agriculture of Ethiopian has faced from unfair terms of trade a challenge to compete with previously protected advanced and relatively cheap imported agricultural products on the local market. For instance, indicated that the despite the comparative advantage of producing durum wheat and barley production in the country, the local agro-industries imported a lot of their raw material (Teklewold et al., 2002). As a result, the smallholder farmers face a risk of lower price if they could able to increase production of a certain products.

Globalization may allow to link small holder producer to international market along with the global value/ commodity chains. Current global market needs highly competent and demands a lot of requirement to fulfill such as quality, grading, patent and brand as well as meet WTO agreements. Yet, as Ethiopian farmers have very limited knowledge and capacity in this respect working together through farmers' organization/ cooperative would play an important role. Moreover, this could also be taking place using contract growers' scheme. All this and other emerging global changes required different extension assistance for the future agriculture. Otherwise, producing in a conventional way would not bring a long term benefit unless the peasant farms are backed with adequate commercial orientation production that is demanded by the order of day.

Participation

In contrast to the previous two, regimes, as its name implies PADETES give a strong emphasis to participation of the farmers in the extension program. It has also said to have a wider coverage as compared to the previous two approaches. To this end, the number of participation has been growing from about 35,000 farmers in 1995 to about 4.5 milllion in 2004 (Metaferia, 2006). Yet, one can question the relevance of growing number participants as a success of the PADETES whether it indicates who are adopting the recommended practice properly or a mere number that could take one of the inputs at one time or other that does not serve beyond a bureaucratic quota targets. In this regard, the fact that the evaluation criteria for development agents and the subject matter specialists in Ethiopia is based on the number of farmers reached or other targets than changes in production and lives of the rural people pointed that participation level was designed to achieve the targets set up at the higher level (EEA/EERPI, 2006).. Moreover, as the name declares, PADETES that used to demonstrate improved technologies and provision of training to the farmers. Hence, the main component in a much spoken agricultural extension of Ethiopia is an activity that pushes technology to the farming communities.

Moreover, it does not give equal participation to involvement of women farmers. The EEA/EEPRI (2006) survey result showed that only 37% of the women have participated in extension advice and training. The field level extension service are also male dominated (27.7 % of the DAs are female).

Public Sector Role

In Ethiopia, though several agricultural extension approaches and methods were deployed by the different regimes with different perspectives (as it has been explained earlier), extension service is largely provided by the public sector. So far the role played by NGOs is very small and that of the private sector is almost negligible.

However, although the public extension service is under attack for not doing enough, not doing it well and for not being relevant (Rivera, 1991), unlike other developing countries during the era of structural adjustment the public extension service was strengthen rather than downsizing. This is due to the fact that the Ethiopian government strong commitment for the development of agriculture and adoption of ADLI that gives much focus for the development of peasant agriculture. However, after a decade of efforts, the performance of the agricultural sector and the welfare of the majority of the rural people are not significantly changed.

However, with the dissatisfaction of its performance of the public sector there have been frequent revision and restructuring. For instance, during the last three decades alone, the Ministry of Agriculture (MoA) has undergone through at least ten major restructuring processes (EEA/EPRI, 2006; Kassa, 2005). Such too frequent changes also affect continuity of extension programs, staff stability as well as destroy institutional memory.

One of the issue raise for attack of public extension service is coverage and quality issues. It has been argued that the coverage and quality of public service extension program is low due to the facts that limitation of resources among others. The dominant current paradigm of the neo-liberal policy revealed that effectiveness and coverage would be increased by privatization of the public services. Though there is a critic for this approach, replacement of extension service by private sector is unlikely in the near future in Ethiopia.

In addition to MoA, the national agricultural research system and some NGOs have also performed agricultural extension service at small scale level. The NARS aims to promote its research results and the NGOs work with local community level particularly to activities relate to over all rural development. Hence, it seems that the rationale behind extension efforts of NRS is to supply of technology and that of NGO is to solve production problem of the peasant societies in promoting technology and other inputs such as credit. However, despite all this efforts it has been often said that there is poor linkages between agricultural extension and research institutes for effective technology transfer mechanism. The research institutes blame that there technologies were shelved because the extension was not taking it; while the extension blames that there is no appropriate or adequate amount of technology to promote. Even the government rural development strategy declares that

> Although Ethiopia has to build its own research capacity as soon as possible, the task of training and creating capable researchers requires long period. Besides, new technology generation also requires a significant time. A rapid growth will be a dream if we indulge in only adjusting our growth to the rate of generating new technologies in our country. For this reason, the major source of our technology supply should not be our own research but what we adopt from others" (FDRE, 2001: 59).

However, technology shopping would not be an easy task due to several barriers and constraints such as access to advanced technologies are limited by the lack of necessary skills, low investment in R & D, costs and restrictions associated to intellectual property right (IPR) and patent issues (Bigman, 2002), that would demand to pay for technology originators on production basis and it would be questionable for traditional small agriculture farms like that of Ethiopia.

To address problem of linkages, through the course of time, a number of efforts were made. The first attempt was establishment of joint program for package testing and formulation of research recommendations to specific areas. Latter a structured Farming System Research (FSR) program was initiated and institutionalised with multi-disciplinary surveys to identify production constraints, validate available technologies on farmers' fields and subsequently to hand over those whose performances were found superior to the ones that farmers have, thereby ensuring research-extension-farmer linkage.

The NARS and MoA were also mad efforts to strengthen functional and institutional linkages through establishments of Research and Extension Liaison Committee (RELC) and latter renamed as Research Extension Advisory Councils (REACs) at different levels to enhance horizontal as well as vertical integration of research, extension and farmers. However, except few of them much of these councils have not done as it expected beyond holding some irregular meetings. This highilight the importance of having agricultural extension provided by multiple actors: public, private, NGOs, cooperatives, and the like. To this end a new a set of arrangements and modalities are required.

Role of Agricultural Extension

The importance of agricultural extension for rural livelihoods in Ethiopia is not questioned but how it can support well rural livelihoods development is challenging. In this respect, the following section examines role of agricultural extension in rural livelihood development.

Some classify functions of extension into two dichotomies: as a purely technology transfer or seeing it as a non-formal agricultural education (Maalouf et al., 1991). Other summarized it as transfer of technology, advisory work and facilitation (Christopolos and Kidd, 2000; cited in Birner et al., 2006). Agricultural extension approaches can also be broadly categorised into: the 'push' type, where the system itself targets innovations to promote among farmers, and the 'pull' type, where the agricultural extension service responds to the demands of farmers (Moris, 1991).

The roles of an agricultural extension service are largely determined by its explicit or implicit goals that it is going to address at the end of the day. In this regard, analyzing the extension policy would have been much helpful. Yet, the country has not had as such a clearly stated extension policy. s. However, it is assumed that it is closely associated with the overall government development policies and strategies of the country and followed an approach that fits to these general directions and on the basis of what donor agencies proposed. Accordingly, since agriculture had given little attention during the first and second five year development plan of the imperial period, there had not been major roles played by agricultural extension except few activities were to introduce some new technologies in some part of the country. Moreover, the number of extension personnel at that time was also limited to provide extension services all over the country[12]. Thus, a 'push' type of extension where technical packages developed by researchers and disseminated to farmers through extension agents have been a dominant function for agricultural extension in Ethiopia.

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[12] Prior to implementation of PADETES, the number of DAs was around. In 1954 there were 2, 39 and 3,500 extension agents in 1954, 1957 and 1995; respectively (Kelemework and Kassa, 2006).

During the imperial period, agricultural and rural sector did not get much attention and limited efforts were targeted for large scale cash or industrial crops. Latter on though the government started to give attention to peasant agriculture with the support of bilateral and multilateral donors its concentration was in a selected potential production areas. Hence, the role of the then comprehensive program was not to assist peasant agriculture but aims for increasing agricultural production supply both for export and local industries. Moreover, the then land tenure system did not benefit smallholder farmers to actively engage in the agricultural sector.

In the *derg* period, though it helps majority of rural people owned their own land, agricultural development efforts were emphasised to large scale state and cooperative farms in order to supply cheap agricultural commodities to local industries and urban consumers. To this end, even the *derg* regime passed a direct intervention on what to produce and by how much to sell it based on a quota system through the then agricultural marketing corporation (Ayele et al., 2003).

It is the current regime that small farms have received a significant attention; however, the focus of production was seemed initially to increase food production but recently due to global other changes shifts it seems a major emphasis to commercial commodities.

In general, when we are looking the role of agriculture and agricultural extension, it was considered as supply of technologies whether be it focused to large or small scale farms. In this regard, agricultural extension was seen as a government policy instrument to modernize agriculture as well as enhance structural changes through the application of technologies such as improved seeds, fertilizers and agro-chemicals. Even the term extension is often called as extension packages as if it is synonymous to technical packages. In nut shell, though there are differences in scale and scope in efforts to help rural people, past extension efforts have been activities that target in technology supplies to change farm productivity by convincing farmers to accept new technology mainly crop technologies that serve for few agro-ecologies but the different socio-economic conditions of farmers were neglected.

Nevertheless, the fundamental question asked here could be is that what the rural people demand and look for from extension service? Is that adequate enough to bring the ultimate objective following these as a major role of extension? There would be no simple and strait forward answer to such question; as it is situation specific and dynamic nature of the environment.

However, two main roles could be highlighted from what is discussed so far. First, due to the significance of the agricultural sector to overall economic growth and development, the emphasis is given to bring commercially developed agriculture, that is, agricultural extension would serve as a bridge between technology developer and users to promote productivity commodities that have high commercial values. Second, emphasis is given to attain food self sufficiency food crops are promoted to increase production. Yet, in both case much emphasis is given for technology transfer to convince farmers to adopt those technologies. However, beyond the promotion of technologies other dimensions such as market, availability of inputs and credits have been affecting the sustainable production of small farmers.

Moreover, today as a result of broader views of poverty (Christoplos and Farrington, 2004) a new role is required to support many aspects rural people livelihoods strategy and objectives. This definitely requires a task more than a mere technology transfer as rural livelihoods development is not require a technological solution for all aspects of its problem and/or challenges. Nevertheless, as rural livelihoods covers many aspects there will be no simple magic bullet roles with regard to declaring roles of agricultural extension. Besides, a lot of question with regard to effectiveness, coverage, costs and the like would also be raised.

In this regard, considering the rural livelihoods assets as a focal point would be helpful to answer what the people wants from extension. Although, livelihood assets differ from individual to individual and one place to the other; land, labour and water consists of the key livelihood assets for the majority of rural livelihoods under Ethiopian context. So, extension is expected to help rural people by improving their livelihood assets and as the same time by reducing various vulnerabilities that can affect them not to utilize their assets effectively. Yet, if this task is suppose to be addressed with simple provision of a technology as it has been done so far will be repeating the same mistake again and again. To this end, the role of agricultural extension should also include an advisory and facilitation role between farmers and other rural services.

The development of rural livelihoods in Ethiopia, thus, requires a well integrated role of agricultural extension services that could make efforts toward creation of competent farming communities that can be transform its agricultural activities very rapidly by diversifying its activities, entering the different value chains and meeting the global competition in a more sustainable way that the traditional production oriented role of extension. However, identifying the optimum role of agricultural extension for rural livelihood development is not an easy task but a very challenging one.

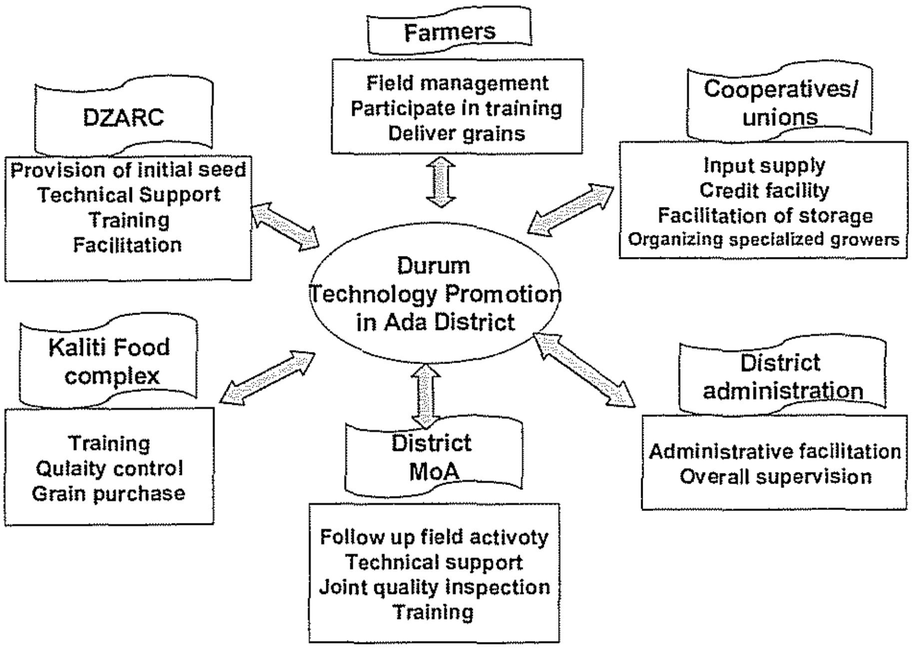
Despite the conventional way of technology transfer activities, these days there are some new way of doing things such as use of farmers field school (FFS), farmer Research and extension groups (FRG/E) and participatory approach. However, still most of the approaches, though, have different names and approaches the main focus are related to promotion of agricultural technologies, i.e, to enhance technology generation and transfer process (Derressa and Kelemework, 2004).

Recently there is an activity that has some element of success and taking efforts to think outside the 'box' (the domain of function of each and respective institutes/ actors). The exemplary approach is an effort to sequentially link research, farmers, agro-industries and/or exporters. This effort brought together all stakeholders on a board and linked them to work together for the mutual reinforcements that ultimately lead to success (Ibid). These approaches brings the different actors/agents such as farmers, farmers' organizations, agricultural expertise, credit providers, private sectors and other stakeholders for joint and complementary task that all would enjoy the benefit at the end of the day. When these success results are evaluated the key elements are the involvement of relevant actors o perform not only their specific task but think on how they can co-ordinate with other to achieve the ultimate groups.

A case in example is given in figure 10 that a durum wheat technology is linked with different actors such as agro-industries, cooperatives, research centre, MoA, local administration) that contribute for effective technology development and transfer in *Ada* district of Ethiopia.

FIGURE 10

A schematic presentation of task sharing and partnership among stakeholders in durum wheat



Source: Assefa, et al., 2006

Of course, the above network was still derived on promotion of agricultural technologies but if it was replaced by objectives that support rural livelihoods; it would have a potential to realize one dream reducing poverty and attaining food security. In this way, actors have to work not only to play their specific role such as technology provider, disseminator, credit supplier, etc., but should look where they would fit and how their role hit the target in response to farmers' problem as part of the agricultural innovation system. It is in this way, the small holder livelihood different constraints can be addressed and their livelihood can be enhanced and hanged. Thus, the role of agricultural extension has also been revisited in considering this new task beyond its conventional one way technology transfer. In general the optimum role of agricultural extension should be an activity that improve livelihood assets, reduce vulnerability and create enabling environments to enhance rural livelihood and there by attain sustainable rural livelihood and poverty reduction. This above all requires, a facilitation and advisory role, than a technology transfer activities. Hence if it is not possible to have all the three roles the optimum would be a facilitation role to meet the different needs of rural people. Yet all this required a different arrangement and pluralistic service providers as it would be a burden to bring such service by a public, a private or any other single actors.

By conceptualizing the peasants' activities with a rapid change global context, one can see the need to revitalize extension function in order to meet the current demands and changes. In this regard, the main role of agricultural extension in Ethiopia can have a role of commercial development of the farmers, facilitating knowledge flows, organizing and empowering framers, extending the state power and authority to the rural areas. Yet all this required a different arrangement. However, if extension is targeted to change the farmers than the farm the optimum function of an agricultural extension is, should consider/ encompass what livelihood assets do the small farmers posses, how they acquire the necessary livelihood assets, what influence their livelihood strategy, what institutional and policy environments should be available and how they should be integrated to support the rural livelihoods.

Accordingly, the agricultural extension should work to enhance should revisit the conventional extension function that targets a supply driven technology transfer by a broad demand driven, context specific extension function that targets the small peasants to improve livelihoods assets, reduce vulnerability and facilitate knowledge flows to enhance the rural livelihoods opportunities and there by to realize the sustainable livelihoods and poverty reduction.

In sum, the road towards rural livelihood development issue is amenable to improve several livelihoods assets, access and strategies, improvement of various technological and other socio-economic conditions of farmers as well as effective and good networks access to credit, market, health service, education and better management of natural resources and other rural services required for sustainable rural livelihood development. Hence, the new role of agricultural extension has take all this into consideration to contribute towards food security and rural poverty reduction. This requires a new look and integrated efforts by all actors to provide a long lasting and sustainable solution.

5. SUMMARY AND CONCLUSION

Ethiopia has implemented a formal agricultural extension since the 1960s to modernize the country's agriculture and increasing agricultural production and productivity mainly through a package approaches.

The different regimes have had their own development strategy priorities and agricultural extension has operated to fit with it accordingly. In this regard, one could say that Ethiopian agricultural extension services can be classified into three different extension movements (Table 3). The first was the imperial period where it had a foundation for establishment of several institutions that would help to transform Ethiopian agriculture, such as through agricultural education and research institutes. The period was also known for the popular CADU project as an exemplary development model, even some stated that it is comparable to the famous models like that of Mexico and India. "Best known of major rural development projects are Mexico's PIDER program, Kenya's KTDA, Ethiopia's CADU scheme, India's Panchayati Raj, and the Masagana 99 program in the Philippines" (Moris, 1981; quoted in Cohen, 1987: 13).

However, the imperial regime gave priority to improve industrialization and building infrastructural development. Thus, the main objective of the agricultural sector at that time was to achieve import substitution and to promote export earnings. As it has been discussed earlier, the main defect in the first phase was that its beneficiaries were mainly the landlords. That made the large number of small and marginal farmers simply into observers rather than participants. Hence, it was the large scale, commercial farmers who had been given attention and benefited a lot. Moreover, the socio-economic and political nature of the feudalistic regime would not allow the small scale farmers to benefit and change their livelihoods except through lip service paid by policies and/or government officials.

The second extension movement was the period which started from the 1975 land reform proclamation. It was socialist in its character and ruled by the Military Regime. It had a plan to solve agrarian problems with a revolutionary type land reform policy that redistributed rural lands and allowed the majority of small holder farmers and tillers to own farming lands. Though the focus was geared towards small and the marginal farmers, it had also its own constraints that limited support to enhance production and productivity as well as changing rural livelihoods. It had abolished private ownership of rural lands and prohibited transfer of land from one holder to the other by any means such as selling and exchange. The focus of agricultural extension was also on promoting producer cooperatives and large state farms. To this end, various incentives and priority were given to producer cooperatives and state farms in the provision .of credit, agricultural inputs and other services. Moreover, the central planning policy of the government had a strong intervention to determine what to produce, where to sell and by how much to sell. This in return would discourage farmers to produce more, among other factors that hindered development of the sector.

The period after the overthrow of the military regime & the take over of the present government can be considered as the third phase of agricultural extension movement. In contrast to the other two regimes, the priority of agricultural extension during this period is on small scale farmers. Moreover, PADETES is planned and financed by the Ethiopian government and has emphasized active participation of rural communities and other stakeholders. The period is also known to have an aggressive extension intervention and the total number of participant farmers reached was reported at 4.2 million from a total of about 10 million small scale farmers in the country (Kelemework and Kassa, 2006). Participation is not an end by itself but a means to further changes in development. In this regard, although the third movement is better in giving recognition to small scale peasant agriculture and has done to improve it, the very critical point to be raised here is that whether these efforts help to change the lives in the large rural communities and brings a sustainable rural livelihood development or not.

It is observed that in all the three regimes the basis of the agricultural extension is production oriented, focusing on technology supply strategies to increase agricultural production and productivity. The role of the agricultural extension in this regard was to promote agricultural inputs using various methods and approaches. However, most of the efforts were top down, donor driven and biased to few crop technology packages as well as highly influenced by the respective political systems.

Yet, though there are some major differences among the three agricultural extension implementation episodes, I argue that all of them have some comparative aspects as all the past efforts on agricultural extension service have not adequately addressed the needs of rural livelihoods. Moreover efforts undertaken so far are not strong enough and promising in the fight against poverty. Rural poverty incidence was estimated by the Ethiopian government in 1999 at 45 percent (World Bank, 2005). Furthermore, the agricultural sector and rural livelihoods still face with a number of problems that have hampered the full exploitation of their potential.

Hence the role of conventional agricultural extension is questionable, particularly in light of dynamic global and local changes. To this end, the study indicates that the optimum role of agricultural extension should include transfer of technology, advisory work and facilitation depending on a local context and required needs and demands. However, in all the above mentioned functions the educational component has to be also in place to guarantee continuity of the support and empowering farmers to cope with new challenges and opportunities, as they (and us) are now living in a rapidly changing world.

Table 3

Summary of agricultural extension intervention under different regime in Ethiopia

Regime	Overall Economic policy	Ownership of land	Focus on agricultural intervention	Major milestone related to agricultural development	Main extension approach	Principal ideology
Imperial period (pre-1974)	Market economy	Private/ landlords	Large scale farmers	Establishment agricultural institutions such as agricultural extension, education and research	Community Development, Package approach (Comprehensive and Minimum packages)	▪ Modernization theory (agricultural modernization) strategy ▪ "Big is better" ▪ Focused on agricultural mechanization and large-scale commercial farms.
Socialist period (1974-1991)	Central planning system	State	Priority to state and collective farms	Land Reform (Nationalized lands/ farms)	Minimum packages II, PADEP, Modified T & V	▪ Public ownership ▪ Focused on large scale cooperative and state farms
Post 1991	Market –led	State	Small farmers	▪ Agricultural Development led Industry strategy ▪ Decentralization of the system of service delivery, aggressive extension intervention have been taken place ▪ Liberalization of output markets	Modified T & V, PADETES, Household menu based	▪ Populist vs free market economy ▪ Focus to small scale farmers

Source: Own construction

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