FARMERS' COLLECTIVE ACTION AND AGRICULTURAL TRANSFORMATION IN ETHIOPIA

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DECLARATION

Name: **ETENESH BEKELE ASFAW**

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Exact wording of the title of the dissertation or thesis as appearing on the copies submitted for examination:

FARMERS' COLLECTIVE ACTION AND AGRICULTURAL TRANSFORMATION IN ETHIOPIA

I declare that this thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

November, 2018

SIGNATURE DATE

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ACRONYMS AND ABBRIVIATIONS

AGRA	Alliance for a Green Revolution in Africa
ADLI	Agricultural Development Led Industrialization
AGP	Agricultural Growth Program
ARDPS	Agriculture and Rural Development Policies and Strategies
ATA	Agriculture Transformation Agency
ATVET	Agricultural Technical and Vocational Education Training
CSA	Central Statistical Agency
DA	Development Agent
DHS	Demographic and Health Survey
EEA	Ethiopian Economics Association
ERHS	Ethiopian Rural Household Survey
EDRI	Ethiopian Development Research Institute
EPRDF	Ethiopia Peoples' Revolutionary Democratic Front
FAO	Food and Agriculture Organization
FDG	Farmers' Development Group
FDRE	Federal Democratic Republic of Ethiopia
FF	Farmers First
FHH	Female Headed Households
FTC	Farmers Training Centers
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
ICT	Information Communication Technology
IFPRI	International Food Policy Research Institute
KII	Key Informant Interview
MHH	Male Headed Household
MoA	Ministry of Agriculture
MoANR	Ministry of Agriculture and Natural Resources
MoFED	Ministry of Finance and Economic Development
MoPED	Ministry of Planning and Economic Development
MoLRA	Ministry of Land Reform and Administration
MPP	Minimum Package Program
NPC	National Planning Commission
PADEP	Peasant Agricultural Development Extension Program
PADETES	Participatory Demonstration and Training Extension System
PAES	Participatory Agriculture Extension System
PRSP	Poverty Reduction Strategy Papers
SDPRP	Sustainable Development and Poverty Reduction Program
SHF	Small Holder Farmer
SNNPR	Southern Nations Nationalities and Peoples Region
SPSS	Statistical Packages for Social Science
T&V	Training and Visit
TFP	Total Factor Productivity
TLU	Tropical Livestock Unit
ToT	Transfer of Technology
UNISA	University of South Africa
WI	Winrock International
WB	World Bank

ABSTRACT

Rural Ethiopia rolled-out a program for the establishment of farmers' collective action groups known as 'Farmers' Development Groups' (FDGs), in 2007, based on presumed common interest of smallholder farmers. Although the government trusts that FDGs fetch fast and widescale agricultural transformation as part of the participatory agricultural extension system, systematic study and evidence on what motivates smallholder farmers to act collectively, the group dynamics, long term impact and transformative potential of the agricultural extension groups is scarce.

Using the expectancy-value theory in social-psychology, this study explores what drives smallholders to act collectively; their participation level and benefits in groups, particularly for women and the youth; and the extent to which farmers' groups attain intended agricultural transformation goals of productivity and commercialization. The study collected a mix of qualitative and quantitative data in 2016, through 46 key informant interviews; 8 focus group discussions with farmers, and a survey of randomly selected 120 smallholder farmers (30 percent women) in four sample woredas (districts) of Ethiopia. The findings of the study are drawn through a content analysis, and descriptive and correlation analysis of the qualitative and quantitative data, respectively.

The study findings show that social identity, and not 'common interest' motivates smallholder farmers to join and participate in FDGs. The study provides evidence that participation in FDGs enhances smallholder farmers' adoption and use of agricultural technologies, where 96 and 84 percent of the farmers who received extension messages in the group on crop and livestock production, respectively, applied the message. Consequently, by 2015 more than 85 percent of the survey respondent farmers reported above 10 percent increase in crop and livestock productivity.

Nevertheless, the nature of the incremental changes brought by the collective actions are not transformative, nor sustainable. Extension groups have limited contribution to commercialization of smallholders, where only 20 percent of the FDG members participate in output marketing. More so, FDGs avail limited collective opportunity for the landless youth, and married female farmers in a rural society where difference in power, status and privilege prevail. It also limits deviation of thought among the rural community.

Limited access to inputs and technology; large family size; limited access to farm land; over dependence of the extension system on 'model' farmers and public extension agents, and poorly designed sustainability features bound the transformative potential of FDGs.

The study forwards a set of five recommendations to unleash the potential of FDGs: reconsider the group design to be identity congruent; ensure inclusiveness for young and female farmers; empower and motivate voluntary group leaders; encourage collective marketing and; invest in sustainability features of the group.

Keywords: collective action; expectancy-value theory; social identity; agricultural transformation; smallholder farmers; agricultural extension; farmers' development groups; group dynamics; commercialization; participation

CHAPTER 1:

INTRODUCTION

1.1 INTRODUCTION

The concept of collective action is widely used in social science discussions to refer to the aggregation of actions of two or more individuals based on a collective decision or common belief. In this study, the collective action concept is used in the context of smallholder farmers' groups and their action for agricultural transformation. Agricultural transformation in this study means a process of change in the subsistence agricultural sector through adoption of agricultural technology, increased agricultural productivity, and commercialization of smallholder farmers. Such transformation improves the livelihoods and incomes of male and female smallholder farmers, living in rural villages and conducting agriculture on a land holding size of less than 2 ha on average, and ultimately a nation.

Debates on the transformative potential of smallholder farmers' collective actions are inconclusive. Collectivism of smallholder farmers, both male and female owning small plots of land, has nevertheless, been attractive for policy makers and practitioners in developing agrarian nations to attain widescale agricultural transformation. This said, if farmers collectivism is to be encouraged and enforced for the transformation of agrarian nations, it is important to establish the extent to which collective actions contribute to agricultural transformation and understand what motivates farmers to collaborate and act collectively. The context of smallholder farmers in Ethiopia motivated this doctoral study.

The first section of this chapter introduces the research problem. The chapter then sets the context of the study. The third section of the chapter presents the research objectives and questions that guided the research undertaking. This is followed by sections that highlight the significance of the study, the research methodology, and the ethical considerations made when undertaking the field study. Finally, the chapter provides an outline of the thesis chapters.

1.2 RESARCH PROBLEM

Mixed and at times contrasting narratives about the transformative potential of collectivism and individuals' participation in collective actions prompted the research problem for this study. Despite wide use of the collective action concept in social sciences, studies on why individuals participate in collective actions, how collective action groups perform, their group dynamics and potential benefits are indecisive, and opinions are sharply divided. Most importantly, debates on the transformative potential, impact and sustainability of smallholder farmers' collective actions are intense.

On the one hand, several studies at different times and contexts including that of Ayer (1997), Steady (2006), Stern (2007), and Dasai and Jeshi (2013) all indicated that individuals in a collective action develop a sense of membership and belonging, increased influence, a shared emotional connection, and a greater sense of control through the powers of large numbers. These writers consider collective actions as a platform and framework to organize and mobilize resources for production, secure sustainable natural resources, respond to climate change, influence policy institutions, protest for social and economic change, improve access to information, advocate for community rights, and contribute to poverty reduction. Similarly, empirical studies on farmers' collective actions suggested that collectivism benefits smallholders in farming systems where land size is diminishing, farming population is increasing, production is fragmented, and markets are scarce (Kariuki & Place 2005; Mutunga 2015). Collective action is also said to facilitate economies of scale and improve the bargaining power of smallholder producers (Mutunga 2015). More so, substantial empirical studies on women in collective action organizations indicated that collective actions are efficient approaches to women's empowerment as they create opportunities for women, including female farmers, to organize, and to become economically self-sufficient within their communities (Adnew & Abadi 2011; Narang 2012; Oxfam 2013; Tearfund 2013).

On the contrary, numerous researchers revealed the ineffective and inefficient features of collectivism and the challenges faced by collective action institutions. Such inefficiencies and challenges, according to the writers, are related to centralization and hierarchy in groups, compulsory sharing, non-excludable public goods, redistribution, group members' lack of interest and free-riding (Francis 1994; Thorp, Stewart & Heyer 2005; Myatt 2007; Di Falco & Bulte 2011).

Adnew and Abadi (2011) argued that income benefits for female farmers in market groups are only realized due to reduced and shared costs and risks, but not from actual increased quantity and quality of production and access to higher value markets. Moreover, Adnew and Abadi (*ibid*.) and Narang (2012) emphasized that collective actions do not necessarily lead to broad-based real empowerment for women and are ineffective in altering patriarchal power relations at the home and in the community.

An empirical study by the Alliance for a Green Revolution in Africa (AGRA 2013) highlighted that farmers' collective actions in Africa exhibit resource shortages, unsustainability, inability to expand, low representation and participation of women and youth, difficulty to operate independently, and inadequate skills of members to account for production costs and access market information. Additionally, Bernard *et al.* (2010) stated that benefits for the poorest of the smallholder farmers, who lack resources and social capital, in a collective action is limited, especially when the group is formed for marketing surplus output. Bernard *et al. (ibid.)* also stressed the difficulty encountered by farmers collective action to maintain bonds of loyalty and common vision in the face of persistent market and social failures.

A large smallholder farming population (over 70 million) and a collectivist culture in Ethiopia made collectivism a credible option for policy makers to attain a participatory agricultural extension system and ultimately agricultural transformation at a widescale, in a short period of time. Despite the importance of smallholder farmers for agricultural transformation in Ethiopia, studies on why and how smallholder farmers participate in agricultural extension collective action groups, and discussions on the contribution of farmer groups towards agricultural transformation are limited. The function and practices of FDG in the agricultural extension system of Ethiopia has not been systematically studied nor documented. The main stakeholders in the transformation process, smallholders, are also rarely involved in policy making and analysis. Retaining this research problem at its core, the present doctoral study set out to closely analyse smallholder farmers' collective actions in the face of the much-needed agricultural transformation in Ethiopia.

If farmers' collectivism is to be encouraged and enforced, knowledge on what motivates smallholders to join agricultural extension collective actions, their participation level in the groups

as well as the extent to which the collective actions contribute to the intended agricultural transformation should be well established. The study intends to fill the information gap regarding FDGs along a set of research objectives and questions.

1.3 CONTEXT FOR THE STUDY

1.3.1 Smallholder Farmers in Ethiopia

Studying issues of smallholder farmers, on which the economy and food security depends on, has significance to the improved livelihoods of the farmers and overall development of the agriculture sector in Ethiopia. Agriculture is an essential sector in Ethiopia's economy, accounting for 40 percent of the country's Gross Domestic Product (GDP), 85 percent of its employment and 90 percent of its exports (NPC 2016).[1] The agriculture sector is dominated by smallholder farmers both in number and production. The number of the smallholder households was estimated to be 15.6 million in 2014, with average growth rate of 21 percent in five years' time from 12.9 million in 2008 (Bachewe *et al.* 2015). Majority of the smallholders (55 percent) operate on one hectare of land or less to produce about 95 percent of the annual national agricultural output (CSA 2016).

Livelihoods of smallholder farmers are mainly characterized by rain-fed, subsistence, and low input-low output farming systems. Smallholder farmers' livelihoods are challenged by periodic and location specific droughts, soil degradation, deforestation, high population density (93 people/km square), high dependency ratio (105 percent), high fertility rate (5.2 children per woman), fragmented land holdings (up to 12 plots per household), undeveloped irrigation water resources (only 3 mill hectare developed), poor access to transport infrastructure (only 22 percent rural community having access to roads), poor agricultural mechanization and poor market linkages (Gebreselassie 2006; Assefa 2008; Bachewe 2009; CSA-WB 2013; NPC 2016; CSA-ICF 2017).

[1] Ethiopia's crop and livestock sectors are elaborated in chapter 2 of the thesis.

1.3.2 Agrarian Reform and Transformation in Ethiopia

Two extreme views exist regarding agrarian reform.[2] One view is the liberal school view that argues for market-led and voluntary agrarian reform, excluding significant political change. The other view is a radical one that proposes forces to be applied against landowners to redistribute 'land to the tiller' (Moyo 2008; Baye 2013). Ethiopia experienced the radical form of land reform that abolished the age-old, private land ownership in 1975, with the fall of the feudal regime. The basis for the then land reform (further explained in the next chapter) was the plight of smallholder farmers in the 1960s and the emergence of radical thinkers who favored complete change of the then feudal system (Kassa 2003; Baye 2013).

Despite major government-led efforts for land redistributions and pro- smallholders' institutional innovations in the 1980s, it is important to emphasize that 'agrarian questions' of the smallholders, for improved production and income, and secured land ownership were not answered by the then agrarian reform. Consequently, smallholder farmers in Ethiopia continued to experience low agricultural production, productivity and income. More so, the 1975 agrarian reform policies, together with droughts, political instability and socialist price controls in the 1980s led to structural challenges including: scarcity and fragmentation of productive farm lands, low migration of farmers out of farm land, environmental degradation, low farm income and productivity, lack of investment in land, insecurity of tenure, and food insecurity (Kassa 2003; Nega, Adnew & Gebreselassie 2003; Gebreselassie 2006; Kassa 2008).

The persistent challenges in the agriculture sector long after the 1975 agrarian reform in Ethiopia necessitated the design of transformative policies and strategies that focus on improving the effectiveness of the prevailing land tenure system. To this end, the Federal Democratic Republic of Ethiopia (FDRE) government, that took power in 1991, expressed the vital role that agricultural transformation plays to sustain and stabilize agricultural production and satisfy both household

[2] The term agrarian reform in this study is used to refer to changes in land tenure rights or land reform. It may involve restoration of land rights to previous owners, redistribution of land rights from one (sector) to the other or may involve land consolidation (Baye 2013).

consumption and market demands, without fundamentally altering the prevailing land tenure arrangement.[3]

1.3.3 Ethiopia's Agricultural Transformation Policy

The principles of Ethiopia's agricultural transformation policy and strategies are outlined in the national development strategy known as 'Agricultural Development Led Industrialization (ADLI)', adopted by the FDRE government since 1993 (MoFED 2003; Adugna 2010).[4]

The ADLI strategy stipulates that agricultural growth (transformation) is the starting point for the structural transformation of Ethiopia's economy (MoPED 1993). The ADLI strategy underscores that agricultural transformation endeavors in Ethiopia should focus on the adoption and use of improved and modern agricultural technologies and practices, increased agricultural productivity and commercialization of the smallholder agriculture. To this end, the biggest responsibility in the transformation of smallholder farmers agriculture is trusted to be contributed by the public agricultural extension system, through the provision of knowledge and skill enhancing trainings, demonstrations and popularization of improved agricultural technologies (MoFED 2010).

In 2005, Ethiopia adopted a Participatory Agricultural Extension System (PAES), as part of the evolution of the agricultural extension system. The objective of the PAES is greater participation of smallholder farmers in the delivery of extension services through their social networks, at a wider scale and in a quick manner. Accordingly, to fulfil its scaling out objectives, the agriculture extension system advocated for the establishment of farmers collective action groups called FDG (MoA 2007). At present, the group extension approach is rolled-out nationally, where about thirty FDGs with twenty-five male and female farmer members, on average are established in each rural kebele to collaborate with the public extension system.[5]

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[3] The visions of the FDRE government are expressed in the policy and strategy documents discussed in detail in chapter 2.

[4] The national ADLI strategy developed into various policy and strategic frameworks including: poverty reduction strategy papers, the Growth and Transformation Plans (2010-2020), and the agricultural and rural development policy and strategy (2003) of Ethiopia. These policies, and their specific agricultural transformation principles, are discussed in detail in chapter 2.

[5] A *kebele* is the smallest administrative unit in Ethiopia which is grouped into one woreda or district with five hundred families (equivalent to 3500 persons on average), that is further sub divided into 3 sub-kebeles. kebele, also known as

This study offers an opportunity to understand and register smallholder farmers' motives for participation in collective agricultural extension groups, and the agricultural transformative potential of FDGs.

1.4 RESEARCH OBJECTIVES AND QUESTIONS

This doctoral study has two research objectives: (i) to investigate and describe the history, status, practice, motives, participation level and benefits of smallholder farmers in farmers' development groups and, (ii) to analyze the agricultural transformative potential of farmers' development groups in the study area.

The study addresses nine broad research questions grouped into two along the two objectives. The first set of research question inquiries: 1. the genesis and drivers of smallholder farmers' groups, 2. what motivates smallholders to join and participate in groups, 3. how inclusive and beneficial the groups are for female, young, and poor farmers, 4. what the role of the public agricultural extension system is in the establishment and functioning of farmers' development groups and, 5. how independent and sustainable farmer groups are. The second category of research questions are related to the assumption that there are opportunities that could be unleashed by farmers' collective action. The questions ask: 1. the level of adoption and utilization of new and improved farming practice(s) and technologies among members of farmers' development groups; 2. the changes in productivity of land, livestock and labor among members of development groups, and 3. the extent of output commercialization among members of farmers' development groups. The study also addresses a research question that needed a correlation analysis between independent characteristics of farmers in FDGs and the three factors of agricultural transformation: technology adoption; increased productivity; and commercialization.

peasant association in rural Ethiopia was created by the socialist Derg government of Ethiopia in 1975. This is further discussed in chapter 2.

1.5 SIGNIFICANCE OF THE STUDY

This doctoral study generates knowledge and discussion on smallholder farmers' collective actions in relation to agricultural transformation. The empirical findings of the study contribute to the knowledge of the scientific community on what motivates smallholder farmers to participate in a collective action and what rewards they get from joining the action. The study provides evidence on contribution and challenges of smallholder farmers' collective actions towards increased adoption of agricultural technologies, farm productivity, agricultural commercialization, and ultimately agricultural transformation. Furthermore, the discussions, conclusions and implications drawn in the study are noteworthy to agricultural policy and decision-makers in developing agrarian nations.

For Ethiopia, knowledge generated from this study will serve as a benchmark to compare the pros and cons of collectivism to other alternative options of engaging with the smallholder farmers in the process of agriculture transformation. Moreover, evidence from the research will be useful for continued discussions around the national agricultural growth and transformation agenda, as well as the validity of the strategy and efforts underway by the participatory agricultural extension system.

1.6 RESEARCH METHODOLOGY AND ETHICAL CONSIDERATIONS

The study employed both qualitative and quantitative research methods in a mixed methods research design, based on the nature of the research objectives and questions. The rationale for choosing mixed methods research design for this study came from the pragmatic principles of the design that encourage the combination of research methods in a single study to provide strength to the study (Creswell & Plano Clark 2011). My decision was also informed and influenced by the mixed research methods philosophical view that mixed methods research design is suitable to answer inquiries in social studies (Tashakkori & Teddlie 2010; Creswell & Plano Clark 2011; Creswell 2013).

The specific research techniques, tools and procedures employed in the study are discussed in detail in chapter 3. Study participants (both farmers and key informants) were asked to partake in the empirical research based on their informed consents. To this end, participants were asked to sign an informed consent form (the consent form is displayed in annex 1).

Ethical clearance was obtained from the UNISA before going to the field. Also, a letter of support to facilitate access to the farming communities was obtained from the Ministry of Agriculture.

1.7 CHAPTER LAYOUT

This thesis is organized into five chapters including the present one. Chapter two, having four sections, presents the literature review and the theoretical framework of the study. The first section reviews relevant literature to shed light on the theoretical debates about the concept of collective action and collectivism. The section emphasizes on the social-psychology explanations of collective action and why individuals participate in collective actions. The second section discusses the theories, main features, and differences between agrarian reform and agricultural transformation. By doing so, the section builds the justification for why this study dwells on agriculture transformation, and not agrarian reform. Next, the section elaborates the main elements of agricultural transformation; why transformation is imperative in developing agrarian nations; and how agricultural innovation systems, specifically agricultural extension, and farmer's collective actions contribute to agricultural transformation. The second chapter also presents other nations' experiences to set a tone on how agricultural transformation took place around the global landscape.

Chapter two further provides a detailed overview of the Ethiopian agriculture sector. It provides a historical review of the agrarian reform and the relevant agricultural policies and practices including the contemporary agricultural transformation efforts of Ethiopia. The section elaborates on the agricultural extension systems of Ethiopia including the current participatory agricultural extension system and the farmers' development groups approach. The last section of the chapter presents the theoretical framework of the study. The framework presents the context, assumed

expectations and values of smallholder farmers to participate in collective actions and the anticipated outcomes of farmers' collective actions.

Chapter three describes and discusses the research methods and approaches used in the study. The chapter provides justification for choosing the qualitative-quantitative mixed research methods approach and its application in the study. The description of the study area, the sampling procedures and sample size, as well as the data collection and analysis tools are also discussed in detail in the chapter. Data sets for the study are collected from 46 key informant interviews held with agricultural professionals, 8 focus group discussions held with farmers' groups, and survey of 120 individual farmers. The qualitative data is analyzed using content analysis while the quantitative data is analyzed using descriptive and inferential statistics on the Statistical Package for Social Science (SPSS 20) software.

Chapter four is devoted to the discussions on the findings of the study generated from the data set. The findings of the qualitative study themes are presented using narratives and quotations. On the other hand, the quantitative findings are presented using tables, percentages, frequencies and correlation coefficients. The chapter also discusses the implications of the study findings. The chapter focuses on answering the research questions of the study by interpreting, conceptualizing, integrating and triangulating the findings of the qualitative and quantitative findings.

Chapter five is the final chapter of the thesis. It provides a summary of the main findings, implications, conclusions and recommendations from the study. The chapter also highlights the contribution of the study to the knowledge of the scientific community and offers ideas for future research considerations.

A list of referenced materials in this study is provided at the end of the thesis chapters. The glossary of important terms, the consent form as well as the data collection tools are displayed at the end of the thesis.

1.8 CONCLUSION

This first chapter presented the research problem, the context, objectives and research questions of the study.

Given the large number of the smallholder farming population and the collectivist agricultural extension policy and culture in Ethiopia, promotion of collectivism and collective action groups appears to be a credible option for decision makers to attain fast agricultural transformation on a broader scale. This study argues that the extent to which farmers are motivated to participate in groups and the contribution of groups to the agricultural transformation efforts of the nation should be thoroughly assessed, if collectivism of smallholder farmers is to be encouraged and enforced in the Ethiopian agriculture extension system. The opinion of smallholder farmers on the collective agricultural extension approach should also be registered, to serve as evidence for future discussions in the area.

The chapter also briefly presented the research methodology, significance of the study, ethical considerations and structure of the thesis. The study intends to describe and explore farmers' development groups that are established under the context of the collective agricultural extension system of Ethiopia. The motive throughout the study is generating knowledge about smallholder farmers' collective actions in the face of agricultural transformation of Ethiopia by using a mixed methods research design.

The next chapter provides the review of literature, and the conceptual and theoretical frameworks of the study.

CHAPTER 2:

LITERATURE REVIEW, CONCEPTUAL AND THEORETICAL FRAMEWORKS

2.1 INTRODUCTION

The collective action concept lies at the heart of diverse social science discussions. The first section of this chapter is devoted to the various theoretical debates and views on the concept of collective action. The section provides a definition of the collective action concept; theoretical approaches underpinning the concept; and an elaborated discussion on why individuals join collective actions.

The second section discusses the theories and main features of the agrarian reform and agricultural transformation concepts, the difference between the two concepts and the rationale for why this study dwells on studying collective actions in the context of agricultural transformation. The section also discusses why agricultural transformation is imperative in developing agrarian nations; and elaborates on how agricultural extension and smallholder farmers' collective actions contribute to agricultural transformation. At the end of the second section, experiences of nations in agricultural transformation is presented to highlight how agricultural transformation happened around the global landscape.

The third section elaborates the context within which this study is conducted. It provides a historical review of the advances in the Ethiopian agriculture sector and the contemporary policy environment that favors agricultural transformation, participatory agricultural extension and smallholder farmers' collective actions.

The last section of the chapter presents the theoretical framework that guided the study. The framework uses social-psychology theories to show the possible motives, expectancy and values that smallholder farmers may attach to decide participation and collaboration in collective action groups. The theoretical framework also illustrates the assumed outcomes of participating in agricultural extension groups.

2.2 THEORETICAL APPROACHES TO COLLECTIVE ACTION

The concept of 'collective action' emerged in the 1960s. It was widely used in the 1970s and onwards mainly by resource and political economists, sociologists and social psychologists (Kelly & Breinglinger 2002). The concept was originally discussed largely in relation to western societies of Europe, who were experiencing various forms of social movements. Most importantly, emergence of collective institutions on issues such as civil rights, environment protection, global peace, and sexuality contributed to the popularity of the collective action concept since the 1970s (Olson 1971; Riesman 1990; Maheu 1995).

Since then, collective action perspectives have evolved in modern literature and are applied to a great diversity of social phenomena in the 21st century. Currently, the concept of collective action lies at the heart of so many important discussions of societies. Accordingly, people's involvement and participation in community affairs, voluntary and charitable activities, religious, economic, social and political groups and associations, are all connected to matters of collective action. The concept is also extensively used in studies of participation in social movements, membership in interest groups, the course of social conflicts, political voting, organization, property rights, and poverty reduction (Klandermans 2004; Mwangi, Markelova & Meinzen-Dick 2012; Bimber, Flangin & Stohl 2014). In this study, the collective action concept is used in the context of participation of smallholder farmers in groups, and the possible contribution of the groups to agricultural transformation of an agrarian nation.

There exist three dominant theoretical schools of thought that explain collective action and collectivism. These are: the traditional collective action theory also known as 'Olson's theory', resource mobilization or social movement theory, and social-psychology theory. The next sections will elaborate the three views.

2.2.1 Traditional (Olson's) Collective Action Theory

The economist Mancur Olson founded the theory of collective action through his work '*The logic of collective action*', first published in 1965. Olson's theory is known for explaining 'problems of collective action' using the concepts of calculative rational choice, self-interest, and the free-rider dilemma (Olson 1971; Riesman 1990; Kelly & Breinglinger 2002).

Olson's work questioned the conventional narrative that states that 'collective interest' gives rise to collective action. He persuasively argued that common interest and group consensus does not generate spontaneous voluntary collective action as it does not provide incentive for an individual's participation in groups. According to his analysis, there is less collective action than what the conventional model explains. This is because the collective action goal, which is a public good, benefits all, even those not in the collective action group, leaving a rational self-interested person with no interest or incentive to join the action (Olson 1971).

More so, Olson claimed that collective action would be confronted by tendencies of rational individuals to free-ride on the efforts of others, particularly in larger groups, where it would be assumed that sufficiently motivated and resourceful others would take charge and supply the benefits and where scale conceals free-riding (Olson 1971; Riesman 1990).

For Olson, groups and collective actors are not efficient. Olson argued that collective action tends to reduce the rate of economic growth of a nation because collectivity calls for redistribution of benefits, which leads to inefficiency, delays, complexity and exclusivity. Olson also sought to demonstrate that a nation's rate of economic growth is inversely related to groups interest and distributional coalitions in the nation (Riesman 1990).

Olson was firmly convinced that it is reward and incentive, in the form of private goods for group members, and punishment or a compulsion for free-riders that leads to collective action (Olson 1971). In other words, for a rational individual to join a collective action, the theory argued a person needs a 'selective incentive' to act in a group-oriented way (Kelly & Breinglinger 2002; Olson 1971).

Olson's theory helped to explain obstacles to effective collective action like the temptation to free-ride, difficulties in locating appropriate contributors to a collective action, non-excludability of public goods, challenges of motivating individuals to contribute under conditions in which individual costs outweigh personal benefits, and the substantial burden of coordinating group member's contributions effectively and efficiently (Bimber *et al*. 2014; Myatt 2007). However, his arguments have been subject to a great deal of critique, modification, and elaboration.

Critiques against Olson's theory emphasized that the assumptions in the theory including free-riding and selective incentive as well as the view collective actors are irrational were very general, old and open to shortcomings. According to Maheu (1995), Olson's theory is incapable of explaining deep motivation for engaging in collective processes and is not helpful in explaining collective action as part of a complex web of social processes. Likewise, Kelly and Breinglinger (2002) stated that Olson's theory missed out on a social psychological account of collective action. Unlike Olson's theory, Kelly & Breinglinger (2002) highlighted that private or selective incentive is unrelated to intentions to participate in a group and that instead, intentions to participate in a group are significantly related to public or collective incentives.

Evidences on the existence of the free-riding problem in groups are also mixed. Several years after Olson's theory, Lowery *et al*. (2004) confirmed the existence of strong and consistent evidence that collective action institutions are susceptible to problems of free-riding. Yet, Bimber *et al.* (2014) explained that free-riding is less common, than what Olson feared, and groups or organizations can always find solutions for the free-riding problem. Critical analysis against the old, but dominant, ideas of Olson came more strongly in the 1980s and 1990s from resource mobilization theorists like McAdam, McCarthy and Zald (1996).

2.2.2 Resource Mobilization Theory

Resource mobilization views towards collective action, also known as social movement theories, were famous in the early 1980s and were used mostly in the study of social movements in the western countries (Tilly 1978; McAdam *et al.* 1996; McAdam 2010). Resource mobilization theorists presented longstanding 'grievances' as reasons for collective actors to act collectively. The theory however explained that grievance alone is not sufficient to create collective action. Instead, grievance mobilizes and brings access to and control over resources for collective action to be created (Polletta & Jasper 2001). The theory argues that it is grievance that motivates collective actors to act collectively and work towards bringing resources they need including money, supporters, attention of the media, and alliances with those in power to be effective, and generate change. Thus, in this theory, gaining access to the resources available to do something collectively and the presence of opportunities for mobilization of the resources are important determinants of collective action (Polletta & Jasper 2001; McAdam 2010).

The resource mobilization theory countered earlier views of Olson that considered participation in collective actions as irrational and illogical. In contrast, the resource mobilization theory saw collective action groups as rational social institutions, created and populated by social actors with a goal of taking a meaningful political or economic action (Kendall 2003; Weismuller 2012). The theory assumes that individuals are rational, and that they weigh the costs and benefits of participation in taking a collective action and act only if benefits outweigh costs and only if their situation can change at affordable costs. Thus, the theory argues that 'self-interest' in the form of perceived costs and benefits is an important construct for collective actions to take place. (Weismuller 2012).

Like Olson's theory, the resource mobilization theory suggested that the 'free-rider dilemma' must be taken into consideration when collective action goals take the form of public goods (Kendall 2003; Pinard 2011). However, unlike Olson's 'selective incentive' solution, resource mobilization theory offered a solution to the free-rider problem by arguing that self-interested individuals are not the ones responsible for the emergence of collective actions and thus do not need selective incentive. Instead, altruistic elites contribute resources, making it possible for collective actions to emerge (Weismuller 2012).

In the late 1980s, the resource mobilization theory received criticism by sociologists and social-phycologists. Critiques pointed out that the theory failed to explain how groups with limited resources succeeded in bringing about changes. Particularly, the rise of successful 'new social movements' like the green movements, peace movements, and feminism in the 1980s and 1990s that mobilized large numbers of members, even compared to resource rich organizations, was used as evidence to show that aggregation of resources was not necessarily required for taking a collective action (Polletta & Jasper 2001; Kelly & Breinglinger 2002; Weismuller 2012).

The resource mobilization theory was criticized for emphasizing on the 'how' of collective action over the 'why' and for depending on rationalistic images of self-interested individuals, leaving important social issues unexamined (Polletta & Jasper 2001). The theory was especially disapproved by scholars who felt that the social movement theory left out crucial social, psychological, emotional and cultural factors.

Sociologists like Johnston, Larane and Gusfield (1994), Klandermans (1997), Kelly and Breinglinger (2002) and Kendall (2003) highlighted that the resource mobilization theory did not assign sufficient weight to 'identity' and culture nor did it explain sociological issues including how 'grievance' was constructed.

Furthermore, the resource mobilization theory was criticized for assuming that individual actors were motivated above all else by grievance, hostile environments, and self-interest, devoid of ties to other individuals or social groups. Opponents of the theory pointed out that a shared 'collective identity' and emotional ties between participants can keep individuals going through setbacks and help them overcome the effects of repression and even when the group is not meeting its goals, whereas a 'hostile environment' may discourage participation even when the individual's commitment to the cause is strong (Fominaya 2010). Opponents also argued that there is more to participating in a collective action, where perceived costs and benefits are not the only motives, but also belonging to a valued group is an important motive (Klandermans 1997; Kelly & Breinglinger 2002; Kendall 2003).

Limitations in the resource mobilization theory, to explain collective action, led to the birth of new social and psychological approaches for explaining the creation of collective actions. In the 21st century, there has been growing social-psychology literature responding to the limitations of the resource mobilization theory. The new theories tried to answer why collective actions exist and amplify the significance of the role of culture and identity in explaining collective actions (Polletta & Jasper 2001; Kelly & Breinglinger 2002; Klandermans 2004; Fominaya 2010).

2.2.3 Social-Psychology Theories

Social-psychology theories, in the 1990s and onwards, came as an alternative to explain collective action, with the main themes flowing from critiques to the Olson and resource mobilization theories. Social-psychology principles explain that human beings desire to connect with and be accepted by others. The principles also suggest that people help and enhance the wellbeing of others with whom they share social connections and are even more likely to do so when they receive rewards. Based on these principles, the social-psychology explanation of collective action

stresses that human beings are social actors who are socially embedded (Kelly & Breinglinger 2002; Stangor, Jhangiani &Tarry 2013).

As an alternative to material and selective incentives suggested by the earlier theories, social-psychology argues that collective identity explanations capture the reasons that persuade people to mobilize and act collectively. Polletta and Jasper (2001) highlighted that collective identity explanations not only answer the question on 'why' individuals participate in collective actions but also explain motivations of people to act collectively, in the absence of selective incentives or coercion. In other words, participation of people happens in groups that motivate them to participate in group affairs and that try hard to achieve their group goals. Also, Klandermans (2004) described that high levels of group identification increase the benefits of group cooperation but also the cost of defection. This means that collective identity creates participation and overcomes the free-riding dilemma, as it makes free-riding less attractive and costly for an individual to take.

Why individuals participate in a collective action, which is the focus of my study, is best explained by social-psychology views. Accordingly, this doctoral study adopted the social-psychology theoretical approach to assess why smallholder farmers participate in collective actions. At the end of this chapter, the theoretical framework of the study elaborates how social-psychology theories of participation in collective action groups are customized and used to inform my study. The next section, however, gives a detailed social-psychology account of why individuals participate in collective actions.

2.2.4 Why do Individuals Participate in Collective Actions?

Participation is an important construct and goal from a social-psychology viewpoint. Although participation is a valued goal, its definition and measures of participation differ widely. For instance, Hammel *et al.* (2008) conceptualized participation as a cluster of values that included active and meaningful engagement, choice and control, access and opportunity, having an impact, supporting others, social connection, inclusion and membership. For Abbaszadeh, Mohammed and Saadati (2010) participation is a process by which people can affect the structures, organizations and authorities, and get the appropriate services in a collective action institution.

Participation in a collective action can be for a short period of time but demanding, it can be indefinite but little demanding, or both enduring and demanding (Klandermans 2004).
In this study, participation is understood as the amount of effort, money and labor (time/ frequency spent on group matters as a proxy) allocated by the individual for the common goal of the collective action.

Social-psychology explanations as to why individuals participate in collective actions are categorized into two. These are the group and the individual levels of analyses or explanation. Both levels of analysis are important in explaining participation and therefore an understanding of both levels of analyses is important (Kelly & Breinglinger 2002). In view of this, the study next discuses both the group and individual levels of explanations for participation in collective actions.

Group level analysis

The group level analysis makes use of the 'social identity' or 'collective identity' approach to explain participation in collective actions. To avoid overextension of the concept, social or collective identity in this study refers to the feeling that group members have towards the groups they belong to (Stangor *et al.* 2013). Klandermans (2004) explained collective identity as a social place shared with other people. This implies that personal identity is always a subset of a collective identity. Similarly, Fominaya (2010) highlighted that 'collective identity' is a set of shared characteristics, principles, and affiliation to specific groups and a positive emotional experience of participation in the group.

The group level analysis of participation adopts social constructionist perspectives. It argues that groups share a purpose and a social identity. Hence, a group is a group when members experience social identity- when they feel good about their group membership and when they define themselves by the group to which they belong (Stangor *et al.* 2013). Social or collective identity approaches explain that people participate in collective actions not so much because of the outcomes associated with participation but because they identify with the other participants.

The social identity concept also suggests that group members engage in a collective action when the action is regarded as improving the conditions of the other group members (Kelly & Breinglinger 2002; Van Zomeren, Postmes, & Spears 2008). In other words, a strong identification with a group is what makes an individual participate in the collective action (Stangor *et al.* 2013).

Klandermans, Sabucedo and Rodriguez (2002) as well as Kelly and Breinglinger (2002) found out from their empirical studies that group identification was significantly correlated to participation in a collective action. There is a recursive relationship between group identity and participation in collective action, where group identification fosters participation in collective action and participation reinforces group identification. Thus, a strong identification with the group makes participation in the collective action group more likely (Klandermans *et al.* 2002).

Individual level analysis

At the individual level of analysis, an individual's participation in a collective action is explained in terms of elements of individual personalities or characteristics and their decision-making processes. Individual personalities that contribute to an individual's decision to participate in a collective action are expressed in the form of locus of control, perceived efficacy, and collectivist orientation (Kelly & Breinglinger 2002).

Individual Personalities: ***Locus of Control***

The concept of Locus of Control (LoC), explained as internal or external, originated as an element of the theory of personality in 1966 (Yamaoka & Stapleton 2016). LoC refers to the extent to which a person believes that changes dependent upon his or her own behavior or personal qualities. An internal LoC refers to the perception of positive or negative events as being the consequence of one's own actions. Thus, people with internal locus of control believe that their actions are effective in obtaining group goals and they perceive that events are a consequence of one's own action and personal control. Whereas, individuals with external LoC interpret positive or negative events as being unrelated to one's own behavior, personal efforts, and beyond personal control. Such individuals believe that regardless of their actions, their fate rests in the hands of chance. To this end, individuals with internal LoC are more likely to get involved in a group, compared to those with external LoC (Kelly & Breinglinger 2002; Yamaoka & Stapleton 2016).

Individual Personalities: ***Perceived Efficacy***

An individual's sense of efficacy, usefulness and worth is another personality used to explain an individual's participation in a collective action. Empirical studies reviewed in the work of Kelly and Breinglinger (2002) indicated that people's senses of efficacy are different, and thus their level of participation in collective actions. According to their findings, age and level of education are positively associated with an individual's efficacy and participation, while women are less efficacious than man and the poor less than the rich.

Similarly, Abbaszadeh, Mohammed and Saadati (2010) stated that people's literacy and vision are influential factors in an individual's efficacy and participation in collective affairs. They indicated that people who have higher educations have high participation because of being familiar with the consequences of participation. Moreover, visionary people, who plan for the future, are hopeful, and optimistic. Thus, such individuals are effectual, and they participate better compared to people who are doubtful about the future (not visionary).

Individual Personalities: ***Collectivist Orientation***

The other personality to explain an individual's participation in a collective action is the idea of collectivist orientation. Collectivist orientation is a social behavior or cultural value where one's personal identity is characterized by choices, goals, norms and values or nature of the group of which one is a member (Kelly & Breinglinger 2002). A collectivist-oriented individual assumes that individuals belong to in-groups or family and thus, it is difficult to leave a group. Along the same line, Wang *et al*. (2002) identified four attributes or behaviors of collective oriented people. These are: the tendency to be driven by social norms and obligations; defining themselves by their membership in groups; the preference to work together for in-group harmony and social relationships; and tendency to subordinate and sacrifice their personal goals and interests to group goals.

People in a collectivist culture have collectivist orientation and are susceptible to social influence. Bond & Smith (1996) highlighted that individuals from collectivist cultures, are more likely to yield to the majority, as they place high value to harmony and group relations. In such cultures, a group solution may be the only solution to progress (Bond & Smith 1996; Wang *et al.* 2002).

Sturmer *et al*. (2008) also indicate that collective norms, values and interests are incorporated in the self and thus become prescriptive for one's behavior. Accordingly, they suggest that individuals with a strong sense of collective identity should be motivated to contribute to the group's welfare and behave as a model group member.

For a conclusive relationship between individual personalities and participation, social-psychology theorists emphasize that one needs to look at an individual's decision-making process towards participation in a collective action (Wigfield & Eccles 2000; Kelly & Breinglinger 2002; Klandermans 2004). Individuals decision-making process towards participation in a collective action is thus discussed in the next section.

2.2.5 Decision-making in Participation- the 'Expectancy-Value' model

An individual's decision-making to participate in a collective action is best explained using social psychology 'expectancy-value' theories. These theories, among other social psychology models of decision-making have been successfully applied in different contexts to explain motivations and decision-makings in participation (Kelly & Breinglinger 2002).

Though the expectancy-value theory was originally proposed in the 1970s by another author, the model was developed by Wigfield and Eccles (2000), who defined 'expectations' as the beliefs individuals have about the successfulness of upcoming outcomes either immediately or in the longer term. Turning to the value portion of the model, Wigfield and Eccles *(ibid.)* explained that 'values' take different forms like attainment value (importance), intrinsic value (enjoyment gained), utility/ extrinsic value (usefulness as they fit into future plans); and cost value (how engagement or effort in one activity limits access to other activity).

In sum, the expectancy-value model explains that a person's orientation or decision towards an action is influenced by the person's belief (expectancy) that the action will lead to an outcome and the person's evaluation (value) of the outcomes (Wigfield & Eccles 2000; Kelly & Breinglinger 2002). Thus, decision to participate is a function of the individual's expectancy and value for the collective incentive.

The social psychologist named Bart Klandermans made the most influential attempt to use the expectancy-value model for understanding an individual's decision for joining and participating in a collective action (Klandermans 1997, 2002, 2004). This study uses Klandermans 'expectancy-value' model to answer the question as to why individual smallholder farmers participate in a collective action. Klandermans model is explained in detail in the next section.

Klandermans 'Expectancy-Value' Model

Klandermans model states that members in a collective action do not only think about (or expect) goals, outcomes or advantages of participation, but they also consider the usefulness and costs (or values) of the goals. Klandremans (2004) explained that people are logical and rational decision-makers and thus they first evaluate or assess the profits and losses of each action and choose or decide to act on the best one. This means that people choose to participate in the group that has the maximum profit and the minimum loss. Thus, if people's act of participation is answered with rewards (expectancy fulfilled), the probability of doing that action or participating again increases. More so, if the reward is important and useful (value) to him or her, he/she will be more likely to repeat or continue that action (to participate). Furthermore, Klandermans (2004) expectancy-value model explains that an individual's decision-making process to or not to participate (in a collective action group) goes through two phases, which he calls: consensus and action mobilization.[6]

Consensus mobilization is the first phase in which a collective action group or a facilitating organization disseminates its views, including using mass media, to familiarize its potential members with the objectives of the intended action. This is the stage where group facilitators try to win the support of individual potential members and mobilize consensus for the group objectives Kelly & Breinglinger 2002). In this phase, a collective action group persuades its potential members that the benefits will outweigh the costs and that they should participate (Klandermans 2004). Going through the consensus phase of decision-making is however not sufficient for a decision to occur. Hence, the action mobilization stage is needed.

[6]Klandermans (2004) refers to the term mobilization as the marketing mechanism that links demand and supply of participation. Klandermans developed a social-psychology account of participation in social movements.

Action mobilization refers to the process whereby those individuals who adopted the collective action view decide participation in the collective actions. The action mobilization phase concentrates on people with an attitudinal character to participate, as individuals will have already adopted the idea to participate, when passing through the consensus mobilization phase (Klandermans 2004).

At the action mobilization phase of decision-making, Klandermans (2004) distinguished that the individual expects three neither mutually exclusive nor computing, but rather complementing, motives or rewards (also referred to as collective incentives) that contribute to the individual's decision to participate. The three motives or collective incentives for participation are: goal or instrumentality motive, social identity motive, and ideology motive. The next paragraphs elaborate on the three motives.

Goal (instrumentality)motive- this refers to an attempt to influence the social and political environment for the success of the group. Hence, participants motivated by goal motive are people who believe that they can change their environment to their advantage.[7] The instrumentality view holds that people assess the probable consequences of participation before taking any action. Thus, their behavior is controlled by the perceived costs and benefits of participation. To this end, the belief that the situation of the group can be changed and goals in the form of collective goods can be achieved at affordable costs makes individuals participate in collective actions (Klandermans 2004).

Social (identity)motive- refers to participation as a manifestation of identification with a group motive.[8] This motive is related to the expected reaction of important or significant others towards the individual's participation (Klandermans 2004). An individual's social motive relates to belonging to a valued group and the belief that there is more in being a participant than perceived

[7] Instrumentality is related to resource mobilization theories and at the psychological level to rational choice theory and expectancy-value theories (Klandermans 2004).

[8] Social identity (defined in the group level analysis of participation above) is related to sociological approaches that emphasize identity component of participation and to the social psychological social identity the collective theory. This is the same as the group level analysis of participation (Klandermans 2004).

costs and benefits (Klandermans 2004). Social motive is most attractive if people identify strongly with their group. Moreover, studies showed that identification with a more exclusive group is far more influential than identification with the more inclusive category. Additionally**,** the collective action's cause; the people in the action; and the group leader are important **c**onstituents for social identification. Furthermore, seeing increasing numbers of people taking part in a collective action, in its self, motivates more people to join (Klandermans *et al.* 2002; Kelly & Breinglinger 2002; Klandermans 2004; Stangor *et al.* 2013).

Ideology motive- refers to individuals' participation in a group motivated by a search for finding meaning to the world and to express their views and feelings.[9] Klandermans (2004) refers to collective actions as the conduits of emotions where groups play a significant role in the diffusion of ideas, passionate politics and values to the public. Thus, individuals in a collective action may be interested in relating to societal debates and political ideas and values developed by 'critical communities'. Individuals also participate to express and communicate their emotions, feelings, and passion.

Altogether, the three social-phycology collective incentives or motives (goal, social identity, and ideology) account for an individual's participation in a collective action and the incentives are fundamental reasons why participation in collective actions becomes appealing to people (Kelly & Breinglinger 2002). Klandermans (2004) stressed that participation in a collective action is more likely to happen if all three motives apply, than if only one or two. He, however, suggested that the motives can compensate one another. The three motives may also interact, where a strong social identity or ideology might alter the goal motive and a strong ideology may reinforce levels of social identity.

Each collective incentive or motive to participate is broken down into an expectation that it will be produced in the group and a relative value or weight given to the incentive to determine participation. Thus, the model is called expectancy-value model for decision-making to participate (or not) in a collective action group (Klandermans 2004).

[9] Ideology is related to approaches that focus on culture, meaning, narratives, moral reasoning, and emotion and to theories of social cognition and emotions (Klandermans 2004).

This study adapts the expectancy-value model to explain why an individual farmer participates in a group. The expectancy-value construct adapted in this study is elaborated at the end of this chapter. The construct makes use of collective incentives (goal, social, and ideology) to describe what motivates smallholder farmers to participate in collective actions, in addition to their individual personalities.

2.2.6 Factors for Effective and Sustainable Collective Actions

Literature stipulates that several factors determine collective actions to be successful and sustainable. Key features of a successful collective action are members with the similar interest, same opinion and belief, geographic proximity, and/or same task (Ayer 1997; Bimber *et al.* 2014). For Heemskerk and Wennink (2004) 'social capital' in the form of relations of trust, reciprocity and exchanges, common rules, norms, and connection within the group enables successful and sustainable collective actions. Researchers also indicated that frequent interaction, transparent and effective communication, information sharing and interdependence among group members, as well as use of information and communication technology are critical for a collective action group to succeed and grow in modern days (Ayer 1997; Bimber *et al.* 2014; Stangor 2013).

Many studies on group dynamics and social capital pointed out that collective actions are most successful when they have a clear and adequate leadership, coordination, recognized organizational structures, roles, relations of trust, reciprocity and exchange, common rules and sanctions, connectedness and networking (Ayer 1997; Pretty 2003, Bimber *et al*. 2014; Stangor 2013).

Collective action groups should have a clear mission, a strong leadership, with high technical and managerial capacity, and an ability to engage with external actors (AGRA 2013). The leadership for a collective action group (usually a chairperson, secretary, treasurer in an executive committee), need to possess qualities such as respect and honesty, dynamic personality, literacy, and must have time to spend on their leadership tasks (Sanginga, Lillja & Tumwine 2001). Pretty (2003) emphasized that setting out rules relating to the group structure and leadership is crucial for the performance of a collective action. More so, actions guided and controlled by the collective actors themselves are more successful (Ayer 1997).

Regarding the importance of strong leadership, Heemskerk and Wennink (2004:6) also highlighted that 'good leadership can turn passive collective action groups into innovative and committed groups and vice versa'.

An individual member's character in the group also determines the degree to which others in the group cooperate for success of the group. An experiment of disrespectful and respectful behaviors in a group and their effect in others participation in the collective action showed that respectful characters increased 'collective identity' and willingness to engage in group servings (Simon & Sturmer 2003). Kruijssen *et al*. (2007) indicated that a group member's ability to refrain from individually profitable actions, for the sake of the common good, is important for the benefits and successes of the group. Furthermore, a study report by Swanson, Bentez and Sofranko (1997) indicated that members in collective action groups, expect rewards or changes within a reasonable time frame, thus if no change occurs within that time frame, the collective action group may collapse Klandermans (2004). Moreover, Klandermans (*ibid.*) emphasized that collective action organizations must deal with emotions or feelings of participants to gain committed people.

In relation to effective and sustainable group membership, Heemskerk and Wennink (2004) emphasized that collective action groups that are oriented towards public goods need to be inclusive, while income generating and service providing groups oriented towards providing services must have exclusive membership.

2.3 AGRICULTURAL REFORM AND TRANSFORMATION

Agrarian reform and agricultural transformation are commonly used concepts in agricultural literature. The two concepts are however different in scope and purpose. This section discusses the meanings, intensions, scope of interventions, and the outcomes of both agrarian reform and agricultural transformation. By doing so, the motive for this study and why it focusses on farmers' collective actions in the context of agricultural transformation, and not agrarian reform, is clarified.

2.3.1 Agrarian Reform

Agrarian reform is related to smallholder farmers story of social exclusion, exploitation and unequal distribution of land. The goal of agrarian reforms is therefore mostly attached to land

struggles to attain land redistribution, with the goal of correcting social injustice, in favor of smallholders. More importantly, agrarian reforms imply interventions in local power relations to lead to improved human rights, food security, income, family welfare, social justice and equality as well as reduced rural conflict for rural population (Ghimire 2001; Moyo & Yeros 2005; Moyo 2008; Saravia-Matus & Saavia-Matus 2009; Baye 2013).The demand for agrarian reform is stronger in agrarian nations with large number of farmers and where the motivation for agrarian reform is the need for equal distribution of productive land, improved livelihood for smallholders and agricultural growth (Moyo 2008).

There is consensus among development scholars that it is important to reform land tenure systems and power relations between the landless and the landlord to reduce rural poverty in developing countries (Ghimire 2001). However, approaches to land reform differ. Some revolutionary thinkers propose state-led radical land reform that involves a widespread redistribution of large private holdings to the landless, while neo-liberals believe in interventions in the land market (Ghimire 2001; Moyo 2008; Baye 2013). The next sections elaborate the two major forms of agrarian reforms: radical and market-led land reforms.

Radical Agrarian Reform

Radical agrarian reforms profoundly alter a country's institutional system and are usually products of revolutionary movements against exploitative governments, struggles for democracy and socialism, or government's commitment to equitable redistribution of land 'with speed' (Ghimire 2001). The principle embraced by radical agrarian reforms is '*land to the tiller*'. Consequently, radical strategies focused on nationalization of land for the benefits of the majority, removing landlords, collectivization of agriculture, and conversion of large farms to state farms Moyo (2008).

Most developing countries found it important to redistribute agricultural land rapidly through radical redistributive reforms. Accordingly, most countries in Asia, Latin America and Africa

undertook radical agrarian reforms, in the period from 1940 to 1980.[10] Countries experienced radical agrarian reforms either as a result of peasants' movements (e.g. Mexico in 1970 and Nicaragua in 1997); authoritarian governments (Japan, South Korea and Taiwan) or; revolutionary governments (China in 1956, Cuba in 1965, and Ethiopia in 1975) (Moyo 2011). Common to all countries that witnessed agrarian reform was their having: a large rural population, agriculture as an important sector for their economy, and land owned by few landlords. The impacts of the reforms however varied in the total amount of land redistributed, number of beneficiaries, and the maximum size of land privately owned after the reform.

Radical agrarian reforms were expected to reduce the land concentration in few hands and increase agricultural production (Ghimire 2001). Literature however highlights that land redistribution programs alone were not enough to guarantee agricultural growth. Rather they created tenure uncertainty among smallholders (Ghimire 2001; Todaro & Smith 2003; Deininger *et al*. 2007). Radical agrarian reforms failed to produce the intended results of agricultural development because they implied greater access, decision-making and control over land for marginalized agrarian groups, while it meant reduced political power for the rich landowners. These changes in social relations however did not happen easily (Ghimire 2001). More so, Ghimire *(ibid.)* indicated that countries with limited farmers' mobilization, when they went through agrarian reform, redistributed little land and benefited a smaller portion of the rural population. Moyo and Yeros (2005) also explained that radical land reforms weakened existing traditional tenure security and solidarity in countries were large commercial farming systems were prevalent and where communal tenure systems were predominant.

Nonetheless, state-led radical land reforms were more successful in some countries than others. For instance, the Chinese and Cuban agrarian reforms are known for being influential worldwide and in terms of impacting a lot of people. Ghimire (2001) explained that China's reform benefited 90 percent of the total agriculture households and redistributed 80 percent of land. In some other cases, the gains of radical reforms are experienced long after the reform.

[10] El-Ghonemy (2001) called the period (1940-1980) the '*the golden age of genuine land reform'* as it was during this period that nearly 30 developing nations implemented radical redistributive land reforms, globally.

Along this line, Moyo (2011a; 2011b) stated that Zimbabwe's land reform, which experienced three decades of redistribution (since the 1980s), triggered increase in productivity long after the supposition that it has failed.

The economic results of agrarian reforms and redistribution of land have tended to be more favorable in countries where redistribution was swift (avoiding periods of uncertainty). Government provisions with the necessary infrastructure, extension services, improved inputs, fixed food prices and subsidized credit and agricultural inputs, technology, markets as well as long term land lease arrangements for smallholders was also crucial for success of land tenure reforms (Spoor 1990; Ghimire 2001; Todaro & Smith 2003; Moyo 2008).

Moreover, Moyo (2008) amplified that agrarian reforms resulted in increased production, when post-reform production is based on directly owned small family farms rather than on state and collectivized cooperative farms. Along the same line, Ghimire (2001) showed that producers cooperatives in most Latin America countries that were established following the agrarian reforms in the 1970s were dismantled after 10 years in the 1980, due to poor performance and cuts of government support to cooperatives.[11]

Market-Led Agrarian Reforms

Market Led Agrarian Reform (MLAR) was conceptualized out of the pro-market critique of state-led agrarian reform in the 1980s (Borras 2003). The principle of MLAR is 'entrepreneurship' or 'market-mediated' land redistribution (Ghimire 2001). Moyo (2008) highlighted that market-based reform is the neo-liberal response to the '*land question'*. The role of the state in MLAR has been reoriented to free market, promoting land markets as a means of improving access to land. The MLAR policy is advocated by the World Bank and the International Monetary Fund, institutions that assume that the market is the most effective and efficient land distribution mechanism. The MLAR approach is also supported by landowners to maintain the structure of large-scale commercial farming (Lahiffa 2007).

[11]Problems in agricultural producers' cooperatives (in Latin America) are manifested in poor management, lack of work discipline and absence of active participation by the members, all of which undermine the capacity of efficient production of cooperatives (Doner 1992).

Central to the MLAR approach is that better performing reforms are those promoting buying and selling of land and establishing banks that provide credit for the poor to buy land. Thus, the approach argues that smallholders and landless people who wish to buy land are expected to search for a willing seller, negotiate the sale price, and secure credit to buy the land (Ghimire 2001).

Promoted by the World Bank, the MLAR approach was implemented in Brazil, Colombia, South Africa, Indonesia, Philippines, and Brazil. Countries that implemented MLAR dismantled their state farms for sale and advocated for land transfer between '*willing buyers' and 'willing sellers'* at market price. Most programs, however, were not successful owing to high prices imposed by landlords (Borras 2003). For instance, the rate of land transfer in South Africa, referred to as the most transparent, community driven and less costly MLAR, remained far below target and made little positive impact on farmers livelihoods or the rural economy (Lahiffa 2007). Moyo (2008) explained that the MLAR in South Africa had slow progress partly due to high land prices which are negotiated from unequal bargaining positions between the poor buyer and powerful landowner. In sum, the MLAR in South Africa is said to be unsatisfactorily and inappropriately implemented (Gumede 2015). Likewise, in the cases of Brazil and Philippines, MLAR served landlords, helping them gain access to more land through the market mechanism. Consequently, only 8 and 6 percent of smallholder households benefited in the case of Philippines and Brazil, respectively *(*Ghimire (2001).

Programs for MLAR are disputed for influencing the evolution of land reform towards exclusive land market and for encouraging agrarian capitalists. Moyo (2008) indicates that MLAR are neither redistributive reforms nor pro-poor. On the contrary, they favored those who had financial capacity and political influence resulting in *land concentration* in the hands of dominant social classes.[12] The marketization of land in Africa is also said to be the reflections of external interests to land resources (Moyo 2008; Moyo & Yeros 2005).

[12]Land concentration refers to a situation where land-based wealth and power transfers, and access to and control over land is concentrated in the hands of dominant social classes and groups like: landed classes, capitalists, corporate entities, state or other dominant community groups such as village chiefs. Different variations of concentrations are possible. It can occur on private or public lands and the organization of control over land resources can be through individual, corporate, state or community property rights. The beneficiaries of such land concentration are dominant social classes and groups as well as state officials and bureaucrats (Borras & Franco 2012).

Agrarian Reform in the 21st Century

Contemporary land issues and struggles for social justice have put land or agrarian reform back at the center of development and political discourse (Borras & Franco 2012).

Moyo and Yeros (2005) argued that the question for land has not achieved its 'historical end' in the 21st century but is rather manifested in the form of insecurity to tenure, land sub-division, informal land markets and land concentration in the hands of the few.[13] The surge in global 'land grabbing', changing land use, and property rights have also become important topics of discussion in emerging literature on agrarian reform and land governance (WB 2010; Deininger 2011; Borras & Franco 2012).

The failure of both forms of land reforms (radical and market-led) has led to emergence of 'scattered but significant' new struggles and movements for land reclamation and control in the 21st century developing nations of the world (Ghimire 2001; Moyo 2008; Borras & Franco 2012). These movements focus on land reform challenges, existing land property laws and values that arise from unresolved land, and agrarian questions. Examples of such struggles for land (re)possession are seen in Brazil, Philippines, South Africa and Zimbabwe. The struggles are either in organized and structured forms of contention, such as those by social movements (Brazil and Indonesia), or less organized and structured 'everyday forms of resistance', as in many parts of Asia (Borras & Franco 2012).

At this juncture, it is important to highlight that agrarian reform in the form of land reform has limited solution to the agrarian problems of the 21st century. Borras and Franco (2012) argued that land reform can certainly address issues and struggles for land (re)possession, but it does not easily fit as a concept, a policy and a political demand in 'struggles against dispossession' in 'non-redistribution' and (re)concentration policy settings. Dissatisfied with past experiences of land reform programs, Moyo (2008) indicated that food security and poverty eradication (in Africa) can be achieved through agrarian transformation, and not through agrarian reform. Similarly, Gumede (2015) emphasized that strengthening progressive agricultural transformation process in which

[13]Moyo (2008) explained that new trends of growing rural land concentration are seen in the African land tenure systems.

farmers invest more in the development of agricultural land will benefit African smallholder and emerging commercial farmers.

In sum, the land questions in the 21st century should be understood in the context of agrarian transition, (Ghimire 2001). Although land reform might still be a valid policy option for rural development, Ghimire (*ibid.*) explained that access to land alone is not enough and land reform measures need to be perceptive and adapted to specific local circumstances. Thus, where cultivable land is scarce, agrarian transition would have to focus on improved land tenure rights, restriction on land sells, progressive taxes and credits and other production services. Ghimire also suggested that more cultivable land area should be made available for redistribution by: putting a ceiling for large landowners, redistributing land held by governments, re-settlement, and reclamation (restoration) of new cultivable land.

The next section discusses the concept of agricultural transformation, which encourages intensive and efficient use of farm land through increased adoption of agricultural technologies and productivity gains on small farmlands.

2.3.2 Agricultural Transformation

The term transformation explains a process of a change of an existing system that has been acceptable and/or fashionable at a certain time (Staatz 1998). The focus of transformation can be the improvement in social life, change from traditional to modern ways of life or, it can be changes in structure and economic growth leading to the rise in income of individuals and nations (Grigg 1992; Staatz 1998; Jaiteh 2008). Transformation is also used to refer to economic transformation also known as 'structural transformation'. Here it means a development process characterized by: a declining share of agriculture in GDP and employment; a rural-to-urban migration that stimulates the process of urbanization; the rise of a modern industrial and service economy; and a demographic transition from high rates of births and deaths to low rates of births and deaths (associated with better health standards in urban areas) (Timmer 2009). Another account of the term 'transformation' is provided by Chanyalew (2015) as poverty reduction, food security, fair distribution of wealth and political stability, in addition to economic growth of a nation.

There are two schools of thought that discuss the important roles the agriculture sector plays in the economic growth and structural transformation of a nation. The first and earlier view is that agriculture directly contributes to the growth of the other sectors. Early development economists (in the 1950s) placed a great emphasis in the movement of resources from agriculture towards manufacturing. This was best explained by the dual economy model (developed by W.A. Lewis in 1954) that explained the growth of a developing economy in terms of labor transition from the subsistence agriculture sector to the modern non-agriculture sectors (Hunt 1989).[14]

The dual economy model states that labor in the traditional agriculture sector is sufficiently high, frequently having a zero-marginal productivity. Thus, there is an unlimited supply of labor able to move to the modern sector at a subsistence wage, without lowering agriculture output. On the other hand, labor has a positive marginal product in the modern sectors. The theory explains that the unlimited supply of labor from the agriculture sector keeps wages in the modern sector low, ensures that capital accumulation in the modern sector is sustained over time, and thus leads towards economic transformation. This economics or labor migration from agriculture into the non-agriculture sectors has long been understood as a feature of development, and a necessary condition for the development of nations (Wang & Piesse 2010). This theory on the direct contribution of the agricultural sector to other sectors of the economy was considered by many development thinkers to be the starting point of development economics and has generated a large theoretical and empirical literature over the years (Wang & Piesse 2010; Ferto 2016).

Nevertheless, confusion and ambiguity regarding some of the fundamental concepts of the dual economy model emerged pointing out that the concept of surplus labor and the mechanisms relating to labor mobility between the traditional and modern sectors lacked clarity. The ambiguities have thus made the model a debatable topic (Brown 2006; Fields 2006) but also a barrier to further development of the model and to being used rigorously in empirical researches (Wang & Piesse 2010).

[14] Dual economy model is a development economics model that views agriculture as a backward and unproductive sector from which production factors are to be drawn from to help the development of dynamic and productive non-agriculture sectors (Ferto 2016).

Alternative views of economic transformation by Johnson and Mellor (1961); Schultz (1964) and latter works of Mellor(1996); Gollin, Parente and Rogerson (2002); Timmer (2009) and Gollin (2010) argued that although the agriculture sector grows at a slower rate than the non-agricultural sectors, investments and policy reforms in agriculture will speed up the economic growth of the nation and indirectly contribute to structural transformation of a nation (Ferto 2016). This view emphasizes the importance of transformation of the agriculture sector for the economic and structural transformation process of a nation *(ibid*.). In this view, the structural transformation of a nation depends on rising productivity in both the agricultural and non-agricultural sectors. Yet, structural transformation cannot happen without first investing in the agriculture sector, in financial and policy terms (Timmer 2009). Thus, agricultural transformation is a prerequisite in the process of structural transformation of a nation. Hence, an agrarian nation's structural transformation evolves through several phases or stages.

The transformation starts when agricultural productivity per farmer rises due to technology use and mechanization (agricultural transformation). The increased productivity creates surplus labor that is tapped directly through taxation and factor flows or indirectly through government intervention to develop the non-agricultural sector in the second phase.[15] The third phase represents the progressive integration of the agricultural sector in to the macro economy, via improved infrastructure and market linkages. This is followed by the last phase of the structural transformation, when the role of agriculture is barely noticeable (Timmer 1988; Timmer 2009).

Agricultural transformation is characterized by a process in which the share of the agriculture sector in a nation's GDP and specifically in country's labor force and total output declines. More so, agricultural transformation is a necessary condition for nations going through the process of economic transformation and modernization. Without transformation of a traditional agriculture, Grigg (1992) indicated that the economic growth in the industrialized and modernized countries could not have been sustained. Evidence also shows that a nation's GDP growth is positively and strongly correlated with agricultural transformation, where. agricultural growth often accompanied

[15] The second phase of transformation is the focus of the dual economy model of development (explained above). At this stage, the surplus labor in the agriculture sector will join the non-farm sectors where wages are higher (Timmer 1988*)*.

or preceded national economic growth, before the declining importance of agriculture in the GDP of the developed countries (Demeke 1999).

Particularly, agricultural transformation is a necessary condition for economic development in the poorest countries of the world where the share of population in agriculture as well as the share of agriculture in the overall economy is high (Cervantes-Godoy & Dewbre 2010). Agricultural transformation provides agrarian nations with food for its population, increased income and saving for the farmer as well as enough produce for raw-materials and export (Grigg 1992; Staatz 1998; Jaiteh 2008; Gollin 2010). Accordingly, Tsakok and Gardner (2007) and Gollin (2010) amplify that income generation streams must first come from the agriculture sector, if agrarian nations should make any substantial economic and structural transformation.

This study retains the view that the right policies and investments in agriculture will lead to agricultural transformation that in turn will lead to structural transformation of a nation's economy. The study maintains the narrative that agricultural transformation is an initial phase to structural transformation of an agrarian nation and it is a process of positive changes in the subsistence agricultural sector, improving the livelihoods and income of smallholder farmers and ultimately an agrarian nation.

Three fundamental changes take place in the process of agricultural transformation. These changes are increased adoption of new and high yielding technologies on regular basis; higher productivity of land and labor for sustained and stabilized surplus agricultural production; and increased supply of food to the market. As production increases due to use of technologies, food supplies to the market becomes stable and food price decreases. Also, farmers income increases as they operate farms commercially, selling a substantial portion of their output, specializing in production, investing on the farm, and purchasing commercial inputs including hired labor. In the meantime, the domestic and export agricultural markets modernize as farmers add quality and value on the commodity produced (Grigg 1992; Seckler 1993; Staatz 1998). Thus, a successful agricultural transformation occurs when agriculture becomes a viable business and not just a means of livelihood for the farmer. As a result, farmers shift from highly subsistence-oriented production towards more specialized and market-oriented production (Seckler 1993; Jaiteh 2008).

In sum, agricultural transformation in this study refers to the process by which an agrarian society achieves increased agricultural productivity through adoption of improved technology and ultimately engages in the commercialization of its product. The three fundamental attributes of agricultural transformation are further elaborated below.

2.3.3 Attributes of Agricultural Transformation

As indicated above, three prominent changes take place during the process of agricultural transformation. These are: adoption of improved agricultural technologies and practices, increased agricultural productivity, and agricultural commercialization. These three changes or goals of agricultural transformation are further elaborated below.

Adoption of Agricultural Technologies

The success of any agricultural technology is when it is accepted and adoption by farmers. Equally, agricultural transformation is possible only if the rate of agricultural production and productivity is increased through adoption of improved and appropriate agricultural technologies and practices by many farmers (Geta, Dadi & Adugna 2006). Literature on agricultural technology adoption indicates that adoption is a process that begins with awareness of the technology and progresses through a series of steps: assessment of the technology, acceptance, and learning that ends up with a decision for appropriate and effective use of the technology (Bridges to technology 2005). Farmers differ in their adoption of a technology, ranging from early adopters to laggards, and people who will never adopt. Such variations are mainly the main reasons for differences in agricultural productivity and commercialization performances among farmers (Jain, Arora & Raju 2009; Asfaw *et al.* 2011; Sunding & Zilberman 2011).

Technology adoption can be tracked using adoption decisions and practices in dichotomous terms (yes or no) (Jain *et al.* 2009). Dichotomous responses however only reflect the status of awareness of the technology rather than actual adoption and thus, Jain *et al*. *(ibid.)* argued that there is a need for adoption studies to cover the intensity of use (for example: how much area of land is covered by the technology). This study explores smallholder farmers' level of technology adoption for crop and livestock including the trainings and messages, practices and agricultural inputs, for which they have access.

A number of studies are carried out on determinants of adoption of agricultural technologies in developing nations, including: technical and credit input availability, gender of the household head, farm size owned, availability of off-farm income, knowledge and education attainment of the farm household head, differential ability of households to take risk, family labor supply, and profitability of technology (Marenya & Barrett 2007; Dercon & Christiaenensen 2011).

Along the same line, a study by Geta, Dadi & Adugna (2006) on factors affecting adoption and intensity of use of an improved crop variety found out that farm size, distance from the research center, extension contact, and earlier performance of the technology determine the rate of adoption and use of the technology. Another study finding by Adugna, Demeke & Emana (2006) on determinants of adoption of technology (fertilizer in this case) showed that gender of the household head, supply of active family labor, and off-farm income influence adoption and intensity of technology use. Also, findings from an adoption study by Asfaw *et al*. (2011). showed that farmers' awareness (information) about the availability of technology is an important factor for the adoption to take place. Knowledge of improved varieties was statistically significant in explaining the level of adoption, where farmers who knew more varieties during the preceding year probably had better information about the advantages of the varieties, and thus are likely to adopt and allocate more land during the present year. Studies also showed that social affiliations and networks in the form of social capital increased the probability of adoption of improved agricultural technologies (Isham 2002; Fafchamps & Minten 2002)

Agricultural Productivity

Agricultural productivity is a function of improved technology adoption and refers to the output produced for a given level of agriculture input(s). Increase in labor productivity can be obtained through mechanization of the agricultural system, and by increasing the skill and knowledge of human labor, while land productivity can be conventionally raised by increasing yield through the application of natural or chemical fertilizer, the use of improved varieties of seeds and animals, the use of irrigation water, and the use of chemicals to control weeds and diseases (Ruttan 2002).

Agricultural productivity in developing nations is commonly expressed in labor and land productivity, as these are what the nations have abundantly, compared to capital (Grigg 1992).

Both ways (output per area of land (land productivity) or output per person working on the farm (labor productivity) are measures of 'single factor productivity'. The International Food Policy Research Institute (IFPRI), however, argues that single factor productivity is only a partial measure of productivity and may ignore or overlook the role of other inputs like fertilizer, seed and so on in any output change. To this effect, IFPRI (2011) developed a total measure of productivity called 'Total Factor Productivity (TFP), which is the ratio of total output quantity (index of outputs) to the quantity of total inputs (index of agricultural inputs). Yet, what TFP measures can be controversial. More so, conceptual and empirical problems including problems of measuring the outputs and inputs index as well as the existence of missing data for inputs and outputs make TFP measurements difficult (Lipsey & Carlaw 2001).

With the intention of keeping the productivity measures simple, in the absence of structured data, the current study dwells only on trends in crop productivity (yield), and livestock productivity as (total livestock byproduct like daily milk or egg, as proxy) at the households' level for common agricultural commodities produced in the study area. Such an approach of measurement might not be analytically perfect, but it captures the objective of the study, which is to understand and illuminate how smallholder farmers' output per unit of land, and per unit of animal are changing, as members of a collective action group.

Agricultural Commercialization

The third important factor in agricultural transformation and which is less talked about is commercialization of smallholder farmers. Commercialization refers to the process when subsistence-oriented farmers start to produce primarily for the market (for both domestic and export markets) and increase their incomes from sale of agricultural commodities (Seckler 1993; Staatz 1998; Gebremedhin, Hoekstra & Tegegne 2006; Jaiteh 2008). Commercial transformation of subsistence agriculture leads to sustainable household food security and welfare (Pingali 1997). It results in income gains from the realization of comparative advantages, economies of scale, and dynamic technological, organizational and institutional changes that arise from the market exchange (Gebremedhin & Jalleta 2010).

Smallholder farmers can play important roles in commercial transformation of subsistence agriculture (Chanyalew 2006). However, for agricultural transformation to happen smallholder households must however come out from purely subsistence farming to practicing farming as a business. Nevertheless, Pingali and Rosegrant (1995) highlighted that commercialization of subsistence smallholders, with the main objective of achieving food self-sufficiency, takes a long transformation process: from subsistence to semi-commercial, and then to a fully commercialized agriculture.

Diversification into higher value products or commodities, value-addition on agricultural produce on- and off- the farm, and post-harvest technologies are key element of a commercialization process. Ultimately, commercialized farmers are expected to gradually move towards specialization in a few products, based on principles of comparative advantage and buy some of their food from the market (Pingali 1997).

Commercial transformation of smallholder farmers entails both market orientation and participation in output markets. The distinction between market orientation (production decision based on market signals) and market participation (sale of output) of smallholders should however be recognized (Gebremedhin and Jalleta 2010). Agricultural market orientation means that input use and product choice decisions at the farm household level are based on principles of profit making and maximization (Pingali 1997). Market orientation calls for quality and standard of the goods produced for the market. This in turn leads to progressive substitution of non-traded inputs by purchased inputs (*ibid.*).

Market participation on the other hand refers to farmers selling their products in the market as their productivity is increased. Gebremedhin and Jalleta (2010) highlighted that though smallholder farmers in developing nations are mostly subsistence, commercial farmers are emerging, and it has become common that farmers participate in the market as their productivity increases. Market participation is measured by the proportion of the value of sales to total value of production (Gebremedhin & Jalleta 2010; Osmani & Hossain 2015).

Osmani and Hossain (2015) highlighted that farmers are market participants if their proportion of product value sold in the market is more than 75 percent of the total value of product. Nevertheless, Osmani and Hossain (*ibid*.) found that smallholder farmers' decision to take part in output market is influenced by socio-economic and farm specific characteristics like farm size, availability of household labor, and involvement in other sources of income.

Although market orientation translates strongly into market participation, policy implications drawn from the analysis of the determinants of market participation alone could be inadequate to enhance commercial transformation. This is because the determinants of market orientation and market participation are not the same and not consistent in their effect (Gebremedhin & Jalleta (2010). Consequently, this study is interested in both the market orientation and output market participation of smallholder farmers as indicators of commercialization.

2.3.4 Smallholder Farmers in Agricultural Transformation

The term 'smallholder' in agricultural literature refers to farmers, peasants or producers who access small or micro plots of land. The term does not, however, describe a homogeneous group of producers, as the plot size is not well established globally. In some cases, for instance, the term smallholder includes farmers who do not own or control the land they farm and is interchangeably used with the term 'peasant' (Rahmato 2008; CSA 2016), while others view smallholders as farmers who own or have well defined land tenure rights (Netting 1993). The term is also used to refer to 'family farm' recognizing the role of the family labor in managing the farm operation (Garner & Compos 2014). Hazell *et al.* (2007) described smallholder farmers as those who are producers of agricultural commodities (both crops and livestock) at a small scale. In this study, smallholders are male and female farmers living in a rural village registered as a resident in the local administration, conducting agricultural production activities (crop production, livestock husbandry and agro-forestry) and owning land of variable size with average land holding size of less than two hectare (CSA 2016).

Common characteristics to all smallholders are that they produce relatively small volumes, they are less resourced, have low productivity due to their inability to invest in productive inputs,

depend on family labor, are mostly subsistence, they produce diverse commodities, and are vulnerable to shocks (Netting 1993; Hazell *et al*. 2007; Garner & Compos 2014).

Smallholder farmers are principal investors in (African) agriculture primarily through labor allocation. More so, smallholders are endowed with both tangible and intangible assets all of which are important for agricultural transformation: physical capital; human capital; intellectual capital; natural capital; and social capital (institutions and networks that build trust and reduce risk (AGRA 2013).

The debate on the efficiency of smallholders and small farms in achieving agricultural growth and the inverse scale-productivity relationship remains unresolved (Duffy 2009; Gourlay, Kilic, and Lobell 2017). Writers like Rahmato (2008), Nega *et al.* (2003) and Gebreselassie (2006) argued that it is unrealistic to expect substantial and sustained agricultural productivity growth from smallholders with small or micro sized farm land. Nega *et al.* (2003) maintained that larger land holdings perform better (in productivity and income) than smaller size holdings, irrespective of farmers' involvement in agricultural extension programmes and they concluded that sustainable agricultural intensification is impossible on mini-plots. A recent research paper by Gourlay *et al*. (2017) also indicated that the inverse scale-productivity relationship claimed by researchers could be a statistical error due to overestimation of farmer reported crop production and yield data.

On the contrary, Ruttan (2002) reiterated Theodore Schultz's (1964) argument that smallholders in traditional agrarian societies are 'poor but efficient'. The argument holds that smallholders are rational allocators of available resources, and if given the same inputs and know-how of their modern and bigger counterparts, they could succeed. In the same manner, Jaiteh (2008) established that the smallholder farmer is an important factor in the process of agricultural transformation and even one of the most important in as far as a labor intensive agrarian livelihood is concerned. Thus, Jaiteh *(ibid.)* stipulated that agricultural transformation plans should hinge upon the smallholder farmer. Also, Garner and Compos (2014) indicated that smaller family farms that have social, cultural and environmental objectives and therefore have close ties to the local culture and the rural community are more efficient and sustainable.

More so, Netting (1993) argued that smallholder farming is a viable and sustainable alternative to industrial or commercial agriculture that depends on fossil fuels, chemical fertilizers, pesticides, and herbicides.

Similarly, Hazell *et al.* (2007) indicated that smallholders play a developmental role especially in countries with equitable distribution of land and high agricultural potential. They further explained that smallholders have advantages over large commercial farms in such countries principally because of their use of family labour at a lower transaction cost and their local knowledge. El-Ghonemy (2001) also stated that productivity of land and labour in developing countries declines due to inefficiency of resource use in large farms. The inefficiency in big farms is manifested by absenteeism, underemployment of farm resources and costs of hiring and supervising labour.
Likewise, Moyo (2008) presented a list of reasons why there is an inverse relationship between farm size and output per area of land, based on studies in Africa. These reasons are that: poor farmers sell (or rent out) land of inferior quality to landowners of larger plots, while they keep the more fertile smaller plot for themselves; small farmers tend to use agricultural inputs more intensively and efficiently, while many large farmers use tenants or sharecroppers and bring tenure disincentives that are not present in owner-operated plots. I allude to the argument that smallholder farmers (both men and women) are important players in the process of agricultural transformation in developing agrarian nations.

2.3.5 The Role of Extension in Agricultural Transformation

The various actors that constitute the agricultural system in the form of knowledge and technology generation, dissemination, and utilization need to co-exist for agricultural transformation to happen. Agricultural innovation systems perspective provides a framework for the analysis of complex relationships and processes that occur among multiple agents and institutions (Spielman 2005). Thus, an agricultural innovation system [16] perspective that encompasses agricultural research, agricultural extension and other agricultural services is useful for better understanding and analyzing agricultural transformation (Spielman 2005; Heemskerk & Wennink 2004).

[16] Agricultural innovations are activities and processes associated with the generation or production, of new technical, institutional, organizational, or managerial knowledge and technology as well as the distribution, adaptation, adoption and widespread use of the knowledge in the agriculture sector (Pretty 2003).

Nonetheless, the scope of this study is limited to analyzing the contribution of the collective agricultural extension system, as part of the agricultural innovations system. Accordingly, the instrumental role played by agricultural extension services, for increased adoption of knowledge and technologies, increased productivity and, commercialization of smallholder farmers is discussed extensively in the next sub-sections.

Agricultural Extension: meaning and function

Literature establishes that agricultural extension, was, is and will continue to be a critical force in agricultural transformation (Moris 1991; WB 1994; Gebremedhin *et al.* 2006; Swanson *et al.* 1997; Eicher 2004; Swanson 2007; Swanson 2008; David & Samuel 2014).

The agricultural extension concept has various evolving meanings and functions. Moris (1991) defined extension as the mechanism for delivery of information and technology to farmers, while Swanson *et al.* (1997) referred to extension as an input for modern farming and an essential mechanism and policy tool to provide timely and relevant information and advice related to improved agricultural technologies and best practices to farmers. In Europe, extension also known as 'agricultural advisory services' focuses on advisory work to farmers, solving specific agricultural problem, while in America the term is used to refer to educational activity (Lemma 2007). A broader definition of extension was yet provided by Gebremedhin *et al*. (2006) as 'a service of information, knowledge and skill development to enhance adoption of improved agriculture technologies and to facilitate linkages with other institutional support services like input supply, output marketing, and credit'.

The term agricultural extension in this study encompasses a broader definition and function of providing advice, information, training and linkage for smallholder farmers to enable farmers adopt technologies and consequently, increase their productivity and commercialization. The evolving scope and mandate of agricultural extension is further elaborated in the next section.

Evolution and Paradigm Shifts in Agricultural Extension

The organization of agricultural extension and its mandate have evolved over thousands of years and the pace of change is accelerating over time, adjusting to changing conditions, challenges and needs of diverse agriculture systems. According to Swanson (2008), the modern forms of

agricultural extension, with extension agents facilitating adoption of improved technologies by farmers, came to existence in the 19th century in Europe.

Several authors distinguished various typologies and paradigms of modern forms of extension. Chambers (1994) identified the Transfer of Technology (ToT) and Farmers First (FF) extension models. Swanson *et al.* (1997) categorized extension systems into three broad categories: government-driven diffusion; participatory or demand-driven; and private extension, while Eicher (2004) identified six models of agricultural extension: national public extension; commodity extension and research; Training and Visit (T&V) extension; NGO extension; private extension model; and the Farmer Field School (FFS). The main agricultural extension models are elaborated next.

Transfer of Technology (ToT) paradigm:

This is the early model of agricultural extension that conceived extension as a service to "*extend*" research-based knowledge to the rural sector to improve the lives of farmers (Swanson *et al.* 1997). The traditional ToT model was thus very much focused on increasing production, improving yields, training farmers, and transferring technology (Swanson *et al.* 1997; Swanson and Peterson 1991). The ToT paradigm was popular in the 1950s and 1960s when the function of extension was transferring technology from researchers to farmers with the desired outcome of adoption of agricultural technology. The ToT paradigm is embedded in professional values, and prescriptions. The menu of technologies is fixed, and the model assumes that researchers have the appropriate technology. In the model, needs and priorities of farmers are identified by scientists and funding agencies who then experiment in laboratory and on-station to generate new technology and hand over the technology to extension agents for transfer to farmers. Consequently, the main role of the agricultural extension agent is to train farmers, while farmers receive the message, adopt, adapt or reject the technology. Failure to adopt the technology, under this model, is explained as farmers' ignorance (Chambers 1993).

The ToT extension model was promoted by the World Bank in the 1970s and 1980s and was implemented through a Training and Visit (T&V) extension system that encouraged individual

farmer's visits by public sector extension agents (Pretty 1995; Eicher 2004). [17] The T&V extension system has served developed nations and particularly the green revolution that has proved to be successful in Asia, where there was more homogeneity within farming systems and higher capacity among extension agents and farmers (Heemskerk & Wennink 2004; Davis 2008).

The ToT extension model in general, and the T&V extension system, in particular, were however criticized in the late 1980s onwards due to the cost of financing coupled with criticisms of irrelevance, inefficiency, ineffectiveness, and lack of equity (Rivera & Sulaiman 2009).

The T&V extension system that was once promoted by the World Bank, has since then been disapproved by the Bank and others, and it is referred to in terms such as "*talk and vanish*" and "*tragic and vain*" (Davis 2008). The extension model was criticized for being top-down and supply driven, leaving little possibility for participation of farmers and local extension agents. It was also found to give poor emphasis to feedback from technology users; and for neglecting diversity in the transfer and use of the technology menu (Roling 1988; Chambers 1994; Rogers 1995; Heemskerk and Wennink 2004; Lemma 2007).

Davis (2008) indicated that the ToT model is not sustainable, and it left many developing countries burdened with huge debts. The ToT model was also criticized for being gender blind. Mogues *et al.* (2009) argued that the T&V extension system was not client oriented and was less accessible for female farmers who had limited demand capacity. Consequently, the ToT extension model did not bring any breakthrough in agricultural productivity of developing nations (Heemskerk & Wennink 2004).

Farmers First (FF) Participatory Paradigm:

Through time, agricultural extension evolved to include a range of diverse rural support services to improve and expand farmers' abilities to adopt technologies. The function of agricultural extension, therefore, evolved from ToT to facilitation; from training to learning, and towards assisting formation of farmer groups (Swanson *et al.* 1997). The new extension paradigm which

[17] T&V extension system was an approach that was first implemented in Asia as an attempt to reach large number of farmers through 'contact farmers'. The extension worker works with the contact farmer to reach other 15-20 farmers under the leadership of the contact farmer (Gunawardana & Chandrasiri 1981).

reversed the power relations in ToT and put the '*Farmer First'* evolved in the late 1980s and 1990s, as a criticism of the ToT model in developing nations (Heemskerk & Wennink 2004). Heemskerk and Wennink (*ibid.*) explained that the paradigm shift was timely as agriculture and social science professionals who closely worked with farmers in developing nations in the 1980s found out that farmers were far more knowledgeable and better informed than agricultural professionals. More importantly, the paradigm shift was basic for developing partnership between farmers and professionals (Chambers 1994).

Consequently, agriculture professionals moved away from viewing farmers as passive individuals to active seekers and processors of knowledge through time. The farmers first model argues that farmers' behavior is rational, and agriculture professionals must work with and learn from farmers instead of research stations and laboratories. Thus, the main goal of the farmers first model is empowerment of farmers by outsiders. Farmers' priorities and participation is key in this extension model, where farmers experiment from a basket of technology choice. The role of agricultural extension agents in FF extension model is therefore empowerment of farmers, as facilitators and providers of choice (Chambers 1994). The FF model is a system in which professional values are shifted towards: 'low' technology; more holistic research methods; more field/local conditions; reversed roles with poor famers as teachers and experimenters; research priorities determined by the rural poor and not by scientists; women coming before men and the poorer before the less poor; and evaluation done by clients themselves (*ibid*.).

Nevertheless, Chambers (1994) emphasized that although the shift to FF extension model appeared extreme, the ToT system was so powerful that a balance will never be achieved, unless many nations make the reversals. Along the same line, Lemma (2007) stated that the ToT paradigm has a significant impact on theory of extension and is still a dominant ideology influencing the planning and practices of agricultural extension in developing nations in the 21st century.

Agricultural Extension in the 21st Century:

Agricultural extension is faced with diverse and complex challenges since the 1990s. The challenges include: increasing demands for global food security; needs for increased coverage and inclusiveness (of the poor and women); climate change and natural resource degradation; increased

needs for availability of input and credit services; limited availability of appropriate technologies to improve productivity; poor research–extension linkage; lack of political commitment; and the dwindling and inadequate public financing for operational costs (Swanson 2006; Gebremedhin *et al.* 2006; Davis 2008; Tesfaye 2008). Such challenges justified the need to: deal with diverse sources of agricultural information for farmers; market riven extension systems; sustainable agricultural transformation; partner with multiple stakeholders including private sector partners; and expand the mandate of extension, promoting agricultural diversification, increasing rural employment, and access to technology (Eicher 2007; Swanson 2007; David & Samuel 2014).

Numerous agricultural extension reforms are recommended underway in many developing countries in response to the new demands in the 21st century. Innovative institutional reforms of extension systems globally, include: institutional pluralism, privatization, decentralization, outsourcing or service contracting, fee-for service, participatory or demand-driven extension and use of information communication technology (Gebremedhin *et al.* 2006; Spielman 2008; Rivera & Alex 2004; Davis, Swanson & Amudavi 2009; Eicher 2007; Swanson 2008). To contribute meaningfully to the evolving roles, it is also recognized that extension and advisory services needs new capacities at individual, organizational and enabling system levels (David & Samuel 2014).

The agricultural extension system in developing nations has increasingly emphasized on multi-disciplinary and sustainable development. It has become more participatory and pluralistic in the 21st century (Eicher 2007). Three strategies have been implemented in most of the nations to reform the extension system since the 1990s. These are: decentralizing the burden of agricultural extension expenditures; decentralizing the responsibility of the central government for agricultural extension and decentralizing the management of extension programs through farmers' participatory involvement in decision-making, leading to farmers taking the responsibility for programs (Rivera & Sulaiman 2009). Some of the reforms in the agricultural extension system are further elaborated below:

Participatory (demand-driven) extension systems[18]: Participatory agricultural extension systems are largely recommended in the 21st century (David and Samuel 2014). In participatory extension systems the extension service provider is no longer seen as the expert who has all the information and solution but rather farmers, individually and collectively, are recognized as major resource to solve local problems (Swanson *et al.*1997). Spielman (2008) highlighted that participatory extension reforms in developing countries help increase agricultural production and farmers income. Gebremedhin *et al.* (2006) also indicated that participatory extension approaches play positive roles by developing farmers who could perform several roles of the public agricultural extension agent, in a cost-effective manner.

Pluralistic extension systems: Pluralism in agricultural extension refers to the increased and diverse/ pluralistic number of extension providers including, public, private and civil society coming onto the scene using multiple extension models that co-exist (Gebremedhin *et al.* 2009; Swanson *et al.* 1997; Birner *et al.* 2006; Tesfaye 2008). Gebremedhin *et al.* (2009) explained that the objective of a pluralistic extension system is to have a coordinated system of complementary extension services that would reach and respond to the diverse requirements of farming systems and the different needs of farmer groups. Spielman (2008) highlighted that pluralism is the future of Africa's agricultural extension. If effective, pluralism can solve problems of coverage, fiscal sustainability, accountability and interaction with knowledge and technology generation. Spielman (*ibid.)* also remarked that for pluralism to be realized in Africa, extension agents need diverse skills that go beyond the basic technical skills, including skills in group dynamics, facilitation, marketing, and information and communication technology.

Privatization of Agricultural Extension: The economic pressures in the 1990s made nations to move towards the privatization of extension services, with farmers being required to pay for services (Swanson *et al.* 1997; Tesfaye 2008). Spielman (2008) and Gebremedhin *et al.* (2009) explained that fee-for-service and privatized extension approaches were primarily aimed as cost recovery strategies and were expected to improve the financial sustainability of the extension

[18] This is like the farmers first extension model explained earlier.

service. Yet, Spielman (2008) highlighted that both approaches have not been taken up in low-income developing countries.

Gebremedhin *et al.* (2009) indicated that privatized extension approaches left out needs of many smallholder farmers. Gebremedhin *et al.* (2009) further explained that private extension systems do not work in situations where smallholders grow a variety of crops for subsistence and for sale. Similarly, Hauga (2007) highlighted that privatization of agricultural extension was accompanied by market failure and further marginalization of small-scale farmers. Likewise, Kidda *et al.* (2000) highlighted that privatization of agricultural extension required situation specific, gradual, and flexible strategies, if resource poor smallholder farmers are to benefit.

Nevertheless, the role for the state in agricultural extension continues to be important for both economic and social reasons (Kidda *et al.* 2000). Public agricultural extension services are especially quite important in developing nations, where the farming communities are mostly resource poor, illiterate, have little access to other information sources and where private extension providers are non-existent (Birner *et al.* 2006; Tesfaye 2008; Gebremedhin *et al.* 2009).

In conclusion, the above discussed agricultural extension models and approaches suggest that the needs of smallholder farmers are better addressed through the participatory and pluralistic agricultural extension systems. The next section elaborates a participatory extension model where farmers are empowered to provide services to other farmers.

2.3.6 Farmers' Collective Actions in Agricultural Extension

With paradigm shifts in the agricultural extension in the 1990s, farmers were no longer seen as 'target groups' but also as partners in planning, decision-making, resource allocation and monitoring and evaluation, individually and collectively (Swanson *et al.* 1997). The effects of market liberalization, globalization and civil society movements enhanced roles of farmers in rural communities (in Africa) and encouraged farmers to organize into collective action groups in the late 20th century *(*Swanson *et al.* 1997; Mutunga 2015).

There are various typologies of farmers' collective actions, having different purposes. Mutunga (2015) classified farmers' collective actions as formal organizations like cooperative societies (with payment of membership fees, and having multi-tiered organizations), and informal farmers' groups that operate mainly at the community level that can be established based on gender, age or neighborhood. Community based informal farmers' groups can also further be classified by their function as: farmer research groups (generating technology), farmer extension groups that work with agricultural extension systems (sharing and utilizing) and, Farmer Field Schools that focus on joint learning (Heemskerk & Wennink 2004; Gebremedhin *et al*. 2009; AGRA 2013). The present study, in line with the research objectives and questions, is interested in informal farmers' collective actions that are established for facilitating the delivery of agricultural extension services to its members.

Several writers have indicated the important roles played by farmers' extension groups by providing members with income enhancing extension services. Farmer groups enhance dialog, facilitate extension events, promote efficient use of farm resources, improve farmers' collective confidence, create opportunities to share ideas and labor and exchange research information and thus create a multiplier effect for the spread of relevant agricultural technologies and practices (Mavedzenge, Murimbarimba & Mudzivo 1991). Furthermore, farmers' extension groups interface between farmers and agriculture service providers, represent the farming community, and generate and disseminate agricultural technologies (Bebbington *et al.* 1994). By linking with the extension system, farmers' collective action groups facilitate implementation and monitoring of extension services, where the extension groups provide feedback to extension workers on farmers' needs, production problems and the results of adoption of technologies (Swanson *et al.* 1997).

Similarly, Gebremedhin *et al.* (2009) stated that farmers' collective actions could alleviate the limited access to extension services faced by smallholder farmers in developing countries. They highlighted that farmers' extension groups play great roles in pre-production, production, and marketing for the members. Mutinga (2015) also noted that through extension groups farmers can solve problems that hinder them from receiving inputs and services in the required amount and quality at the right time.

According to findings of an assessment done by the Ethiopian Agriculture Transformation Agency, extension delivery is easier when farmers are organized in informal extension groups, as it provides an opportunity for farmers to work together, to resolve common problems and to build confidence (MoANR-ATA 2017). Such farmers' groups are better able to access extension services, technologies and benefits of joint peer-to-peer learning and they eventually develop willingness to be organized in bigger formal cooperatives *(ibid.).* Moreover, Mogues *et al.* (2009) highlighted that rural women groups are promising in reaching female farmers with extension services by avoiding the possible social sensitivity of male extension agents one-on-one contact with female farmers.

This study upholds the argument that farmers' extension groups are valuable tools to reach big numbers of farmers, especially in developing countries with huge agrarian society.

2.3.7 Measuring the Outcomes of Agricultural Extension

An effective and efficient agricultural extension system that facilitates transfer of knowledge, technology and inputs; adoption and utilization of agricultural technologies; and productivity by farmers plays an important role in bringing agricultural transformation (Gebremedhin *et al*. 2006; Davis 2008; Tesfaye 2008).

The effectiveness of agricultural extension is evaluated based on the changes in farmer's awareness and knowledge of technologies, the skill with which they can use the technologies; the extent of adoption of the technologies; and farmers access to information about markets, credit and input supply and farm productivity (Gebremedhin *et al*. 2006). Similarly, Lemma (2007) explained that effective performance of an extension system can be measured by the appropriateness of the extension message communicated to farmers. On the other hand, efficiency of agricultural extension services is measured by the amount of cost with which the services are provided to farmers (Gebremedhin *et al*. 2006).

Agricultural extension writers underscored the need for evaluating the performance and measuring the impact of agricultural extension systems (Davis 2008; Swanson 2009; Taye 2013). However, researchers are skeptical about the validity and reliability of most extension evaluations.

Measuring the impact of extension is a complex issue for governments and donors (Davis 2008; Eicher 2004). Studies on impact of extension are difficult to capture due to measurement challenges, questions of representativeness, and lack of baseline data (Davis 2008). Evaluation results are often overestimated and contradictory due to poor impact evaluation methodologies, lack of reliable data and insufficient capacity to conduct rigorous impact evaluations (Taye 2013). Furthermore, challenges in measurement are related to the difficulty in attributing impact in the absence of baseline data; cost of reaching large, geographically dispersed and remote smallholder farmers at scale; and dependence on broader policy environment, where the outcome of extension efforts depends on policies (like input and output prices, credit policies, input supplies, marketing and infrastructure) over which extension has little influence (Eicher 2004; Swanson 2009).

The findings of this study are hopped to provide useful information about the performance of farmers' development groups in the extension system of Ethiopia. Nonetheless, the study does not claim to assess the overall performance and impact of the extension system in the study area.

2.3.8 Global Experiences of Agricultural Transformation

Countries have their own peculiarity and pace to achieve agricultural transformation. However, despite differences in political, economic, historical, and geographic contexts, there are some common features in the process and end products of their agricultural transformation experiences. In general, four types of nations are identified with regards to their agricultural transformation: industrial nations of the West, the former socialist countries of central and eastern Europe, green revolution nations of Asia, and African nations with complex, diverse and risk-prone agriculture. By the mid-1980s agricultural production has risen sharply in the industrial nations of the West and in the green revolution nations of the South; but it did not grow much in the complex nations of the South (Chambers 1993). Agricultural transformation experiences from the four classifications are presented below.

The Developed (industrial) Nations

The developed nations of the West (Western Europe, North America and Australia) are pioneers in agricultural transformation. Historically, the west started to transform their agriculture using scientific practices in the 16th century, triggered by increased population in Europe, colonial

agriculture and experimentation in labor saving agriculture technologies (Duffy 2009). Grigg (1992) explained that earlier agricultural production growth in the western industrial nations came from expansion of arable land (area under cultivation). In the late 19th and 20th century, however, agricultural productivity growth came from introduction of farm machinery, adoption of mixed farming (crop/livestock), and modern chemical farming. More significantly, the industrial revolution in the first half of the 19th century has increased farm efficiency through mechanization (Grigg 1992; Duffy 2009).

Developed nation's dependence on agriculture started to gradually decline with the growth of cities and rural-urban migration in the 20th century, resulting in different approaches to increase productivity. Consequently, high population density countries of western Europe maximized output per hectare of land, while low population density countries of North America and Australia maximized output per capita (Grigg 1992). For instance, a review of the United States agricultural transformation by Dimitri *et al.* (2005) showed that technological improvements increased productivity and at the same time reduced the number of people employed in the farming sector, creating opportunities for non-farm-based employments.

In the early 20th century, Duffy (2009) indicated, the United States renewed its efforts to improve the lives of the farmers by increasing their productivity through technologies that substituted capital for labor. The then government argued that the expansion of small farms could be facilitated using programs designed to retrain and move agricultural workers to non-farm industries.

By the mid-20th century, the developed nations of the West have already achieved high farm productivity and overproduction. The Western countries also became food self-sufficient and major exporters of agricultural products in the world market. Since then, agricultural production in most of the Europe is governed by a regional strategy called 'Common Agricultural Policy (CAP)' with the aim of ensuring sufficient food supplies for member states' citizens, at predictable prices (guaranteed markets) that would assure farmers of adequate incomes from the land (Lines 2009). [19]

[19]The CAP was established in the 1960s as a uniform policy trying to cater for the needs of the very varied agricultural sector in 27 states across both Eastern and Western Europe. The six countries that earlier on adopted the CAP were

In the 21st century, the developed nations are consolidating farm land and increasing efficiency in farming. They are also rethinking agriculture in the wake of climate change for a stable and sustainable agriculture production (Stoate *et al.* 2009; Mark 2010).

Central and Eastern Europe and USSR

Agricultural transformation in the Central and Eastern European countries as well as the former USSR (Russia) started in the second half of the 20th century. The first wave of transformation in central Europe took place in the 1950s and 1960s under the socialist reorganization of agricultural programs into state farms and the collectivization of smallholder agriculture (Csaki 1992).

Agricultural transformation in the socialist countries was shaped by the legacy of the 'command economy' where the transformation process was highly centralized. However, in the late 1960 and 1970s, it was observed that central administration impeded production and hence called for decentralization of socialist agricultural systems (Held 1980).

The second wave of agricultural transformation in the eastern European countries, but still with limited progress, started in the late 1970s, driven by the global economic tensions and increased demand for food. Nevertheless, though agriculture played an important role in the overall economy of these countries, it was characterized by large inefficiencies, high production costs, subsidized food prices, and inflation as well as state monopoly in food processing and distribution in the 1980s (Csaki 1992; Ferto 2016).

The third wave of agricultural transformation in the region, with radical and meaningful changes began in the early 1990s, when the countries created a new agricultural structure based on private land ownership (agrarian reform), farmers cooperatives, state farms, and market economy (Csaki 1992). The transformation process demanded for changes in the government's role for liberalizing food prices, eliminating food subsidies, providing extension services, and developing agricultural policy that encouraged efficient production and income parity among producers. All these actions constituted a package that were implemented in a coordinated manner (i*bid.*)

all in Western Europe and their economies were recovering from the devastation of the Second World War (Lines 2009).

Consequently, the eastern European and the USSR countries became food self-sufficient and eventually, 'peasant way of life' and poverty in the countryside disappeared by the mid-1990s. Experience from the socialist countries showed that political transformation was an essential condition to move from a command economy towards a market economy for agricultural transformation to take place (Held 1980; Csaki 1992). More so, the transition process in the early 1990s including economic, political and institutional reforms (particularly land policies) have resulted in significant changes in the agriculture sector.

In the early 21st century, the eastern and former socialist countries of Europe joined the European Union and adopted the CAP, which implied greater opportunities for the countries, in a global competitive market (Ferto 2016).

The Green Revolution Nations of Asia and China

Agricultural transformation in Asia, except China, came with the 'Green Revolution'[20] that introduced modern science (improved cereal varieties, fertilizers, irrigation, and modern pest control methods) to solve the Asian food crisis in the 1960s with speed and at scale. The green revolution contributed to a reduction in poverty and the launching of broader economic growth in many of the Asian countries in a remarkable and unprecedented manner (Hazell 2009).

Nevertheless, the green revolution was much more than a technology fix, as it also required a supportive economic and policy environment. It also needed educating farmers about new technologies and ensuring that they had access to inputs, markets and adequate rewards to their investments. Government interventions were also important for ensuring that smallholder farmers were not left behind in the revolution.

Transformation in China had been the result of a tripartite interaction between smallholder farmers, the state and the market since 1980. Transformation in China's agriculture sector began with agrarian reform from a collective system to an individual household-based system that increased

[20] The term 'green revolution' was originally coined in the 1990s to describe the phenomena where India and Pakistan saw yields increase from less than 1 ton per hectare in the mid-1960s to more than 2 tons per hectare in the late 1990s (McArthur 2015).

incentives for family farming. Starting the mid-1990s, agricultural markets in China are liberalized with expanded national and international markets that led to diversification and specialization within the agricultural sector. Moreover, farmers' market needs were supported by public investments in infrastructure, research, education and extension services. Consequently, farm productivity rose rapidly, and by 2010 China has become a middle-income country feeding its more than 1.3 billion populations (China- DAC 2010).

Like most developed nations, much of Asian nations' attention in the 21st century is focused on sustaining agricultural productivity, while mitigating climate change problems (McArthur 2013).

The nations of Africa

In contrast to the developed and green revolution nations, there had been deepening crisis with rising population, smaller land holdings, soil degradation and static or declining food production per capita in the complex, diverse and risk prone nations of the South. Apparently, the agricultural science that served the needs of the developed and green revolution nations in the 20th century did not fit with the priorities of the risk prone agriculture nations (Chambers 1993).

Literature on Africa's agricultural transformation indicates that transformation in the continent has been a long-term process, taking place at a very slow pace and continuing trend (Goldman & Smith 1995; McArthur 2013; Collier & Dercon 2014). The possibilities and expectations of achieving a desirable level of agricultural transformation in Africa have also been questioned by many (Seckler 1993; Goldman & Smith 1995; McArthur 2013). African agriculture was still close to being 100 percent subsistence oriented and agricultural transformation process was virtually non-existent in the 1990s, thirty years after the independence of many African countries. Although agricultural productivity might have increased for Africa since the 1990s, food production per capita remained stagnant since the 1960s and average yields per capita remain lower than yields in other continents. Nevertheless, agriculture is still the largest employer in Africa in the 21st century and some African countries (mostly West Africa) have started experiencing an improvement in their agricultural performance in the 1990s and early 2000. The agricultural improvement in Africa has however highly varied and has not been sustainable, nor very extensive (Goldman & Smith 1995; Fox *et al.* 2013; McArthur 2013).

Apparently, Africa is the only continent (mostly Sub-Sahara) in the 21st century that is still seeking its 'green revolution', struggling to initiate productivity gains, while also going through environmental and other natural, economic and political problems. On-going efforts to transform African agriculture are challenged with climate change and high population growth with many people depending on land for their livelihood. Although varying from country to country, available agricultural technology in Africa has been limited and much of the investment in agricultural extension has not been effective to bring agricultural transformation. One great challenge for the 21st century is, therefore to enable transformation of Africa's agriculture (McArthur 2013). Western African nations stand out to have increased productivity and food production per capita over the late 20th century period (1960 onwards). Yet, more than half of African countries saw a decline in cereal production per capita and the average food production growth rate over the four decades (1960-2000) was negative (McArthur 2013).

It is however noteworthy that Africa had tried to launch an 'African Green Revolution' as initially called by the united nations secretary-general Kofi Annan in 2004. This helped to raise funds and accelerate progress in many countries in the following years. Some of the gains (more than double the regional average) were seen in Malawi, Ethiopia, Zambia and Rwanda each achieving cereal yields of 2 and more tons per hectare by 2010, compared to 1 ton per hectare in early 2000, while average African yields remained only 1.4 tons per hectare as of 2013 (McArthur 2015).

Taken together, three points can be concluded from the literature review on agricultural transformation experiences of countries and regions. First, each country's and region's move towards agricultural transformation was been backed by state driven policies, including agrarian (land) reform. Second, agricultural transformations are characterized by a package of interventions- including access to key agricultural inputs and advisory extension services. Third, agricultural transformation in Africa, is not fast enough and there is a need for more evidence of agricultural transformation efforts.

The next section explores the agricultural transformation policies and practices in Ethiopia.

2.4 AGRICULTURAL TRANSFORMATION IN ETHIOPIA

Ethiopia, a predominantly agrarian nation, is on a much-needed agricultural transformation journey. This section presents major trends in the nation's agricultural transformation commitment with focus on three major issues. These issues are: the Ethiopian land reform program and its impact; the post reform agriculture sector programs and policies; and the pre- and post-agrarian reform agricultural extension systems. This section also discusses the vision of policy makers with regards to smallholder farmer's collective action and the expected contribution of farmers' collective actions towards agricultural transformation. The following sub-section, however, starts with an overview of the Ethiopian agriculture sector (crop and livestock).

2.4.1 Ethiopia's Agriculture Sector

The backbone of the Ethiopian economy has always been the agriculture sector that is dominated by crops and livestock mixed farming systems. Agriculture contributes over 40 percent of the Gross Domestic Product (GDP), 84 percent of the exports, and over 80 percent of the livelihoods of the Ethiopian population in 2015 (CSA 2015; NPC 2017). The crop and livestock sub-sectors accounted for 27.4 (26.4 in 2016) and 7.9 percent of the GDP on average, respectively for the five years 2010-2015 (NPC 2016; NPC 2017)).

The reality of Ethiopia's agricultural performance is complex and inconsistent, varying spatially across the country as well as over time, due to changes in policies and weather shocks. To this effect, Dorosh and Rashid (2011) stated that Ethiopia's agriculture must be understood by both the progress achieved at the national level and the food insecurity problems in pocket areas of the country. Agricultural growth is a major engine for poverty reduction and contributor to the overall growth of the economy of Ethiopia. Despite its importance, the agricultural sector in Ethiopia is characterized by low productivity compared to its potential, emanating from environmental and other structural and institutional factors. The food security needs of the country have also not been met in the 21st century as the number of food insecure people has not gone down below 3 million on average and Ethiopia has been importing cereal (wheat) since 1960s (as much as 2.6 million metric ton annually). Thus, agricultural growth had not brought drastic changes to the food self-sufficiency situation of the country (Dorosh & Rashid 2011; MoFED 2013; NPC 2016).

On the contrary, agriculture growth rate accelerated from 1.2 percent in 1980 to 2.9 percent in 1990, to 6.2 in 2000 and 6.6 percent in 2015.[21]

Smallholders

Smallholder farmers, with farm land size ranging from 0.5 to 2 hectares, comprise important resources in Ethiopia's agriculture. They consist most of the agriculture sector labor source (75 to 80 percent) and generate over 95 percent of the annual gross total agricultural output of the country (CSA 2015). Smallholder farmers also dominate the agricultural land use, making up 94 percent of total cultivated land, in 2014 and 55 percent of all smallholder farmers operating one hectare of land or less (Bachewe *et al.* 2015; NPC 2016;). With rural population growth, the number of smallholder households grew from 12.9 million in 2008 to 17.4 million in 2017, with a growth rate of 34.8 percent in a decade time, as in Table 2.1.

Table 2.1: Number of SHFs Households Nationally, in Millions of Households

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
No. of Smallholder HHs in millions	12.9	12.9	13.3	14.3	14.3	15.0	15.3	15.6	17.4

Source: CSA annual reports (2007-2017 in Bachewe et al. 2015 and CSA 2017)

Smallholder farmers in Ethiopia live on few and poorly provided social services (health, education and drinking water) and their livelihoods are dominated by rain-fed, subsistence, and low input-low output farming systems. These farmers are also often weakened by periodic and location specific droughts (an example is the *El-Nino* caused drought in 2015/2016 affecting more than 15 million population), soil degradation, deforestation, high population density, increasingly fragmented land holdings (12 fields per farm household in 2013), undeveloped irrigation water resources, poor transport infrastructure and poor market linkages with little value addition on produced agricultural commodities (Gebreselassie 2006; Assefa 2008; Bachewe 2009; CSA- WB 2013; Jirata 2016; NPC 2016).

[21]The proportion of the population (rural and urban) living below the national poverty line fell from 38.7 in 2004 to 29.6 in 2010 and 23.4 percent in 2015. Ethiopia's overall GDP growth rate averaged 10.1 percent during the 5 GTP years (2010-15). In terms of structural change, the share of agriculture in the overall GDP that stood at 42 percent in 2010 declined to nearly 39 percent by the end of 2015 (Dorosh & Rashid 2011; NPC 2016).

The crop sub-sector

The crop sub-sector in Ethiopia has always been the major contributor to the growth of agriculture. It is estimated that 13 million hectares (only 17 percent compared to 75 million hectares of land suitable for cultivation) of land is cultivated by 2016 (CSA 2016). The main agricultural regions of the county have two (bimodal) crop production seasons named *Meher* and *Belg*[22].

Ethiopia has considerable variations of agro-climate zones due to the wide range of altitudes. Consequently, smallholder farmers in different places grow various annual and permanent crops. The major crops grown are, however, categorized into seven groups: cereals, pulses, oilseeds, vegetables, root crops, fruit crops, and cash crops. These major crops are produced in almost all regions of the country despite the variation in volume of production. Cereals, pulses and oilseeds are the most important field crops, occupying 86 percent of crop area planted and being the main element in the diet and source of income of most Ethiopians. These food crops are also the major drivers of growth in the crop sub-sector. The most commonly produced cereal (with largest share of area cultivated) is *teff* (*Eragrostis abyssinica*), which is used to make the Ethiopian bread called *'injera',* followed by maize and barley. Coffee (arabica variety), sesame and dry beans are the most valuable cash/ export crops also generating foreign exchange earnings (CSA 2016).

Cereal crop production between 1999 and 2008 increased by 7 percent per year. Most increases in crop production however are said to be due to expansion in cultivated area and not from yield productivity improvements (Seyoum, Dorosh, & Asrat 2012). Similarly, the total production of major crops by smallholder farmers increased from 180 million quintals per year in 2010 to 270.3 million quintals per year in 2015 (an additional 90 million quintals) or 50 percent (NPC 2016).

The livestock sub-sector

With an estimated 132 million cattle, sheep, goats, camels, and poultry in 2016, Ethiopia's livestock population is the largest in Africa (Kimball 2011; CSA 2017). Though not as dominant as the crop sub-sector, livestock plays a significant role in the economy of Ethiopia contributing

[22]*Meher* is the long rainy season that occurs from June to September and provides ideal moisture for the long maturing crops like teff, wheat, barley that are harvested from September to February. The season account for more than 90 percent of annual crop production and 95 percent of cereal production The *Belg* season refers to the small rainy season that occurs from February to May in limited areas of the country and *Belg* season crops (mainly maize) are harvested during the months of March to August (CSA 2016).

to both agricultural value-added and national GDP. Consequently, the share of the livestock sub-sector averaged 35 percent of agricultural GDP and 16 percent of national GDP in 2015 (Birkelo 2016). The contribution of livestock and livestock product exports to the foreign exchange earnings was also, estimated to be an average 13 percent of the annual national foreign exchange earnings during the period 2001 to 2008 (Negassa, Rashid & Gebremedhin 2011).

At the household level, 60 to 70 percent of the Ethiopian population raises livestock for their livelihood (Kimball 2011). Livestock provides a wide variety of functions for Ethiopians, as they are among the most important household commodities under both the sedentary mixed crop-livestock production system and the nomadic pastoral or agro-pastoral production system. [23]

Though the total livestock number in Ethiopia is the largest in Africa, the number of livestock herd size at the individual smallholder farmers and pastoralist level is small and the level of livestock productivity is one of the lowest in the world (Negassa *et al*. 2011). The livestock sub-sector is also characterized by multiple species and multipurpose activities, less commercially oriented production systems, low commercial market off-takes, inadequate production and marketing infrastructure, and inadequate services, institutions, and support systems *(ibid.).*

In recognition of the future opportunities for the livestock sector, the government of Ethiopia designed a five years Livestock Master plan (2015-2020) that serves as a road map for the livestock sector (Shapiro *et al*. 2015).

2.4.2 Agricultural Transformation Pre-1991

A lot has been written about the agriculture sector performance and challenges in Ethiopia. It is yet important to note that present agricultural transformation efforts in Ethiopia are affected by the past. Thus, this sub-section discuses agricultural development policies, interventions, land tenure systems, and extension systems under the major political regimes prior to the FDRE government.

[23]For the pastoralists, livestock exclusively represents their livelihoods, wealth, and a store of value in the absence of financial institutions while in smallholder crop–livestock mixed farming systems it functions for coping with shocks, cash income, a means of transportation, farm outputs (milk and beef production) and farming (draught use), fuels for cooking, and breeding (Birkelo 2016).

These regimes are: the feudal pre-agrarian reform regime prior to 1974 and the post agrarian reform period of the socialist *Derg* regime (1974-1991).

Prior to 1974 (The Emperors time)

Ethiopia had multiple and complicated land tenure systems prior to 1975. The tenure system then was distinguished between landownership patterns in the southern highlands, brought under rule by conquest in the late 19th century, and the northern highlands, known as the old kingdom (Wubneh 1990).

In the south, tenancy was up to 80 percent of the holdings with few farmers owning the land on which they worked. Tenant payments to landowners averaged as high as 50 percent of the produce and absentee landlordism was common (Wubneh 1990). On the other hand, most farmers in the north held some (*rist* land*)* [24], and absentee landlordism was rare. Landless residents were few, estimated at about 20 percent of total holding(*ibid*.)

In general, the tenure system prior to 1975 was characterized by land concentration, lack of ownership, exploitative tenancy, and insecurity. Endless litigation over land rights, and arbitrary eviction from holdings were also common. The then tenure system is said to have affected 60 percent of farmers and 65 percent of the country's population (Nega *et al.* 2003). Consequently, farmers lacked the incentive to improve production, while the absence of modern facilities and inputs as well as shortage of rainfall exacerbated the low productivity of the land. Thus, growth in the agricultural sector was difficult (Nega *et al.* 2003; Deininger *et al.* 2007; Chanyalew 2015).

Furthermore, policy makers prior to 1975 paid little attention to the development of the peasant agriculture. Public extension services were provided through few (6 to 8) extension agents located along the main roads and covered an area of up to 30-kilometer radius from their work station. Thus, the big proportion of the farmers living away from the roadside had limited contact with extension workers (Kassa 2003; Kassa 2008).

[24]*Rist* land was hereditary to all descendants (both male and female). No user of land could sell his or her share outside the family or mortgage his or her share as a gift, as the land belonged not to the individual but to the family (Dunning 1970).

The government, however, gave recognition to the development of smallholder farmers in the last five-years development plan of the regime (1968-1973), through its extension approach called the Minimum Package Program (MPP). The MPP extension approach provided peasants with minimum agricultural development services (like improved seeds), funded by outsiders (Gebremedhin *et al.* 2006). Also, an agricultural extension department was established under the Ministry of Agriculture in 1971, to facilitate implementation of the MPP.[25] The MPP extension program was, however, halted when the socialist revolution took place in Ethiopia in 1974 (Kassa 2003; Kassa 2008).

The Socialist *Derg* period (1974 - 1991)

Towards the early 1970s, a speedy agrarian reform became essential to improve the overall agricultural sector condition of Ethiopia. For this to happen, progressive Ethiopians (mainly university and high school students) became in favor of land reform movements against the outdated land occupancy system (Kassa 2003). As a result, the revolutionary *Derg* government declared national land reform programs in March 1975 through Proclamation No. 31/1975.[26] Under the land reform program[27], the government nationalized all the land in the rural area without compensation, eliminated land tenancy completely, forbade the hiring of wage labor on private farms, ordered all commercial farms to remain under state control, and granted each farm family so-called 'possessing rights' to a maximum of ten hectares of land, based on the number of household members (Rahmato 1984; Bekele 1998; Nega *et al.* 2003).

The 1975 agrarian reform, that fundamentally altered the then agrarian relations, was designed to answer the 'agrarian question' of smallholder farmers (especially in the southern Ethiopia), for ownership of land and improved livelihoods. The intention of the agrarian reform was to distribute

[25]Modern agricultural extension services in Ethiopia date to the early 20th century (Kassa 2003). In 1943, the imperial government established the then Ministry of Agriculture (MoA), and in 1953 the Ministry of Agriculture established the then Alemaya Collage of Agriculture (now Haromaya University) to develop, deliver, coordinate and lead agricultural education, research and extension nationally (Gebremedhin *et al.* 2006).

[26]The provisions of the 1975 proclamation (No. 31/ 1975) included: public ownership of all rural lands; distribution of private land to the tiller; prohibitions on transfer-of-use rights by sale, exchange, succession, mortgage or lease, except upon death and only then to a wife, husband or children of the deceased; and in the case of communal lands, possession rights over the land for those working the land at the time of the reform (Bekele 1998).

[27]Land redistribution was administered by the then newly established Ministry of Land Reform and Administration (MLRA) through peasant/farmers associations at the grassroots level (Rahmato 1984).

land, increase agricultural production, increase rural income, and provide a basis for agricultural expansion through implementing agricultural and rural development strategies based on socialist principles (Pawsewang 1983; Bachewe 2009). To realize its intention, the *Derg* government made those farmers working on the land the legitimate owners. The government also implemented rural development strategies and institutional innovations (mostly collective) including: Peasant Associations (PAs), producer cooperatives, state farms, villagization and agricultural extension programs.

Peasant Associations (PA): The land reform proclamation required that farmers be organized into associations that would facilitate the implementation of rural development programs and policies. Peasant associations provided opportunities for farmers to participate in local matters where they assumed a wide range of responsibilities, including implementation of government land use directives, settlement of land disputes, encouragement of development programs, organization of defense squads, tax collection and local data collection. Accordingly, by the end of 1975 there were 18,000 PAs with membership of 4 million peasants. The number grew to 24,700 PAs and 6.7 million members in 1977 (Wubneh 1991).

State farms: The motive of the government for expansion of state farms was the desire to produce surplus food (Wubneh 1991). Accordingly, state farms received a large share of the country's agricultural resources in the form of investment and direct subsidy. However, despite the emphasis on state farms, the farms were inefficient and accounted for only 6 percent of total agricultural output by 1987 *(ibid.).*

Producers Cooperatives: In 1978, the socialist government passed legislation that encouraged farmers to form producers' cooperatives. Cooperatives were supposed to alleviate shortages of inputs and problems associated with the fragmentation of landholdings by pooling resources like land and oxen. Income from the cooperatives was however distributed based on labor contributions. Despite the government provided incentives to producers' cooperatives, including priority for credits, fertilizers, improved seed, and access to consumer items and building materials, the farmers responded less enthusiastically, as they considered the move as a preamble to the destruction of their 'family farms' (Wubneh 1991; Kassa 2008).

Villagization: In 1985, the *Derg* government initiated a 'villagization' program that moved millions of smallholders from dispersed settlements to centrally planned small villages (Pankhurst 1986). The objectives of the program were to promote land use, conserve resources, provide access to amenities like clean water, health and education services; and strengthen security. As a result, by 1989 more than 13 million people resettled in 4,500 new villages. Nevertheless, by 1990, the government abandoned villagization due to: criticism and pressures from the international community; deteriorating national security conditions; poor conditions of settlers, and shortage of resources (Pankhurst 1986; Wubneh 1991).

Agricultural Extension: There was not much agricultural extension work until 1981 due to political instability and structural changes in the rural areas. Later, between 1981 and 1985, the MPP extension approach of the previous government was reinitiated and implemented in selected areas, channeled through PAs and cooperatives. The MPP extension program was however phased out in 1985, to be replaced by a new extension program called the Peasant Agricultural Development Extension Program (PADEP) (Kassa 2003).

The PADEP employed the Transfer of Technology (ToT) extension model and used the Training and Visit (T&V) extension system that was introduced and adopted from India since 1983, by the MoA. PADEP was implemented in selected surplus producing areas where one extension agent was expected to serve 1,300 farm households through 'contact farmers' (Kassa 2003; Kassa 2008). Nevertheless, the extension system was not accessible to many, due to the limited number of available extension agents to cover a wide area.[28] Consequently, smallholders were left out (Gebremedhin *et al.* 2006; Chanyalew 2015).

The PADEP and particularly the T&V extension model during the socialist regime was criticized for not being participatory and for favoring the development of the state farms and collective producer cooperative farms, at the expense of individual smallholder farmers (Davis 2008). Similarly, Dejene (1989) indicated that the T&V communication system (through contact farmers

[28] Extension agents were also engaged in non-extension tasks of tax collection, loan repayment, cooperative promotion and villagization (Kassa 2003).

to the rest of the community) did not work as expected, as up to 25 percent of the contact farmers did not have the necessary extension knowledge and skill.

Impact of the agrarian reform

Although the 1975 land reform changed landownership patterns in favor of farmers, smallholders continued to suffer from low production and income problems. Thus, the question of smallholder farmers for improved production, income and secure land ownership was not answered by the 1975 agrarian reform. Gebreselassie (2006) elaborated that though Ethiopia's land reform abolished the exploitative landlord-tenant relationship, it failed to address wider agrarian and rural issues that included: shrinking of farms, high farm fragmentation, high population pressure, low migration, scarcity of productive farm lands, environmental degradation, low farm income and productivity, and lack of investment in land. The reform is also said to have led to structural challenges of insecurity to land tenure, and food insecurity (Nega *et al.* 2003).

Even though the *Derg* period (1975-1991) was marked by agrarian reform and institutional innovations to enhance agricultural productivity, agricultural growth remained low. Successive trials made by the government showed little success partly due to drought, political instability, and price controls Nevertheless, the agriculture sector grew at 3 percent in 1990, compared to 0.6 percent in the late 1970s due to policy changes[29] (Kassa 2003; Nega *et al*. 2003; Kassa 2008).
The structural problems in agriculture including land insecurity, small size of land, low productivity and low farm income continued to persist in the 21st century and all problems are said to be either directly or indirectly related to the agrarian reform (Gebreselassie 2006). The two structural challenges: land fragmentation and tenure insecurity are elaborated below.

Small land size and land fragmentation: Dwindling holding size is a major feature of the Ethiopian tenure system. Rural land had been periodically redistributed during the *Derg* regime, to accommodate young families or new households. Consequently, individual holdings were frequently redistributed resulting in far smaller than the permitted maximum allotment of ten hectares (Wubneh 1990). Nega *et al.* (2003) highlighted that the total number of "mini-plot" holders

[29] In 1988, the *Derg* government made policy changes following its 'mixed economy' commitments to lift price control, free movement of goods and to stop further land redistribution (Nega *et al.* 2003).

has increased substantially after the land reform, where 57 percent of peasant households in the pre-reform and 72 percent in the post reform periods (1980s) operated holdings of 1 hectare or less. The land redistribution process meant not only smaller farms but also the exacerbation of fragmentation of land holdings, which meant scattered small plots to give families land of comparable quality (Rahmato 1984).

In connection to farm size, Rahmato (2008) argued that an average Ethiopian farm household (predominantly cereal-based) needed no less than 2.5 hectares of land and a pair of oxen to produce enough food for the family, annually. Nevertheless, the number of households who held more than 2 hectares in 2003 were only 13 percent of the farm households and only 32 percent of farmers owned two oxen (Rahmato 2008).[30] Given the small land size, Rahmato concluded that it is unrealistic to expect any substantial agricultural productivity growth in Ethiopia.

Tenure insecurity: This was the other post-reform problem that was exacerbated due to increased pressure by the government to redistribute land and to collectivize farms. Tenure insecurity was claimed to be the main obstacle to improve production (Gebreselassie 2006). Peasants were reluctant to improve their land, after the reform because they were afraid that they would not receive adequate compensation for any upgrades on the land (Nega *et al.* 2003).

2.4.3 Agricultural Transformation in the FDRE Regime (post- 1991)

In 1991, the *Derg* was overthrown by a 'transitional government' that later became Ethiopian Peoples' Revolutionary Democratic Front (EPRDF) or the Government of the Federal Democratic Republic of Ethiopia (FDRE). Since then, policy and strategy formulation in Ethiopia, including for the agricultural sector is guided by the 'Revolutionary Democracy' principles of the EPRDF 'developmental state' government that combine elements of capitalism and socialism (Chanyalew 2015). The agricultural sector in the FDRE regime are anchored and derived by the principles embedded in policy and strategy documents that include: Agriculture Development Led Industrialization (ADLI) Strategy, Agriculture and Rural Development Policy and Strategy (ARDPS), and successive five-year poverty reduction and transformation plans.

[30]As indicated earlier, 55 percent of all smallholder farmers in the country operated on one hectare of land or less, in 2015 (CSA 2015).

Next, the thesis discusses relevant policies and strategies in relation to agricultural transformation and collective agricultural extension endeavors in Ethiopia.

The Agriculture Development Led Industrialization (ADLI) Strategy

The agricultural sector and sub-sector policies and strategies followed by the FDRE are guided by the development principles in the Agricultural Development Led Industrialization (ADLI) strategy, put forward by the government in 1993. The core principle of the ADLI strategy is that 'agriculture should be the starting point for initiating the structural transformation of the economy and smallholders are at the center of the transformation' (MoPED 1993). The main features of ADLI are that improvement in the performance of the smallholder agriculture first, leads to income increase and market surplus for rural households. It will also be able to provide farm products for the industry and urban sectors. Thus, ADLI is a phased strategy, starting in the agricultural sector transformation, which then offers labor and inputs for the non-agricultural sector *(ibid.).*

Agricultural transformation, under the ADLI policy, is expected to be driven by increases in productivity stemming from adoption of modern technologies and other inputs, and further development of rural infrastructure, irrigation and market access. To this end, the strategy promoted the use of labor-intensive agricultural methods, chemical inputs, diversified production, technologies to increase agricultural productivity. The policy also emphasizes the importance of agro-ecological zonation and tailoring intervention strategies for each agro-ecology for optimal development outcomes (MoPED 1993). The old but dominant ADLI strategy has been fine-tuned since 1993, responding to changing national circumstances and ideas and has acted as the basis for the design of all the country's Poverty Reduction Strategy papers (PRSP) and rural development policies over the last two decades (MoFED 2003; Adugna 2010; Chanyalew 2015). [31]

As a critique to the principles of the ADLI strategy, Rahmato (2008) highlighted that the policy did not sufficiently promote investment in the growth of industries and small towns as well as non-farm employment together or side by side with the agriculture sector. Rahmato *(ibid.)* also

[31]The principles of the current growth and transformation plan are also preserved in the old ADLI strategy.

highlighted that the ADLI strategy ignored the impacts of the land tenure structure and demographic changes on agricultural transformation.

Agriculture and Rural Development Policy and Strategies

The FDRE government designed the Agriculture and Rural Development Policy and Strategies (ARDPS) in 2003. Since then, the strategies serve as a framework for planning any agricultural and rural development programs (Chanyalew 2015). The policy is one in which the principle of ADLI that 'agriculture should be the starting point' is reiterated. Consequently, the ARD policy reiterates that agricultural growth will enhance domestic capital, thereby creating a momentum for future growth both within the agriculture and non-agriculture sectors (MoFED 2003).

The ARDPS amplifies that it makes sense for Ethiopia to efficiently employ the abundant resource, land and labor, to bring rapid agricultural transformation (MoFED 2003). [32] The idea embedded in the policy is to improve agricultural productivity by helping the smallholder agricultural labor force reach higher levels of productivity (*ibid*.).

The strategies to achieve the desired agricultural transformation include: strengthening the agricultural labor force, preparing area (agro-ecology) compatible packages, diversification and specialization, dissemination of appropriate technology, proper or efficient use of farm land, market-led agricultural development, improved rural finance, private sector participation, expansion of rural infrastructure, strengthening of non-agricultural rural activities, voluntary resettlement programs within each region, and establishment of rural cooperatives (MoFED 2003).[33]

Nevertheless, a critical review of the ARDPS by Chekole (2015) highlighted that the policy was formulated based on what the government wished the smallholder farmers to be, and not based on

[32]The ARDPS explains that land and labor are the two main resources Ethiopia has abundantly, while there is shortage of capital (MoFED 2003).

[33] The ARDPS policy document had no plans to reform the land tenure system. Similarly, rather than relying exclusively on outside technologies, the policy advised to draw on the useful agricultural experiences and practices in the country and improve on them, as necessary (Chanyalew 2015).

the reality of the smallholder.[34] From his experience, Chekole *(ibid.)* was not convinced that the labor productivity of smallholder farmers can be increased by the agricultural extension system. Moreover, Chekole found the prevailing government's intervention in the market, was a paradox to the vision for free private market engagement. He also stated that 'diversification and specialization' of production is not practical and that increases in agricultural productivity are not easily achievable in Ethiopia, with a fast-growing population, problems of access to arable land, and backward farming practices.

Similarly, Rahmato (2008) criticized the ARDPS for the limited attention it gave to other sectors of the rural economy, compared to the agriculture sector. He also stated that the policy leaves out 'hard' labor saving technologies (mechanization) by emphasizing only what he called 'soft' technologies (like agro-chemicals, improved seeds, improved management practices as well as utilization of water). The success and effectiveness of the large-scale voluntary resettlement plan in the ARDPS and its environmental consequences was also contested (Pankhurst 2004).

Poverty Reduction Strategy Papers (PRSP)

Ethiopia formulated four successive Poverty Reduction Strategy Papers (PRS) in the period between 2002-2015. The PRSPs were prepared by authorities of the government of Ethiopia.[35]

The First PRSP: Sustainable Development and Poverty Reduction Program (SDPRP)

The first PRSP, prepared in 2002 under the name 'Sustainable Development and Poverty Reduction Program (SDPRP)', covered the 3-years period from 2002 to 2005. The paper aimed at 'creating a free-market economic system which would enable rapid development, reduce food aid dependence and make poor people the primary beneficiaries of growth' (MoFED 2002).

[34]Chekole (2015) stated that the ARDPS policy formulation did not involve rural people's views and the policy was forcing smallholder farmers to adopt new ideas as 'trial and error'. Hence, when it came to practice and implementation, Chekole *(ibid.)* said, the policy has failed.

[35]PRSPs are prepared by countries in broad consultation with stakeholders and development partners, including the staffs of the World Bank and the International Monetary Fund. Updated every three (to five) years, with annual progress reports. They describe a country's macroeconomic, structural, and social policies in support of growth and poverty reduction, as well as associated external financing needs and major sources of financing (IMF 2011). Adugna (2015) however indicates that PRSPs are largely donor-mandated requirements for continued World Bank and IMF support.

The SDPRP was informed by an extensive national poverty assessment of the 1990s, the Millennium Development Goals (MDGs), and the ADLI strategy.[36]

The SDPRP was the first consolidated program of the FDRE government that laid the foundation for Ethiopia's agriculture sector growth (Chanyalew 2015).The agriculture and rural development sector intervention focus of the SDPRP was on: investments in infrastructure(market, road, information); promotion of value-added agricultural exports; investments in agricultural education; strengthening of decentralization processes and improvements in governance; agricultural research; water harvesting, small scale irrigation and increased water resource utilization; and a special focus on food security (MoFED 2002). The implementation of SDPRP was also supported by institutional developments including cooperatives and rural micro-finance institutions.

A performance report on SDPRP indicated that the country began to register better economic performance during the SDPRP period, with an average GDP growth of 6.7 percent annually and an average annual per capita income growth rate of 3.6 percent (MoFED 2006). At the end of the SDPRP in 2005, a total of 23,378 agricultural extension or Development Agents (DAs) were trained through the Agricultural Technical Vocational Education and Training (ATVET) centers (an initiative which was designed to train DAs and farmers). Around 5,493 Farmers Training Centers (FTCs) were also constructed and ready to give extension services to farmers (MoFED 2006).

Assisted by DAs, the number of smallholder farmers who benefited from agricultural extension services including trainings grew from 4 to 6.9 million during the SDPRP period, resulting in increase in agricultural production. Thus, by the end of the SDPRP period-2005, agriculture has grown by 13.4 percent compared to the negative growth rate in 2002 (MoFED 2006).

[36]The SDPRP had five strategic pillars: Agricultural Development Led Industrialization (ADLI); justice system and Civil service reforms; Decentralization and empowerment; Capacity building in public and private sector; and Food Security (MoFED 2002).

Nonetheless, Rahmato (2008) remarked that any increase in the GDP of Ethiopia during the SDPRP period was attributed to good weather and expansion in arable land rather than use of technical inputs or productivity gains.

The Second PRSP: Plan for Accelerated and Sustainable Development to End Poverty

The second five years PRSP (2006-2010***),*** named the PASDEP, maintained the strategic directions pursued under the first PRSP (SDPRP), related to infrastructure, human development, rural development, food security, and capacity building. The plan however embodied some new directions such as greater commercialization of agriculture, private sector enhancement, and scaling-up of efforts to achieve the Millennium Development Goal- to reduce poverty by half (MoFED 2006).[37] PASDEP also addressed the rural-urban linkage between the agriculture and the industry sectors to the extent that it seemed that the previous rural centered development policy was abandoned (Rahmato 2008).

The fundamentals for the development of the agriculture sector under the PASDEP emphasized the consideration of agro-ecological diversity when developing extension packages and greater 'diversification and specialization' of production for increased market based agricultural development (MoFED 2006). The government's emphasis on agricultural commercialization started during the PASDEP period and it was during this period that the agriculture extension system was redesigned to provide services both at the group as well as household levels. Formal rural cooperatives and their unions, with the main function of input distribution and output marketing were also promoted to be established throughout the country during this period. The formation of informal farmers' extension groups (the focus of this study) were also initiated during this period (Gebremedihin *et al.* 2006).

The average GDP growth rate over the PASDEP period was 11 percent and for the agriculture sector was 6 percent (less than the 8 percent target). The FDRE government reported that the

[37]Haile (2015) argued that the PASDEP was more comprehensive than its predecessor the SDPRP, further encompassing sectors that were not adequately articulated in the SDPRP such as tourism, small and medium-enterprise development, job creation, urban development and construction.

agricultural performance achieved in the PASDEP period was high due to a combination of emphasis on diversification and commercialization of smallholders' agriculture, expansion of non-agricultural production in services and industry, capacity building and good governance, off-farm employment (small enterprises), and massive investment in infrastructure. Nevertheless, performance of agriculture was limited due to delayed and irregular distribution of the rain related to the climate change challenges. The agricultural water challenges were further taken as lessons for the next plan to consider expansion in small-scale irrigation. It was also realized that much work was needed to ensure a balance between economic development and population growth (MoFED 2010).

The third and fourth PRSPs: Growth and Transformation Plans (GTP*)*

At the end of the PASDEP period, the FDRE government formulated two successive five-years plans known as Growth and Transformation Plan (GTP I 2010-2015 and GTP II 2015-2020). The foundation for both GTPs was still the ADLI strategy.

The first GTP maintained agriculture as a major source of economic growth. Also, the plan continued to accord smallholders to play an important role in agricultural transformation (MoFED 2010).[38] The plan emphasized that agricultural transformation will liberate millions of smallholder farmers from hunger and traditional and subsistence production, allowing them to significantly contribute to the economic or structural transformation of the country.

Major agricultural transformation policy directions of the first GTP are: scaling-up of model farmers' best agricultural practices to many farmers and commercialization of smallholder farming. The plan argued that best practices of 'model farmers', who registered high technology adoption, agricultural productivity, and commercialization during the PASDEP period, have to be drawn on for scaling-up to the rest of the smallholder farmers to perform near to, or as equal as, the model farmers (MoFED 2010). The agricultural transformation plan in the GTP also included: a shift to produce high-value crops, a focus on high-potential areas, facilitating the commercialization of agriculture, and supporting the development of large-scale commercial

[38]The vision of the first GTP for the agriculture sector was "to build a modern and productive agricultural sector with enhanced technology …" MoFED 2010.

agriculture. Thus, like the PASDEP, the commercialization of smallholder farmers continued to be the major source of agricultural growth in the first GTP (*ibid*.).

As a whole, the economic growth rate during the first GTP implementation period (2010-2015), averaged 10.1 percent, against the target 11.2 percent set for the period (NPC 2016). The economic growth was characterized as 'sustainable, fast, broad-based and pro-poor' *(*Adugna 2015; Chanyalew 2015; NPC 2016). Major economic sectors like agriculture, industry and services registered an annual average growth rate of 6.6, 20 and 10.7 percent, respectively, during the period 2010-2015. Yet, at the end of the first GTP period the share of agriculture, industry and service sectors in the GDP changed only moderately[39]. Consequently, the economic growth during the GTP period, registered a slow structural transformation in the economy.[40] Moreover, despite progress made in the GTP period, poverty eradication remained as the number one development agenda in Ethiopia (Chanyalew 2015; NPC 2016).

Agricultural growth (an average of 6.6 percent over the GTP period) was lower compared to the plan of 8.6 percent. The limited modern technology, low level of agricultural productivity (compared to other countries), and limited diversification of agricultural products has contributed for the low performances of the agriculture sector as compared to the plan. Adugna (2015) indicated that the crop subsector, which on average accounted for about 30 percent of the GDP, has been the major contributor to the agricultural growth during the GTP period. Thus, the productivity of major food crops (cereals, pulses, and oil seeds) reached an annual average performance level of 17.6 quintal per hectare during the first four years of GTP I. As a result, the production of these crops increased from 180 million quintals in 2010 to 274 million quintals in 2015 (by more than 50 percent). The livestock sub-sector, however, registered lower than potential (NPC 2016).

[39]The share of the agricultural sector to the national GTP declined from 45 percent to 40.2 percent at the end of the GTP period, while the share of the industry sector increased from 11 to 14 percent and the service sector increased from 45 to 46 percent (NPC 2015).

[40] Structural transformation in Ethiopia is the process of reallocating economic activity across three broad sectors (agriculture, manufacturing, and services) for modern economic growth. It involves the shift of resources and policy focus from the traditional sectors to modern sectors, from the traditional activities to modern activities and from low productivity and limited technology to high productivity and advanced technology (Adugna 2015).

A second five years GTP that runs from 2015 to 2020 was launched in September 2015. The contents of the second GTP are built on lessons learnt from the first GTP period, and the major strategic directions, priorities and implementation modalities for the envisioned agricultural transformation and the emphasis on smallholder farmers remains the same as that of the GTP I (NPC 2016).[41]

The first annual report of the GTP II period (NPC 2017) indicated that agriculture grew only by 2.3 percent, against the target of 8.2 percent set for the 2015/2016 fiscal year, because of the drought in the 2015/2016 year. Consequently, the share of the agriculture sector to the GDP declined to 36.7 percent compared to 38.7 percent in the year 2014/2015. Even if the composition of the economy has changed in favor of the industry and service sectors (needed for the structural transformation), the government realized the need towards more works to 'insulate the performance of agriculture from drought shocks' (*ibid.*).

2.4.4 Land Tenure Policy post- 1991

In May 1991, the transitional government declared that the issue of land tenure (a choice between private and public ownership) would be settled in the process of developing the new federal Constitution. Accordingly, the new federal Constitution of Ethiopia adopted in 1995, settled the land tenure issue in favor of 'public ownership of land' and secured the decision as one of the articles of the Constitution.

Article 40 of the Constitution provides that the right to ownership of rural and urban land is exclusively vested in the state and in the people of Ethiopia. 'Land is a common property of the Nations, Nationalities and peoples of Ethiopia and shall not be subject to sale or other means of exchange' (Sub Article 3). Sub Article 4 also states that 'Ethiopian peasants have the right to obtain land without payment' (The Constitution of Ethiopia 1995). The land policy, grounded in social equity, allows every rural individual to claim to a plot of land enough for his/her livelihood, while the argument forwarded by the government for the continuation of land as public or state property rests on tenure security and social equity objectives. the tenure security argument indicates that

[41] With nine pillar strategies, the second GTP aims to achieve an annual average real GDP growth rate of 11 percent while at the same time pursuing measures towards 'rapid industrialization and structural transformation' (NPC 2015).

private ownership will give rise to distress sale, high rural land concentration in the hand of few and landlessness (The Constitution 1995; Rahmato 2008).

Furthermore, the constitution (Article 51) stipulates that regional governments have the duty to administer land and other natural resources according to federal laws. Thus, following the Constitution, a proclamation was enacted in 1997on 'Rural Land Administration', No. 89/1997 (revised in 2005 Proclamation (No.456/2005) to give regional governments the power to administer land. Accordingly, the regional states of Ethiopia have adopted their own rural land administration and use proclamations.

In the nut shell, the rural land issue in Ethiopia is made to be a settled and closed subject by inserting the land ownership issue in the Constitution. In so doing, Gebreselasse (2006) explained that the Government of Ethiopia eliminated land policy as a variable that could be used to address the changing circumstances that affect the rural economy. Similarly, Ambaye (2012) highlighted that unlike countries where land ownership is not as such treated as a constitutional issue, in Ethiopia, land ownership goes beyond being a mere policy matter because of its socio-economic importance. Furthermore, scholars argued that there are no fundamental differences between the legal framework of the *Derg* and the FDRE government on rural land issues. Rather, they argued that there are more similarities in land administration between the two regimes and the justification from the government for public ownership is based on unsubstantiated fear (Nega *et al.* 2003; Gebreselassie 2006; Rahmato 2008; Baye 2016).

At present, the Constitution (Article. 40) continues to be the basis of land policy in Ethiopia. Private land ownership has never been the vision of the FDRE government and land continuous to be the property of the state, while farmers have conditional use right over the plots of land.[42]

The land policy of Ethiopia is criticized for the increased land fragmentation, landlessness of the rural youth (who were not part of the last land redistribution), and 'equality of poverty' in the rural

[42]Use rights are given by regions, if the landholder is engaged in farming, the holder is resident in the kebele and not away for more than three years; if the land is cultivated on regular basis and the holder takes proper care of it (regional proclamations in Nega *et al*. 2003).

areas (Nega *et al.* 2003; Rahmato 2008). More so, Deininger *et al.* (2007) indicated that the proclamation that devolved responsibility for land policy to the regions led to regional diversity in key provisions like ceiling land size, land use rights and redistribution. Nega *et al.* (2003) also stated that with the delegation of land administration to the regions, regional governments enacted different laws on land administration, utilization, taxation and other related policies. As a result, land administration and farm-holdings in Ethiopia differ from region to region.

Rural land registration and certification program

In 1998, following the Rural Land Administration Proclamation of the 1997 (revised in 2005), the FDRE government embarked on a rural land registration program in Tigray followed by Amhara (2002), and Oromia and the Southern Nations and Nationalities Peoples (SNNP) regions (2004). The program was response to the three decades of concerns over land tenure insecurity to increase the tenure security and the program was welcomed by farmers. The land certification program documented, and registered lands held by rural households with the aim of promoting greater tenure security for farm households. The program certified the long-term use rights of rural households by issuing 'Green books' to households as a record of their land holdings and rights (Persha, Greif & Huntington 2017).

The impact of the first level certification program is, however, mixed. On one hand the program has been widely viewed by donor institutions, development practitioners and scholars as a successful low-cost and large-scale land registration programs in Africa or anywhere else in the world. The estimated cost of Ethiopia's first-level certification is reported to be approximately US$1 per parcel (Deininger *et al.* 2008). The certification program registered and documented land through a participatory process in which neighbors' act as witnesses for the demarcation of parcel boundaries.[43].

In addition to being considered as one of the least costly land registration programs in Africa and elsewhere (Deininger *et al.* 2008), Ethiopia's first-level land certification program was quickly

[43]Details of the parcel were agreed to by people in the neighborhood and recorded on paper forms, together with information on the household head, parcel area, location, quality of land, and the names of individuals to whom adjacent parcels belong (Bezu & Holden 2014b).

scaled up and covered many households in a relatively short period of time where by the mid-2000s, approximately 20 million plots were registered from 6 million households (Deininger *et al*. 2008) and. by the end of 2010, 90 percent of farming households in Ethiopia have got their first-level certificates (MoA 2015).

More so, research suggests that first-level certification has had a positive impact on a variety of economic outcomes. Among the key findings are increased investment and land productivity (Holden, Deininger, & Ghebru 2009), increased land rental market (Deininger, Ali, & Alemu 2011; Holden *et al.* 2011), as well as increased women's land tenure rights and participation in land market activity and improved food security child nutrition (Holden & Ghebru 2013; Bezabih, Holden & Mannberg 2016).

On the other hand, the first-level certification was perceived to have key limitations that rendered it from being a viable long-term solution for securing land rights for smallholders, as the certification did not map individual plots or provide a sufficient level of spatial detail for improved land use management and administration.[44]

To address the limitations of the first-level certification, the government, with support from donors, launched a 'second-level' land certification a second level land certification program since 2005. The second-level uses an accurate Global Positioning System (GPS) technology in the four main regions of Ethiopia (Persha *et al.* 2017). On the extreme, Rahmato (2008) argued that the certification program does not solve issues of tenure security, as land can still be redistributed and expropriated for 'public purposes'. Rather, he believes that land registration has given local governments increased authority over farmers land holding.

In summary, despite the constitutional provision that securely vested the ownership of land to the state, rural land policy in Ethiopia has remained one source of disagreement and focus of debate among politicians, academics and other stakeholders. In addition to current government efforts to

[44]The lack of computerized land registries did not enable effective management and updating of registration records (Persha *et al*. 2017).

address the issue of tenure insecurity through the provision of land certificates, many like Nega *et al*. (2003) Gebreselassie (2006), Rahmato (2008), and Chanyalew (2015) all argued that the land policy in Ethiopia should be discussed in order to address challenges of low farm productivity, stagnant agriculture, increasing environmental degradation, and food insecurity in the country.

2.4.5 Agricultural Extension post-1991

Public agricultural extension services are the main vehicles for agricultural transformation under the FDRE government.[45] Accordingly, under the situation where smallholder farmers are engaged in traditional agricultural production, deploying big numbers of trained public extension workers to support farmers was viewed valuable by the government (Mogues *et al.* 2009; Berhanu 2012). To this end, important investments took place under the public extension system including expansion of the ATVET colleges, (25 of them in 2014), FTCs (more than 11,000 in 2016), and the training and deployment of DAs (60,000 DAs in 2016) reducing the DA to farmer ratio (to 1:470 by 2016) (Berhanu 2012; Kelemework & Hoogendoorn 2016).

By the mid-2000s the numerical size and educational level of DAs was expanded by providing them with extensive technical and vocational trainings at the ATVET colleges, with the goal that every FTC or rural kebele would have a team of at least three DAs, with trainings in crops production and management, livestock production and management, and natural resource management (Kelemework & Hoogendoorn 2016).

The huge public investment in agricultural extension was however speculated by some to have a political agenda. For instance, Berhanu **(**2012) highlighted that the FDRE government gave high priority to public investments in agricultural extension for two reasons; promoting agricultural growth but also controlling and mobilizing the rural population. Although politics is often entangled with development, this study is principally interested in the role played by the extension system in agricultural transformation of Ethiopia.

[45]The main government institutions responsible for planning and implementing agricultural extension policies and programs in Ethiopia are the Ministry of Agriculture at the federal level, and the corresponding regional bureaus, zonal and woreda offices.

Two agricultural extension systems evolved during the last two decades under the FDRE government. These extension systems are further elaborated next.

Participatory Demonstration and Training Extension System (PADETES)

The T&V extension system was replaced by a Participatory Demonstration and Training Extension System (PADETES) in 1995.[46] During the launching of PADETES, the government declared that the objective of the extension system was to enhance the productivity, and empowerment of smallholders with a view to ensuring prospects for national food self-sufficiency, increase the volume and variety of industrial raw materials, and producing for the export market (EEA 2006). The PADETES gave emphasis to smallholder farmers by providing FTC based training and advice and demonstrating to them farming practices and improved agricultural packages (mainly improved seeds and fertilizer) through local-level extension agents or DAs (Kassa 2003).

Nevertheless, the PADETES is criticized by several authors for not consistently generating the desired agricultural extension impacts and not being client oriented (EEA 2006; Berhanu 2012). Similarly, Davis (2008) highlighted that PADETES was a hierarchal and structured system. Also, Gebremedihen *et al.* (2006) stated that the PADETES was a top-down, supply-driven, and uni-modal system, thus impeding the capacity of farmers to innovate and engage in the growing commercial economy. Mogues *et al.* (2009) also indicated that poor farmers, particularly female farmers, had less access to extension services under the PADETES, compared to male farmers.

An in-depth analysis of the PADETES extension system in 2010 (Davis *et al.* 2010) also concluded that the wider enabling environment, in which extension operated like seeds, other inputs, water, and credit systems, as well as producer groups were week, hindering the extension system from achieving its full potential impact.

[46]The PADETES was adopted by the government as a scale-up of a pilot extension program supported by the non-government organization called Sasakawa Global 2000 (SG-2000) in 1993, involving farmers in field demonstration exercises. The SG-2000 scheme that resulted in a huge harvest in 1995, prompted the government to adopt agricultural extension as a national intervention strategy, and a major component of the ADLI (Berhanu 2012).

Participatory Agricultural Extension System (PAES)

In response to the growing critics, the government modified the PADETES agricultural extension system to a Participatory Extension System (PES) in 2006. The system was rolled-out nationally in the following years, with the objective of greater participation of farmers in the delivery of agriculture extension. The basic principle of the PAES is enhancing smallholder farmers social networks and learning.

The PAES uses group extension methods called 'farmer development groups' to consolidate the agricultural extension delivery system at the grass roots level. Thus, since 2007 the nationally rolled-out farmers' groups together with the large number of public employed DA (60 thousand of them in 2016), are expected to give a wide range of agricultural extension and advisory services such as farmers training, demonstration of improved farming techniques, and market information to farmers in their vicinities (MoA 2007; MoANR-ATA 2017).

Farmers' Development Groups (FDGs)

Farmers' development groups are informal social networks or collective action organizations initiated by the government of Ethiopia, for facilitating the delivery of agricultural extension services to a multitude of farm households in a relatively short period of time and at a minimum cost (MoA 2007; Kelemu, Gebrekirstos & Hadgu 2014).

According to the government's expectation, the group approach enables public extension workers (or DAs) to reach many farmers at one time, creates a forum for farmers to learn from each other, and enables group adoption of technologies and best practices. Farmers' development groups are believed to facilitate joint actions, promote innovations of smallholder farmers; empower farmers to involve or take part from planning stage up to monitoring and evaluation of development interventions, and facilitate learning processes, and exchange, dissemination, and adoption of technology, best agricultural practices, and experiences. Farmers' groups are also expected to serve as a bridge to link farming communities with the extension system and external institutions (MoA 2007; MoANR-ATA 2017; Kelemu e*t al.* 2014).

The recently launched national agricultural extension strategy of Ethiopia (MoANR-ATA 2017) reiterated that the PES has a better potential to strengthen smallholder farmers participation in extension services through FTCs and farmer development groups. The strategy also recognizes farmer-based organizations as key instruments for the national extension system, as the groups act as entry points for the grass-roots extension services and for the bottom up extension approach (*ibid.*).

To this end**,** the government of Ethiopia encourages the establishment of farmers' development groups in all the kebeles and regions of the country. According to the MoA guideline (2007), about ten FDGs (consisting of 20 to 30 farmers) are expected to be established in each sub-kebele (village). Thus, one kebele (that has three sub-kebeles) may have about 30 FDGs. The PES guideline (MoA 2007) also stipulates that groups should be led by 'model farmers' who have responsibilities of sharing knowledge, best practices and improved technologies obtained from any source. Additionally, each group is supposed to be assisted by a DA, who is also responsible for follow-up of the performance of similar other groups (10 FDGs on average) in the same village. The case study by Kelemu e*t al.* (2014) exhibited that FDGs have similar status and function as formal farmers' organization and have the potential to achieve desired goals in agricultural communities.

At present, the PAES implementation guideline, designed by the MoA in 2007, is adopted by all regional governments. Nonetheless, except few case studies, the impact of the decade old PAES and particularly the group extension approach has not been systematically studied. Though this study is not an impact study, it explores and sheds light on FDGs performance in the context of agricultural transformation.

2.5 THEORETICAL FRAMEWORK FOR THE STUDY

The theoretical framework that guided the study is built on the concepts, theories and facts provided in the preceding literature review sections on collective action and agricultural transformation. The framework is used to answer questions as to why smallholder farmers partake

in a collective action for agricultural extension and how the collective actions may contribute to agricultural transformation.

The theoretical framework maintains the argument that smallholder farmers (male and female), living in the rural village, conducting agricultural production activities and farming average land size of two hectares are important individuals to improve farm production and productivity and therefore should be the subject of any discussion regarding agricultural transformation in developing agrarian nations.[47]

The framework helps to explain what motivates smallholders to decide for joining collective action agriculture extension groups using the social-psychology theory of 'expectancy-value' model. The chosen theory and the decision-making model were discussed in detail in section 2.1. The review of literature demonstrated that the chosen 'expectancy-value' model of participation, compared to other social-psychology models of participation, can be successfully applied in different contexts, including smallholder farmers, to explain an individual's decision-making in participation.

Based on the literature review, my framework assumed that smallholder farmers are subsistence producers, and have limited asset and resource bases. This group of people represents rational individuals who are dissatisfied with their livelihood conditions and thus demand to change. More so, smallholder farmers have varying levels of internal locus of control and sense of efficacy to contribute to their desired livelihood changes. Smallholder farmers in most developing nations including Ethiopia are also part of collective oriented societies and cultures. Additionally, participatory agricultural extension policies and interventions familiarize and build consensus among smallholders to collectively act for agricultural extension goals.

In sum, the conditions and personalities of smallholder farmers as well as 'the *consensus mobilization'* facilitated through the public extension system form the first phase of decision-making that are displayed in the first box (Box 1) of Figure 2.1.

[47]Although smallholder farmers are key to agricultural transformation, the study does not however undermine the fact that medium and large-scale commercial farms are important contributors to the process of agricultural transformation.

The theoretical framework also assumed that most smallholder farmers who are targeted by the consensus mobilization phase would adopt the view that participation in groups is important and hence they will show interest to join a group. However, smallholder farmers expect incentives or motivations to decide their level of participation in the collective extension activity. Adapting the Klandermans 'expectancy-value' model of participation, the theoretical framework indicates that smallholder farmers expect three motives or collective incentives (reward or goals, social identity, and ideology) will happen to participate in collective action groups.

In the framework, the first motive, instrumentality or reward motive for smallholder farmers mean that they expect that participation is necessary and is a must to fulfill their needs for agricultural extension services including access to agricultural trainings and technology inputs. The second motive, social motive is farmers expectation that other farmers with similar identity like them will also participate. The third or ideology motive is farmers expectancy that they will get satisfaction politically and professionally.

These three incentives are assumed to be the fundamental reasons why smallholders participate in collective action (in this case agricultural extension) groups and all three motives should apply for effective level of participation. Yet, individual farmers' attach varying weight to each incentive. The 'expectancy-value' phase to decision-making is illustrated in Box 2 of Figure 2.1**.**

Given that all the three incentives (rewards, social identity and ideology) are present in the process of decision-making, smallholder farmers will positively decide to participate in farmers' extension groups. By doing so, based on the literature review, individual smallholder farmers will benefit socially, economically, and ideologically.

Economic benefits of smallholder farmers are assumed to come from adoption of technologies, reduced cost of agricultural production and aggregate sale or marketing of agricultural products. Social benefits will come from the social networks established in the groups and the mutual exchange of support for agriculture knowledge and skill, for improved agricultural production, as well as friendship, and social support.

Ideological benefits of smallholder farmers are reflected in the form of empowerment and efficacy in fulfilling some political and community commitments and responsibilities in the group. Ideology can also be professional benefits that include inter-personal communication skills, knowledge and confidence.

By deciding to participate in farmers' collective actions, smallholders are assumed to contribute to agricultural transformation outcomes (increased adoption of agricultural technologies, increased productivity and commercialization) at household levels and ultimately at the nations level. The outcomes of farmers' participation in an agricultural extension collective action are shown in the last part of the theoretical framework (Box C).

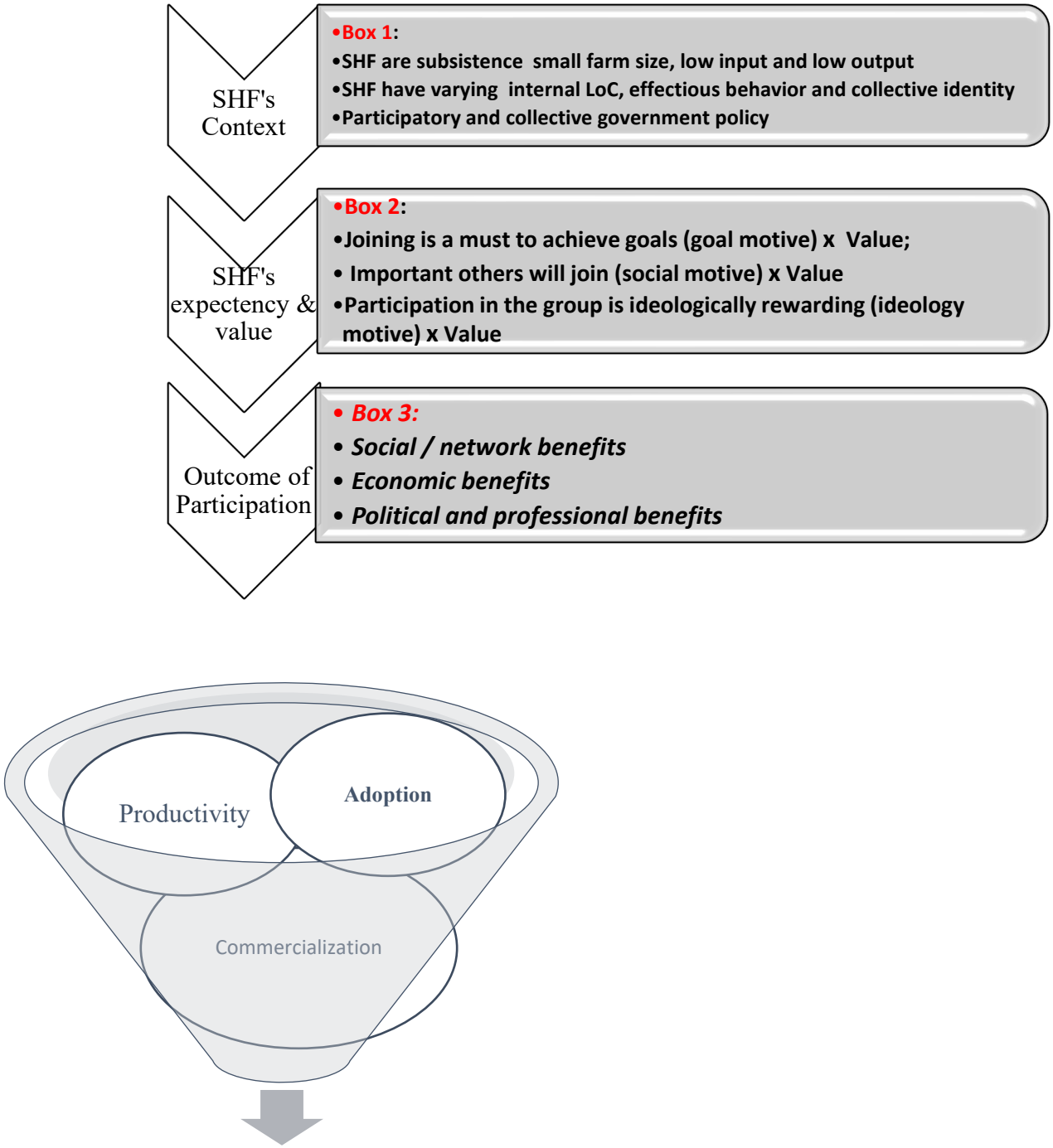


Figure 2:1: Smallholder Farmers' Context, Expectancy and Benefits in Collective action (author 2016)

2.6 CONCLUSION

The chapter had four sections. The first section discussed the definitions and theoretical approaches towards the concept of collective action. Three prominent theories in collective action: traditional or Olson's; resource mobilization; and social-psychology were presented and discussed in the section. The section then elaborated on why people participate in collective actions, using the social-psychology theories. This doctoral study adopts the social-psychology theoretical approach to explain why smallholder farmers participate in collective actions for agricultural transformation. The social-psychology approach was chosen considering the strength and the applicability of the theory to the context of the study.

Next, the section discussed the group and individual level social-psychology explanations as to why individuals take part in collective actions. The individual level explanation further looked at the decision-making process in participation, adopting the Klandermans 'expectancy-value' model of decision-making in participation. The model stressed the importance of the three motives of participation (goal, social and ideology), that have relative weights or values for each participating individual. More so, if the three motives do not avail, it is unlikely that the individual decides to continue participation in a collective action.

The second section of the chapter discussed the concepts and theoretical underpinnings of agrarian reform and agricultural transformation**.** By doing so, the rationale for this study to assess farmers' collective actions in the context of agricultural transformation, rather than agrarian reform is clarified. From reviewed literature, it is convincing that an agrarian nation's prospect is the transformation of their agriculture sector. This means, nations investing in approaches that encourage intensive and efficient use of rural resource including land through increased adoption of agricultural technology, increased agricultural productivity, and commercialization of farming.

Then, the section discussed the evolving meanings and functions of agricultural extension systems as well as the dynamic roles of collective farmers' organisations in the process of agricultural extension and transformation.

The third section started by highlighting the importance and challenges of the agriculture sector in Ethiopia. The section explored Ethiopia's historical journey in agricultural transformation, while focusing on post-agrarian reform programs of the socialist Derg government and the agricultural transformation policies and practices under the current government.

Finally, the chapter provided the theoretical framework of the study. The section reiterated my intentions for choosing the social-psychology theories of participation in collective actions in this study, instead of others. The framework also contextualized and used the 'expectancy-value' model to explain why individual smallholder farmers decide to participate in collective actions for improving their livelihoods and transforming the agriculture sector. The section presented the assumed motives of smallholder farmers for taking part in farmers' collective action and the expected contribution of farmers' collective actions in the process of agricultural transformation. The progression in smallholder farmers decision-making process towards participation in agricultural collective action and the outcomes of their participation are displayed visually at the end of the section.

The next chapter presents the research methodology employed in the study.

CHAPTER 3:

RESEARCH METHODOLOGY

3.1 INTRODUCTION

In any research undertaking, one must choose what research methodology to follow. This study chose a mixed methods research design. This chapter provides the reasons for choosing the mixed methods research design for the study, including the theoretical view and principles that motivated the selection and use of the mixed methods, and the tools utilized in the study.

The chapter has three sections. The first section explains the chosen research design for the study and the rationale. The second section offers a description of the study area, where primary data was collected. Finally, the third section discusses both the qualitative and quantitative research techniques, tools, sample design, data collection techniques and procedures, and the data analysis techniques used in the study.

3.2 MIXED METHODS RESEARCH METHODOLOGY

This study employed a mixed methods research design to meet its two objectives, to investigate, explore and describe smallholder farmers' development groups, and to analyze their agricultural transformation potential. The section below defines the research design and the motives for selecting the design.

3.2.1 Mixed Methods Research: Definition and Use

Mixed methods research is one of the research paradigms or methodologies from the three: quantitative, qualitative, and mixed methods (Teddlie & Tashakkori 2009; Creswell 2013). The basis for the emergence of mixed methods research was the debate in the social sciences regarding the superiority of quantitative versus qualitative methodology in the late 20th century. Thus, the mixed methods research design is a pragmatic (3rd) alternative view, combining the strong points

of both the quantitative and qualitative methodologies (Johnson & Onwuegbuzie 2004; Morgan 2007; Teddlie & Tashakkori 2009; Migiro & Magangi 2011).

Though social scientists conducted mixed methods research throughout the 20th century, Taddlie and Tashakkori (2009) and also Creswell and Plano Clark (2011) highlighted that early definition of the mixed methods research concept in social science can be traced back to the 1990s with Greene *et al.* (1989), who noted that the mixed methods design included at least one quantitative, method to collect numbers and one qualitative method, to collect words. Later, Tashakkori and Teddlie (1998) defined mixed methods as: 'a combination of qualitative and quantitative approaches in the methodology of a study', while they in their recent book (Tashakkori & Teddlie 2010:5) defined the methodology as a: 'broad inquiry logic that guides the selection of specific methods.'

Creswell and Plano Clark (2011) highlighted that a mixed methods research collects and analyses both qualitative and quantitative data, based on research questions; mixes the two forms of data; gives priority to one or both forms of data; uses the qualitative and quantitative procedures in a single phase or multiple phases of a study; frames these procedures within theoretical lenses; and combines the procedures into a specific research design of the study.

The philosophical paradigm underpinning mixed methods research is pragmatism or practicality. The pragmatic view emphasizes the need for adoption of multiple (qualitative and quantitative) approaches in one study to better understand the research problem, to acquire knowledge that is intensively enriched, and to strengthen the credibility of research findings (Teddlie & Tashakkori 2009; Creswell & Plano Clark 2011; Creswell 2013).

To defend the viewpoint that supports the use of mixed methods in a single study, promoters of the mixed methods methodology formulated the 'compatibility' and 'complementary strengths' argument. The c*ompatibility* argument presents a view that qualitative and quantitative methods are compatible. It argues that there are adequate amounts of similarities between qualitative and quantitative methods which makes them eligible to be incorporated together in various ways to enable all-inclusive and efficient inquiry (Creswell 2013).

The *complementary strength* idea states that both qualitative and quantitative methods consist strengths and weaknesses and by blending the methods the strengths of one method overcomes or offsets the weaknesses of the other method (Creswell 2013).

This study uses a mix of both qualitative and quantitative research methods to collect and analyze the research data. My primary motive for choosing mixed methods research is the nature of the research problem, objectives, and the research questions of the study outlined in chapter one

Qualitative research method is used to explore important variables among the sample farmer groups, including why farmers participate in development groups and the benefits and challenges as well as the dynamics and functions of farmers' development groups. Also, qualitative method is used to capture the multiple perceptions of key professional informants towards collective action groups and their agricultural transformation potential. Quantitative research methods, on the other hand, is used to measure descriptive variables including frequency, percentage and average demographic and socioeconomic characteristics of farmers. Quantitative research method also allowed me to infer relationships between the independent variables like gender, age and income status of sample smallholder farmers in the survey and the attributes of agricultural transformation (adoption, productivity, and commercialization).

The study decided to use mixed methods due to the philosophical view that mixed methods research design is suitable to answer social studies inquiries (Tashakkori & Teddlie 2010). More importantly, the justification for choosing mixed methods research design for this study comes from the premise of the pragmatic approach that encourages the combination of research methods to provide strength to the study (Creswell & Plano Clark 2011).

Finally, mixed methods research design is chosen to enable triangulation and complementarity in my study. Both triangulation and complementarity strategies are important to ensure the validity of the study. To ensure triangulation and complementarity in this study, both the qualitative and quantitative methods employed in the study were designed to address similar research questions

and themes. Triangulation[48] of findings is vital to compare and cross-check the consistency of the study findings from the data collected and analyzed through the qualitative and quantitative methods (the use of triangulation for validation purposes is further elaborated under the validity and reliability section 3.5).

Another reason for using mixed methods is to complement[49] the (narrative) findings from the qualitative methods with the descriptive and inferential statistics findings. Yauch and Steudel (2003) recommended that qualitative and quantitative methods be used to produce more robust results, than could be accomplished using a single approach for social studies. They highlighted that using both qualitative and quantitative research methods in a complementary fashion produces a more complete understanding of the research questions and enables a greater understanding of underlying cultural values and assumptions in social studies.

Type of mixed methods research design used

Mixed methods research has several design typologies that one can choose from when undertaking a study. Nevertheless, Creswell and Plano Clark (2011) pointed out four key decisions that need to be made when choosing an appropriate research design. These decisions are about the level of interaction, the relative priority, the timing, and the procedure of mixing of the quantitative and qualitative research 'strands.'[50] The four decisions and the choices I made in this study are explained below.

i. *The level of interaction* between the qualitative and quantitative strands: refers to the extent to which the qualitative and quantitative research strands are kept independent. The strands may interact with each other during the process of the research before final interpretation or when drawing the overall interpretation of the study. In this study, the qualitative and quantitative

[48]Triangulation refers to the process of using more than one method whilst studying the same research question. The aim of triangulation is to attain convergence and corroboration (Creswell 2013; Migiro & Magangi 2011)

[49]Complementarity refers to the process of using the findings of one method to elaborate, illustrate and clarify the results from the other method to gain a fuller understanding of the research problem and give clarity to a given research result (Creswell 2013).

[50]'Strand' is the process of posing a question, collecting data, analysing data and interpreting the results based on the data, when conducting a qualitative or quantitative research (Teddlie & Tashakkori 2009).

research strands were kept independent when collecting and analysing the data. However, the qualitative and quantitative strands were mixed when displaying, discussing and interpreting the study findings.

ii. *The relative priority* of the strands: refers to research where both the qualitative and quantitative methods have equal priority in addressing the research problems or when one of the methods may be emphasized, with the other method used in a secondary role. This study prioritized both methods equally, as some research questions are best answered using qualitative methods (focus group discussions and key informant interviews) while others were better answered using quantitative methods (individual farmer households' survey).

iii. *The timing* of the strands: refers to the time data sets are collected. These can be concurrent (collected in a single phase simultaneously); sequential (collected in two distinct phases with one strand after the other); or multiphase combination timing that occurs when the strands are implemented in multiple phases that include sequential and or concurrent timing over the study period. This study collected both qualitative and quantitative data simultaneously at one study area but repeated the research phases in four study areas within a three months period (July to September 2016) and hence a multiphase combination timing of the strands was utilized.

iv. *The procedure* for mixing the strands: refers to the stage the strands are mixed and the strategies for mixing the strands. The strands may mix at four possible points of the study: at the design stage, during data collection, during data analysis or during interpretation. With regards to the strategy for mixing, the two strands may be mixed either by merging the two data sets; connecting from the analysis of one set of data to the collection of the second set of data; embedding one form of data within a larger design; or using a framework to bind together the data sets. This study kept the qualitative and quantitative strands independent during analysis and mixed the findings during the discussion and interpretation stage of the study.

While there are several combinations of the above decisions and research design options, outlined by Creswell and Plano Clark (2011), the research design used in my study is called *convergent mixed methods design*. This indicates that the data set collected through the qualitative and

quantitative methods are analyzed separately, and the findings converge at the discussion and interpretation stage, when findings are verified, validated and triangulated

The application of the convergent mixed methods research design as well as the research procedures followed in my study are explained in detail in subsequent sections of the chapter. Before doing that, however, the next section provides a description of the study areas and the procedures followed to select the study areas.

3.3 DESCRIPTION OF THE STUDY AREA

The field study was conducted in four districts of Ethiopia, locally known as woredas.[51] The woredas are located in the three highly populated regional states of Ethiopia named: Oromiya, Amhara and Southern Nations, Nationalities and Peoples Region (SNNPR). The next sections explain the procedures followed in choosing the four woredas and describe each of the study woredas.

3.3.1 Rationale and Procedure Used for Choosing the Study Areas

The four sample woredas selected for this study belong to a list of 96 woredas where the public Agricultural Growth Program (AGP) is implemented.[52] The reason for choosing the study areas from a list of the AGP intervention areas is because the program woredas represent areas that have relatively better potential, compared to non-AGP implementation woredas for agricultural transformation (including good agro-climate and natural resource, access to infrastructures, extension contact services, road networks, and communication).

[51] A *woreda* (equivalent to a district) is an administrative division of Ethiopia, managed by a local government. A woreda is composed of several kebeles, which are the smallest units of local government.

[52] The AGP is a government of Ethiopia program that ran for 6 years (2011 to 2016) focusing on increasing agriculture production, productivity and commercialisation in agricultural potential woredas of Ethiopia. The program utilizes the national participatory agricultural extension system to scale-out successful agricultural practices (MoA 2010).

Despite the agriculture potential in the study areas, smallholder farmers adoption of technology, agricultural productivity and commercialization is low and the AGP aspires to support the transformation process of farmers (MoA 2010). The areas chosen for primary data collection are suitable to answer the research questions outlined in chapter one, in relatively agricultural potential scenarios of smallholder farmers in Ethiopia. Claiming a representative number of FDG is however impossible for this study.

The study decided to choose four sample woredas from the 12 AGP woredas around Addis Ababa, for convivence and security reasons. The four sample woredas were selected using a mix of purposeful and multi-stage random sampling procedures. First, only woredas within 200-kilometer radius from Addis Ababa were identified from the list of AGP implementation woredas (thus, the list was shortened to 12 woredas). Second, the twelve woredas were clustered into the three regional states around Addis Ababa (this are Oromiya, SNNPR and Amhara) to get representation from each region. The four woredas were then randomly selected from each of the 3 regional clusters (with one woreda each from Amhara and SNNPR and two woredas from Oromiya, given that Oromiya has relatively bigger number of woredas compared to the other two).

The next section provides a brief overview of the sample four woredas selected for the study including the location, topography, and livelihoods of the smallholder farmers, based on secondary information gathered from the woreda offices.

3.3.2 Overview of the Study Areas

The four woredas that participated in the study are: Bassona Worena in Amhara region; Cheha woreda in SNNPR; Welmera and Liben Chiquala woredas from Oromiya.

Bassona-Worena*:* is located 130 kms north east of Addis Ababa in North Shoa Zone of Amhara regional state. It is found. The woreda has a range of agro-ecologies with altitude ranging between 1300 to 3400 meters above sea level (52 percent highland). With a population size of 134, 600 (65,690 female), the woreda has 30 kebeles. The administrative center for the woreda is Derbeberhan town. Agriculture (crop-livestock mixed farming) is the main livelihood of the woreda people. One third of the woreda total 142,081-hectare area is under rain fed cultivation of

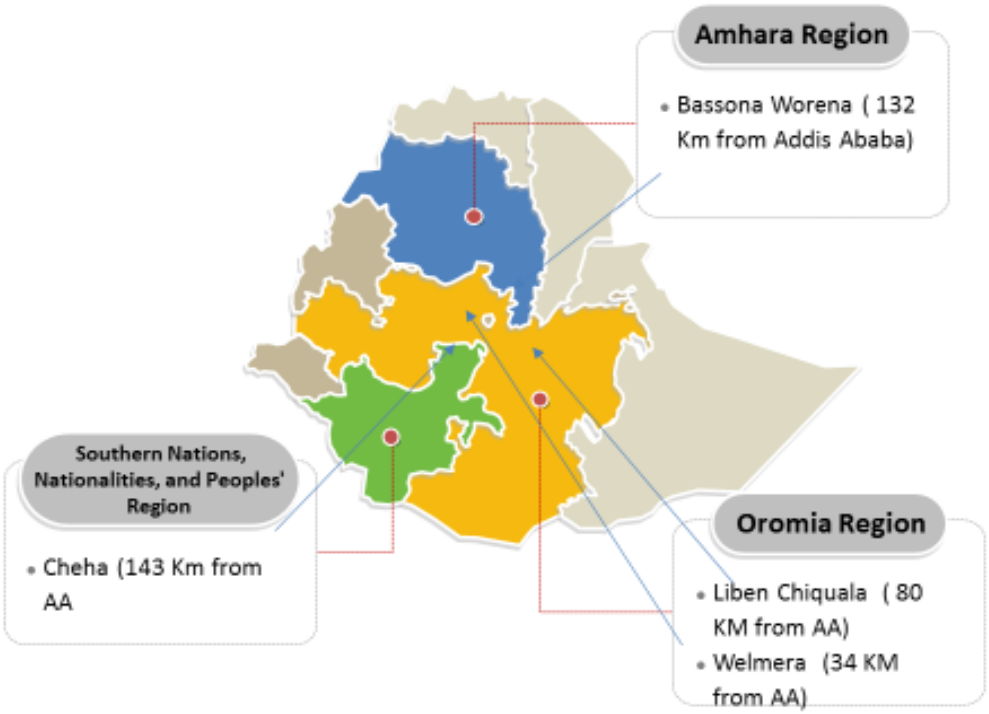
annual crops and an 18,256-hectare area is reserved for animal (cattle, sheep and goat) grazing. An additional, 5,493 hectares of the woreda land is irrigable. Farmers around the woreda town practice agro-forestry, trade and improved dairy farming. Bassona-Worena is a major milk supplier in the Amhara region. The main crops and average productivity in quintals per hectare are: barley (29 qt/ha), wheat (32 qt/ha), chickpea, and beans (28 qt/ha).

Cheha: is located 143 kms south west of Addis Ababa in the Gurage Zone of SNNPR. Elevations of the woreda range between 1510-3000 meters above sea level (60 percent mid- altitude). The woreda has 39 kebeles with a population size of 144,228 (72,956 female). The administrative center is *Endibir* town. Crops are major sources of income. In addition, livestock rearing is a supplementary source of employment and income. Major crops grown in the area and average productivity in quintal per hectare are: *enset (root crop), teff (*13 qt/ha), maize (45qt/ha), wheat (38 qt/ha), barely (28 qt/ha), chickpea, coffee (10qt/ha), chat(stimulant) and nigger seeds, as well as some root crops like yams. Areas under rain-fed and irrigation cultivation are 29,054 and 855 hectares, respectively out of the total land area of 44,072 hectares. Pasture land is 2,249 hectares and main livestock types in the woreda include: cattle, goat, poultry; mule, horse and donkey.

Welmera: is located 34 kms west of Addis Ababa in a special zone of Oromiya regional state. The woreda has 23 kebeles with a total population of 134,273 (67,059 female) in 16,100 households. The administrative capital of the woreda is Holeta town. Agriculture is the main source of livelihoods in the woreda with a total cultivated area of 37,411 hectares and 24,645 hectares of grazing land. The main crops are: *teff,* barely, wheat, maize, fava bean, chick-pea, and lentils. The main livestock types kept in the woreda are: cattle, sheep, goat, horse, mule, donkey and poultry.

Liben Chiquala: is located 80 kms east of Addis Ababa in East Shewa zone of Oromiya regional state. The woreda has 18 kebeles with a total population of 93,367 (45,783 female) or 15,153 households. The woreda has a total cultivated area of 48,125 hectares with main crops like teff, maize and wheat; and 3,272 hectares of grazing land. Main livestock are cattle, sheep, goat, honey bees and poultry.

The approximate geographical locations of the selected study woredas is shown in Figure 3.1.



Source: Map edited on free templates (2017)

Figure 3:1: Location of the Woredas Where data was Collected

After the four study woredas were identified, a total of eight *kebeles* were purposively selected from each of the four woredas, based on proximity to the woreda towns. Then, a total of 8 FDGs (one in each Kebele), with a total of 250 members were selected randomly to participate in the study as provided in Table 3.1.

Table 3.1: Selected Woredas, Kebeles, Selected FDGs, and No. of members in selected FDGs

Names of selected woredas	**Names of selected Kebeles**	**Name of selected FDGs & the (No. of members in selected FDGs)**
Bassona-Werena	Bakelo	Tach Amba no.2 (34)
	Kor margefia	Kobi Geserew (28)
Cheha	Worden	Tirk Boto (35)
	Mocha	Ye Tikur (30)
Wolmera	Bekeka	Kori Owed (30)
	Rob gebeya	WK2 (28)
Liben	Adele Miecha	Wodecho (30)
	Dillelo Jila	Kobo Tokofa (35)
Total	8 kebeles	**8 FDGs(250 members)**

Source: Field Study (2016)

3.4 DATA COLLECTION AND ANALYSIS

Both primary and secondary data sets were used to answer the research questions of the study. The techniques and procedures utilized in capturing and analyzing the data sets are discussed in the following sub-sections.

3.4.1 Secondary Data Collection and Analysis: *techniques and procedures*

Secondary data is used in the study to supplement the findings from the primary data. Relevant persons were asked to identify useful secondary data sets in relation to the study and data was collected from government written unpublished documents and reports as well as pictorial displays (on walls) at the sample woreda and kebele agricultural offices. Review of the existing official government documents provided background information about the study area, the trends and status of farmers' development groups in the woredas and kebeles, and the agricultural extension guidelines. Relevant academic books and journal articles as well as other electronic resources is also used to enrich the primary data findings.

3.4.2 Primary Data Collection and Analysis: *techniques and procedures*

The sources of the primary data for this study are key informants, farmers in focus groups and individual smallholder farmers in the 8 sample kebeles. The primary data was collected and analyzed through qualitative and quantitative mixed techniques, tools and procedures that are explained in detail in the next sections. The data collection techniques are: i. Key informant interview; ii. Focus group discussions, and iii. Individual farmers survey.

i. Key Informant Interviews (KIIs)

Key informant interview (KII) is a technique of collecting information by interviewing a selected number of participants (Phillips 1981). Key informant interviews have some advantages over other methods of data collection as they are easier and less expensive. KIIs are flexible, as questions and topics can be added or omitted during the interview.

KIIs provide readily understandable information and quotations for writing (EDC 2004). Mwanje (2001) stated that KIIs are especially useful in their ability to provide qualitative information that supplements or clarifies what researchers have learned from existing data sources and other data

collection methods. KIIs also help to design other data collection efforts by providing guidance on the target for the study and the types of questions to ask. KIIs provide opportunities for covering many topics in great depth; examining systems, processes and issues that a researcher may want to investigate further; refining other data collection efforts; clarifying findings of quantitative research; and for generating recommendations (EDC 2004).

Conducting KIIs in this study was important to capture data from knowledgeable and informed people about the Ethiopian agriculture extension system; the history, process and drivers for the formation of farmers' development groups and informant's view about the motives for farmer's participation in development groups. KIIs were also useful to understand informant's (extension professionals) overall perceptions of the transformative potential of farmers' collective action groups and changes witnessed in the farming communities after formation of farmers' development groups.

Possible shortcomings of KIIs have been taken note and minimized during the design of the study and the process of conducting the interviews. These shortcomings are the possibility of overlooking less visible informants; time constraint to select appropriate informants; inability to build a trust relationship with informants; informants giving their own biases; informants feeling they are being tested; and finding it difficult to quantify or organize information (Mwanje 2001; EDC 2004).

KII participants size and sampling procedure: Selecting the right informants in KIIs is very important.[53] Along the same line, Phillips (1981) emphasized that if researchers do not thoughtfully select the right informant, they run the risk of interviewing individuals with one perspective or background and having one-sided or biased conclusions. More so, Marshall (1996) highlighted that qualitative sampling requires a flexible, pragmatic approach, and thus an

[53]The KII guideline developed by EDC (2004) emphasizes that a good informant is someone who not only understands the research issue or topic, has specialized knowledge or experience with a problem, or has professional training in that area, but is also able to clearly express their thoughts, feelings, opinions, and perspective on the topic. Informants needs to be a mix of people - people of different ages, ethnicity, religious affiliation, educational level, and sex. it may be advantageous to interview a broad range of informants including outliers, those who have specific critical experiences or those with special expertise (Marshal 1996).

appropriate sample size for a qualitative study (like KII) is one that adequately answers the research question.

A total of forty-six Key Informant Interviews were held at various office levels. Diversity of informants in terms of qualification, sex, and geographical location was considered when selecting informants for the study. As a result, informants included individuals from public agriculture extension offices (federal MoA, regional and woreda agriculture offices, Agricultural Transformation Agency (ATA), and non-governmental organizations, who have working experience with farmers' development groups. Extension agents and subject matter specialists from the agriculture office at the kebele level also participated in the interviews.

The key informants for this study were selected using a purposive sample of people with the required expertise and experience about the research questions. Phillips (1981) stressed that the informants in KII, should be chosen not on a random basis but because they have special qualifications such as particular status, knowledge, or even accessibility to the researcher. Marshall (1996) also suggested that a purposeful sampling technique enables the researcher to actively select the most productive sample to answer the research question.

Snowball sampling technique was employed at the initial stage of the KII to identify a list of informants that can offer valuable insight on the study topics. [54] Thus, the list of potential key informants for the study were recommended by key informants at the early stage.

KII instrument and procedure: Although key informant interviews are more informal than other forms of data collection, they still require a structure to be effective.[55] To this end, semi- structured interview questionnaires with open ended and closed questions were utilized in this study to

[54]Snowball or chain referral sampling is a non-probability sampling technique where existing study participants (in this case informants) recruit future participants from among their acquaintances or through referrals. Snowball sampling is widely used in qualitative studies (Biernacki & Waldirf 1981).

[55]The EDC guideline (2004) advises that it is best to use a well-prepared procedure, such as written questionnaires, to direct interviews.

capture the informant's experience and expertise in a structured manner. The tool used for the KIIs is provided in appendix 2.

Most KII questions were open-ended to allow the respondents to explain an issue in their own words. Yet, close-ended questions were also asked when short and quantifiable answers were needed. Except some specific questions asked to extension agents at the community level, all the interview questions for each informant were similar. The interview questions asked to all informants focused on: their perceptions regarding benefits, efficiency and sustainability of farmers' collective action in agricultural extension; success factors and challenges in organizing farmer groups; what motivates farmers to join collective actions; the roles, benefits and sustainability of the group extension approach; the level of participation of female and young farmers in FDGs; and the agricultural transformative potential of farmers' groups.

After identifying key informants (46 KIIs at various levels), convenient times and places to conduct the interviews were arranged with them, mostly at their offices. However, for those informants who were not able to hold face to face interviews (18 KIIs), they were requested to fill written questionnaires, exchanged via email. Few interviews were also done through telephone communication (4 KIIs).

Before the interviews began, I introduced myself and thanked informants for their willingness to participate in the study. Informants were also asked to sign a consent form, to indicate their willingness to take part in the study. Further, the purpose of the interview and how the information would be used confidentially was made clear for informants.

Interviews started with questions asking informants' personal information. Active listening techniques were employed during the interview sessions, allowing informants to talk more. Clarifications were however asked when informants were not understood. All face to face key informant interview sessions were kept within one hour[56] and were concluded by summarizing and verifying what the informants have said and asking them if there was anything they wanted to

[56]The EDC guideline on KII (2004) advises that KIIs should not go over an hour as the people chosen as key informants are likely to be busy and the quality of the conversation can deteriorate if they feel rushed.

add or ask. Finally, informants were asked to recommend another person that could, or should participate in the interview. For those who filled written questionnaire, a thank you note was sent and followed up with a telephone conversation, if responses were not clear.

In the early stages of the KIIs, each new informant gave a new knowledge or information. However, in the later stages, new information stopped emerging and informants usually confirmed the information already obtained. Thus, interviews stopped after the 46th informant. Marshall (1996) referred to this point where no new information is obtained as the stage of 'data saturation'.

KII data analysis: The data from the key informant interviews were recorded on each of the 46 interview questionnaire papers. The use of semi-structured questionnaires in the KII enabled the quantification, organization and comparison of the informants' responses for some of the interview questions, as in a survey. In this regard, Phillips (1981) explained that KII can be employed in a survey context to obtain quantifiable responses, although it is initially associated with qualitative research.

The responses from informants for all the closed-ended questions were entered in the SPSS 20 software for descriptive (quantitative) analysis, while the stories, opinions, experiences and perceptions of the key informants were analyzed narratively through 'thematic content analysis' of the responses provided by informants. Responses from all the KII were cross-checked to look out for contrasting perspectives. Thematic content analysis is a form of analysis in qualitative research, where documents including interview transcripts and field notes are examined to identify 'facts' of a situation or events. Content analysis helps to illuminate possible difference in perception of different actors across similar events (Sofaer 1999; Corbin & Strauss 2008; Saldana 2009). It emphasizes pinpointing, examining, and recording patterns (Codes or "themes") within a qualitative data.

ii. Focus Group Discussion (FGD)

Focus group discussion is a form of group interview that capitalizes on communication with and between selected participants to generate data (Kitzinger 1995).

Conducting focus group discussions in this study was imperative because of the collective nature of the study that needed to assess collective experiences of farmers. More importantly, farmers' development groups operate collectively, and thus the FGD method is uniquely suitable to study pre-existing farmers development groups.[57]

The FGD method is advantageous for this study as it recognizes the diversity of views, opinions and experiences of group participants about their collective action groups. Also, the FGD method is also useful to generate answer for the research questions aimed at establishing the group dynamics, participants' motives to join a farmers' group and the benefits they reap towards agriculture transformation, as a group. Focus group discussions encouraged contribution from farmers who were reluctant to be interviewed on their own and those who felt they have nothing to say. The method allowed smallholder farmers to engage with one another and formulate their group ideas. Especially, FGDs encouraged the participation of female farmers to talk about their engagement in farmers' development groups and the benefits they generated from the group (Liamputtong 2011).

FGD participants' size and group composition: Eight focus group discussions were conducted in this study[58] (two in each of the four sampled woredas). The group participants' size in one focus group discussion varied between 8 to 15 and all participants were members of Farmers' Development Groups in a natural setting.

The study employed a two-stage sampling process to select the eight focus groups in the four selected woredas, with the help of woreda focal persons. First, as explained earlier, two kebeles were purposively identified in each woreda based on proximity to woreda town (total of 8). Second, focus groups were identified randomly from a list of pre-established farmers' development groups registry at each of the eight study kebele centers.

[57] Kitzinger (1995) explained that a FGD with pre-existing groups enables a study to observe interactions that approximate to 'naturally occurring' data. The participants can relate to others' comments or incidents in their shared daily lives or they may challenge each other on contradictions.

[58] Kitzinger (1995) stated that the number of FGDs carried out in a study could vary depending on the aims of the (research) project and the resources available.

With the support of DAs residing in the kebeles, only volunteer and available farmers from the selected farmers' development groups were invited to participate in the FGDs. Efforts were, however, made to ensure that each focus group was composed of proportional male and female participants (20-30 percent female farmers). More so, to capture the diverse views and experiences of farmers, it was purposefully made sure that the participants represented their groups in a natural setting. Hence, farmers from group leadership committees and members, young and old, as well as model and follower farmers were invited to participate in the FGDs.[59]

FGD instruments and Procedures: The eight FGDs were conducted one after the other between the months of July and September 2016. All eight group discussions were moderated by me, with support from coached facilitators in each woreda. The facilitators took field notes and audio-visual recordings, once consent was received from the participants. In some cases (in Liben and Wolmera woredas), the facilitators also supported in the translation of discussion points to local language.

For each FGD, the DAs invited the volunteer farmers to a central place that is convenient for the participants, mostly in a farmers' training center compound or school classroom. In two of the cases, FGDs were held at the homes of FDG group leaders. During the discussions, I sat with focus group participants in a circle. After introductions to the purpose of the study, as well as the aim of the group discussions, FGDs started with vote of thanks and appreciation for members' participation in the study and. The participants were also encouraged to participate and talk to each other rather than to address themselves only to me.

Discussions took place in local languages over an hour, on average, as some of the group members went into longer narratives. Some refreshments were served during discussion FGD sessions, to establish comfortable atmospheres.[60]

[59] When conducting FGDs, it is recommended to focus on people's shared experiences and homogeneity within focus groups (Sofaer 1999). However, bringing together a diverse group can be advantageous to maximize exploration of different perspectives within a group setting (Kitzinger 1995).

[60]A comfortable setting, refreshments, sitting round in a circle and use of group exercises helps to establish the right atmosphere for group members to participate (Kitzinger 1995).

Discussions were guided using a field check-list with a set of open-ended questions translated to local language. Participants were first asked to discuss about their farmers' development groups (why and when it was established, members role, number and composition of members, livelihood of members, and description of 'model farmers' in the group. Then the participants were asked to reflect on their group dynamics (benefits, division of roles, leadership and monitoring, support to female farmers, intra-group communication and relationship with public DAs, and settlement of disputes and by-laws). Finally, the focus groups were asked to recall changes in their agricultural technology adoption, production, productivity and commercialization within the time frame, dating back to establishment of their groups. Participants were also asked to assess the performance and challenges of their farmers' development groups.

Although discussions went well, the problem of dominance was experienced in all the eight focus group discussions.[61] Mostly, male participants and members from the FDG executive committees dominated the discussions. Yet, other focus group discussion participants also gave committee members the opportunity to lead the discussion because the leaders were seen as more knowledgeable about the issues discussed. Female farmers also allowed men to talk first and did not talk much. To deal with the drawback, I constantly probed for more clarification and wider participation, especially from the female participants. In two cases, female discussants were also encouraged to discuss separately.

***FGD Data Analysis**:* The analysis of information captured through the FGDs adopted three key steps: preparation of transcripts; identification and organization of codes and themes (c*odding and categorizing)*, and interrelation of themes using a thematic content analysis method.

[61]Focus groups may comprise participants who dominant the discussion or those who are inactive. Such problems can be resolved by helping participants be comfortable, and by facilitating interactions between group members (Liamputtong 2011). In such cases, the researcher should also keep the discussion going, through probing techniques and ensuring that everyone gets a chance to speak (Lemma 2007). More so, the researcher should watch for non-verbal expressions like nodding, smiling and shaking of heads to signify agreement or disagreement to deal with inactive participants (Barbour 2008). A comfortable setting, refreshments, sitting round in a circle and use of group exercises also helps to establish the right atmosphere for group members to participate (Kitzinger 1995).

After getting back from the FGDs, all the eight field notes and video records from the FGDs were reviewed and checked for accuracy. The data sets were then transcribed in to scripts (documents) in preparation for analysis.

The themes in each transcript were then categorized into the main discussion patterns/ themes including: group dynamics; leadership; farmers motives for joining groups, participation; benefits; adoption level of agricultural technologies, agricultural productivity changes, agricultural commercialization, and challenges. The identified codes and themes were mostly pre-set based on the research questions and topics on the FGD checklist. Nevertheless, new codes, categories and themes like shortage of agricultural inputs and non-agricultural roles of groups that emerged from analysis of the transcripts were also considered. The themes were organized and documented using Microsoft Word. Themes were aligned to the research questions and objectives of the study.

The contents of the eight scripts were then analyzed to identify facts or findings under each theme. The main purpose for using thematic content analysis was to understand the perceptions of farmers and comprehend their discussion about the main themes and subthemes, in relation to the research question. The qualitative findings from the FGDs are finally presented in the next chapter in the form of texts and quotes describing participants' views, perceptions, and experiences. When doing so, effort is made to highlight some of the discussions and arguments that took place in the FGDs.[62]

iii. Individual farmer's survey

Individual farmer's survey was administered through field assistants, concurrent to the focus group discussions. The information captured from the survey was intended to triangulate and complement findings from the KII and FGD methods. [63] To this end, similar questions were constructed for all three data collection tools (FGDs, KIIs and survey). The survey was also used

[62]Kitzinger (1995) recommended that a focus group research report that is true to its data should usually include at least some illustrations of the talk between participants, rather than simply presenting isolated quotations.

[63]Survey is the collection of information from a sample of individuals through their responses to questions (Check & Schutt 2012). The aim of undertaking a survey is to generate information in a standardized form, for a specified sample (Mwanje 2001).

to compute and answer the quantitative research questions including measures of farmers' perception, level of participation as well as ranking of benefits in their groups and their individual agriculture transformation (adoption, productivity and commercialization) status.

***Survey- Sampling procedure and Sample size*:** The survey participant farmers were randomly selected from the eight FDGs from which farmers who participated in the focus group discussions were also identified, in the selected kebeles. A total of 120 farmers participated in the survey (*n=120*). This is almost half of the overall population of the eight farmers' development groups that participated in this study(*N=250*). Bartlett *et al.* (2001) highlighted that a quarter of a sampling frame (population) is reliable and valid to provide generalized results that are representative to the overall population from which it is drawn and can generate a statistical power analysis. Accordingly, the data from the survey provides reliable information about the eight selected farmer development groups.

Survey Instruments and Procedure: A standardized questionnaire, that has fifty structured and closed-ended, Likert-type[64], dichotomous, multiple choice and rating scale questions, was used as an instrument to collect the quantitative survey data (refer the questionnaire in Appendix 3). The questions in the questionnaire captured socioeconomic, demographic, as well as psychological (perception, motivation, expectations, opinions) variables of individual farmers. The questionnaire is partitioned into three parts. The first part collected data about the demographic characteristics of FDG members. This part of the questionnaire covered categorical data such as: age, gender, education, marital status, family size, and income status.

The second part explored when participants joined their FDGs, what motivated them to join, their expectation before joining and the current practice as well as their satisfaction. The section also asks what benefits DG members to have, what roles they have and the dynamics and relationship of the group members. The last part of the questionnaire focuses on the extension and other functions of FDGs and agricultural transformation roles played by FDGs: the adoption of new

[64]A Likert-type scale is an ordered scale which was originally developed in 1932 by Rensis Likert to measure attitudes. The typical Likert scale is a 5- or 7-point ordinal scale from which respondents choose one option that best aligns with their view (Losby 2012).

technologies and practices, production and productivity as well as commercialization variables. The survey questionnaire was pre-tested through a pilot survey of few (5) respondents and fine-tuned, before it was administered to the larger sample of participants.

With the support of the woreda facilitators, ten local field assistants were hired and coached to conduct the farmers survey. The field assistants invited each volunteer farmers to a central place (mostly at the FTC) to run the survey interview. Interviews started by thanking participants for volunteering to take part in the survey and explaining the purpose of the study. Participants were also asked to sign an attendance sheet as an indication of their consent and received an incentive (50 Birr per farmer) for sparing their time. Each interview session took 45 minutes, on average.

***Survey Data Entry, Cleaning and Analysis*:** The questions that were standardized and pre-set with response formats including rating scales, Likert-type scale fixed responses (dichotomous or multiple) were easily coded and analyzed using the SPSS 20 (Statistical Package for the Social Sciences) software. Variables measured in the study and entered in the SPSS spreadsheet included: personal variables, motivation and levels of participation, benefit in the DG; group dynamics; and agriculture transformation variables.

First, the responses for the questions were entered on to the SPSS-20 spreadsheet from each questionnaire that was also coded. Following the data entry, the data was reviewed and cleaned for data inconsistencies, and missing data. Although data entry work was done by two assistants, I did the coding, editing as well as the verification of the data. Two questionnaires were discarded after verification due to several missing answers. Hence, the analyzed sample size was reduced to 118 (n=118). Data cleaning also showed missing responses for several items(questions). The data set from the survey was then analyzed using descriptive and inferential techniques on SPSS.

Descriptive analysis is used in this study to quantitatively describe, summarize and present frequencies and percentages for most of the survey questions including the socio-economic characteristics of survey participants, perception of farmers about their participation level; their benefits and challenges; their function in their farmer development groups; and motives for participating in development groups. The study uses tables, frequencies, and percentages to present the descriptive analysis findings in the next chapter.

Inferential (correlation) analyses is performed to make predictions about potentially related variables in the study. Correlation analysis is a technique adopted in inferential statistics to examine relationships between two variables statistically by looking at the *correlation coefficient (*Field 2009). This study tested the relationships between six independent, and ten dependent variables provided in Table 3.2.

The correlation between the dependent and independent variables in the study is shown using the Spearman's correlation coefficient (r_s). The Spearman's correlation analysis is run in this study because my data to be correlated are not measured at the interval level. Thus, I deselected the option for a Pearson correlation and selected the Spearman's test in the Bivariate Correlations dialog box on the SPSS. Spearman's correlation coefficient, (r_s), is chosen as it is a non-parametric statistic and requires only ordinal data for both variables to be corelated.[65] Ordinal variable are categories but have a meaningful order. Accordingly, for each numeric code I have provided a value label (as in Table 3.2). When running the correlation analysis on SPSS 20, cases with missing data were excluded on analysis by-analysis or 'pare wise' basis, which means excluding the case from the analysis only when a score/ value is missing for the correlated variables (Field 2009).

The correlation coefficient(r_s) fluctuates from -1 (perfect negative correlation) through 0 (no correlation) to +1 (perfect positive correlation). The sign (+ or -) of the correlation coefficient shows the direction of the relationship. The correlation coefficient value also measures the size of an effect. Thus, correlation values of $r_s \pm 0.1$ represent a small effect, ± 0.3 a medium effect, and ± 0.5 a large effect size (Field 2009).

[65]Non-parametric tests (or assumption-free tests) are statistical procedures that do not rely on the restrictive assumptions about the type of data on which they can be used. In particular, they do not assume that the sampling distribution is normally distributed. Most of these tests work on the principle of ranking the data: that is, finding the lowest score and giving it a rank of 1, then finding the next highest score and giving it a rank of 2, and so on.

Table 3.2: Descriptions and Measurement Levels of Variables Used in the Correlation Analysis

Variable	*Description*	*Type and measurement of variable*
DG member's characteristics (predictor variables)		
Gender	Gender of the respondent	Binominal, 0= female, 1= male
Age	Age group of the respondent	Ordinal, 1= 16-35(young), 2=36-55(adult); 3= 56-65, 4=above 65
Education	Level of education of the respondent	Ordinal 1=illiterate, 2=literate, 3=Primary, 4=secondary
Income	Income status of the respondent in the community	Ordinal 1= very poor, 2=poor, 3=average, 4=rich, 5=very rich
Family size	Number of family members	Ratio
Model farmer	Being a model farmer	Binominal, 0=No, 1= Yes
Farm size	Size of rain fed land in hectare	Ordinal, 1=0.25-0.5, 2=0.6-1ha, 3=1.1-2.5, 4= above 2.5
Intermediary variables		
Participation	Level of participation (time spent) in DGs	Ordinal, 1=very low, 2=low, 3=medium, 4=high, 5=very high
Access to Extension	Access to extension service (visit from DAs and model farmers)	Ordinal, 1=very low, 2=low, 3=medium, 4=high, 5=very high
Access to Crop t	Level of access to new/ improved crop technologies	Ordinal 1=very low, 2=low, 3=medium, 4=high, 5=very high
Access to LS t	Level of access to improved livestock technologies	Ordinal, 1=very low,2=low, 3=medium, 4=high, 5=very high
Agriculture transformation variables (dependent variables)		
Adoption LS	Level of adoption and intensity of use of livestock technology	Ordinal, 1=very low, 2=low, 3=medium, 4=high, 5=very high
Adoption crop	Level of adoption of new/ improved crop technologies	Ordinal, 1=very low, 2=low, 3=medium, 4=high, 5=very high
Crop productivity	Rate crop productivity (amount/ hectare)	Ordinal, 1=very low, 2=low, 3=medium, 4=high, 5=very high
LS Productivity	Rate of LS productivity in (by product/animal daily milk as proxy)	Ordinal, 1=very low,2=low, 3=medium, 4=high, 5=very high
Crop Quantity	Proportion of produced crop for the market in	Ordinal,1=very low, 2=low, 3=medium, 4=high, 5=very high
LS Quantity	Proportion of produced LS for the market	Ordinal, 1=very low,2=low, 3=medium, 4=high, 5=very high
Crop Quality	Scale of quality (value addition) on Crop products for the market	Ordinal, 1=very low, 2=low, 3=medium, 4=high, 5=very high
LS Quality	Scale of quality of LS products for the market	Ordinal, 1=very low, 2=low, 3=medium, 4=high, 5=very high

The study also run significance *(Sig.)* tests of the correlation to test the hypothesis that the correlation is different from 'no relationship' or zero.

Field (2009) highlighted that by running the significance test, we gain confidence that the relationship that we have observed is statistically meaningful. Level of significances in my study are shown using a probability P-value (p) that is represented either by a value equal to zero or smaller than the P- value of p= 0.05, to show level of confidence at 95% or higher. A two-tailed probability test of significance is used in the study because the nature of the relationships between the variables is not predicted. Only findings with statistically significant correlations or $p< 0.05$ are displayed and discussed in the next chapter.

3.5 VALIDITY AND RELIABILITY TEST

Self-reported measures produce *measurement errors* because various factors influence how people respond to the measure. It is therefore important to ensure that the measurement error is kept to a minimum by determining that the property of the measure is doing its job properly. The two important properties of a measure are validity and reliability (Field 2009). Hence, to ensure that the measurement error is kept to a minimum and that the research tool or instrument is doing its job properly, the validity and reliability of the research instrument should be determined. A valid and reliable measurement instrument is evidence that the study allows correct inferences about the question it was aimed to answer. In other words, for research findings to be valuable, they must be both *valid and reliable*. Thus, it is important that validity and reliability evaluations are conducted in both qualitative and quantitative components (Creswell 2013). The evidence that this study is valid and reliable is provided below.

Validity refers to the credibility and trustworthiness or believability of the research. It is the degree to which the study instruments measure what they are supposed or designed to measure (Field 2009). There are two aspects of validity. These are: internal validity - the instruments or procedures used in the research measured what they were supposed to measure; and external validity - the results or findings can be generalized (representativeness) beyond the immediate study sample.

Using methods from both qualitative and quantitative research paradigms in mixed methods research enables triangulation and complementarity strategies, that ensure validation of research findings (Yauch & Steudel 2003; Creswell 2013; Migiro and Magangi 2011). Triangulation is carried out in this study to ensure validity throughout the study by comparing the consistency of

the qualitative and quantitative findings and evaluating if the data talked to each other, as the questions for both methods were related or similar. To minimize possible validity threats, the themes from the qualitative findings of the KIIs and FGDs were matched and crosschecked with statistical results from the quantitative study. Thus, triangulation of findings helped to verify and check the existence of similar and complementary patterns in the findings, increasing trustworthiness and representativeness of the findings.

A second consideration of a measure, to minimize error, is reliability, which is whether an instrument can be interpreted consistently across different situations (Field 2009). Reliability is whether an instrument can produce consistent results when the same entities are measured under different conditions[66]. Reliability is concerned more about measuring internal consistency. A statistical method known as 'reliability analysis' can be used to measure the consistency of a questionnaire and determine reliability finding that give confidence in the reliability of the study (Pallant 2010).

In quantitative studies, reliability tests are conducted using Cronbach's Alpha (α) coefficient, which is a strong measure of internal consistency of items in a rating scale.[67] Cronbach's α indicates the overall reliability of a questionnaire and values around 0.8 are good (Field 2009).

To test reliability and consistency of the survey questionnaire of the study, all rating questions that were set on a five-point scale and used to measure the scales of group dynamics and agricultural transformation (13 questions) are tested for reliability. Accordingly, Cronbach's Alpha (α) or reliability analysis was run for the 13 items on SPSS and the Cronbach Alpha's coefficient (α) is 0.856.

[66]Reliability means that a consistently reflects the construct that it is measuring. For instance, a measure is reliable when other things being equal, a person gets the same score on a questionnaire if he or she completes it at two different points in time (Field 2009).

[67]A score is computed from each variable and the overall rating called the 'scale' is defined by the sum of these scores of the overall variables from the research dataset. The value of the Cronbach's Alpha (α) ranges from zero to one and the closer the Cronbach's Alpha coefficient is to one the greater the internal consistency of the items in the scale (Pallant 2010).

The reliability results of the rating questions (α) is slightly high (0.856), indicating good reliability and a high level of internal consistency, which implies that the survey research instrument and questions (items) are reliable (Field 2009).

3.6 CONCLUSION

The chapter started by providing the rationale for choosing a mixed methods research design for the study, including the theoretical paradigm and principles that motivated the selection of the research methodology. I chose a mixed methods research design to answer the research questions outlined in chapter one. The reason for choosing mixed methods research design came from the principle of the pragmatic approach that encourages the combination of research methods in a single study to provide strength to the study. More so, mixed research methods design is used for the triangulation and complementarity of study findings, to ensure validity of the study.

The second section of the chapter offered a description of the four woredas where primary data was collected from in the second half of 2016. A total of eight farmers' development groups was selected randomly to serve as source of information for the study. The section elaborated the procedure and rationale in choosing the study areas.

Next, the chapter discussed both the qualitative and quantitative research techniques used in the study including the data collection instruments, sample design, data collection procedures, and the data analysis techniques. The study conducted 46 key informant interviews, 8 focus group discussions and 120 individual farmers survey. Key informant interviews were held with agricultural extension professionals at various levels. Data from KIIs was then analyzed using descriptive statistics and qualitative content analysis techniques.

The eight focus group discussions were held with groups of 8 to 15 farmers (25 percent female farmers) who are members of farmers' development groups in the natural settings. The data set captured from group discussions was prepared into transcripts. Then, codes and themes were identified, and themes were interrelation using a qualitative content analysis method.

Concurrent to the focus group discussions in the field, individual farmer's surveys were administered with the help of field assistants. The farmers who took part in the survey were randomly selected from the eight farmer groups that were identified for FGDs. A total of 120 (*n=120*) farmers participated in the study. Two questionnaires were however discarded at the data cleaning stage, due to large missing data. Semi structured questionnaire was used to collect the quantitative data. The responses from the survey were entered on to the SPSS-20 spreadsheets, reviewed and cleaned for data inconsistencies. Then the data set from the survey was analyzed using descriptive and inferential statistical analysis (correlation) techniques on the SPSS.

The chapter finally presented the validity and reliability evaluations considered in the study to ensure minimum measurement error. To this end, the findings from the mixed methods research were triangulated to ensure the validity and trustworthiness of the findings by checking and cross-examining the findings from the KIIs, FGDs and survey methods. Additionally, the Cronbach Alpha, α, reliability analysis was conducted to assess the reliability of the quantitative research instrument (survey) and the rating questions. Consequently, the reliability result is acceptable and credible.

The next chapter presents, discusses, interprets, triangulates, and complements the findings generated from the qualitative and quantitative data sets analysis.

CHAPTER 4:

EXPLORING FARMERS' DEVELOPMENT GROUPS: DISCUSSION AND INTERPRETATION OF STUDY FINDINGS

4.1 INTRODUCTION

Generating knowledge on smallholder farmers, in relation to agricultural transformation, is useful for dominantly agrarian nations like Ethiopia. This study intends to address nine research questions with the objectives of exploring farmers' development groups and analyzing the agricultural transformative potential of farmers' development groups. To this end, in the late 2016 primary data was collected and analyzed using mixed methods research design. This chapter is devoted to the presentation, discussion, interpretation and triangulation of the study findings generated from the various data set.

The qualitative findings of the study are illustrated and discussed using narratives and quotes, while the quantitative findings are presented using tables, frequencies, percentages, correlation coefficients and statistical significance values.

The chapter has seven sections. The next section presents the demographic and socioeconomic descriptions of the study participants. Then, the chapter presents and discusses the drivers for the formation of FDGs in rural Ethiopia, and farmer's motives for joining FDGs. The fourth section deliberates on FDG members' roles, levels of participation, benefits and group leadership. This is followed by presentations and discussions on the findings with regards to the relation between public agricultural extension services and FDGs and the sustainability of the group extension approach. Section six presents and discusses the findings on the contribution of FDGs to the agricultural transformation attributes. The seventh section displays and discusses statistically significant findings (at 95% level of confidence) from the correlation analysis of variables outlined at the end of the preceding chapter.

4.2 DESCRIPTION OF STUDY PARTICIPANTS

4.2.1 Profiles of Key Informants

Personal characteristics of the forty-six interviewed key informants are summarized in Table 4.1 below. Out of the total 46 key informants, female informants consisted 5 in number (11%). The limited number of female agricultural extension professionals to serve as key informant, is an indication that the professional agriculture extension system is male dominated.

Table 4.1: Description of Key Informants

Characteristics of KIs	Frequency (n=46)	Percentage (%)
Gender		
Male	41	89.1
Female	5	10.9
Age		
15-34 years (youth)	9	19.6
35-55 years (adults)	29	63.0
Above 55 (older people)	8	17.4
Education level		
High school	1	2.2
Diploma or degree	25	54.3
Post graduate	20	43.5
Qualification of KIs		
Agriculture related	45	97.8
Non-agriculture related	1	2.2
Position & experience		
Office head / manager	28	60.9
Technical	18	39.1
Awareness of the PAES	35	76.0
Experience of FDGs	42	91.3

Source: KII (2016)

Many of the key informants (60.9%) were office managers and almost all (98%) had agriculture science as their qualifications. Out of the total, 42 of them (91.3%) had a working experience with farmers development groups. Likewise, 76% of the informants were aware of the Participatory Agricultural Extension System and the national PAES guideline, developed by the then federal MoA in 2007, that outlines the purpose and function of FDGs in agricultural extension. These is an assurance that the selected KIs are relevant and knowledgeable about the interview topic.

4.2.2 Description of Focus Group Discussants

The eight focus groups that participated in group discussions had an average of twelve participants that are also members of FDG in a natural setting. Each focus group was composed of proportional male and female participants (on average 25% female farmers). More so, the compositions of the focus groups represented FDG leadership committees, general assembly, young, old, as well as literate and illiterate farmers.

Livelihoods of all the eight FGD participant farmers depends on crop-livestock mixed agriculture. Some farmers however were engaged in additional off-farm business like small rural shops, transport service (horse cart), and daily labor. Discussants had an average of 1.5 hectare of rain fed land per household, with some participants having additional irrigable land (on average 0.3ha), and some having access to communal land.

Major crops grown by the communities of the eight focus group members are cereals (barley, wheat and t*eff*); Pulses (fava-beans, field peas and lentils); root crops: *enset* (in the SNNPR); stimulant cash crops (coffee and *chat*), and vegetables on irrigable land (potato/carrot/onion). Major livestock interventions FGD participants benefited from are dairy cows (local breed), sheep and goats fattening, cattle fattening and poultry/chicken (for eggs). However, all focus groups expressed their concern that the declining access to water is becoming a major threat for both crop and livestock production, and therefore their livelihoods.

4.2.3 Descriptions of Individual Farmer Survey Participants

As shown in Table 4.2 below, one fourth (30 out of 118) of the survey participants are female farmers**.** This is a reasonable number of representations of female farmers, given that the average number of female farmers in a farmer development group is one third. More than 90% of the survey participants are adults between the ages of 35 and 65, while 6% of the respondents were above 65 years and only few (3.4%) of the total participants were young farmers between the age of 15 and 35**.** This suggests that the rural youth are underrepresented in the farmer groups.

The majority (88.2% or 97 in number) of the survey respondents are married men and women (9) from Male Headed Household (MHHs). Many of the survey participants (82.8%) practice Christianity religion, and almost half of the respondents (49.1%) are from the Oromo ethnic group**.**

The main farming system, and only means of livelihood for more than 85% of the survey respondents is mixed crop-livestock agriculture. Nevertheless, 15% of respondent farmers were engaged in non-farm work, in addition to agriculture. The majority (88.2%) of the survey participants self-reported their income status as average (not poor but also not rich), compared to other smallholder farmers in the community, while 6% and 4% considered themselves as poor and rich farmers, respectively.

Table 4.2: Characteristics of Survey Respondent Farmers (in % of respondents)

Character	**Frequency n=118**	**Percent (%)**
Gender		
Male	88	74.6
Female	30	25.4
Age in Years	Frequency	Percent
15-35 (young)	4	3.4
35-65 (adult)	107	90.6
Above 65 (old)	7	6.0
Marital status	Frequency	Percent
Single (not married)	4	3.6
Married	97	88.2
Divorced	5	4.5
Widowed	4	3.6
No response	8	6
Religion	Frequency	Percent
Christian	96	82.8
Muslim	17	14.7
Other	3	2.6
No response	2	
Ethnic group	Frequency	Percent
Amhara	28	25.0
Oromo	55	49.1
Guragie (South)	29	25.9
No response	6	
Source of Income	Frequency	Percent
Only Agriculture	100	84.7
Non-farm & Agric.	18	15.3
Income status	Frequency	Percent
Rich	6	5
Average	104	88.2
Poor	8	6.8

Source: Survey (2016)

Out of the total respondents who indicated their level of formal education, the majority (38.6%) of the respondents are literate, able to read and write, and 4.4% of the participants have attended high school (Table 4.3). When disaggregated by gender of respondents, majority (64%) of the female respondents could read and write but none made it to higher grade levels.

Table 4.3: Education Level of Survey Participants (in no. & % of respondents)

Education level of participants	Gender of participants in Number of respondents		Total	Percent
	Male	Female		
Illiterate	21	8	29	25.4
Read and write	31	13	44	38.6
Elementary Grade 1-8	27	9	36	31.6
High school Grade 9-12	5	0	5	4.4
Total	84	30	114	

Source: Survey (2016)

With regards to household size, survey participants had an average family size of 5.2 and maximum family size of 10 **(**Table 4.4).

Table 4.4: Family Size of Survey Participants (in % of respondents)

	n	Minimum	Maximum	Mean	Std. Deviation
Family size	101	0	10	5.21	1.97

Majority of the respondents (39.6%) cultivate less than 1 hectare of rain fed land, while 33 % use between 1 and 2.5 hectares of land, and 27% of them have access to greater than 2.5 hectares of land as in Table 4.5**.** When disaggregated by gender, majority of the female farmers reported cultivating smaller farm sizes (less than 1 ha), compared to male farmers.

Table 4.5: Survey Participants' Land Size (in % of respondents)

Size of land	Frequency (Number of farmers from total)		Percent	Cumulative Percent
	Male	Female		
Less than 0.5 hectare	7	6	12.3	12.3
0.5-1 hectare	15	14	27.4	39.6
1 - 2.5 hectare	30	5	33.0	72.6
Greater than 2.5 hectare	25	4	27.4	100.0
Total (n)	77	29	100.0	

Source: Survey (2016)

As in Table 4.6, the major types of crops grown by the majority (73.7% of the cases) of the survey participants are cereals (maize, wheat, barley and *teff)* and pulses (beans, chickpeas and lentils). Oil crops are the least grown crops (8.5% of the cases).

All survey participants were also engaged in one or two livestock interventions. Most (68.6%) of the participants stated that they are raising/fattening small ruminants (sheep and goat), followed by dairy cows (61.9%). Participants are least engaged is bee-keeping activity (only 20.3% of the cases).

Table 4.6: Major Crops Grown and Livestock Raised by Farmers (in % of respondents)

Major crops grown/ Livestock	Percent (n=118)
Cereals & Pulses	73.7
Animal fodder/feed	22.0
Vegetables (potato)	21.1
Oil crops	8.5
Small ruminants (Sheep & goats)	68.6
Dairy cow	61.9
Poultry (for egg)	50.8
Cattle fattening	28.8
Bee-keeping	20.3

Source: Survey (2016)

4.3 GENESIS OF FARMERS' DEVELOPMENT GROUPS

This section addresses several of the research questions including: what the driver of FDG is; establishment, process and status of FDGs; and what motivates smallholder farmers to participate in FDGs.

Key informants explained that provision of agricultural extension services through FDGs was rolled-out as of 2007. Similarly, except for one of the focus group participants (in Cheha woreda) that indicated to have been established in 2013, all the other focus group discussants recalled that their FDGs were established in the years 2007-2009, through the facilitation of local governments.

Despite the fact that working together in groups is not a new phenomenon in the rural communities, farmers indicated that the FDG arrangement is more structured and has multiple purposes, compared to previous farmer groups. Farmers in the focus group discussions elaborated that grouping of farmers for rural development intentions goes way before 2007, under different names including 'governmental group' (locally known as 'M*engistawi Buden'*).

Likewise, some FGD participants explained that farmer groups and 'contact farmers' existed since the early 2000, but since 2007 the groups have been reoriented and re-established with more participation of farmers and with introduction of the 1:5 sub-group arrangements (one model farmer to-work with five follower farmers) in the big groups. Focus group discussants in Oromiya stated that the term FDG is locally called *'Gere Missoma', which* means 'farmers working in a campaign'.

4.3.1 Drivers and Process of FDGs Establishment

Although the group extension approach is a policy intervention to be rolled-out among all farming communities of Ethiopia, key informants were not certain about the expansion status. Many of the key informants (67.4%) believed that all farming households in Ethiopia are currently members of FDGs (Table 4.7), while some informants however argued the existence of non-member farm households in marginal and inaccessible areas and that the landless rural residents are not members of FDGs.

Most importantly, key informants expressed concern about the general assumption that the formation of FDGs is driven by farmers 'common interest'. Despite the 43.5% key informants who stated that the establishment of farmers DGs was driven by common interest of farmers, majority (45.7%) of them argued that FDGs are not established based on common interest of members.

The key informants expressed the existence of an 'invisible hand', even though the PAES guideline states that FDGs should in principle be organized based on 'common interest' of farmers. They explained that the local agricultural extension office had a hands-on intervention in the establishment and registration process of groups.

Table 4.7: KI's Perception of Membership and Drivers of FDG (in % of respondents)

Are there farm households (nationally) who are not member of FDG?	Frequency	Percent
Yes	6	13.0
No	31	67.4
Do not know	9	19.6
Total	46	100.0
Are FDGs formation driven by common interest of members?	**Frequency**	**Percent**
Yes	20	43.5
No	21	45.7
Do not know	5	10.9
Total	46	100.0

Source: KII (2016)

To elaborate the external influence during the process of the group establishment, an informant said:

> *'Individual personalities are not the same, some farmers do not want to work in a group setting while other may want to, yet… FDGs are established top-down without taking note of this, and not all members are convinced about the group formation…but they join because they are afraid to challenge the system (KII 2016).'*

In terms of process, informants stressed that groups were organized based on neighborhood arrangements. Key informants however emphasized that organization of FDGs based on neighborhood makes agricultural extension work difficult, entangling it with social life. An informant also suggested that farmers should rather organize along common farming systems, adjacent farm land, or along some common agricultural commodities they produce. In this regard, an informant explained:

> '*Even if established based on a common interest of members, interests change over time', and therefore, instead of common interest and neighborhood, farmers with adjacent farm lands should have been advised and motivated to come into groups (KII 2016).*'

Many key informants also stated that FDGs do not have clear visions, and purpose in most cases. Hence groups engage in activities they were not intended for. An informant exemplified:

> '*Once established, DGs focus on political issues like election…putting aside the main objective of establishment- that is agricultural extension (KII 2016)'.*

Like majority of the key informants, focus group discussant farmers unanimously stated that groups were organized based on geographic proximity of households, neighborhoods, and social networks (like *Idir).*[68] Farmers explained that all farm households that had access to land were 'encouraged*'* by DAs to join a group based on neighborhood. Farmers also recalled that the community received 'guidance and support' from the local administration when registering as groups. One FGD participant (group leader) illustrated:

> *'Groups are established based on geographic proximity and neighborhood with one family member represented from each farm household, usually the household head. The groups are inclusive of farmers above the age of 18, irrespective of gender, religion, income and ethnic background of the member* (FGD 2016).'

Even though the group sizes altered over the life time of the FDGs and from place to place, FDGs in the study area had 30 members on average, out of which one third (about 10) are female farmers.[69]Focus group discussants explained, with enthusiasm, that their groups evolved gradually to the current structure.

Not all farm households decided to join groups at the same time, after the consent mobilization process. Rather some joined latter, and others left one FDG to join another preferred group within the same kebele. For instance, farmers in the focus group discussion in one of the kebeles in *Cheha*

[68]*Idir* is a membership based formal local institution for social support purpose in the neighborhood.

[69]Men from MHHs and women from FHHs were registered as members of the FDGs. Some married women (wives) from MHHs were also members, but in rare cases, when husbands are away from home or engaged in other off-farm activities.

woreda, indicated that they were 35 members (15F) in one group at the time of the field study, compared to only 22 members when their group was initially established 4 years ago.

It is however important to highlight that FGD participants, in Oromiya, admitted that their FDGs have weakened over the last two years and group memberships have not been updated. This is related to challenges of the political stability in the region.

Discussion and Interpretation

While farmers' groups and rural collective actions date from time immemorial and are common among traditional communities like Ethiopia, farmer extension groups are relatively new occurrence in rural Ethiopia. Although, the period FDGs rolled-out slightly varies spatially, they were first introduced in the agricultural extension system in the early-2000.[70]

Notably, it is important to highlight that FDGs are the product of the current PAES of Ethiopia that encourages heads of farming households (men and women), who own a farm land and are between the ages of 18 and 64 years, to be members of FDGs (MoA 2007). Farmers in FDGs are organized based on neighborhood and geographic proximity to each other, irrespective of their gender, income status, education level and ethnic or religious orientation. This shows that FDGs have inclusive membership, except that they are not open for landless rural residents including the young farmers. This is a case were access to land determines access to social capital.

Although it is necessary that the public agricultural extension system facilitates the process of rural group formation, the findings specify the involvement emanating from the DAs is more of an influence and interference than facilitation. Consequently, the interference pressurizes the farmers to opt for participation. Interference of DAs in group formation is not new as an earlier study by Lemma (2007) indicated cases, where DAs convince and register farmers for their own performance evaluation; farmers fear of moral punishment where DAs describe non-participating

[70]Some study participants argued that groups existed in prior extension methods that used the 'contact farmer' approach. Nevertheless, there is a distinction between the previous contact farmer approach and the current FDG approach using model farmers. Contact farmer denotes the personal contact, while a model farmer applies only to farming (Lemma 2007). FDGs have an average membership of thirty farmers with the introduction of the 1 model farmer to 5 follower farmers (1:5) sub-group arrangement.

farmers as lazy, backward and weak, and DAs frightening farmers of being excluded from rural programs and benefits.

The public agricultural extension system in Ethiopia claims it initiated and facilitated the formation of FDGs to ensure that agricultural extension services[71] reach many farmers, given the limited number of agricultural extension workers at the grassroots level. To this end, the DAs and local administration interfered in the establishment and registration of the groups. DAs disseminate and promote the view that the group approach is important and effective for channeling and receiving extension services. DAs also persuade smallholders that the extension benefits of joining FDGs outweighs the costs of participating, trying to win the acceptance of farmers and making them trust that they have 'common interest'.

The presence of 'common interest' among group members is not evident. Even if the PAES guideline (MoA 2007), outlines that farmers should be organized based on members 'interest' and free will, the findings of the study show that FDGs are established in a campaign manner based on neighborhood arrangement. Majority of the key informants are convinced that groups are not established based on common interest, but rather, group members were not free to decide their involvement. Similarly, focus group discussants indicated that groups are formed based on neighborhood arrangements without consideration to their agricultural interests. Thus, findings imply that the government, through its local invisible-hand, controlled establishment of farmers groups.

Overall, unlike the rhetoric use of the term 'common interest' as the driver for the formation of farmer groups, as assumed by the government of Ethiopia, this study finds the terminology misunderstood and too broad to be of any operational relevance at the local level. The fact that FDG members are coerced to join groups however limits the innovativeness of individual farmers to address practical challenges and develop their problem-solving capacities. Along this line, Mutunga (2015) wrote that some African governments go out of their way to ensure farmers' movements start and grow, and most often such interferences mean lack of autonomy for the

[71] Agricultural extension services include the variety of interventions like trainings, advices, demonstration and input provision, as detailed in the literature review chapter.

farmer groups. More so, this study does not rule out the influence of local politics in the establishment of FDGs, in addition to its agricultural extension arguments.

Political interference in rural community development is not uncommon. Lefort (2012) claimed that the ruling government in Ethiopia aimed to build its constituency among smallholder farmers and sustain its political domination in the rural areas through the public agricultural extension services. The weakening of FDGs in Oromiya is evidence that farmers are protesting against the rules of the government.

Similarly, Segers *et al.* (2009) found out in their study that local politics and farmers' participation are merged in rural development and the impacts of mobilization are most evident among farmers who are politically active in the community. Aalen and Tronvoll (2009) also argued that the establishment of farmers' groups were deliberate plans of the government to prevent any large-scale protest, against the government in power, by establishing a massive administrative structure of control, and legislative instrument of suppression.

4.3.2 Smallholder Farmers Motive (s) for Joining FDGs

The next question was therefore to understand what motivates farmers to act collectively. Consequently, KIs were asked to rate what motivates farmers to join FDGs, on a 5-points Likert scale, from the most important to the least important motive. Accordingly, most important motives, as perceived by majority of KIs, are access to agricultural extension service (41.4%) followed by social support (32.3%) or social identity, as in Table 4.8.

Table 4.8: Key Informant's Perception of SHFs' Motives to Join FDGs (in % of respondents)

Scale of value	**Motive (s) for participation (%)**			
	Goal: Access to Agriculture Extension(n=29)	**Goal: Economic (n= 28)**	**Ideology: Political or professional (n=31)**	**Identity: Social (n=31)**
Most important	41.4	25.0	19.4	32.3
Very important	13.8	32.1	25.8	16.1
Important	10.3	28.6	9.7	29.0
Less important	20.7	7.1	16.1	16.1
Least important	13.8	7.1	29	6.5

Source: KII (2016)

Nevertheless, when asked the same, most of the farmers (71.2%) who participated in the survey indicated that their main motive for joining FDGs is social cohesion or identity in the form of support from other group members, followed by access to agricultural extension trainings and advice. Economic benefits are the least chosen motives for joining FDGs, as in Table 4.9.

Table 4.9: Survey Participants' Motives for Joining FDGs (in % of respondents)

Motives to join in FDG	**Frequency** (n=118)	**Percent**
Social identity	84	71.2
Agri. extension goal	63	53.4
Political ideology	50	42.4
Economic goal	21	17.8

Source: Survey (2016)

Discussion and Interpretation

Many key informants perceived that individual farmer's participation in FDGs is motivated mostly by the goal or need for access to agricultural extension services. On the contrary, smallholder farmers who participated in the survey stated that their main motive, both in terms of expectation and value, for participating in FDGs is social incentive, explained as support from and to other members who will also join the group.

Smallholder farmers in the study area are part of a collective culture where individual farmers depend on each other for agricultural inputs, learning and accessing new farming practice and technology. More so, as stated earlier, farmers in the study area live in a context where agricultural extension policies and interventions build consensus and 'push' smallholders to collectively act for agricultural extension goals. Taken together, farmers are motivated to participate in FDGs expecting that other farmers like them will also participate followed by the expectation that participation is necessary and is a must to fulfill their agricultural extension needs, even if they do not have common interest.

From the findings on individual motives, it is surprising that economic benefit in the form of income and access to finance is the least valued motive for most smallholder farmers (even below the political ideology motive) to join FDGs. This could however be because the DAs have

explicitly oriented the farmers that economic benefit is not the purpose of organizing into FDGs during the consensus mobilization phase.

Smallholder farmers' individual decision-making process to join FDGs resonates with the expectation-value model described in the theoretical framework of the study. Group members' orientation and decision-making towards joining a FDG is motivated by their expectation that joining the group will lead to higher social cohesion as an outcome- which each individual farmer values most. An individual smallholder farmer in a collective action is motivated above all else by ties to other individuals in the neighborhood.

The study also demonstrates the miss-match between the perception of the group facilitators (the KIs) and farmers about the weight or value farmers give for the various incentives to join a FDG. That is, key informants (group facilitators) perceive that goal motive (expectation that participation is necessary for extension benefits) is valued more, while farmers gave more weight for social incentives (expected reaction of important others towards the individual's participation), when joining groups.

Thus, group facilitators understanding of incentives for farmers participation in groups as-extension goals, is not accurate. The study findings are also proof that the intentions of professionals facilitating the establishment of groups, can be different from the motives and values of those who are expected to participate in the group.

To sum up, collective action is not only about pursuing a purpose and a goal set by others, but also about the needs to be with similar others. Belonging to a valued group proves to be an important motive to bring farmers together.

Social cohesion better explains and makes sense as to why collective actions exist. It also amplifies the significance of the role of collective culture, collective orientation of individuals, and social identity, in explaining the why of collective actions. This is consistent with social-phycology views that group identification fosters participation in collective action (Kelly & Brienglinger 2002; Klandermans 2004).

4.4. GROUP DYNAMICS: MEMBERS' PARTICIPATION, ROLES, BENEFITS AND LEADERSHIP

This section focuses on participation, benefits, group dynamics, leadership and sustainability of FDGs. [72] Specific research questions discussed under this section are how the group dynamics, structure, practice and function of FDGs look like; what the group leadership, function, time management, responsibility and benefits look like; how FDGs relate to the public extension system; what external support they receive; and what conditions (if any) exist under which the female and youth farmers participate and benefit from the opportunities presented by collective action. Below are the study findings:

4.4.1 Female Farmers Participation in FDGs

Key informant's perception regarding female farmer's level of participation in FDGs is mixed. More than 50% of the key informants indicated that female farmers' level of participation in FDG, is low or very low on a 5-points Likert scale from very high to very low, while on the contrary, 30.4% and 13% of the key informants indicated that female farmers participation in groups is high and very high, respectively as in Table 4.10.

Table 4.10: Key Informant's Perception of Female Farmers' Participation in FDGs (in % of respondents)

Level of participation (time as proxy)	Frequency	Percent (%)
Very high (> 8hrs/week)	6	13.0
High (6-8 hrs/week)	14	30.4
Medium (4-6 hrs/week)	2	4.3
Low (2-4 hrs/week)	16	34.8
Very low (< 2hrs/week)	8	17.4
Total	46	100.0

Source: KII (2016)

Key informants who believed that female farmers had lower participation in FDGs explained the reason from both sides of the female farmers' and the extension system.

[72]As also stated in Chapter 2, participation in this study is defined as the amount of time, money and energy spent in group activities and decision-making for the benefit of the group. To measure participation, hours spent per week on group matters is taken as a proxy.

Informants elaborated that female farmers are busy with reproductive activities, are shy to express their idea and that women are 'still under the influence of local patriarchal culture'. Additionally, informants explained that female farmers' participation is low due to the limited female farmers' awareness about the benefits of FDGs, because they think FDGs are for male farmers; and because women heads of female headed households (FHHs) are few in the community and those in male headed households (MHH) are represented by their husbands.

On the other hand, informants stated that the male dominated extension system is not interested to work with female farmers, compared to male farmers. Also, informants indicated that extension agents do not clearly understand female farmer's issues and how to effectively mobilize women.

Similarly, 60% of the female farmers in the survey self-reported that their level of participation in the groups is medium, while almost (one fourth) of the female farmers admitted that their level of participation in FDGs is low as shown in Table 4.11.

Table 4.11: Survey Participants' Level of Participation in FDGs, by Gender (in no. of respondents)

Level of participation	**Gender of Participant**		**Total**	**Percent**
	Male	**Female**		
Very low (< 2hrs/week	2	0	2	1.7
Low (2-4 hrs/week)	14	7	21	17.8
Medium (4-6 hrs/week)	34	18	52	44.1
High (6-8 hrs/week)	27	5	32	27.1
Very high (> 8hrs/week)	11	0	11	9.3
Total	88	30	118	100

Source: ***Survey (2016)***

Support provided to female farmers in FDGs

Although female farmers have low participation in FDGs, focus group discussant farmers indicated that FDG members support female farmers with farm resources like labor, farm tools, oxen to plough the land, and seeds, upon demand. A female discussant highlighted:

> *'Helping each other is not new in our culture and hence if someone in the neighborhood needs support, members do not hesitate to support him or her, if especially a FHH (FGD 2016).'*

Focus group discussants in Bassona explained that despite efforts made to ensure female farmers participation in collective actions, as equal as men; women are most of the time busy with other non-farm, household chores like preparing food and local drink (*Areke*)[73], and health care issues. The women from the MHH take longer time to cook and care which shows women in MHH tend to carry more reproductive responsibilities than women in FHH. Women from FHH spend more time in the field supporting or supervising farming activities. One male farmer stressed the point saying:

> '*We do care about FHHs, the elderly and farmers with disability in the FDGs. We include them…. though they don't move at the same pace as other male farmers (FDG 2016)'.*

Another male focus group discussant confirmed:

> *'If FHHs demand for support from the FDG, they will be supported; moreover, when there are communal works where all FDG members should contribute, they (female farmers) are not obliged to engage in strenuous work (FDG 2016)'.*

Similarly, farmers in the survey were asked what special agricultural support was provided to female FDG members. Accordingly, most of the survey participants (43.2%) indicated that FHHs in the FDG are given priority in access to agricultural inputs and that they are not expected to participate in strenuous group actions as in Table 4.12**.** However, 22.9% of the respondents (including 7 women) indicated that they are not aware of any special support to female farmers.

Table 4.12: Survey Participants' Perception of Support Provided to Female Farmers in FDGs by Gender (in % of respondents)

Special support to women	Gender of participant		Percent
	Male	Female	
Priority in access to inputs	42	9	43.2
Exempted from strenuous work	17	12	24.6
Farming and marketing support	6	2	6.8
No special support	20	7	22.9
Total	85	30	

Source: Survey (2016)

[73]*Areke* is local alcohol drink prepared from barley. It is income generating activity consuming most of the women's time in one of the woredas.

Women-only versus mixed FDGs

The majority (65.2%) of the KIs trust that women-only FDGs are a better alternative for performance, compared to women in mixed groups. Informants argued that female farmers identify more with other similar female farmers and that it is an affirmative action to organize female farmers in women-only groups. A few (married) women focus group discussants, resonate with this opinion of women-only groups for being recognized in their own rights. They exemplified that invitations in mixed groups to extension trainings and meetings are extended to only one member of the household, hence the husband (the head) attends, while married women participate in the FDGs only depending on the topic discussed or only if the husband is away.

Other informants (32.6%), however stressed that rural women are not a homogeneous group and thus, it is difficult to generalize that all female farmers are better- off in women-only groups than mixed groups (as in Table 4.13).

Table 4.13: Key Informants' Perception of Women-only Groups (in % of respondents)

Women-only FDGs compared to mixed groups	Frequency	Percent
Yes, are better alternative	30	65.2
No, does not matter	15	32.6
Do not know	1	2.2

Source: KII (2016)

Key informants who were cynical about women-only groups explained that historically male farmers have better exposure and experience in agricultural information and technologies that female farmers can tap into, learn from and share, in a mixed group.

In other words, female farmers in women-only groups may miss-out from opportunities that avail in mixed groups. More so, informants elaborated that it is important for female farmers to mix with male farmers, as there are farm activities that are labor intensive and strenuous and thus need male engagement (like ploughing and irrigation). Many women in focus groups also preferred to be in mixed FDGs, provided that the group deals with agriculture related activities.

Some indifferent informants however underscore that the group type does not matter, as all groups must be able to address female farmers needs by giving them equal attention and service. Some informants also argued that the current global policy and strategy is 'gender mainstreaming', rather than women-only.

An informant emphasized the benefits of mixed groups saying:

> *'When they (women) are in a mixed group, there is a possibility of sharing experiences and learning from each other. If established separately, they (female farmers) will be denied the opportunity of working with men and eventually they will shy away from taking leadership in the mixed community (KII 2016)'.*

Along the same line, an informant said:

> *'... going forward, women farmers organized for agricultural purposes in mixed groups should get the maximum if the system recognizes that women and men have equal rights, and that both contribute equally to agriculture development (KII 2016).'*

Discussion and Interpretation

Rural women in the study area are tasked with hectic and less valued domestic and reproductive activities in addition to their agriculture production and income generation duties. Female farmers, and especially married women in MHHs, have limited membership and participation in FDG affairs. Nevertheless, the limited participation in community activities will in return make women less efficacious than men. This is an evidence where collective actions may marginalize women from the extension system since women are usually trapped in gender division of labor to meaningfully participate and benefit from group interventions.

The low representation of married female farmers is mostly attributed to the perception, by both the community and service providers, that married women are represented by their husbands and that the number of female heads in the rural society is small. On the other hand, women in FHH work longer hours on farming then women in MHHs, supporting or supervising farming activities.

This clearly indicates that the daily activity mapping of the two groups of women (in FHH and MHH) is different in relative terms.

From the discussions so far, it can be inferred that by the extension system encouraged female farmers from FHHs to participate with other men in all the FDG activities including decision-making processes and leadership. Nevertheless, discussion with female farmers revealed that even if they want to equally participate, women are most of the time busy with other non-farm reproductive activities, or due to their low level of awareness about the importance of taking part in FDGs. These might however be because group extension in the FDGs does not consider availability and needs of female farmers.

Limited representation of women in groups is more pronounced especially for married female farmers, denying them from engaging in community affairs and networks that help them learn how to cope and survive in the absence of their husbands.

In sum, discussions with key informants also reveals that the participatory agricultural extension system is still male dominated, and household based, not recognizing intra-household gender dynamics. The 'participatory' extension system has also not challenged the cultural *status-quoe* and thus is not effective in changing female farmers' behavior towards participation.

The low participation levels of female farmers in FDGs however has consequence. It leads to limited recognition of female farmers, as real farmers and to their poor access to agricultural services and technologies, compared to their male counterparts. Because female farmers' participation in FDGs is low, the public extension system perception of the roles that men and women play in agriculture will continue to be biased toward men. Consequently, female farmers technology adoption will continue to be limited and thus less productive than male farmers. This is consistent with findings of gender equality studies in smallholder agriculture (Mogues *et al.* 2009; Regassa *et al.* 2013; Agullar *et al.* 2015) that showed that female farmers in Ethiopia receive significantly less and lower quality extension services due to the perception bias against female farmers.

Key informants' anticipation that female farmers' participation and benefit will improve in a women-only FDG, compared to mixed groups, is consistent to recommendations made by others including Mogues *et al*. (2009) who stated that women-only groups may be a promising approach to reach women with extension services. Such groups, according to them successfully link extension agents with women farmers and circumvent the socially sensitive issue of (male) extension agent advising women one-on-one.

Literature by Stangor *et al.* (2013) and Klandermans *et al.* (2002) also designated that female farmers identify more with other female farmers and participate better in women-only groups as being a female can be a strong and enough identification for an individual woman to participate in the collective action.

On the contrary, some informants argued that female farmers in women-only groups miss out the opportunity of learning and tapping into the farming experience of male farmers. This latter view was also shared by many in focus group discussions. Thus, this study is evidence that female farmers may identify better with other men farmers, when the purpose of the group is agricultural work. Hence, the view that group identification reinforces participation should be seen in a context. It also amplifies the need for carrying out a gender analysis to understand the relationships between men and women farmers in each context.

4.4.2 Young Farmers Participation in FDGs

Despite the low representation of the rural youth[74] in FDGs, 37% and 15% of the key informants rated the participation level of young farmers (age 15-35) in FDGs high and very high, respectively while 28.3% stated it is low, as in Table 4.14.

[74]Youth in this study refers to the age group 15-35, using the African Union 'African Youth Charter' definition. https://au.int/sites/default/files/treaties/7789-treaty-0033_-_african_youth_charter_e.pdf

Table 4.14: Informants Perception of the Level of Participation of the Rural Youth in FDGs (in % of respondents)

Youth participation in FDG	Frequency	Percent
Very high (> 8 hrs/week)	7	15.2
High (6-8 hrs/week)	17	37.0
Medium (4-6 hrs/week)	7	15.2
Low (2-4 hrs/week)	13	28.3
Very low (< 2 hrs/week)	2	4.3
Total	46	100.0

Source: KII (2016)

Nevertheless, some of the key informants who indicated higher participation of the rural youth in FDG were not convinced that the nature of the participation was a meaningful one. In relation to this, an informant said:

> '*Though participation of the youth in FDGs may seem to be high, having them in the group is mainly for political reasons as they (the youth) don't have resource (KII 2016)'.*

Key informants who alleged low participation of the rural youth, on the other hand, explained that reasons could be because of the poor attention the extension system gives to the youth. Informants highlighted that the MoA guideline restricts landless people from group membership, thus most of the rural landless youth cannot participate. But also, informants indicated the growing trend where the rural youth do not consider agriculture as a lucrative business. Rather, the landless youth mostly migrate to towns in search of other jobs.

Similarly, almost all the few young farmers **(**3 of the 4) who participated in the survey self-reported that their participation in their FDGs is high or very high (Table 4.15).

Table 4.15: Farmers Level of Participation in FDGs, by age (in no. of respondents)

Level of participation	Age of participant (years)			Total	Percent
	15-35	36–65	above 65		
Very low (< 2 hrs/week)	0	2	0	2	1.7
Low (2-4 hrs/week)	1	18	2	21	16.9
Medium (4-6 hrs/week)	0	50	2	52	44.06
High (6-8 hrs/week)	2	29	1	32	27.12
V. high (> 8 hrs/ week)	1	8	2	11	9.3
Total	4	107	7	118	100

Source: Survey (2016)

Discussion and Interpretation

Rural youth constitute a large proportion of the Ethiopian youth population, with young people aged 15 - 29 account almost 30 percent of the total population in 2017 (TAK-IRDI 2018). Yet, the finding of this study shows that majority of the FDG members are adults (age 36-65) with well-established farming experience.

The study suggests that the participation of the rural youth in FDGs should be understood both in terms of representation in the group but also their contribution in the group. From this study it can be inferred that while representation of the younger farmers in FDGs is low, those who are members actively take part in the operations of FDGs.

The explanation for under representation of the youth in FDGs is that many of the rural youth are landless and the fact that rural youth received little attention from agricultural extension policies and strategies of the country. In this regard, access to extension services through FDG is not relevant to the rural youth context. Discussions with key informants shows that the absences of infrastructural facilities such as electricity and telecom services for digitalized services of extension services, support services such as access to financial services and access to agricultural inputs also discourages youth to be engaged in agriculture.

As a result, most of the rural young people do not view agriculture as an attractive business opportunity. Rather, young people aspire to move out of the community for employment opportunities in the non-farming sectors. This is in line with a paper by Bezu & Holder (2014) that stated that the low interest among the rural youth in agricultural livelihoods coupled with lack of access to farm land forces rural–urban migration of the rural youth in Ethiopia.

4.4.3 Group Leadership

With regards to the roles of survey participants, 35.6% (42 in total) indicated that they serve as group leaders (in executive committees), while the others (76 of them) are regular members (Table 4.16). Out of the 42 group leaders (executive committee), four are women.

Table 4.16: Roles of Smallholder Farmers in FDGs (in % of respondents)

Role/ responsibility of participants in the FDG	Gender of participant		Total	Percent
	Male	Female		
Executive committee (leaders)	38	4	42	35.6
Regular Members	50	26	76	64.4
Total	88	30	118	*100*

Source: Survey (2016)

Executive Committees

All eight focus groups in the study indicated that their FDGs are led or managed by an executive-committee. An executive committee has five to seven farmers, who are also leaders of the 1:5 sub-groups. The committees consist of a chairperson, a secretary, a casher and other members. Executive-committee (ex-com) members are nominated and elected by the general assembly of each FDG, with involvement of DAs and Kebele administrations, based on criteria. The criteria for nomination include: being accepted and respected in the community, able to read and write, and willingness to lead the group.

Ex-com members indicated they have clear roles in the group. That is: the chairperson calls for meetings and does much of the public relations and communication with external organizations, while the secretary takes notes during meetings and compiles reports to be submitted to the DA. The cashier (which some FDGs said do not have) collects and keeps money from DG members and pays out group costs, when needed. The other three or four committee members lead 1:5. sub-groups

It was obvious from the discussions with focus groups that ex-coms are socially and politically influential and that they approve major collective decisions in the group.

An ex-com member highlighted:

> *'We (in the ex-com) endorse members identity cards, and that way we control what is happening in the group and we can easily get hold of bad doers (criminals) (FDG 2016).'*

Executive committees are dominated by men. Women in the ex-coms are mostly 1:5 sub-group leaders, but rarely chair-persons. A farmer in Bassona woreda FGD highlighted on this by emphasizing:

> *'Women have poor participation in leadership in all the (26) FDGs in my kebele, there are only 2 women leaders of 1:5 sub-groups, but no female chairperson nor secretary (FGD 2016)'.*

Focus Group Discussant participants also explained that there is no fixed-service term for the executive-committee members, while they can rotate for the other positions in the ex-com, including for the chairperson position. Ex-com leaders are evaluated every quarter of a year by all DG members (general assembly), and they will be replaced if they do not perform up to the expectation of the group or if the ex-com members personally want to step down from leadership. One ex-com member however expressed his reservation regarding the difficulty of stepping down from the committee saying:

> *'In principle, we can quit leadership when we want, but it is not easy… the group members as well as the DAs question why we want to resign, and we will be made to pay a penalty when leaving (FGD 2016).'*

Group leaders' level of effort (participation)

Executive committee members in the study stated that they meet very often (at least once in a week), depending on the season to discuss and update each other on current affairs in the group. The executive committee meetings are, however, preceded by meetings of the 1:5 sub-groups, that meet more often, (every 3 days or at least once a week).

More so, the 1:5 group leaders meet follower farmers under them informally, as they are in the same neighborhood. The 1:5 leaders visit households under their responsibility with the objective of advising and monitoring if farming is done as per agronomic recommendations of the extension system. One FGD participant shared his meeting experience saying:

'Our general assembly meets the 5th day (religious holiday) of every month while the executive committee meets in two weeks' time and the 1:5 sub-groups meet every Sunday (FGD 2016).'

As expected, findings from the survey show that the level of participation of group leaders in their FDGs is higher than that of the other members as shown in Table 4.17.

Table 4.17: Level of Participation, by Farmers' Role in FDGs (in No. of respondents)

Level of participation	Role in FDG		Total	Percent
	Leaders	Members		
Very low (< 2 hrs/week)	0	2	2	1.7
Low (2-4 hrs/week)	3	18	21	16.9
Medium (4-6 hrs/week)	17	36	53	44.0
High (6-8 hrs/week)	15	16	31	27.1
Very high (> 8 hrs/week)	7	4	11	9.3
Total	42	76	118	100

Source: Survey (2016)

When discussing the work load of ex-com members, an ex-com member in one focus group discussion highlighted:

'*Being in the executive committee is a big responsibility with huge expectation from the members we serve'.*

Another FGD participant stressed that the ex-com members are expected to show, mentor and teach those farmers under them through the 1:5 arrangement. Participants also explained that ex-com members do not have any leisure time as they execute most of the group related activity off-hours and on holidays, not to compromise and affect their own farm work.

An executive committee member said:

'*It is rewarding to see that other farmers learn from us. After the 1:5 arrangement, there is no idle farmer, and the committee has become very busy (FGD 2016).'*

In addition to mentoring other group members, all the FDG executive-committees in each kebele meet at the kebele center and interact, share experience and discuss the performance of each FDG, in the presence of DAs, once in a month. Nevertheless, some ex-com members in the group discussions emphasized, with frustration, that even though they are accountable to their local agriculture office and they are supposed to report directly to the agricultural extension officers-DAs, other non-agriculture sectors like education, health, security and political administration also approach them as an entry point to the community. Hence the group leaders are very busy with non-agriculture activities. To this end, the agricultural extension focus of the groups is very loose and diluted.

Incentives for group leaders

Group leaders (ex-com members) in the survey were asked to single select from a list what rewards they get from serving or leading their DG. Accordingly, most of the group leaders (45.2%) indicated networking with the public extension system, followed by the skills gained through various trainings (33.3%). On the contrary, 16.7% of the executive committee members reported that they do not get any benefit from their leadership roles as in Table 4.18.

Table 4.18: Rewards for FDG Leaders (in % of respondent)

Incentive for leaders	Frequency (n=42)	Percent
Networking	19	45.2
Trainings & information	14	33.3
Economic	2	4.8
No benefit	7	16.7

Source: Survey (2016)

Group leaders' recurrent costs

Executive committee positions are voluntary, and committee members do not get paid for the services they provide to the FDG. They also do not get any financial support to cover recurrent costs, except some instances where the kebele administration or agriculture office provides the committees with stationery supplies. Sometimes the extension system also pays daily allowances when the group leaders travel on duty, far away from their home.

Also, some FGD participants highlighted that they collect cash (from penalties or small group members contributions) which can be used by the ex-coms to cover recurrent operational costs. For instance, in Cheha woreda, discussants stated that they save 5 *Birr*[75] monthly, in microfinance, for covering recurrent costs of their FDG.

Some key informants however indicated that selected FDGs receive external financial support from government or non-government rural programs. A case in point is support from the Agriculture Growth Program for 'innovative' groups.

4.4.4 Model Farmers in FDGs

Focus group discussants describe 'model farmers' as smallholder farmers who adopted and utilized recommended agronomic practices, new technologies, best practices, and innovations introduced by the extension system, earlier than others, and show/demonstrate to other follower farmers.

A discussant highlighted:

> *'A model farmer is one who changed him/herself and others, one who is better than the other farmers, educated, and is a volunteer to teach and* demonstrate to other farmers *(FGD 2016)*'.

Another FGD participant emphasized who a model farmer is as:

> *'One who uses agricultural inputs as recommended by the extension system, prepares the farm land and plants crops at the right time and recommended agronomic practice; feeds his/her family abundantly; takes care of his/her land; and manages and protects his/her crop from animals and other loss (FGD 2016).'*

Discussants indicated that, about 25% of FDG members, on average, are model farmers. Model farmers serve FDG as leaders of the 1:5 sub group in the executive committee and hence one FDG

[75] *Birr* is the Ethiopian currency. One birr is equivalent to 0.03 USD, as of February 2018.

will have at least 5 to 7 model farmers. They also indicated that female model farmers constitute one fifth of the total number of model farmers, on average. Also, most model farmers are formally educated (up to grade 8).

Model farmers are identified and selected by other FDG members and endorsed by the extension system (DAs), together with local governments. Focus group discussants explained that the number of model farmers in FDGs has increased over time. For instance, according to discussants in Bassona woreda, 22 of the 34 members were model farmers at the time of the study, compared to only 6 model farmers when the groups were established in 2008.

More than half (66.7%) of the survey respondent farmers self-reported that they are model farmers. This is not surprising, as most of the participants indicated they are group leaders earlier on. Out of the total model farmers, in the survey, 27% (almost one third) of them are female model farmers (Table 4.19). Model farmers in the survey were asked what makes them different from other follower farmers in the community and all responded that they are different because they work hard, and they have higher agricultural productivity, compared to other farmers.

Table 4.19: Percentage of Model Farmers by Gender (in % of respondents)

Are you a model farmer?	Gender of the participant		Total (n)	Percent
	Male	Female		
Yes	54	20 (27%)	74	66.7
No	30	7	37	33.3
Total	84	27	111	100.0

Source: Survey (2016)

Model farmers in this study underscored that they are very busy with both agriculture and non-agriculture rural development activities. In addition to serving as leaders in the executive committees, model farmers support and help DAs when conducting farm demonstrations and as co-trainers.

Also, a key informant shared his experience that some model farmers buy agricultural inputs for other farmers who could not afford to do so at the time of planting, to be re-reimbursed after harvest. Nonetheless, some model farmers in the discussions, indicated that they face challenges to become, and maintain to be a model to others, as some other farmers are envious of them and a lot is expected from them. At one instance, a frustrated model(lead) farmer also indicated that he counted his efforts to change other 'lazy' farmers as a '*waste of time'*.

In relation to this, a key informant stressed that group leaders (model farmers) spend a lot of unrewarded time and energy advising and mentoring other group members without any incentive/fee.

To elaborate, the informant told a story:

> *'When model farmers are asked about the added responsibility in the group approach… they complain saying 'why do we waste our time working with group members without any incentive? (KII 2016).'*

Discussion and Interpretation

Study findings show that members of FDGs have distinct roles, clear division of tasks group structure and leadership in the group as lead or follower farmers. Having such clear leadership, and organizational structure as well as actions guided and controlled by the collective actors themselves imply success in performance and sustainability of collective actions (Ayer 1997; Stangor *et al.* 2013; Bimber *et al.* 2014;).

From the discussions, it is realized that the group approach has high dependence on model farmers as an engine of agriculture development and the growth and transformation plan of the country.

The study acknowledges that model farmers that serve as group leaders manage huge and diverse expectations in the group and their community. Nevertheless, the high dependence on model farmers is a cause for fear and doubt of the efficiency of the extension system, as distortion from the original message may kick-in and thus compromise the quality of the extension service channeled through model farmers.

Contrary to literature (Lefort 2012; Lemma 2007) that states that model farmers (group leaders) in rural Ethiopia are selected by the local governments, this study found that the group executive-committee model farmers are nominated and elected democratically by the FDGs general assembly, based on certain criteria including their personality trait. Yet, political orientation of the leaders is also assessed.

The study confirms that group leaders have vision, are hopeful, and optimistic. Lead farmers have internal locus of control and thus believe that their actions are effective in obtaining group goals. They are efficacious, they value ideology and power motives, and they participate in group affairs voluntarily, compared to other farmers. Model group leaders work for in-group harmony and social relationships and they sacrifice their personal interests and goals for group goals. Model farmers in the executive committees are relatively better educated compared to others and can demonstrate agricultural practices to other follower farmers. These characters are consistent with descriptions of model farmers by Lemma (2007) as farmers who apply new inputs, have literacy skills, are well accepted by the community, are willing to take and implement advice from DAs, and are opinion leaders.

In the study, it was obvious that the executive committees intermediate between the public agricultural extension (including other rural development interventions) and the farmers they represent. This resonates with Segers *et al.* (2009) reference to group leaders (model farmers) as local development brokers, who 'mobilize' other farmers to participate in rural development. Similarly, Lefort (2012) identified model farmers as the 'upper cluster of smallholder farmers' and the 'engine for agricultural growth'. However, the limited number of female farmers serving in the executive committees implies that female farmers are not equally empowered to hold leadership positions in their communities.

Group leaders or model farmers shoulder huge responsibility of mentoring others to follow suit without any economic incentive or fee. The voluntary executive committee positions do not receive any payment for the service they provide. Voluntarism is an important personality for the benefits and successes of the collective action (Kruijssen *et al.* 2007).

The fact that the executive committee positions are filled by voluntary farmers shows that model farmers can refrain from individually profitable actions, for the sake of the common good. This is an important personality trait for the benefits and successes of the collective action. The rewards group leaders claimed to get from serving their group are networking with the public extension system, and first-hand access to various short-term training opportunities and new technologies. Except few cases, the executive committees do not access any structured external financial support to cover their recurrent costs. Discussions also show that, group leaders are not free to focus their attention on agricultural extension (their core business) but are being pulled in all directions/sectors, including local politics.

More so, because FDG committee members are not properly recognized and supported for playing their role, the study detected some frustration among committee members. The study also sensed some symptoms of burnout among the leaders including anger, loss of energy, loss of satisfaction, and a sense of purposelessness. The absence of a continuous rewarding system will sooner or later demoralize model farmers' performance and affect the sustainability of the collective action (US-DHHS 2005).

While the group leaders' performance is periodically evaluated by the FDG general assembly, it is, however, not clear from the study if the committee members clearly know what quality of performance is expected from them and if their performance is on track. It also seems that evaluation sessions are not used as a forum to give the committee members a chance to discuss their issues and suggest changes, but as fault finding sessions, where consequently, committee members will be told to resign, if not performing up to the expectation of the general assembly.

4.4.5 Decision-Making in FDGs

Survey participants were asked who makes major agricultural extension decisions on behalf of FDG members (on issues like topics to be trained on, what technologies to adopt, when to meet at the kebele for demonstration, what inputs to demand and so on). Consequently, as in Table 4.20, the majority (47%) of the respondents identified that major agricultural extension decisions are made by the public extension officers-DAs, followed by the FDG executive committees (by 32.2% of the respondents).

Table 4.20: Farmers Perception of Who Makes Major Agric. Decisions in. FDGs (in % of respondents)

Agricultural decisions are made by:	Frequency	Percent
Development Agents	55	47.8
Executive Committee	37	32.2
General Assembly	11	9.6
Others	7	6.0
I do not know	5	4.4
Total	115	100

Source: Survey (2016)

While major decisions are made mostly by the public DAs and the ex-coms, 90.6% of the survey participant farmers stated that they are consulted in the planning of agricultural extension interventions in their FDGs. Probably, this should be read with caution as 35% of the survey participants are ex-com members. Nevertheless, 9% and 37% of the farmers rated the transparency level of the group planning and decision-making process as low or only medium, respectively (Table 4.21).

Table 4.21: Survey Participants' Perception of the Transparency Level in Groups (in % of respondents)

Level of transparency in decision-making	Frequency	Percent
Low	11	9.3
Medium	44	37.3
High	32	27.1
Very high	31	26.3
Total	118	100.0

Source: Survey (2016)

Discussion and Interpretation

Despite most of the farmers medium level of participation (about 4 hours in a week) in their FDGs, findings show that farmers are somehow consulted in the planning of local agricultural extension interventions. This shows that efforts are made by the public extension system to inform and aware farmers of decisions taken elsewhere. On the other hand, findings in this study are evidence that the public employed DAs still play a big decision role in the group extension system and farmers are not free to innovate and make vital farming decisions

4.4.6 Collective Actions and Benefits of FDGs

Findings show that FDGs give various collective benefits for its members. Below is the list of benefits:

i. Collective learning

Focus group discussants excitedly stated that they find their FDGs and specifically the 1:5 sub-group arrangements useful institutions at the local level where collective learning and mentoring takes place. FDGs enhances peer- to- peer learning where members learn from each other, and exchange ideas and information informally at any social occasion. Members meet informally and discuss agricultural extension works during coffee ceremonies, on the farm, at community events, and other social gatherings.

Focus group discussants indicate that the lead (model) farmers, who take trainings at the kebele, share and demonstrate what they are trained on for the other five follower farmers under them. Along this line, a group discussant farmer said:

> '*Farmers learn better from other similar farmers. The FDG and 1:5 arrangement creates positive competition and envy among farmers, for greater changes (FGD 2016).'*

ii. Aggregation of demands for agricultural inputs

Key informants explained that FDGs facilitate participatory demand aggregation for agricultural inputs. The process of demand aggregation starts at the individual farmer's household where the family develops annual farm plan (type and amount of input required).

Individual household plans are aggregated at the 1:5 sub-group level and submitted to the DG executive committee. Then, the FDG executive committee compiles the 1:5 plans from the sub-groups into a consolidated one FDG plan. The FDG plan is then submitted through the chairperson to the kebele development committee (composed of kebele chairperson, all DAs in the kebele, farmer representatives, and women and youth representatives) that reviews all submitted FDG plans in the kebele (on average 30 plans). The kebele consolidates all FDG plans into one kebele plan and finally passes it to the woreda administration for approval and action.

Nevertheless, demand aggregation is not straight forward. An informant that was not convinced about the success of participatory demand aggregation in the group stated:

> *'Ideally, the 1:5 sub group members should come together to discuss and compile individual plans into sub-group annual plans that are then rolled into one FDG plan. In some cases, however, frontline extension workers (DAs) have the belief that 'they know what is best for the farmers' and thus will fill in the inputs demand request form, without consulting farmers* (KII 2016).'

Another informant highlighted that there is a huge gap between actual demand (amount, type, time) of individual farmers' and the supply of inputs by the extension system.

The informant exemplified:

> '*In most cases, farmers do not have strong demand for fertilizer due to high cost of fertilizer but still... DAs request for it and farmers are forced to take it* (KII 2016).'

iii. Social networking (social capital*)*

Key informants indicated that groups serve as social platforms for experience sharing and solving common problems among smallholder farmers. Informants believe that being in a group builds confidence of individual farmers and brings behavioral changes for increased use of improved technologies and best practices. FDG members work together on group activities and problems including watershed development and production on communal farm lands.

In view of social capital, an informant said:

> '*When they (smallholder farmers) work together, healthy competition is created encouraging everyone to work harder…not to be left behind (KII 2016).'*

iv. Agricultural trainings, messages and demonstrations

Agricultural messages and short-term trainings delivered by agricultural extension professionals are other collective goods farmers can access through FDGs.

Topics for short-term seasonal or modular trainings [76] are identified and prepared by extension officers at the federal MoA (or from research centers, regional BoA). The trainings and messages are then cascaded from federal- to region to- zone to- woreda to kebele- to FDGs (1:5). Key Informants explained that Training of Trainers (ToT) is given to woreda level experts by the federal MoA and regional BoA experts. The woreda experts in turn conduct training for DAs. Correspondingly, DAs in each kebele deliver trainings to DG leaders and model farmers, who will finally pass the message through the 1:5 arrangements.

Focus group discussant farmers also explained that short-term trainings are given through FDGs at the kebele farmers training centers (FTC) about 4 to 5 times every year, usually during the months of January and May (after harvest before next planting time). Modular trainings topics include: irrigation practices, watershed development, *Belg* and *Meher* crop production before the start of the main cropping seasons. In some cases, woreda experts, together with DAs provide the short-term trainings to model farmers.

In addition to the modular trainings, woreda agricultural experts plan, organize and deliver short trainings of 3 to 7 days to kebele DAs (in some cases together with FDG leaders, who in turn train all FDG members together. The DAs may also provide need based short trainings of up to one day, if demands are expressed from farmers in the kebele.

Key informants also shared the current practice of demonstrations of new technologies that takes place at both FTC and host model farmers' farm by DAs together with lead farmers. In relation to this, an informant stated:

> *'In most cases, DAs and other experts train group leaders (model farmers) at training centers, who in turn passes on the message to other follower farmers on the farmer's plot. This way, model farmers support the other farmers adopt successful extension packages. Sometimes, however, the whole FDG gets trained and participates in demonstrations at FTCs* (KII 2016).'

[76]Modular trainings are seasonal and pre-planned trainings prepared by the then federal MoA.

With regards to the mode of training, the major form of communication is oral presentation by DAs. Key informants highlighted that radios and posters are also sometimes used for reinforcing extension messages to farmers. Messages are also transferred from the DA to model farmers through mobile phones.

A key informant highlighted:

> 'T*he DA is the most important person at the local level to pass messages to FDGs. A DA is supposed to meet with two FDG leaders in a day. The FDG periodic meetings are also used to transfer messages to the whole group* (KII 2016).'

v. *Monitoring and evaluation of group agricultural performances:*

Another important collective action performed by FDGs is monitoring of adoption of agricultural technologies and changes in productivity among FDG members.

On a similar point, a FGD participant (group chairperson) said:

> 'F*DGs are an entry point for involving and checking on farmers in multiple activities in the kebele. We monitor each other by checking who prepared the farm land on time, we monitor input use and adoption of technologies, we assess who wants credit and who can afford to buy agricultural inputs with cash and so on (FGD 2016)'.*

Key informants indicated that monitoring of the status of adoption of technologies and productivity is first undertaken within the sub-groups (at the 1:5 level). The FDG leaders monitor the farms of all other members. The agricultural performance details of each farm household are then reported (orally and written) to respective DAs, by the DG leaders on weekly basis. DAs in turn pass the report to immediate supervisors at woreda office.

An informant elaborated:

'There are regular meeting days between the FDG leaders (Chairpersons) and DAs. DAs contact group leaders periodically, when the group leaders provide feedback to DAs on level of technology adoption by each FDG member (KII 2016).'

Key informants also specified that every quarter of the year teams of monitoring experts from zones and woreda offices of agriculture visit randomly selected representative sample FDGs, using a checklist.

Moreover, federal extension teams monitor adoption annually, through farmers' field days and farmers' festivals. Also, annually, FDG leaders (ex-coms) together with the Public DAs in each kebele, collectively evaluate and rank FDGs performance as 'A' or 'B', based on certain criteria.[77] FDGs that rank an 'A' grade are rewarded with gifts like farm tools that they can use collectively. Individual farmers are also evaluated as: early adopters (model), medium adopters, or laggards, to encourage increased participation.

Nevertheless, some key informants, expressed their dissatisfaction with how monitoring and evaluation is done at the local level. They stated that monitoring and evaluation of agricultural performance is rarely done, data are not reliable, and the feedback mechanism is poor, inconsistent and disorganized.

Informants are also not convinced that one-day events are enough to show the reality for the visiting federal or regional teams.

vi. *Conflict resolution*

Focus group discussant farmers indicated that FDG have informal written by-laws, discussed and endorsed by all group members. By-laws are general about the wellbeing of the neighborhood and are referred to for punishment of members for not complying with the regulatory rules.

[77]The assessment criteria are mainly related to adoption of new technologies, land use efficiency, and high productivity. For instance, group discussants in the Southern region elaborated that those in the 'B' category produce one crop -maize only, while those who rank 'A' produce two times; that is *maize in belg short rains and teff in meher main season.*

Discussants gave examples of rules that needed to be respected like: no excessive drinking of alcohol (A*reke*) and disturbing the neighborhood; and no absenteeism or being late for group meetings and community works. Members who do not comply with the rules of the group are punished (fined cash). However, discussants stated that group by-laws are not properly enforced, and members are not penalized unless they commit a 'big crime'.
A group leader said:

> '*There is a written by-law(rule) for the group…however, members cover(compensate) for each other and there is no need* to follow or enforce the law *(FGD 2016).'*

Focus group discussants indicated that there is no punishment for not participating in the group activities, unlike the earlier times. Instead member farmers are advised to work hard and follow the group rules to be like model farmers.
A discussant elaborated:

> *'We have come to realize that only positive influence in the form of continuous advice is effective, unlike punishment (FGD 2016).'*

Focus group discussants highlighted that most local conflicts are related to unfair or unequal distribution of irrigation water among members, and one's livestock grazing on another farmer's crop field. Another participant stated that disagreements arise more during the rainy season related to floods management where floods upstream passing through erode the farms of other farmers.
Most conflicts or disagreements are resolved by mediation from the 1:5 sub group leaders, executive committees or village elders. One FGD participant reiterated:

> '*Advice is the only solution* … thus the '*Aba Gere' (the chairperson) or ex-com members try to solve problems in the FDG through discussion and consensus (FGD 2016)'.*

Nevertheless, if local conflicts cannot be solved by the FDG leaders, the case is taken to the kebele administration, social court or other formal institution.

Most important collective benefits

The study asked key informants and farmers themselves to rank the collective benefits of FDGs. Key informants were asked to rate benefits farmers get in the FDGs from a given list of benefits, on a five-points Likert scale from the most important to the least important benefits as in Table 4.22. Accordingly, key informants perceive that the most important benefits of FDGs are agricultural extension (training and field demonstration) coverage at scale (55.8% respondents); followed by social benefits (20%), and aggregation of members demand for agricultural inputs (18.9%). The mostly selected least important collective benefit of FDGs are output marketing followed by economic benefits.

Table 4.22: Key Informants' Perception of Benefits of FDGs (in % of respondents)

Scale of importance	Benefits of FDGs				
	Social networking	Extension Trainings & demos.	Economic /income	Inputs demand aggregation	Output marketing
Most important	20.0	55.8	10.3	18.9	8.3
Very important	40.0	32.6	20.5	27.0	11.1
Important	25.0	4.7	25.6	37.8	16.7
Less important	15.0	2.3	25.6	13.5	22.2
Least important	-	4.7	17.9	2.7	41.7
Total	40	43	39	37	36

Source: KII (2016)

However, unlike key informants' perception, almost half of the farmers in the survey (49.4%) indicated that they benefit the most from the social support in the FDG, followed by agricultural extension information from DAs (47.9%). Group marketing was the least important benefit participants enjoyed from joining FDGs as in Table 4.23.

Table 4.23: Farmers' Benefits in FDGs (in % of respondents)

Scale of importance	Participants (%) who selected/ ranked the collective benefits				
	Support to each other	Agricultural extension	Pull resource	Aggregate input demand	Group marketing
Most important	49.4	47.9	16.4	8.3	-
Very important	29.2	33.3	4.9	6.7	-
Important	19.1	16.7	50.8	18.3	8.3
Less important	2.2	2.1	27.9	51.7	31.3
Least important	-	-	-	15.0	60.4
Total	89	96	61	60	48.0

Source: Survey (2016)

Discussion and Interpretation

FDGs are important local institutions that have multiple benefits; socially, economically and politically. Groups have important roles in the participatory agricultural extension system where. they provide agricultural extension services at scale (large coverage) and are especially effective for mobilization purposes.

The FDGs approach has eased communication between farmers and the public extension; group trainings; and aggregation of smallholder farmers' demand for agricultural inputs. FDGs role in collective marketing and commercialization of outputs is however negligible (this is further discussed in the agricultural transformation discussions).

It is evident that FDGs induce behavioral changes among the farming community through farmer-to-farmer extension, where group members encourage each other, share technology and establish a strong social life. The most important arrangement in FDG is the 1:5 sub-groups, where the lead (model) farmer who takes trainings at the kebele FTC demonstrates what he/she is trained on for other 5 farmers.

Smallholder farmers value the social networking in groups, more than the agricultural extension benefits, implying that FDGs strengthen smallholder farmers' social capital and support to each other and increase SHFs access to agricultural inputs by providing them with the opportunity to pull resources (including labor) for agricultural and other purposes.

4.4.7 Who Benefits Most in FDGs?

Key informants were also asked about their perception of who amongst the smallholder farmers (in terms of age, income, education level and gender) benefits the most from the group extension services. As presented in Table 4.24, the majority (50%) of informants stated both old and young farmers benefit equally, while 37% stated the younger farmers benefit more. Similarly, the majority (37%) of the informants said the rich and poor farmers benefit equally, while 32.6% said it is rather the poor farmers who benefit from the group approach.

Again, many of the informants (41.3%) stated that both the educated and illiterate benefit the same way, while 37% of informants reported that it is the educated farmers who benefit more.

Unlike the perceived equality expressed for all other variables, the majority (53.3%) of the informants stated that male farmers benefit more than female farmers from the FDG approach.

Table 4.24: Informants' Perception of who Benefits more from FDGs (in % of respondents)

Benefit by **Age**	**Frequency (n=45)**	**Percent**
Young	17	37.8
Old	5	11.1
Same	23	51.1
Benefit **by income status**	**Frequency**	**Percent**
Rich	13	28.9
Poor	15	33.3
Same	17	37.8
Benefit **by Education level**	**Frequency**	**Percent**
Educated	17	37.8
Illiterate	9	20.0
Same	19	42.2
Benefit by gender	Frequency	Percent
Women	7	15.6
Men	24	53.3
Same	14	31.1

Source: KII (2016)

Discussion and Interpretation

For the study's inquiry about who amongst the smallholder farmers gets the most from the benefits availed in FDGs, it is found that benefits from FDGs are shared along all categories of farmers, except that male farmers benefited more than female farmers.

Nevertheless, it should be noted that previous sections of the study presented mixed responses with regards to benefits of female farmers in FDGs. Some focus group discussants expressed that female farmers in FHHs are given priority in access to inputs; support with agricultural resources and that women are exempted from taking part in group actions that are strenuous. While on the contrary, almost one fourth of the survey respondents are not aware of any special support given to female farmers. Such mixed messages about female farmers benefits in FDGs are indications of the variations among groups and that there is no standard service provision.

4.5 THE PUBLIC EXTENSION SYSTEM

This section seeks to show how study participants perceive and evaluate the group extension approach, compared to the conventional individual extension contact. It also presents the relationship between the formal extension system and the group extension arrangement. The section also discusses the sustainability of the FDG approach.

4.5.1 Efficiency of FDGs

Key informants were asked if they think that the group extension approach is more efficient (maximum impact with minimum effort and expense), compared to the conventional individual house-to-house extension approach. Accordingly, 78% of the key informants affirmed that the collective action approach is more efficient, while 21.7 % doubt the efficiency of the group approach.

Key informants emphasized that FDGs are particularly efficient for mobilization purposes, group works, participatory planning, and environmental and natural resource management works that need collective action. Key informants also explained that the FDG approach has reduced the time spent on house to house agricultural extension visits by extension agents and is efficient in bringing fast social/behavioral change at the community level.

A key informant in favor of the group approach explained:

> '*E*ven though *individual agricultural extension approach is effective in bringing maximum impact at the individual farmers level…, it is expensive and time-consuming Thus, group or collective approach is more efficient to reach many farmers. (KII 2016)'.*

Key informants remarked that unlike the conventional extension agent -to farmer relationship, the FDG approach, that uses farmer-to farmer extension, creates an opportunity for follower farmers to discuss agricultural issues with model farmers. It provides the opportunity for group members to encourage each other, share technology and establish a strong social life. FDGs are useful to disseminate up-to-date information from DAs in an easier and faster manner, and collect urgent feedback from farmers, for immediate action by the DA.

A key informant, who believes that the group extension approach has potentials said:

> *'I have no doubt that the group approach will expedite rural socio-economic development, if well facilitated and supported (KII 2016).'*

Like the key informants' perception, 77.1% of the survey respondents stated that the group extension approach performs better extension service, compared to the individual approach.

Nevertheless, majority of the survey respondent farmers (more than 40%) indicated that the agricultural extension performance of FDGs (in channeling extension services) in the crop sector is better, compared to the other sub-sectors. Consistent to findings on commercialization, many of the respondents indicated that the performance of the group extension for increased market orientation and participation service is the poorest, as in Table 4.25**.**

Table 4.25: Farmers Perception of FDGs Agricultural Extension Performance (in % of respondents)

Performance rate of extension services through FDGs	**Opinion of survey participants on performance of agricultural extension services provided through DGs (%) (n=118)**			
	On Crop	**On Livestock**	**On Natural Resource mgt.**	**On Marketing**
Very good	31.4	17.8	28	14.4
Good	16.9	23.7	16.1	14.4
Average	45.8	48.3	45.8	40.7
Poor	5.1	9.3	8.5	19.5
Very poor	0.8	0.8	1.7	11.0

Source: Survey (2016)

4.5.2 Interaction of the Public Extension System with FDG's

In this study, the contact that FDG's have with the DAs is taken as a proxy to relationship with public extension system. Focus group discussant farmers explained that extension agents or DAs have schedules to meet with the whole FDG members (general assembly) usually once in a month, on a religious holyday[78]. During peak agricultural seasons, meetings usually take place after 3 pm. in the afternoon, when '*the oxen are back from the farm'*. Meeting with the whole general assembly can however also be called by the DA, if urgently needed.

[78]As an Orthodox Christianity religious principle, farmers do not farm or work on a religious holiday including Sunday. They can however perform other community work, including meetings.

A discussant explained:

> '*DAs come and visit us whenever needed or when the group requests their assistance. However, we (the whole FDG) meet at the kebele (FTC) with the DA regularly on the 21st day of each month (a local religious holiday) (FGD 2016)'.*

At the monthly meetings that take place at the FTC, group members discuss and try to find solutions for issues like availability of agriculture inputs, when to plant, how big a land area to cover with which crop type, and the production challenges. On that day, farmers also collectively visit demonstration plots in the FTC, facilitated by the DAs. Nonetheless, participants admitted that the quality of the formal meeting schedules with DAs have deteriorated over time and meetings do not take place as often as before, in some kebeles.

In addition to the general assembly meetings, DAs meet very often with FDG chairpersons and 1:5 group leaders. A key informant explained that a DA meets/ mentors and supports at least two 1:5 DG leaders in a day, who will mentor another 5 to 7 follower farmers.

Work Burden of Development Agents (DAs)

Key Informants were asked if they consider the collective agricultural extension approach has reduced the work burden of extension agents and shifted the burden to model farmers. In view of the question, most of the informants (76.1%) said that the approach has indeed reduced the burden on DAs, while 19.6 % of the respondents did not agree with the statement as in Table 4.26.

Key informants, who perceived a reduced burden for DAs, explained that DAs, in the past, were expected to collect data from individual households and report to the woreda. In the same way, DAs were supposed to go to villages and individual HHs to transfer messages.

Table 4.26: Informants' Perception of the Reduced Burden of DAs (in % of respondents)

FDG approach reduces the burden of DAs	Frequency	Percent
Yes	35	76.1
No	9	19.6
I do not know	2	4.3
Total	46	100.0

Source: KII (2016)

In the collective extension approach, DAs are not expected to work with every individual farm household. Rather the FDG leaders are the ones who move around the village to collect data and transfer messages from DAs to other farmers in the FDG. Similarly, the group leaders assist DAs in conducting on-farm field demonstrations and trainings, where leaders receive and transfer extension messages to their 1:5 sub-group members and host the on-farm demonstrations

Discussion and Interpretation

The overall performance of FDGs in channeling agricultural extension services is average. Nonetheless, FDGs extension performance for the crop sector is better, compared to the other agricultural sub-sectors (livestock, natural resource management and market), while service on market-oriented extension is the poorest extension service provided in all FDGs.

The poor extension performance in commercialization raises questions about the effectiveness of the approach in transforming the subsistence agricultural sector to a market oriented one. This study ascertains that the group approach is efficient in reaching many farmers in a short period of time. This means that group extension maximizes impact with minimum effort and expense, compared to the conventional individual household extension approaches.

Despite that some of the relationships between FDG and DAs lost momentum (in the Oromiya region due to political instability) the study shows that the public agricultural extension system, through DAs, has a big role in the functioning of the FDGs. DAs provide service either for all FDG members collectively or through model farmers. They deliver theoretical trainings and demonstrate agricultural technologies on FTCs and on model farmers plots.

On the other hand, the model farmer approach has minimized or shared the work load of DAs and thus the FDG approach has reduced the technical burden and time constraint of DAs in travelling long distances to serve individual farmers.

4.5.3 Sustainability of FDGs

Key informants were asked if they think that the group approach is sustainable (will continue to exist without support from the public extension system) and the majority (93.3%) of the informants responded negatively.

In connection to the sustainability of the FDG approach, a key informant expressed his worry saying:

> *'For the time being, the group approach helps to extend information and knowledge to non-model farmers. However, there is no guarantee that model farmers will continue to share, as some model farmers do not want to work with lazy farmers (KII 2016).'*

Another key informant indicated that the limited room for individual innovativeness in FDGs affects group sustainability saying:

> *'As they are now, FDGs increase reach to a large farming population by scaling-up the achievement of model farmers… however, there is little scope for innovation within the farmer groups to develop their own problem-solving capacities and address practical and dynamic challenges (KII 2016).'*

Like the perceptions of key informants, some focus group discussants stated that their groups cannot continue to function, without the external support.

The farmers explained that they are not at a stage where they can search and bring new technologies and practices, like what the public agricultural extension is currently doing. Most of the FGD participants, however, expressed their expectation that the FDGs will be sustainable in the future, when farmers are better educated, and better-off with adequate knowledge.

In the future, FGD participants argued, information gaps can be bridged by ICT including radio and mobile phones, in the absence of DAs. In the meantime, however, most of the discussants indicated they need access to continuous refresher trainings and messages as well as introduction to new technologies and link to source of innovations by the public extension system.

Discussion and Interpretation

The perception of different participants of the study on sustainability of FDGs implies that FDGs cannot sustain themselves in their present structure and capacity. In the future, if farming and smallholder farmers are modernized, and use more Information Communication Technology (ICT) for agriculture extension, FDGs will be able to function by themselves.

Sustainability is not a concept embedded in the establishment of the groups. Consequently, there is no platform created for continuous learning and access to information for the farmers, without the public extension system. It is therefore difficult for FDGs to sustain collective activities, if technical assistance is no longer made available from the public extension system. The findings also show that farmers are not encouraged to innovate and make decisions, but rather to copy practices from other model farmers. This however has an impact on sustainability of collective actions

More importantly the fact that the study confirmed that FDGs do not get any external financial support nor do they mobilize internal funds for their agricultural extension work, implies that the extension system has not considered the economic and financial positions of FDGs when the extension groups were organized. Nevertheless, literature stipulates that access to finance from various sources and savings play a very important role in the development and sustainability of collective actions (Birchall & Ketilson 2009).

4.6 AGRICULTURAL TRANSFORMATION IN FDGs

The collective extension system is ultimately expected to contribute to agricultural transformation among the group members and the community by large. This section inquires the transformative potential of FDGs. Agricultural transformation entails increased adoption and intensity of use of new and better farming practices and agricultural technologies; increased agricultural productivity, and commercialization of farming.

Holding the assumption that there are opportunities that could be unleashed by farmers' collective action; this study investigated: the level of adoption and utilization of improved farming practice(s)

and technologies; changes in agricultural productivity; and the extent of commercialization among FDG members.

4.6.1 Effectiveness of FDGs

Key informants were asked about their experience with regards to the effectiveness of FDG extension approach in its contribution to the agricultural transformation process (increased adoption of technologies, productivity, and commercialization). Accordingly, the most effective agricultural transformation performance of FDGs, as perceived by many of the key informants, is facilitation for adoption of agricultural technologies and practices, followed by attaining increases in land and labor productivity. Performance of FDGs in achieving agricultural commercialization comes last, as in Table 4.27.

Table 4.27: Key Informants' Perception of FDG's Effectiveness (in % of respondents)

Scale of performance	Contribution to factors of Agricultural transformation (in % of respondents)		
	Adoption	**Productivity**	**Commercialization**
Effective	93.4	65.2	19.1
Indifferent	4.3	23.9	14.3
Ineffective	2.2	10.8	65.5
Total (n=46)	100	100	100

Source: KII (2016)

An informant justified that value-addition on agricultural products is very poor in rural areas and agricultural market chains are too complex for smallholders in FDGs to address.

4.6.2 Access to, and Adoption of Agricultural Messages and Technologies

The study probed farmers level of adoption and intensity of use for the extension trainings messages, advice and agricultural technologies they were introduced to, since they joined their FDG.

Agricultural messages received and adopted

Many (80.7%) of the survey respondent farmers recalled that they received trainings and messages on chemical fertilizer and pesticide use for crop production. Also, 71.9% received training on recommended agronomic practices, as in Table 4.28. However, participants admitted that they did

not apply all the trainings and messages they received. The most applied message, in proportion to the number of those who received the message, was on the use of improved seeds (96.7 %), followed by use of chemical fertilizer. For the other messages including agronomic practices and organic fertilizer preparation, only half or less of those who received the trainings or messages applied it on their farm. Post-harvest messages were the least adopted.

Table 4.28: Trainings and Messages Received and Adopted on Crop Production (in % of respondents)

Major types of message received on crop production	who received message (%) (n=118)	who applied message (%) (n=118)	Proportion (%) of those who applied message out of those who received the message
Improved seeds	49.1	47.5	96.7
Chemical fertilizer use	80.7	48.3	59.8
Organic fertilizer use	59.6	30.5	51.2
Agronomic practices	71.9	32.2	44.8
Post-harvest tools	22.8	9.3	40.8

Source: Survey (2016)

Like the crop related trainings, survey participants recalled that they have received livestock related trainings and messages over the years, mostly on livestock management (74.6% of the respondents) as in Table 4.29.

Table 4.29: Trainings and Messages Received and Adopted on Livestock (in % of respondents)

Major types of advice, message and trainings received on Livestock production	Who received message (%) (n=108)	Who applied message (%) (n=108)	Proportion (%) of those who applied message out of those who received the message
Animal feed preparation	39	33.1	84
New breeds of animals (AI)	39	29.7	76
Livestock management (Care, housing, health)	74.6	41.5	55

Source: Survey (2016)

Again, not all survey participant farmers who received trainings, messages and advice on livestock production and management adopted the technologies. The most adopted livestock production related message, in proportion to the number of those who had access to the message, is the message on animal feed preparation.

Access to agricultural technologies/inputs and adoption

Farmers' level of adoption and intensity of use of technologies or inputs ultimately depends on access to the technology, in addition to messages and trainings on technology. Along this line, all the eight focus group discussants were asked to reflect on the agricultural technologies and practices introduced to FDGs, over the last five production years (2010-2015). Accordingly, discussant farmers recalled that they were exposed to technologies on: preparation and application of organic fertilizer (compost), row/line planting, new improved seed varieties for wheat, malt barley and t*eff* (kuncho variety) crops, new vegetable seedlings, Artificial Insemination (AI) service for hybrid dairy cows, new sheep (*doppler* and *bonga*) breeds, *borena* cattle breed for fattening, poultry management, as well as livestock forage production, and animal feed preparation.

Focus group discussants explained that they access seeds and fertilizer through farmers cooperatives in the woreda. Information on the supply of inputs is provided to FDG members through their executive committees, when the planting season is about to start. FDG members will then buy inputs. However, if farmers cannot afford to buy inputs with cash, DG executive committees will request microfinance institutions to provide farmers with credit. Along this line, farmers explained that even though they avoid taking credit, accessing credit (from the rural saving and credit cooperatives) either as a member of FDG or as another group member was not difficult.

Focus group discussants also indicated that despite their increased demand for improved technologies, including seeds, fertilizer, irrigation water, and improved animal breeds over time, the growing shortage and difficulty to access agricultural technologies are major constraints in adoption and intensity of use of agricultural technology.

Farmers expressed, with frustration, that the supply of agricultural inputs in the kebele has never been enough for all farmers to buy. They complained that the 'government' has not been able to cater for farmers' demand adequately. Thus, most farmers indicated that they have lost their trust in the input supply system and that they are discouraged from submitting their annual demand/request for inputs.

Along the supply of inputs, a discussant stated:

> *'Supply and access to improved varieties of seeds has never been enough, even after individual demands are assembled and submitted to the concerned office. Moreover, even when inputs are available, they are expensive for us to buy (FGD 2016).'*

Survey results show that most participants (44.9% respondents for crops and 57.6% for livestock) self-rated their level of adoption and use of improved agricultural technologies medium over the past two seasons, as in Table 4.30. Farmers reported they have better access (in 42.4% cases) to crop technologies and practices (seeds, fertilizer and chemicals), compared to livestock technologies (AI, medication, new breeds) (in 36.4% of the cases). Also, in some cases farmers reported higher levels of adoption, compared to their access to technologies, especially for crops.

Table 4.30: Farmers Report on Access to, Adoption and use of Agricultural Technologies (in % of respondents)

Levels of access to and adoption of technology	**Participants (%) who have access to and who adopted new technologies and inputs**			
	Crop technology (n=118)		**Livestock technology(n=118)**	
	Access	**Adoption**	**Access**	**Adoption**
Very high (>5 tech.)	18.6	19.5	1.7	3.4
High (4 tech)	42.4	31.4	36.4	25.4
Medium (3 tech.)	33.1	44.9	44.9	57.6
Low (2 tech.)	5.1	4.2	12.7	9.3
Very low (1 tech.)	0.8	-	4.2	4.2

Source: Survey (2016)

4.6.3 Productivity of Crop, Livestock and Labor in FDGs

Focus group discussant farmers were asked to reflect on their total agricultural production and productivity for the major crops and livestock, over the years since joining FDGs.

i. Crop and livestock productivity

Discussants in all focus groups indicated that crop yields have indeed increased from year to year over the past three to five years (2010-2015). Discussants also expressed their conviction that productivity of land has increased because farmers (through the FDG support) started to plough the land properly (right depth and frequency), drain excess water from the soil, and exercise planting in lines(rows).

For instance, FGD participants from Cheha woreda stated that production has increased over the last few years especially for new potato varieties *(gudene and belete).* Women FGD participants in Cheha woreda also indicated that they are organized to work on a communal land separately, in a women-only group, and they have grown *teff* by themselves in 2014 and 2015, contributing to the increased total *teff* production in the woreda.

A female FGD participant elaborated:

> *'Production and productivity for cereals has especially improved over time. This is possible because farmers' groups have contributed to farmers learning from each other. Groups facilitated access to communal farm lands,*[79] *and access a rented tractor for 1,500 Birr/hectare to plough the communal land (FGD 2016).*'

Farmers in Bossona woreda elaborated that they now use row planting, and improved seeds as they have witnessed the benefits from model farmers. Again, because farmers observed the importance of new crop varieties (like for durum wheat), seed multiplication farmer groups are rising in number.

The increases in total production and productivity are manifested in various ways. FGD participants in Cheha said, they have seen positive changes in their livelihood including, diversity of food consumed at home, and houses with grass roofs now changed to corrugated iron.

A FGD participant in Cheha woreda elaborated:

> '*Because of increased potato production, farmers are now able to eat and sell potato throughout the year (FGD 2016).'*

[79]Participants in Cheha woreda explained that the kebele is allocated a communal land for FDG members, for one cropping season depending on farmers' interest and capacity to grow perennial crops (either teff or maize on the 'communal land', while they grow enset, coffee, chat, *godere* (cassava) on their individual farm. This is said to be a new initiative in the woreda.

Focus group discussants in Oromiya woredas also confirmed that production of crops and productivity of land has increased where changes in livelihoods are manifested by households being able to get food throughout the year, to buy extra cloth for family members, and to educate their children (pay school fees for children).

Nonetheless, some FGD participants remarked that production and productivity has lately been challenged by the dry climate conditions and the soaring price of inputs, especially for fertilizer.

Survey participant farmers were asked to rate the increased productivity they claim to have achieved in 2015 compared to 2010 for both crops and livestock products. Accordingly, the majority of the respondents rated the level of productivity increase for both crop (in 44% of cases) and livestock (in 62.7% of respondents) as medium, while 26.3% of the survey participants stated their rates of crop productivity mainly has increased very high (more than 30 %), and few (3.4 %) of the respondents indicated a very high livestock productivity increase (as in Table 4.31).

Table 4.31: Farmers' Perception of Increased Productivity rate (in % of respondents)

Rate of increased yield (productivity) compared to prior FDG	**Participants (%) who had increased productivity in:**	
	Crops (n=118)	*Livestock (n=118)*
Very high (above 30%)	26.3	3.4
High (20-30%)	28.8	23.7
Medium (10-20%)	44.1	62.7
Low (5-10%)	0.8	6.8
Very low (below 5%)	-	3.4

Source: Survey (2016)

As shown in the table above, more than 98 % and 88 % of survey participants reported an increase above 10 % for crops and livestock, respectively. Thus, with 2010 as a reference year, agricultural productivity has progressively increased among group members above 10 % on average by 2015 in the study areas. The average annual productivity of vegetables reported by farmers (potato as proxy) was however higher. On average, it has increased by 20 % from 50 quintals per hectare in 2010 to 60 quintals per hectare in 2015.

Survey participants were also asked if they would continue to adopt and invest in new/improved agricultural technologies and practices in the future to increase agricultural productivity. To this

effect, 99% and 82% of the participants responded affirmatively for crop and livestock productivity increase, respectively.

ii. Labor productivity

Focus groups were asked to discuss the usefulness and relevance of groups for enhancing the skills and knowledge of members. Accordingly, farmers explained that FDGs have enabled them to learn new ways of farming, use their labor efficiently and appreciate the value of farm-land.

Discussants indicated that the trainings and agricultural messages channeled through their FDGs are useful, relevant and skill enhancing while discussants in Bassona woreda stated that group members use labor intensively by farming together (locally called *'Debo')* on each of the 1:5 sub-group members. FDG members also highlighted that the increased competition among members has contributed to the overall increase in labor productivity and production

Nevertheless, some FGD participants (mainly female farmers) complained that most schedules for skill enhancing trainings do not consider farmers free times and are scheduled when they are busy. Some FGD participants also expressed their concern regarding the quality of the trainings they get.

A FGD participant elaborated saying:

> 'T*he 'quick' nature of the training we get on new practices cannot be considered as proper trainings but rather as awareness creation, and most of the time we forget the message (FDG 2016)'.*

Another participant also expressed his disappointment in the cascaded trainings saying:

> '*First hand trainings from researchers and woreda experts should not only be for model farmers, but for all* (FDG 2016).'

Key informants expressed similar concerns. They elaborated that agricultural extension trainings are top-down regardless of the farmer's character like gender, age, and agro-ecology. Trainings are general, not related to specific tasks of farmers and the technical capacity of DAs to provide skills training to farmers is doubtful. Trainings are also mostly classroom based, with little room for practical demonstration on farmer's conditions. Moreover, farmers rarely get written hand-outs

and guidebooks to use for future reference. Yet, even if reference material is provided, it is mostly not at the level farmers can read and easily understand.

Key informants also indicated that agricultural technologies are demonstrated both at the FTCs and model farmers' plots for big groups of farmers at one time. Moreover, once trainings are delivered, impacts of the trainings are not assessed or followed up, to check if farmers have captured the message. Some key informants also expressed their fear that the cascading approach for trainings may result in dilution of information and problems of inconsistency.

Survey participant farmers were asked about the nature of the trainings delivered through FDGs. Specifically, they were asked who provides the trainings, where trainings are held and if all theoretical training sessions were followed by practical demonstrations. In view of this, as in Table 4.32, the majority (89.8%) of the survey participants indicated that trainings are delivered mostly by DAs together with model farmers. Almost all respondents indicated that trainings and field demonstrations take place at FTCs.

Table 4.32: Farmers' Perception of the Trainings Delivered to them (in % of respondents)

Who delivers **the trainings?**	Frequency	Percent
DAs with model farmers	106	89.8
Model farmer(s)	7	5.9
Other agriculture experts	4	3.4
Total(n)	117	100
Are trainings followed by practical demonstration?		
Yes, mostly	67	56.8
Yes, but sometimes	50	42.4
Total (n)	117	100
Where are trainings and demonstrations held?		
At FTC	115	97.5
At model farmers plot	3	2.5
Total(n)	118	100.0
Are trainings useful?		
Very useful	101	85.6
Not useful	15	14.4
Total (n)	116	100

Source: Survey (2016)

More than half (56.8%) of the survey participants indicated that theoretical class room trainings are most of the time followed by practical demonstrations in the FTC, while the remaining participants stated that practical sessions are held only sometimes. To sum up, more than 85% of the survey participant farmers reported that the trainings they received were helpful and instrumental in enhancing their labor productivity, while on the contrary, almost 15% of the survey participants stated that the trainings they received through the FDGs were not useful.

4.6.3 Agricultural Commercialization in FDGs

Commercialization, as the third attribute of agricultural transformation, was discussed with farmers in the focus groups. Commercialization of farmers is seen from two ways. One is the market orientation of the farmers, and second is the actual participation level of smallholder farmers in agricultural output markets.

Specifically, focus groups discussed how agricultural output is aggregated and how market access is facilitated through the FDGs; if there are temporal changes in the quality of production and quantity of portion of product taken to the market.

From the discussions with farmers, it was evident that there is little specialization in farmers production. Discussants also admitted that they do not focus on the quality of product. Moreover, farmers take to the market whatever surplus production they have, after satisfying household consumption.

In general, farmers grow crops for home consumption, for seed purposes, and last for the market. Discussants highlighted that even within the crop sector, they grow cereals predominantly for home consumption and pulses for both home consumption and market purposes. Thus, commercialization comes not by design but due to increased productivity and production stated

A FGD participant explained:

> *'Currently, we produce more than the household consumption. Thus, we take the surplus for the market (FGD 2016).'*

Unlike other collective activities, FGD participants explained that they sell their output independently, as decisions to sell (what amount, where and when to sell varies from house to house. Discussants from one of the focus groups also mentioned that they have experience of marketing collectively in the 1:5 arrangement, though not always. When discussing why DG members do not aggregate their product for sale, a participant elaborated, saying:

> *'We sell our product individually to cooperatives or woreda market (town) when we are in need for cash money. … Because we demand money at different times, we cannot aggregate our product for sale in the FDG (FGD 2016).'*

Nevertheless, although farmers individually sell their product, the FGD members recalled that they had several discussions on market information for their products among group members. In most cases farmers sell their agricultural products to woreda farmers cooperatives, which in turn searches for market linkages.

Output Market Orientation and Participation

Market orientation of survey participants was captured in this study as proxy to farmers consideration to agricultural product quality when producing. The proportion of total produce taken to the market was on the other hand taken as proxy for output market participation. In view of this, most of the survey participant farmers rated their level of market orientation for both crops and livestock production as medium. Participants however showed better (higher) market orientation and participation for crops compared to livestock, as in Table 4.33

Table 4.33: Farmers Market Orientation & Participation (in % of respondents)

Level for market orientation quality & (participation- quantity)	**Market Orientation & Participation**			
	Crop (n=106)		**Livestock (n=106)**	
	Quantity	Quality	Quantity	Quality
Very high (> 20%)	23.9	23.1	4.2	3.4
High (15-20%)	27.4	16.2	17.1	17.1
Medium (10 – 15%)	35.9	47.0	56.4	55.6
Low (5-10%)	2.6	3.4	6.8	7.7
Very low (< 5 %)	0.9	0.9	6.0	6.8

Source: Survey (2016)

While the proportion of produce farmers take to the market is small, the survey revealed that almost 90% of the farmers market (sell) their agricultural product, mostly crops. Above half of these farmers indicated that they sell their product at the woreda market center, which is wider in size, compared to the kebele market (Table 4.34).

Table 4.34: Survey Participants' location for output marketing (in % of respondents)

Location of market	Farmers preferred market center (%)	
	Crop (n=117)	Livestock (n=116)
Local/village (at kebele)	29.1	23.3
Woreda market	59.0	63.8
Regional market	1.7	1.7
Do not take to market	9.4	10.3

Source: Survey (2016)

This could be because the kebeles in the study are near the woreda market center. The proportion of total crop production the farmers take to the market is however small, on average 18% of their crop produced. Nevertheless, the majority (84.5%) of the survey participants who sell their produce indicated that they make profits and are satisfied with the market.

Discussion and Interpretation

Access to farm land

Like in many parts of Ethiopia, farm land is an important asset and factor of production in the study areas. The average rainfed farm-land holding of farmers in this study, 1.5 hectare, is not very different from the national average farm size, that was 1.37 in 2013(CSA-WB 2013).

Access to improved agricultural technologies and inputs

Smallholder farmers in the study area are exposed to various new and improved crop and livestock technologies and practices over the years, since the establishment of FDGs. However, farmers' access to agricultural technologies and inputs is gloomy. There also exists visible frustration and disappointment among farmers with the inability of the government extension system to adequately cater farmer's requests for agricultural inputs.

The current practice whereby technologies are first introduced to and repeatedly tried out with better performing FDGs and model farmers (hosting farmers) has created some concern among

farmers who believe that few FDGs and model farmers are more preferred or even favored by the extension system. The fact that only few model farmers get full attention by the public extension system has however demoralized other non-selected farmers. Thus, converging all attention on few model farmers over burdens the favored group/model farmer but also encourages unhealthy relationships and jealousy among farmers.

Technology adoption

The findings on farmers demand, adoption and intensity of use of improved technologies shows a positive trend, amidst inadequate access to technology. Adoption and intensity of use of crop technologies is better, compared to livestock technologies.

The study findings indicate that the continuous monitoring and supervision of adoption for agricultural technologies within the FDGs and the feed-back system at the local level encourages adoption and intense use of technologies. However, it was also evident that access to technology and inputs was not the only factor for limited adoption of technology, as not all farmers who had access to technology and training adopted.

Some farmers (model farmers) are early adopters, where others are laggards and others never adopted. Moreover, smallholder farmers adopt technologies after they do their own assessment and when they are convinced that it will increase their total production

Agricultural Productivity

Despite the overall increase in agricultural productivity, it is evident from the findings that crop productivity performed better than the livestock productivity (estimated for cow milk (litter) per cow per day, number of eggs per hen per day, and number of born animals per household in a year). The average productivity for crops is computed based on the recall data collected from survey respondents. Despite the high degree of variance, missing data and inconsistency of measurement, the average crop productivity in the study areas has increased over the years since establishment of FDGs by 10 to 20% in 2014/2015 compared to 2010, depending on the crop type.

The claimed crop productivity increase was from land intensification through adoption of fertilizer and high yielding seed varieties as well as irrigation. Another explanation for the overall increase in production and productivity of farmers is attributed to increases in labor productivity. The correlation analysis of this study (presented in the next section) also shows that the crop productivity is positively related to the level of participation in FDGs. Despite the difficulty of securing figures for each FDG, the change in crop productivity in the study area resonates with the national estimates for the years in discussion, as shown in Table 4.35**.**

Table 4. 35: Cultivated Land Area, Crop Output, and Productivity, Nationally (2008-2015)

Crop productivity	2008	2009	2010	2011	2012	2013	2014	2015
Cultivated area in millions of hectares.	11.3	11.6	11.9	12.3	12.6	12.8	12.9	12.6
Crops[80] produced in millions of quintals	186.1	198.7	215.5	246.4	258.9	291.6	319.7	254.6
Crop productivity in quintals per hectare	16.4	17.1	18	20	20.5	23.1	25.5	20.2

Source: CSA annual reports (2008-2015) adopted from Bachewe et al. (2015) & NPC 2016

Although all productivity increases cannot be attributed to FDGs, the national trend in crop productivity demonstrates improvements over the years since FDGs are initiated, with an average annual crop productivity of 17.5%. The total area cultivated in 2015 is 11.5% higher compared to 2008 while total output in 2015 is 36% higher than 2008. Thus, productivity of crops has grown consistently and rapidly over the years since the establishment of FDGs. Bachewe *et al.* (2015) indicates that labor and land productivity and use of improved inputs (especially chemical fertilizer) were important factors that contributed to the productivity growth.

Trainings to improve labor productivity

Theoretical trainings and agricultural messages are delivered for farmers mainly by the public extension system officers. From the discussions around trainings and learning in this study, it is obvious that FDGs involvement in technology generation and verification (research) is limited.

[80]Crops include: cereals, pulses, oilseeds, vegetables, root crops, and fruit crops

Enough time and attention are also not given for farmers' learning process. More so, training methods are uniform and top-down regardless of the trainee's (farmer) characteristics

The cascading approach for agricultural trainings and messages that starts from the public agricultural extension system to the local and individual farmers level is not clean from dilution and inconsistency of information. The capacity of some DAs (and model farmers supporting DAs) to provide skills training is also questioned. More so, the fact that few FDGs and model farmers are always chosen to receive initial (first hand) trainings from researchers and experts made other members complain, implies the need for increased use of innovative training approaches (like video and radios) to standardize messages for a bigger number of farmers to receive the first-hand training or message at the same time. Notwithstanding the reservations regarding the quality of agricultural trainings, farmers do however benefit from new and refresher agricultural trainings and messages. The benefits are manifested in the improved farmers work ethics behavior and increased labor productivity.

The study also confirms that FTCs are important local institutions for gathering farmers to undertake trainings and field demonstrations. In addition to skill trainings, it is my conviction that the 'healthy competition' among FDG members, to produce the same (and more) as the model farmers will ultimately lead to increased labor productivity. This claim, however must be further studied.

Output Commercialization

Commercialization in Ethiopia is traditionally understood as participation in the market and not necessarily as being market oriented when producing. This study tried to capture both orientation and participation.

Market orientation: The market related support FDG members get from the extension system are: information on what to produce, market price and where to sell the marketable product. The findings show limited specialization in production, with smallholders growing diverse crop types and raring diverse livestock. Farmers do not target certain clients, nor do they focus on quality of products for the market but are concerned about quantity of food produced for

consumption. Farmers sell what is surplus after taking and storing what they need for household consumption and seeds for next planting. For instance, grain crops in the study area are mainly produced for home consumption but also for seed and last for market purposes. Moreover, findings show that group members find it difficult to aggregate their product for collective marketing. Rather, FDG members market decisions vary and they sell their agricultural output independently. This implies that FDGs miss-out of the gains from collective marketing.

Market participation: The finding that a significant number (90%) of the farmers in this study participate in marketing implies that smallholders' increased productivity led households to produce more than required consumption and engage in marketing of their surplus product. Farmers surplus produce, however, accounts for less than 20% of their produce.

This is consistent with the ERHS report[81] on crop (cereal) disposition pattern in Ethiopia that showed 60 to 80% of crop produced nationally is consumed by the producers, while sales account only 10 to 20% of crop production CSA-WB (2013). Thus, although agricultural yields grew in the period since the establishment of FDGs, much of the agricultural output is consumed by the producers and smallholders are not only small-scale producers but also small-scale market participants.

4.7 FINDINGS OF THE CORRELATION ANALYSIS

This section presents and discusses the findings of the Spearman's correlation analysis, run in the study to explore the potential relations between independent variables and the variables of agricultural transformation. However, only statistically significant relations at $p< 0.05$ or 95% confidence level are presented. The definition of the variables used in the correlation analysis and their level of measurement was provided at the end of chapter 3.

[81]The Ethiopian Rural Household Survey (ERHS) report is collected by the CSA every five years. The recent survey was done in 2013.

4.7.1 Level of Participation in FDGs

A positive correlation is observed between the farmers' gender and the level of participation in FDGs, r_s= 0.209, p=0.023, as shown in Table 4.36**.** This indicates that male farmers participate significantly more compared to female farmers in FDGs. This finding is consistent to what farmers in focus group discussions and key informants in the study indicated.

Table 4.36: Correlation Between Participation in FDGs and Gender of Participant

Dependent Variable: Level of Participation in FDGs			
Predictor Variable	**Correlation (rs)**	**P-Value**	**n**
Gender	0.209*	0.023	118

* Correlation is significant at the 0.05 level (2-tailed)

4.7.2 Access to Extension Services

A medium and positive linear relation is observed between the level of participation in FDGs as well as being a model farmer and access to extension services, r_s= 0.324, p= .000 and, r_s= 0.331, p= 000, respectively. However, access to extension services are inversely related to the income status and family size of farmers, r_s= -0.183, p= 0.048 and r_s= -0.221, p= 0.016, respectively, as in Table 4.37.

Table 4.37: Correlation Between Access to Agricultural Extension Support and Predictor Variables

Dependent Variable: Access to extension services through FDG			
Predictor Variables:	Correlation (rs)	P-Value	n
Income status	- 0.183*	0.048	118
Family size	- 0.221*	0.016	118
Participation in FDG	0.324**	0.000	118
Model farmer	0.331**	0.000	118

*Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

4.7.3 Access to Agricultural Technology/Inputs

As shown in Table 4.38, there is a positive linear relation between access to improved crop and livestock technologies and access to extension services and participation in FDGs. This implies that the more the farmers participate in the DG actions and the more extension support DG members get, their access to agricultural technologies and inputs also increases.

A strong relation is observed between access to technology and access to extension services for crops, r_s=0.617, P=0.000. Access to crop technologies is, however, negatively related to family size indicating that the bigger the family size, the lesser the family accesses technology.

Access to crop technology is also inversely related to age of the farmer and land size. This implies that the older the age and the bigger their plot of land, farmers have problems to access crop technologies. Moreover, access to livestock technology is positively related to the gender of the survey participants, indicating that female farmers have less access to livestock technology, compared to men.

Table 4.38: Correlation Between Access to Technologies and Predictor Variables

Dependent Variable:	***Access to new/improved Ag. technologies & Inputs***					
Predictor Variables:	***Crop Inputs***			***Livestock Inputs***		
	Correlation (rs)	P-Value	n	Correlation (rs)	P-Value	N
Family size	-0.238*	.009	118	-	-	-
Age	-0.196*	.033	118			
Land size	-0.197*	.042	106	-	-	-
Gender	-	-	-	0.215*	.019	118
Extension service	0.617**	.000	118	0.268**	.003	118
Participation in DG	0.428**	.000	118	0.373**	.000	118
Access to crop (fodder) technology	-	-	-	0.384**	.000	118
Model farmer	0.365**	.000	118	-	-	-

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

4.7.4 Adoption of Agriculture Technology

The results of the correlation analysis reveal that there is a strong and positive linear relationship between adoption of crop technologies and access to extension support, and access to crop technology, r_s= 0.518, p= 0.000 and r_s= 0.722, p= .000, respectively. Adoption of crop technology is also positively related to the model farmer status, and level of participation in FDGs, r_s= 0.423, p=.000, r_s= 0.264, p= 0.004, respectively. Similarly, there is a strong linear relationship between adoption of livestock technology and access to livestock technology, r_s=0 .542**, p= .000 as shown in Table 4.39.

Farm land size is, however, negatively correlated to adoption of crop technology (r_s = -0.196, p=0.045). This implies that farmers with larger farm land tend to non-adopt crop technologies. This is consistent with the negative correlation between land size and access to crop technology.

Table 4.39: Correlation Between Adoption of Technology and Predictor Variables

Dependent Variable:	***Adoption of new/improved technologies***					
Predictor Variables:	***Crop technologies***			***Livestock technologies***		
	Correlation (rs)	P-Value	n	Correlation (rs)	P-Value	n
Model farmer	0.423**	.000	118	-	-	-
Extension support	0.518**	.000	118			
Farm land size	-0.196*	.045	106	-		
Participation in DG	0.264**	.004	118	-	-	-
Access to crop tech.	0.722**	.000	118			
Access to LS tech.	-	-	-	0.542**	.000	118

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

4.7.5 Productivity

As expected, there is a strong linear relationship between crop productivity and access to agricultural extension services, access to crop technology, and adoption of crop technologies. Likewise, there is a positive and strong positive relation between livestock productivity and access to and adoption of livestock technologies, as shown in Table 4.40.

Table 4.40: Correlation Between Productivity and Predictor Variables

Dependent Variable: Agricultural Productivity						
Predictor Variables:	***Crop***			***Livestock***		
	Correlation(rs)	P-Value	N	Correlation (rs)	P-Value	N
Family size	- 0.229*	.013	118	-	-	-
Model farmer	0.243**	.008	118	-	-	-
Extension support	0.608**	.000	118	0.183*	.047	118
Participation in DG	0.432**	.000	118	0.254**	.105	118
Access to crop techno	0.719**	.000	118	-	-	-
Access to LS tech.	0.241**	.009	118	0.514**	.000	118
Adoption of crop techno	0.545**	.000	118	-	-	-
Adoption of LS techno	-	-		0.484**	.000	118
Crop(fodder) productivity	-	-		0.305*	.001	118

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

A positive linear relation is also observed between productivity of both crop and livestock and participation levels in FDGs**.** Moreover, a positive relation is observed between crop productivity and livestock productivity, showing the complementarity of the two sectors. There is however a negative relation between crop productivity and family size, r_s= -0.229, p=013, indicating that farmers with bigger family size invest less on crop productivity. This is consistent across the other correlation findings of the study that showed a negative relation between family size and access to extension services, and crop technology.

4.7.6 Commercialization

Crop market

As presented in Table 4.41 a strong positive relation is observed between commercialization of crops and access to crop technology, adoption of crop technology and crop productivity. The proportion of crop that farmers take to the market (proxy for market participation) is positively related to the extension support, participation in FDG, and being a model farmer. Market participation for crops is also inversely correlated to family size, r_s= -0.255, p=.006, implying that households with bigger family size consume most of the product and take a smaller portion of their product to the market.

Table 4.41: Correlation between Crop Commercialization and predictor variables

Dependent Variable: **Commercialization of Crop products**						
Predictor Variables:	***Crop- market participation (quantity)***			***Crop- market orientation (quality)***		
	Correlation (rs)	P-Value	n	Correlation (rs)	P-Value	N
Family size	- 0.255**	.006	117	-	-	-
Model farmer	0.219*	.018	117	0.190*	.040	117
Age	-	-	-	-0.220*	.017	117
Extension support	0.388**	.000	117	0.444**	.000	117
Participation in DG	0.424**	.000	117	0.398**	.000	117
Access to crop techno	0.607**	.000	117	0.598**	.000	117
Adoption of crop techno	0.597**	.000	117	0.583**	.000	117
Crop productivity	0.569**	.000	117	0.645**	.000	117
Crop quantity	-			0.828**	.000	117
LS quantity	-			0.317**	.001	117
LS quality	-			0.418**	.000	117

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

The study also finds farmers orientation towards quality is negatively corelated with the age of farmers, implying that older farmers are less market oriented (care less about the quality of product). A strong relationship is observed between market orientation (quality) and market participation (quantity) for crops (r_s= 0.828, p=.000), confirming that market orientation translates into market participation.

Livestock Sales

Like the crop sub-sector, the correlation results reveal that there is negative linear relationship between commercialization of livestock products and family size, while there is a positive relation between commercialization of livestock and land size, access to and adoption of livestock technology and livestock productivity. Commercialization of livestock is also related to participation in FDG as in Table 4.42.

Table 4.42: Correlation Between LS Commercialization and Predictor variables

Dependent Variable: **Commercialization of Livestock products**						
Predictor Variables:	***Market participation Livestock- quantity***			***Market orientation Livestock - quality***		
	Correlation (rs)	P-Value	N	Correlation (rs)	P-Value	N
Family size	- 0.255**	.006	117	-0.197*	.033	117
Land Size	0.237*	.015	105	0.303**	.002	105
Extension support	-	-	-	0.223*	.016	117
Participation in DG	0.247*	.007	117	0.235**	.011	117
Access to crop techno	0.203*	.006	117	0.237*	.010	117
Access to LS techno	0.396**	.000	117	0.410**	.000	117
Adoption of crop techno	-	-	-	0.201*	.030	117
Adoption of LS techno	0.516**	.000	117	0.456**	.000	117
LS Productivity	0.450**	.000	117	0.405**	.000	117
Crop productivity	-	-	-	0.290**	.001	117
Crop (fodder) quantity	0.392**	.000	117	0.360**	.000	117
Crop(fodder) quality	0.317**	.001	117	0.418**	.000	117
LS quantity	-	-	-	0.719**	.000	117

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

There is a positive relation between orientation for livestock quality and extension support, while no significant relationship is observed between livestock market quantity and extension support**.**

This implies that quality in livestock production can be influenced by extension, but not the total amount of marketed livestock product.

There is a positive relationship between livestock market orientation and access to and adoption of crop technology and crop productivity, again confirming the complementarity between the two sectors. Commercialization in crops is also positively related to livestock commercialization. Thus, improved access to animal forage (crop) and crop by-products for the livestock feed increases the livestock productivity and commercialization.

Discussion and Interpretation

The strongest correlations in this study occurred between market orientation and market participation for crops (r_s=0.828, p=.000); access to crop technology and adoption (rs=0.722, p= .000); access to crop technology and productivity increase in crop (rs =0.719, p=.000); and market orientation for livestock and participation in livestock market (rs=0.719, p=.000). This is closely followed by strong correlations between increased crop productivity and market orientation for crops (rs=0.645, p=000); access to extension services and access to crop technology (rs=0.617, p=.000); access to extension services and crop productivity (rs=0.608, p=000); and access to crop technology and market participation for crops (rs=0.607, p=000).

Wealth Status

Significant but smallest or weakest correlation effects in this study occurred between income status of farmers and access to extension service (r_s= -0.183, p=.048). Though weak, a negative relation between access to extension services and income status of farmers implies the probability that relatively wealthier or better-off farmers accessed extension services and adopted technologies earlier than the relatively poorer ones. However, as time goes by and many other farmers adopt the technology, the earlier adopters (wealthier farmers) sustain themselves and can possibly diminish their interest (increase their dissatisfaction) to participate and access extension services from the public/collective source.

Consequently, wealthier farmers marginal productivity does not increase as much as that of the relatively poorer farmers. This finding is consistent to a study by Tefera and Jaleta (2006) that

observed a negative relationship between participation in extension programs and wealth status of farmers. Similarly, an earlier study by Bandiera and Rasul (2006) found an inverse relationship between networking and adoption suggesting that social or collective action effects are positive when there are few adopters in the network, and negative when there are many adopters.

Education Level

The education level of survey participants was captured in the study because education attainment was expected to be an important determinant in the adoption to technology and productivity of farmers. However, in this study, education level of participants does not have any statistically significant correlation (at 0.05 levels) neither with participation level of farmers in collective actions, nor any of the agricultural transformation variables. This is unlike earlier study findings that showed that level of education is positively associated with an individual's sense of efficacy for decision-making to participate in a collective action (Kelly & Breinglinger 2002).

Participation in FDGs

The correlation analysis reveals a positive linear relation between level of participation in the FDG and the extension services accessed through FDGs; access to new technologies; crop productivity, commercialization of crops and productivity of livestock (increase in animal by-products). This implies that smallholder farmers who participate and network more in FDGs have better access to agricultural technology and inputs and thus they are more productive. The result on correlation of networking and adoption and productivity resonates with earlier findings that studied returns to social networks (Isham 2002; Fachamps & Minten 2002)

The consistent and positive relation observed between crop productivity and livestock productivity, indicating high complementarity between the two sectors, is evidence that increased crop productivity means increased feed or fodder for the livestock. The synergy that exists in agriculture is also an indication for the importance of the mixed and diversified agriculture production, where crops can feed the animals and animal manure can provide nutrients for the crops, and the farmers can add value to their production with a more holistic approach.

The complementarity between the two sectors: crops and livestock, was also revealed by Bezabih *et al.* (2016) who indicated that the number of livestock units in a household is a positive and significant determinant of crop productivity, indicating the crucial role of the oxen as a source of draught power.

Access to Technology and Extension Service

The correlation results imply that strengthening access to crop technologies and improving extension services though FDGs is critical for the adoption, productivity increases and commercialization of smallholder farmers. Similarly, the positive relation between adoption of agricultural technologies and access to extension support channeled through the FDGs proves the instrumental role played by the agricultural extension system in the process of creating awareness about new technologies for better adoption.

The finding that the adoption and intensity of use of agricultural technologies are positively related to access to the technology resonates with earlier studies (Geta *et al.* 2006; Adugna *et al.* 2006; Bandiera & Rasul 2006) that showed that farmers more likely decide to adopt a new technology, when they have access to the technology and when they are well informed about the technology to be adopted. Also, the findings are consistent with earlier studies that showed that access to inputs and extension services plays a big role in the agricultural transformation process of smallholder farmers (Marenya & Barrett 2007; Gebremedhin *et al*. 2009; Asfaw *et al.* 2011).

Despite the positive and strong relationship between access to and adoption of livestock technologies and livestock productivity, the weak relationship observed between access to extension service and livestock productivity (r_s= 0.183, p=0.047) and no significant relationship between extension services and quantity of livestock implies that extension service has limited contribution to increases in livestock productivity, compared to crops. This confirms that the Ethiopian extension system is crop dominated and that extension contributes little to transformation of the livestock sector. It also indicates that the extension system should work more on availing livestock improvement technology to increase productivity of livestock.

Female and Young Farmers

The lower participation of female farmers in the FDGs and lower access to livestock technologies for female participants as well as lower may in turn mean that female farmers have less access to inputs, adoption, and consequently limited productivity. This is consistent with gender studies in smallholder agriculture (Regassa *et al.* 2013; Agullar *et al.* 2015) that found that female farmers in Ethiopia receive less and lower quality extension services and that female headed households use less of improved technologies, and thus are less productive compared to men farmers. This shows the need to work in enhancing female farmers productivity.

Additionally, age of farmers is inversely related to their market orientation, where the youth are better in understanding complex value-chains, value additions, and quality business compared to the older farmers. This finding is like that of a recent impact study of agricultural interventions on the rural youth, by the Ethiopian Development Research Institute (EDRI 2017), that indicated that commercialization in youth headed households was more than the older headed households.

Land Plot Size

Although weak, an inverse relationship between farm size and access to crop technology and adoption confirms that smallholder farmers with small farm lands are still important resources in the process of agricultural transformation and that larger farm size is associated with lower productivity per hectare.

The possible explanation for this is that smallholder farmers with smaller plots, compared to farmers with bigger land tend to adopt and use inputs, including farm labor, more intensively and efficiently, because they operate to achieve a level of survival. This is consistent with a study by Bezabih *et al.* (2016) that showed negative relationship between land size and productivity, caused by low input intensity and constraints to inputs use on larger plots.

Family Size

Turning to the family size variable, a negative linier relationship is observed between family size and access to extension, technologies, adoption of technology, productivity, and commercialization in crops and livestock. As smallholder farmers depend and employ family labor

for agricultural purposes, family size should have been related positively. To understand this correlation, it is therefore important to understand the composition of the family.

The possible explanation in the case of this study is that big family size means more dependent population (below the age of 15 and above 64) rather than supply of active agricultural labor. Adugna *et al.* (2006) indicated that adoption and technology use are related to family size positively only if active family labor is available. Along this line, official reports (CSA-WB 2013) indicated that the dependency ratio in rural Ethiopia is about 105 %.

Also, according to the Ethiopia Demographic and Health Survey report of the CSA (CSA 2016), 47% of the hundred million population of Ethiopia is under the age of 15. This negative relationship between family size and agricultural transformation attributes implies the need to expanding family planning services for smallholder households.

4.8 CONCLUSION

This chapter, with seven sections, was the main portion of the thesis. It was the chapter where the study findings generated from the qualitative and quantitative data set are presented, discussed, triangulated, and interpreted. By doing so, the chapter provided answers to the research questions and fulfilled the objectives of the study.

The qualitative findings were illustrated and discussed using narratives and quotes, while the quantitative findings were presented using tables, frequencies, percentages, correlation coefficients and statistical significance values.

The second section of the chapter presented the demographic and socioeconomic descriptions of the study participants (Key Informants, Focus Group Discussants and Individual survey respondents). Key informants are agricultural extension experts who directly or indirectly know about FDGs. On the other hand, focus group discussants and survey participants are male and female farmers who are members of FDGs in the natural setting.

Then, the third section discussed the genesis of FDGs in Ethiopia. Specifically, the section presented the perceptions of key informants and farmers about the drivers for the establishment of the farmer groups, and smallholder farmers' motives for joining the groups. Findings showed that farmers' groups establishment was rolled-out by the government circa 2008. Groups were established based on neighborhood arrangements, geographic proximity of households, and social networks, but not on 'common interest' of farmers, as stated in official document. Group establishment has since then been influenced and controlled by government employed extension agents.

Key informants perceived that individual farmers are motivated by the need for access to agricultural extension services (goal motive) when deciding their participation in FDGs. Smallholder farmers who participated in the study, however, stated that their main motive, both in terms of expectation and value for joining in FDGs, is social incentive (social motive). The study thus showed the miss-match between the perceived motive by facilitators and the actual weight assigned for the different motives of farmers to join a FDG.

The fourth section deliberated on FDGs dynamics including members' roles, participation, benefits and leadership. The findings indicated that female farmers' (especially married women) level of participation in FDGs is lower compared to other categories of the community. Possible reasons for low representation and participation of female farmers are social norms and low levels of female farmers' awareness about the benefits of FDGs.

The section also provided discussion on the comparison between women-only and mixed groups for improved female farmers' participation and benefit. There, the issue should not be about women-only group or mixed group, but rather about understanding their needs and giving them equal attention in whichever group they are in.

The findings also showed that young farmers representation in the FDGs is low. The possible explanation for under representation of the youth is the exclusiveness of the FDG membership criteria, where the landless youth cannot join.

With regards to benefits of FDGs, smallholder farmers in the groups collectively benefit from social networks, collective learning, and aggregation of their input demands. Groups provide farmers with the opportunity of pulling resources (including labor) together for agricultural and other purposes. Benefits of FDGs are shared along all members of farmers, except that male farmers benefited more than female farmers from the benefits availed in FDGs.

Discussions on the leadership of FDGs showed that the groups are managed by an executive committee of five to seven volunteer model farmers who are also leaders of the 1:5 sub-groups. Leaders are selected based on criteria in a democratic and participatory process. Executive committee membership is dominated by men (more so for the chairperson positions). Executive committee members play important extension and other social roles in the group, including conflict resolution. Nevertheless, the study detected some frustration among committee members because they are not properly recognized nor payed for the service they provide for their work.

The fifth section discussed the efficiency of the agricultural extension services provided through FDGs. The group extension approach is indeed efficient with regards to reaching a big number of farmers with minimum effort and expense, compared to the conventional individual house-to-house extension approach, and especially for mobilization purposes. Nevertheless, the group approach cannot continue to exist without support from the public extension system. This is because smallholder farmers are still not at a stage where they can search and source new technologies and practices by themselves.

The sixth section was about FDGs contribution to the agricultural transformation process of Ethiopia. These attributes for transformation are: adoption of agricultural technologies and practices; land and labor productivity changes, and commercialization (market orientation and participation in the market). Accordingly, the findings indicated that FDGs are effective in facilitating adoption of agricultural technologies, messages and practices, and consequently attaining increases in land and labor productivity.

Smallholder farmers' level of adoption and intensity of use of technologies however depends on access to the technology. However, it was evident that farmers were challenged by shortages in access to agricultural technologies.

The findings show that crop yields (especially cereals) have indeed increased from year to year over the past five to seven years since establishment of FDGs. The productivity increases in the livestock sector are however moderate. Improvements in total production and productivity manifested in the livelihood changes among farmers. Changes included, diversity in food consumed at home, being able to get food throughout the year, modern house and children's education being paid. With regards to commercialization, there is limited specialization in farmers production and farmers market orientation is limited as they focus little on quality.

The findings on market participation, in terms of the proportion of produce farmers take to the market, showed that majority of the farmers have limited participation in markets (less than 20% of crop produce taken to market). The FDG members trade their surplus agricultural product individually, after satisfying their household consumption. Thus, FDGs have limited contribution to commercial transformation of smallholders

Finally, the last section presented and discussed the statistically significant findings from the Spermans' correlation analysis of the study. Findings show that there is significant relationship between level of participation in FDGs and the two agricultural transformation attributes, technology adoption and productivity.

Relatively wealthier families and those with bigger family size, however, have less access to agricultural extension services and they participate less in the market. Female farmers participate less and have lesser access to technology compared to men.

The next chapter presents the main conclusions derived from the discussions so far and the policy implications of the findings. The chapter will also provide some recommendations.

CHAPTER 5:

TOWARDS TRANSFORMATIVE FARMERS' DEVELOPMENT GROUPS: CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The preceding chapters presented the theoretical framework of the study, the methodology used in undertaking the research, and the empirical findings of the study. The interpretations and theoretical implications of the study findings were also presented and discussed in chapter four, in view of addressing the research objectives and research questions.

This final chapter of the thesis presents the main conclusions and policy implications of the findings. The chapter also proposes some policy and practical recommendations. At the end, the chapter will highlight some issues that need further research.

5.2 CONCLUSIONS, POLICY IMPLICATIONS AND RECOMENDATIONS

This section discusses the main conclusions, policy implications and recommendations drawn from the study findings.

5.2.1 Conclusions and Policy Implications

Main conclusions and policy implications drawn from the study findings are categorized under five headings below, based on the objectives and research questions of the study.

i. FDGs are not motivated by common interest

The first conclusion from the study is that membership in FDGs is motivated by social cohesion triggered by geographic proximity, unlike policy makers rhetoric use of the term 'common interest' as justification for formation of FDGs.

The assumption for the existence of 'common interest' is misleading, as all group members are not homogeneous and thus do not have common opinion nor interest about agricultural extension

services the whole agricultural transformation narrative. Collective culture and social identity, thus best, explain why collective actions exist in developmental states or state-led interventions. Nevertheless, the neighborhood relations among FDG members does not guarantee specialized agricultural extension communication, as it entangles with social relations and local politics.

ii. FDGs have exclusive membership

The second conclusion is that the FDGs membership is exclusive of residents who do not own farm land. With increasing rural population and landlessness, the exclusive membership of FDDGs, exacerbates the marginalization of the landless. Making land ownership as a pre-condition for farmers to join extension groups discriminates against the rural landless youth who can contribute and benefit along the agricultural value chains.

Similarly, though female farmers gain from the social capital and learning in groups, their participation level is low, compared to male farmers. Married female farmers are particularly underrepresented in FDGs. These imply the existence of gender disparity in the group extension system. Thus, the narrative that collective actions create opportunities for female farmers to organize, innovate, invest and become economically self-sufficient, is not realized across all categories of rural women. Nonetheless, it is not evident that female farmers are better-off in mixed or women-only extension groups.

iii. FDGs are overdependent on model farmers and extension agents

The third conclusion is that the collective extension system hugely depends on success of 'model farmers', that refrain from individually profitable actions, for the sake of the common good. Model farmers, and especially those serving in executive committees, are burdened with both agricultural and non-agricultural group activities. They serve as leaders of groups and are expected to share their knowledge, political orientation and resource with other group members voluntarily. Nevertheless, the fact that the model farmer leaders receive limited recognition and appreciation from group members and no financial support to cover recurrent costs for group services primes to frustration, threatening the group extension model.

On the other hand, FDG's performance depend largely on government employed DAs, who have ultimate decision-making power and control over group affairs, including farmers input decisions. The dependence on DAs makes it difficult for farmers' groups to operate independently and nurture their group leadership and management capacity. High involvement of extension agents in the decision-making and function of FDGs contradicts with the principles of 'participatory' agricultural extension system. Such involvement of the government also leads to farmers vulnerability to political manipulation.

iv. FDGs are not transformative

The forth conclusion of the study is that FDGs do not guarantee widescale smallholders' commercialization.

Collective actions encourage informal exchange of ideas, information sharing, as well as group learning and mentoring and co-influencing. They strengthen smallholder farmers' social capital and support systems. They also improve smallholder farmers' access to agricultural inputs by providing members with the opportunity of pulling resources (mostly labor). Consequently, agricultural performance of FDG members has improved after joining FDGs onwards. FDGs members have adopted and increased their intensity of use of agricultural technologies and practices. In turn, this has led to increases in farm productivity. Positive changes in the livelihoods of smallholders are manifested by farm households being able to diversify food and nutrition throughout the year, purchase new cloth frequently, modernize their house and pay for their children's education. Nevertheless, the nature of the changes brought by collective actions is not transformative, but rather survivalist.

As production increases due to use of technologies, food supplies to the market should have become stable and food prices should have decreases. Also, farmers income should have continuously increased, as they operate farms commercially, selling a substantial portion of their output, specializing in production, investing on the farm, purchasing commercial inputs including hired labor. At macro level, the domestic and export agricultural markets should have modernized as farmers add quality and value on the commodity produced. Regrettably, these features are far from reality for FDGs in the study.

Performance of FDGs in generating incomes from agricultural commercialization is limited, as the smallholders still consume a large (80 percent) proportion of their produce. FDG members have inadequate market orientation, and no interest and skill in aggregation and bulking of outputs for the market. Thus, except the claim that FDGs bring about widescale adoption of agricultural technology and productivity increase, groups have not significantly improved commercialization and incomes of large number of smallholder farmers.

v. FDGs are not sustainable

Finally, it is unlikely that FDGs will sustain, given the poorly embedded sustainability features like: limited financial, management and monitoring skills of executive members; lack of continuous learning opportunities, poor direct linkage to innovation sources for group members; huge dependency on model farmers and DAs, poor appreciation for group by-laws, and lack of fund-raising mechanisms for group operation costs.

The FDG extension approach that depends on extending and scaling best practices of model farmers does not encourage, problem solving skill, dynamism and self-innovativeness among smallholder farmers. The approach limits individual farmers from questioning and experimenting, but rather adopt and promote technologies only channeled through the system. FDGs members innovativeness is further restricted by their limited access to sources of innovation like ICT, media, publications, universities and research centers. All these have implications on the sustainability of the approach.

5.3.2 Policy and Practical Recommendations

Ensuring participation and benefit of big numbers of smallholder farmers in agricultural extension, with minimum public cost, is a challenge for poor agrarian nations. To this effect, the importance of FDGs for channeling extension services to large numbers of farmers in Ethiopia with minimum cost is undisputable. Nevertheless, FDGs are constrained from releasing their transformative potential, due to a cocktail of complex issues discussed in the other sections.

Based on the conclusions and policy implications drawn from the study findings, a set of five recommendations are forwarded for action by the agricultural extension policy makers and practitioners in Ethiopia. The recommendations can be taken as a whole, and be used strategically

to challenge the status and functions of FDGs, which currently do not fully conform with the attributes of agricultural transformation.

i. Reconsider the design of FDGs

Individual smallholders in a collective action should identify with other farmers in the group for successful collective actions. The policy implications of the study on what motivates farmers to collaborate in collective actions suggest the need to revisit and refine the group formation approach. Findings suggest that promoting shared identity and celebrating collective identity in group membership can generate valuable resources for local agricultural transformation. Accordingly, FDGs should be encouraged to re-organize on basis of their social identity. Renewed conceptions and celebrations of local identity, social relationships, and countywide organizational cooperation should be channeled and nurtured in FDGs for transforming the subsistence nature of agriculture.

Smallholder farmers should also be able to freely decide to join collective actions and be equally free to leave the group and act individually, based on rules. For this to materialize, the extension system should however develop a menu of extension service options that equally cater for both individual farmers and those organized in collective action groups.

More so, despite the importance of DA's 'facilitation' role in group formation and operation, it is imperative that facilitators take for granted that common interest always exists among farmers. Rather, the public extension system should minimize its interference in individual farmers decision making to join and participate in the FDGs and promote social identity as a tool to build community clusters that are eager to transform their agriculture.

ii. Ensure the representation and participation of the landless youth and female farmers in FDGs

Organizing the rural youth in FDGs is an effective long-term strategy for building the human and social capital in rural communities. Moreover, successful agricultural extension groups that are

inclusive of the landless rural youth help demonstrate that agriculture is a rewarding career for the youth and give the youth a chance to make a difference in the future of agriculture transformation. Despite the vivid decline in the interest of the rural youth in the agriculture sector and high rural-urban migration, there are however young farmers who still want to, or are forced to, remain in the sector because of limited job opportunity in the other sectors of the economy. Thus, encouraging young farmers to stay in agriculture and participate in FDGs can reduce dissatisfaction of the rural youth.

On the other hand, engaging the landless rural youth in farmers' groups introduces modern agricultural technologies whilst also helping the youth learn from traditional and indigenous tools of addressing agricultural challenges. It is also evident that engagement of young farmers in groups is advantageous, as the youth will bridge the digital literacy gaps in the group and help harness their potential skills in agribusiness. Assuring youth engagement in agricultural extension groups helps to reduce the growing problems of 'ageing farmers' and rural youth unemployment but is also crucial for the socio-political stability and sustainability of interventions in agriculture (Bezu & Holden 2014; FAO 2014).

This said, the study findings suggest the need for policy makers to explore for a meaningful and productive engagements of the landless rural youth as legitimate clients in FDGs. Strategies may include quotas for youth's participation, allocation of land for the youth on rent basis, and positive media messages to inform young farmers about the value of agricultural value-chains.

The other underrepresented farmers in FDGs are married women in their own rights. The participation level of women from FHHs is also low. The study had a mixed result in identifying the best option of increasing female farmers participation in collective agricultural extension. Logically speaking, the issue should not be about organizing female farmers in a woman-only group or mixed group. Rather it should be about giving both male and female farmers equal attention and service in whichever group they are in. Improvement in the representation and participation level of female farmers needs understanding of the problems and needs of female farmers and continuous support and commitment from the extension system, the community and the FDG leaders for the empowerment of rural women and gender equality.

At the time of the field work, it was noted that female farmers (both married and heads of FHHs) are being organized in women-only DGs, facilitated by the Women and Children Affairs office (instead of the agriculture office). It will therefore be important for future studies to investigate how different the women-only FDGs perform compared to the mixed FDGs, in terms of empowering and benefiting female farmers' agricultural extension needs, and especially that of married women.

Nevertheless, for more participation of female farmers (in MHHs and FHHs) in FDGs, time and labor-saving interventions that release their time from reproductive roles into community roles should be aggressively rolled-out. Group facilitators and FDG executive committee members should also be guided by policy frameworks that are sensitive to the needs and interests of female farmers in agricultural extension.

iii. Empower and motivate group leaders

The composition, design, structure and dynamics in a given collective action group are important features in defining the performance and sustainability of the group. For farmer group leaders to play their extension service provision roles effectively and to fulfil their voluntary commitments, they should be closely supported, motivated and empowered by the public extension system.

In the long run, farmers' groups should also be able to function with the least support from the public extension system. Thus, while the public extension system gradually displays less involvement in group affairs, it should prepare group leaders to manage the groups and effectively undertake their responsibility. For this to happen, a skilled human resource base should first be developed among the model farmers.

Given the vast and vital extension roles played by the executive committees (model farmers), committee members need 'soft' technical capacity and skill building support from the public agricultural extension system, to enable the group leaders to undertake their responsibility effectively. The capacity building needs observed in this study are on: managing groups, mobilization of internal funds, leadership, documentation, facilitation, record keeping, gender issues, and communication and networking. Again, regular reinforcement and recognition to

volunteers is proven to motivate volunteers to feel useful. The volunteer committee members need recognition and rewards for their efforts and outstanding services.

Group leaders should get the right and up-to-date information for them to make informed decisions for the group. Model farmers serving in the executive committees also need to be allowed to focus their attention on agricultural extension rather than being pulled in different directions. Especially, group leaders need not entangle in local politics, to gain respect in their extension work.
Additionally, the study maintains that executive committees should be able to cover their recurrent/ operational costs from the group. To solve the financial constraints, FDGs should be able to mobilize resources and funds internally through: group savings, membership fees and fees for some specialized services.

iv. Encourage collective output marketing

The FDGs, as they are currently organized, miss out on the opportunity of collective or aggregate marketing to enhance commercial transformation.

A successful agricultural transformation occurs when agriculture becomes a viable business and not just a means of livelihood for the farmer. Thus, farmers shift from highly subsistence-oriented production towards market-oriented production is necessary (Seckler 1993; Jaiteh 2008). For this to happen, the extension system should exert more effort to learn and promote the values of group marketing and bulking among FDGs for increased market participation in some selected, location specific agricultural commodities.

The public extension system structures together with the group executive committees should also be encouraged to look for establishing sustainable market linkages for the FDGs. Although complex, FDGs should be able to address and engage in value-addition for the market and higher market chains (for both inputs and outputs).

v. Invest in the sustainability of FDGs

It is evident that global moves towards agricultural transformation have been backed by state driven policies. Public agricultural extension services are especially quite important in developing nations, where the farming communities are mostly resource poor, illiterate, have little access to other information sources and providers are non-existent. However, the prevailing huge government's intervention in the extension system is a paradox to the vision for free and participatory farmers engagement.

The main investment goal of the public extension system should, therefore, be the empowerment of smallholder farmers. It is important that the public extension system views FDGs as active seekers and processors of agricultural knowledge and technology, and that FDGs aspire to bring change to their members and the community. Towards this, below are some specific sustainability features that the public extension system should pursue:

Ensure alignment with a bigger transformation plan/picture: Each FDGs should be aware of its importance, contribution and responsibility in the local and national agricultural transformation process. Thus, FDGs should be assisted by the public extension system to align their group annual agricultural plans with the vision of the kebele, woreda and beyond.

Promote local innovations: The public extension system should promote innovativeness of group members and strengthen learning from local innovations to solve localized problems. More so, FDGs members should be facilitated to get linked directly to sources of innovation like training centers, universities, and research centers in the vicinity.

Avail agricultural inputs: Successful agricultural transformation should be backed by provision of key agricultural inputs and advisory service. Thus, for agricultural transformation to take place, the nation should work on provision of adequate, climate smart and affordable agricultural technologies and inputs to smallholders. Due attention should be given to ensure that groups have access to the right agricultural technology at the right time to increase technology adoption, productivity and commercialization.

Encourage participatory by-laws and guideline: Strong group governance is critical for sustainability of groups. When designed in a participatory manner and enforced, group by-laws are important for healthy group dynamics and support the group leaders to consistently and sustainably administer membership, operation, roles, responsibilities and leadership in the FDGs. To this effect, FDGs should have tailored group by-laws and operational guidelines. The extension system should facilitate the review of existing group by-laws or the design of new consultative and progressive group by-laws. The by-laws should also ensure proper enforcement and effective operation of the group activities.

Encourage digital communication: Transparent, standard and effective communication among group members and with the public extension system is important. Use of digital communication is useful for standardization of messages/trainings cascaded with in the groups. Incidentally, use of communication technology like mobile phones, local radio and videos should be further encouraged in extension, subject to the literacy level and cost of the technology.

Ensure effective trainings: Farmers disapproval of the way trainings are designed and cascaded, the 'q*uick'* nature of trainings, the exclusivity of first-hand/original trainings, and the way trainings are scheduled without considering the free times of all farmers are issues that need consideration. The impacts of the cascaded trainings should also be systematically assessed to check if farmers have captured what they were trained on

Integrate family planning: Given the inverse relationship between family size and agricultural transformation, the extension system should coordinate with responsible institutions to use the FDGs as an entry point to mainstream population, family planning and reproductive health issues in agricultural production and provide services for smallholder households.

5.3 ISSUES FOR FURTHER RESEARCH

This study generates knowledge and discussion points on smallholder farmers' collective actions, in relation to agricultural transformation. The major underpinning of the whole study is an interest to unleash agricultural transformation potential of farmers' collective actions. The conclusions and

recommendations from the study are expected to initiate further dialog on the transformative potential of farmers' group extension approaches.

As part of the dialogue, it is however important to further research on the transformative potential of women-only development groups and how to meaningfully engage the landless youth in agricultural transformation efforts. Moreover, it is valuable to have further investigations as to how to achieve effective commercialization of smallholders at a larger scale, through farmers' groups.

It is also due time that a systematic and wider impact evaluation study of the Ethiopian participatory agricultural extension system in general, and farmers' development groups, in particular, is undertaken to measure the gains of the collective approach over the conventional household extension approach.

Finally, agricultural transformation is a process. It is my conviction that even though smallholder farmers and their collective actions exhibit challenges that limit their transformative potential, the challenges are not static. I uphold the argument that: farmers' collective actions are valuable tools to reach the big numbers of smallholder farmers; the challenges in collective actions can be solved with proper policy directions and that farmers' extension groups can be shaped into a useful instrument for the envisaged agricultural transformation of Ethiopia.

GLOSSARY OF TERMS

Below are some of the commonly used terms in the thesis and how they are used in the study.

Access to technology: is the availability of the demanded agricultural technology or input

Adoption of technology: is the acceptance and intensity of use of the training messages and agricultural (crop and livestock) technologies, practices and inputs.

Agriculture transformation: is a process of changes in the subsistence agricultural sector through the adoption of technology, productivity increase and commercialization. Transformation increases the livelihoods and incomes of smallholder farmers and ultimately a nation.

Agrarian reform: is land redistribution in favor of smallholders, with the goal of correcting social injustice. It implies interventions in local power relations. is interchangeably used with the term land reform.

Agricultural extension services: encompasses a broader definition and function of providing advice, information, training and linkage for smallholder farmers to enable farmers adopt technologies and consequently increase their productivity and commercialization.

Agricultural Productivity: is the agricultural output produced for a given level of agriculture input(s). In this study it is the total crop produced per unit of land and crop produced per unit of adult farm labor. In the absence of structured data, the current study dwells only on trends in crop productivity (yield), and livestock productivity as (total livestock yield like daily milk, as proxy).

Collective action: is the aggregation of two or more individuals' actions based on a collective decision. The concept in this study is mostly used in the context of smallholder farmers' groups and their action for agricultural transformation.

Commercialization: refers to the process when subsistence-oriented farmers start to produce primarily for the market (for both domestic and export markets) and increase their incomes from sale of agricultural commodities.

Kebele: is the smallest administrative unit in Ethiopia with 3500 persons on average.

Participation levels: as the amount of input (time/frequency, money and labor) allocated for the group action as members of the group or as leaders in the group.

Smallholder farmers: are male and female farmers living in a rural village conducting agricultural production activities (crop production, livestock husbandry and agro-forestry) and owning land of variable size with average land holding size of less than two hectares.

Social (collective) identity: is the feeling that group members have towards the groups they belong

Woreda is an administrative division of Ethiopia equivalent to a district, managed by a local government. A woreda is composed of several kebeles, which are the smallest units of local government.

REFERENCES

Aalen, L. and Tronvoll, K. 2009. The End of Democracy? Curtailing Political and Civil Rights in Ethiopia. *Review of African Political Economy* 36:120-193. Available at: doi: 10.1080/03056240903065067.

Abbaszadeh, M., Mohammad, N. and Saadati, M. 2010. Explanation of Influential Factors in Citizen's Social Participation. *Journal of Applied Sociology,* 39(3).

Adnew, B. and Abadi, Z. 2011. *Researching Women's Collective Action: Ethiopia Report*. GB: Oxfam.

Adugna T., Demeke, M. and Emana, B. 2006. Determinants of Fertilizer Adoption in Ethiopia: The Case of Major Cereal Producing Areas. In: *Commercialization of Ethiopian Agriculture.* Proceedings of the 8th Annual Conference of the Agricultural Economics Society of Ethiopia, edited by Wale, E., G/Michael D., Emana, B., and Woldehanna, T. Addis Ababa.

Adugna, T. 2010. Ethiopia's Agriculture Sector Policy Investment Framework. MoA (Power point presentation), Addis Ababa.

Adugna, T. 2015. *The Performances and Challenges of Growth and Transformation Plan I in Ethiopia: The Case of Economic Growth and Social Development*, Part I. Available at: http://www.aigaforum.com/article1/First-GTP-economic-growth-challenges.pdf.

Aguilar, A., Carranza, E., Goldstein, M., Kilic, T. and Oseni, G. 2015. Decomposition of Gender Differentials in Agricultural Productivity in Ethiopia. *Agricultural Economics,* 46(3).

Alliance for a Green Revolution in Africa (AGRA). 2013. *Africa Agriculture Status Report: Focus on Staple Crops.* Nairobi.

Ambaye, D.W. 2012. Land Rights in Ethiopia: Ownership, Equity, and Liberty in Land Use Rights. Peer Reviewed Paper, FIG Working Week 2012. Rome, Italy. Available at: http://www.fig.net/resources/proceedings.

Ambaye, D.W. 2015. *Land Rights and Expropriation in Ethiopia*. Doctoral thesis. Stockholm: Royal Institute of Technology.

Asfaw, S., Shiferaw, B., Simtowe, F. and Hagos, M. 2011. Agricultural Technology Adoption, Seed access Constraints and Commercialization in Ethiopia. *Journal of Development and Agricultural Economics*, 3(9):436-447.

Assefa, T. (ed.) 2008. *Digest of Ethiopia's National Policies, Strategies and Programs*. Addis Ababa: Forum for Social Studies.

Ayer, H.W. 1997. Grassroots Collective Action: Agricultural Opportunities. *Journal of Agricultural and Resource Economics,* 22(1):1-11.

Bachewe, F.N. 2009. *The State of Subsistence Agriculture in Ethiopia*: *Sources of Output Growth and Agricultural Inefficiency*. The University of Minnesota. Available at: http://hdl.handle.net/11299/54278.

Bachewe, F.N., Berhane, G., Minten, B. and Taffesse, A.S. 2015. *Agricultural Growth in Ethiopia (2004-2014): Evidence and Drivers*. ESSP Working Paper, Addis Ababa: IFPRI.

Bandiera, O. and Rasul, I. 2006. Social Networks and Technology Adoption in Northern Mozambique. *Economics Journal.* 116: 869-902. Available at: https://pdfs.semanticsscholar.org.

Barbour, R. 2008. *Doing Focus Groups*. London: Sage Publications.

Bartlett, J.E., Kotrlik, J.W. and Higgins, C.C. 2001. Organizational Research: Determining Appropriate Sample Size in Survey Research. *Information Technology, Learning, and Performance Journal*, 19: 43-50.

Baye, T.G. 2013. Peasants, Land Reform and Property Right in Ethiopia: The Experience of Gojjam Province (1974 to 1997). *Journal of African Studies and Development,* 5(6)145-156. Available at: doi: 10.5897/JASD12.056.

Bebbington, A.J., Merrill-Sands, D. and Farrington, J. 1994. *Farmer and Community Organizations in Agricultural Research and Extension: Functions, Impacts and Questions*. ODI agricultural Administration (Research and Extension) Network Paper 47, London: ODI

Bekele, E.1998. *Rural Women, Land rights and Household Gender Relations*: The *Case of Ethiopia.* MA thesis, The Hague: Institute of Social Studies

Berhanu, K. 2012. *The Political Economy of Agricultural Extension in Ethiopia*: Economic Growth and Political Control. Paper produced as part of the Political Economy of Agricultural Policy in Africa (PEAPA) work stream, Working Paper 042. Available at: www.future-agricultures.org.

Bernard, T., Spielman, D., Taffesse, A.S. and Gebre-Madhin, E.Z. 2010. *Cooperatives for Staple Crop Marketing*: *Evidence from Ethiopia*, IFPRI research monograph, 164, USA: IFPRI.

Bezabih, M., Holden, S. and Mannberg, A. 2016. The Role of Land Certification in Reducing Gaps in Productivity between Male- and Female-owned Farms in Rural Ethiopia. *Journal of Development Studies,* 52(3): 360-376. Available at: doi: 10.1080/00220388.2015.1081175.

Bezu, S. and Holden, S. 2014a. Are Rural Youth in Ethiopia Abandoning Agriculture? *World Development,* 64:259–272.

Bezu, S. and Holden, S. 2014b. Demand for Second-Stage Land Certification in Ethiopia: Evidence from Household Panel Data. *Land Use Policy*, 41:193-205. Available at: doi: 10.1016/j.landusepol.2014.05.013

Bhattacherjee, A. 2012. *Social Science Research: Principles, Methods and Practices:* Text Books Collection. Book 3. Available at: http://scholarcommons.usf.edu/oa_textbooks/3. (accessed on: June 18, 2014).

Biernacki, P. and Waldorf, D. 1981. Snowball Sampling: Problems and Techniques. *Sociological Methods and Research,* 10(2): 141- 163.

Bimber, B., Flangin, A. and Stohl, C. 2014. *Collective Action in Organizations: Interaction and Engagement in the Era of Technological* Change. USA: Cambridge University press.

Birkelo, C. 2016. *USDA's Investment in Ethiopia's Livestock Feed Sector Pays Off*. GAIN Report Number: ET1602, Addis Ababa: USDA.

Birchall, J. and Ketilson, H. 2009. *Resilience of the Cooperative Business Model in Times of Crisis*. Sustainable Enterprise Program, Rome: ILO. ISBN:9789221224099

Birner, R., Davis, K., Pender, J., Nkonya, E., Anandajayasekeram, P., Ekboir, J., Mbabu, A., Spielman, D.J., Horna, D., Benin, S. and Kisamba-Mugerwa, W. 2006. *From Best Practice to Best Fit: A Framework for Designing and Analyzing Agricultural Advisory Services*. ISNAR Discussion Paper No. 5, Washington, D.C: IFPRI.

Bond, R. and Smith, P.B. 1996. Culture and Conformity: A Meta-analysis of Studies using Asch's (1952, 1956) Line Judgment Task. *Psychological Bulletin,* 119(1):111-137.

Borras, S.M. 2003. Towards a Better Understanding of the Market-Led Agrarian Reform in Theory and Practice: Focusing on the Brazilian Case: In: *Land Reform 2003/3. Land Settlement and Cooperatives,* edited by Groppo, P. Special Edition. Rome: WB and the FAO.

Borras, S.M. and Franco J.C. 2012. Global Land Grabbing and Trajectories of Agrarian Change: A Preliminary Analysis. *Journal of Agrarian Change,* 12(1):34-59.

Bridges to Technology. 2005. *What is Technology Adoption?* Available at: http://www.bridges-to-technology.com. (accessed on: October 6, 2014).

Brown, R. 2006. On Labour Market Dualism in the Lewis Model: A Comment. *The Manchester School,* 74(3): 350–354.

CSA (Central Statistical Agency). 2015. Key Findings of the 2014/2015 (2007 E.C.) *Agricultural Sample Surveys:* Crop Yield for Major Grain Crops, Private Smallholder Farms, Main Season 2014/15. Federal Democratic Republic of Ethiopia. Addis Ababa.

CSA. 2016. *Agricultural Sample Survey 2015/2016(2008 EC)*: Report on Area and Production of Major Crops. Federal Democratic Republic of Ethiopia. Addis Ababa.

CSA. 2017. *Agricultural Sample Survey 2016/2017(2009 EC).* Vol.1 Report on Area and Production of Major Crops. Statistical Bulletin-584, The Federal Democratic Republic of Ethiopia. Addis Ababa.

CSA and WB (the World Bank). 2013. *Ethiopia Rural Socioeconomic Survey (ERSS),* Survey Report. Addis Ababa.

CSA and ICF. 2017. *Ethiopia Demographic and Health Survey 2016*. Addis Ababa.

Cervantes-Godoy, D. and Dewbre, J. 2010. *Economic Importance of Agriculture for Poverty Reduction.* OECD Food, Agriculture and Fisheries Working Papers, No. 23, OECD. Available at: doi: 10.1787/5kmmv9s20944-en.

Chambers, R. 1993. *Challenging the Professions: Frontiers for Rural Development*. London: IT.

Chambers, R. 1994. *Paradigm Shifts and the Practice of Participatory Research and Development*. IDS Working Paper 2, Brighton: IDS.

Chanyalew, D. 2006. Policies for Commercial Transformation of Ethiopian Agriculture. In: *Commercialization of Ethiopian Agriculture,* proceedings of the 8th annual conference of the agricultural economics society of Ethiopia, edited by Wale, E., G/Michael D., Emana, B. and Woldehanna, T. Addis Ababa.

Chanyalew, D. 2015. *Ethiopia's Indigenous Policy and Growth: Agriculture, Pastoral and Rural Development*. Addis Ababa. (ISBN:9789994496440).

Check**,** J.W. and Schutt, R. K. 2012. *Research Methods in Education*. Thousand Oaks, CA: Sage. (ISBN: 9781412940092).

Chekole, E. 2015. *Rural and Agricultural Development Policy in Ethiopia and its Implementation: The Unsolved Paradox*. Munich: GRIN Verlag. (ISBN: 9783656902997)

China-DAC Study Group. 2010. *Agricultural Transformation, Growth and Poverty Reduction: how it happened in China, helping it happen in Africa*. Report on the International Conference on Agriculture, Food Security and Rural Development, 27-28 April 2010, Bamako.

Collier, P. and Dercon, S. 2014. African Agriculture in 50 Years: Smallholders in a Rapidly Changing World? *World Development,* 63: 92-101.

Corbin, J. and Strauss, A. 2008. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory (3rd ed.).* Thousand Oaks, CA: SAGE.

Constitution of the Government of Ethiopia. 1995.

Creswell, J.W. 2013. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (4th ed.).* Thousand Oaks, CA: SAGE.

Creswell, J.W. and Plano Clark, V.L. 2011. *Designing and Conducting Mixed Methods Research (2nd ed.).* Thousand Oaks, CA: SAGE.

Csaki, C. 1992. *Transformation of Agriculture in Central Eastern Europe and the Former USSR*: *Major Policy Issues and Perspectives*. World Bank policy research working papers, WPS 888.

Dasai, R. and Jeshi, S. 2013. *Collective Action and Community Development: Evidence from Self-Help Groups in Rural India*. India.

David, M.M. and Samuel, H.S. 2014. The Role of Agriculture Extension in the 21st Century: Reflections from Africa. *International Journal of Agricultural Extension,* 2(1). Available at: https://pdfs.semanticscholar.org/

Davis, K. 2008. Extension in Sub-Saharan Africa: Overview and Assessment of Past and Current Models, and Future Prospects. *Journal of International Agricultural and Extension Education,*15(3):15–28.

Davis, K., Swanson, B. and Amudavi, D. 2009. Review and Recommendations for Strengthening the Agricultural Extension System in Ethiopia. Available at: https://agriknowledge.org/downloads/cf95jb495

Davis, K., Swanson, B., Amudavi, D., Mekonnen, DA., Flohrs, A., Riese,J.,Lamb, C. and Zerfu, E. 2010. *In-depth Assessment of the Public Agricultural Extension System of Ethiopia and Recommendation for Improvement*. IFPRI Discussion Paper, Washington, D.C: IFPRI.

Deininger, K. 2011. Forum on Global Land Grabbing: Challenges Posed by the New Wave of Farmland Investment. *Journal of Peasant Studies*, 38 (2): 217–247.

Deininger, K., Ali, D., Holden, S. and Zevenbergen, J. 2007. *Rural Land Certification in Ethiopia: process, initial impact, and implications for other African Countries*. Policy Research Working paper 4218. The World Bank Development Research group, Washington.

Deininger, K., Ali, D., Holden, S. T. and Zevenbergen, J. 2008. Rural Land Certification in Ethiopia: Process, Initial Impact, and Implications for Other African Countries. *World Development*, 36(10): 1786-1812.

Deininger, K., Ali, D., and Alemu, T. 2011. Impacts of Land Certification on Tenure Security, Investment, and Land Market Participation: Evidence from Ethiopia. *Land Economics*, 87(2): 312-334. Available at: doi:10.3368/le.87.2.312

Dejene, A. 1989. The Training and Visit Agricultural Extension in Rainfed Agriculture: Lessons from Ethiopia. *World Development, 17*(10): 1674-1659.

Demeke, M. 1999. *Agricultural Technology, Economic Viability and Poverty Alleviation in Ethiopia.* Paper Presented to the Agricultural Transformation Policy Workshop, 27-30 June 1999 Nairobi. Available at: fsg.afre.msu.edu/ag transformation/atw_demeke.PDF

Dercon, S. and Christiaenensen, L. 2011. Consumption Risk, Technology Adoption and Poverty Traps: Evidence from Ethiopia. *Journal of Development Economics*, 96(2):159-173.

Dimitri, C., Effland, A.B. and Conklin, N.C. 2005. *The 20th Century Transformation of US Agriculture and Farm,* edited by Cox, M., Munro-Faure, P., Dey-Abbas, J., Rouse, J. and Baas, S. Economic Information Bulletin No. (EIB-3), USA: USDA.

Di Falco, S. and Bulte, E. 2011. A Dark Side of Social Capital? Kinship, Consumption, and Savings. *Journal of Development Studies*, 47(8): 1128-1151. Available at: http://dx.doi.org/10.1080/00220388.2010.5143282009.

Doner, P. 1992. *Latin American Land Reforms*: *In Theory and Practice*. A Retrospective Analysis. Madison: The University of Wisconsin Press.

Dorosh, P. and Rashid, S. 2011. *Food and Agriculture in Ethiopia: Progress and Policy Challenges*. USA: IFPRI.

Duffy, M. 2009. Economies of Size in Production Agriculture. *Journal of Hunger and Environmental Nutrition,* 4(3-4): 375-392. Available at: doi: 10.1080/19320240903321292.

Dunning, H.C. 1970. *Land Reform in Ethiopia: A Case Study in Non-Development*. UCLA.

EDRI (Ethiopian Development Research Institute). 2017. *Agricultural Growth Program (AGP I) of Ethiopia: Evaluation Report.* Addis Ababa.

EDC (Education Development Center). 2004. *Data Collection Methods: Getting Down to Basics.* Document prepared by EDC for the online course.

Eicher, C.K. 2007. *Agricultural Extension in Africa and Asia*. Literature review prepared for the World AgInfo Project, Ithaca, New York: Cornell University. Available at: https://pdfs.semanticscholar.org.

El-Ghonemy, M.R. 2001. The Political Economy of Market-Based Land Reform (105-133). In: *Land Reform and Peasant Livelihoods: The Social Dynamics of Rural Poverty and Agrarian Reform in Developing Countries,* edited by Ghimire, K.B. London: ITDG publishing.

Ellemers, N., Spears, R. and Doosje, B.1997. Sticking Together or Falling Apart: Ingroup

Identification as a Psychological Determinant of Group Commitment Versus Individual Mobility. *Journal of Personality and Social-psychology*, 72: 617-626.

EEA/EEPRI (Ethiopian Economic Association/Ethiopian Economic Policy Research Institute). 2006. *Evaluation of the Ethiopian Agricultural Extension, with Particular Emphasis on the Participatory Demonstration and Training Extension System (PADETES)*. Addis Ababa.

Fafchamps, M. and Minten, B. 2002. Returns to Social Network Capital Among Traders. *Oxford Economic Papers.* 54:173-206

Ferto, I. 2016. Structural Transformation in Central and Eastern European Countries' Agriculture: Convergence or Divergence? *Advances in Economics and Business,* 4(10):547-552. Available at: doi: 10.13189/aeb.2016.041004

Field, A. 2009. *Discovering Statistic Using SPSS (3rd ed.)*. London: SAGE

Fields, G. S. 2006. Labor Market Dualism in the Lewis model: Reply. *The Manchester School,* 74(3):355-359. Available at: http://digitalcommons.ilr.cornell.edu/articles/290/

Food and Agriculture Organization (FAO). 2014. *Youth and Agriculture: Key Challenges and Concreate Solutions.* Rome: FAO, IFAD and CTA.

Fominaya, C.F. 2010. Collective Identity in Social Movements: Central Concepts and Debates. *Sociology Compass,* 4(6):393–404. Available at: doi: 10.1111/j.1751-9020.2010.00287

Fox, M.L., Haines, C. Munoz, M.J.H. and Thomas, M.A.H. 2013. *Africa's Got Work to Do: Employment Prospects in the New Century.* International Monetary Fund Working Paper WP/13/201. Washington DC: IMF.

Francis, D.G. 1994. *Family Agriculture*: *Tradition and Transformation.* London: Earthscan publications.

Federal proclamation. 2005. Rural Land Administration and Use Proclamation (No. 89/1997) revised in 2005 (No.456/2005).

Federal proclamation. 2005 Expropriation of Landholdings for Public Purpose and Payment for Compensation' Proclamation (No. 455/2005).

Garner, E. and Campos, AO. 2014. *Identifying the "Family Farm": An Informal Discussion of the Concepts and Definitions*. ESA Working Paper No. 14-10. Rome: FAO.

Gebremedhin, B., Hoekstra, D. and Tegegne, A. 2006. *Commercialization of Ethiopian Agriculture: Extension Service from Input Supplier to Knowledge Broker and Facilitator*. Improving Productivity and Market Success (IPMS) of Ethiopian Farmers Project working paper no 1., Nairobi: ILRI.

Gebremedhin, B., Jaleta M. and Hoekstra, D. 2009. Smallholders, Institutional Services and Commercial Transformation in Ethiopia. *Agricultural Economics,* 40:773-787. Available at: doi: 10.1111/j.1574-0862.2009. 00414.x

Gebremedhin, B. and Jaleta, M. 2010. *Commercialization of Smallholders: Is Market Participation Enough?* Paper presented at the joint 3rd African Association of Agricultural Economists (AAAE)and 48th Agricultural Economists Association of South Africa (AEASA) Conference, Cape Town.

Gebreselassie, S. 2006. *Land, Land Policy, and Smallholder Agriculture in Ethiopia: Options and Scenarios*. Paper prepared for the Future Agriculture Consortium, Institute of Development Studies, March 20–22, 2006, Brighton.

Geta, E., Dadi L. and Adugna T. 2006. Informal Channels for Transfer and Adoption of Improved Technologies: The Case of Sweet Potato Varieties in Southern Ethiopia. In: *Commercialization of Ethiopian Agriculture*. Proceedings of the 8th annual conference of the agricultural economics society of Ethiopia, edited by Wale, E., G/Michael D., Emana, B., and Woldehanna, T. Addis Ababa.

Ghimire, K.B. (ed.) 2001. *Land Reform and Peasant Livelihoods: The Social Dynamics of Rural Poverty and Agrarian Reforms in Developing Countries*. UN Research Institute for Social Development, Great Britain: ITDG.

Goldman, A. and Smith J. 1995. Agricultural Transformations in India and Northern Nigeria: Exploring the Nature of Green Revolutions. *World Development*, 23(2):243-263. Available at: https://doi.org/10.1016/0305-750X(94)00115-F

Gollin, D., Parente, S. L. and Rogerson, R. 2002. The role of agriculture in development. *American Economic Review*: Papers and Proceedings, 92(2), 160–164.

Gollin, D. 2010. Agricultural Productivity and Economic Growth (Chapter 37). In: *Handbook of Agricultural Economics*, vol. 4, edited by Pingali, P. and Evenson, R. Amsterdam: Elsevier Science.

Gourlay, S., Kilic, T, and Lobell, D. 2017. *Could the Debate be Over?: Errors in Farmer-Reported Production and Their Implications for the Inverse Scale-Productivity Relationship in Uganda*. Policy Research Working Paper 8192. Washington, D.C: WB.

Greene, J.C, Caracelli, V.J, and Graham, W.F. 1989. Toward a Conceptual Framework for Mixed – Method Evaluation Designs. *Education Evaluation Policy Analysis*, 11:255–274.

Grigg, D. 1992. *The Transformation of Agriculture in the West*. UK: Blackwell Ltd.

Gumede, V. 2015. *Political Economy of Post-Apartheid South Africa*. Dakar: CODESRIA.

Gunawardana, A.M.T. and Chandrasiri, A. 1981. *Training and Visit System of Extension*. Colombo: Agrarian Research and Training Institute.

Haile, T.G. 2015. Comparative Analysis for the SDPRP, PASDEP and GTP of the FDR of Ethiopia. *Global Journal of Business, Economics and Management*, *5*(1): 13-24. Available at: doi: http://dx.doi.org/10.18844/gjbem.v5i1.61

Hammel, J., Magasi, S., Heinemann,A., Whiteneck,G., Bonger, J. and Rodriguez, E. 2008. What Does Participation Mean? An insider Perspective from People with Disabilities. *Journal of Disability and Rehabilitation, 30(19).*

Hauga, R. 2007. Competence for Rural Innovation and Transformation. *The Journal of Agricultural Education and Extension*, 5(4):263-274.

Havnevik, K., Bryceson, D., Birgegard, L., Matondi, P. and Atakilte B. (eds.). 2007. *African Agriculture and the World Bank: Development or Impoverishment.* Policy Dialogue, 1. Stockholm: The Nordic Africa Institute.

Hazel, P., Poulton, C., Wiggins, S. and Dorward, A. 2007. *The Future of Small Farms for Poverty Reduction and Growth.* 2020 Discussion Paper No. 42. Washington, D.C: IFPRI.

Hazell, P. 2009. *The Asian Green Revolution.* IFPRI Discussion Paper 00911, Available at: http://www.ifpri.org/sites/default/files/publications/ifpridp00911.pdf. (Accessed on: 2, September 2014).

Heemskerk, W. and Wennink, B. 2004. *Building Social Capital for Agricultural Innovation: Experiences with Farmer Groups in Sub-Saharan Africa*. Bulletin 368. The Netherlands: Royal Tropical Institute.

Held J. 1980. *The Modernization of Agriculture: Rural Transformation in Hungary (1848-1975*), East European Monographs, No. LXIII, USA.

Holden, S., Deininger, K., and Ghebru, H. 2009. Impacts of Low-cost Land Certification on Investment and Productivity. *American Journal of Agricultural Economics*, 91(2): 359–373. Available at: http://ajae.oxfordjournals.org/content/91/2/359.abstract

Holden, S., Deininger, K., and Ghebru, H. 2011. Tenure Insecurity, Gender, Low-cost Land Certification and Land Rental Market Participation in Ethiopia. *Journal of Development Studies,* 47(1): 31-47. Available at: doi:10.1080/00220381003706460

Hunt, D. 1989. *Economic Theories of Development: An Analysis of Competing Paradigms* New York: Harvester Wheatsheaf. ISBN 0-7450-0237-4.

IMF (International Monetary Fund). 2011. The Federal Democratic Republic of Ethiopia: Poverty Reduction Strategy Paper: Growth and Transformation Plan 2010/11–2014/15 Vol. I. Ethiopia GTP Country Report No. 11/304.

IFPRI (International Food Policy Research Institute). 2011. A Review of Literature on Agricultural Productivity, Social Capital and Food Security in Nigeria, NSSP working paper, No.21, Nigeria.

Isham J. 2002. The Effect of Social Capital on Fertilizer Adoption: Evidence from Rural Tanzania. *Journal of African Economies,* 11(1):39-60.

Jain R., Arora, A. and Raju S.S. 2009. A Novel Adoption Index of Selected Agricultural Technologies: Linkages with Infrastructure and Productivity. *Agricultural Economics Research Review*, 22: 109-120.

Jaiteh, S. 2008. Ten-Issues Plan for Agricultural Transformation. *The Daily Observer, Gambia*. 8 January 2008. Available at: http://observer.gm/africa/gambia/banjul/article/2008/1/8/ten-issues-plan-for-agricultural-transformation.

Johnston, B. F., and Mellor, J. W. 1961. The Role of Agriculture in economic development. *American Economic Review*, 51(4), 566–593.

Johnston, H., Larana E. and Gusfield, J.R. 1994. Identities, Grievances and New Social Movement, Chapter one. In: *New Social Movements: From Ideology to Identity* edited by Laraña, E., Johnston, H. and Gusfield, JR. Temple University Press.

Johnson, R.B. and Onwuegbuzie. A.J. 2004. Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*, 33(7):14-26.

Jirata, M., Grey, S. and Kilawe, E. 2016. *Ethiopia Climate-Smart Agriculture Scoping Study*. Addis Ababa: FAO.

Krueger, R.A. and Casey, M.A. 2009. *Focus Groups: A Practical Guide for Applied Research, (4th ed.)*. Thousand Oaks (CA), New Delhi (India), London (UK) & Singapore: SAGE.

Kania, J. and Krama, M. 2011. Collective Impact. *Stanford Social Innovation Magazine*.

Kariuki, G. and Place, F. 2005. *Initiatives for Rural Development Through Collective Action: The Case of Household Participation in group activities in the highlands of central Kenya*, Collective action and property rights (Capri) working paper No.43, USA: IFPRI.

Kassa, B. 2003. Agricultural extension in Ethiopia: The Case of Participatory Demonstration and Training Extension System. *Journal of Social Development in Africa*, 18(1).

Kassa, H. 2008. Agriculture Extension in Ethiopia: Historical Evolution, Relevant Policies and Challenges (*129-152).* In: *Digest of Ethiopia's National Policies Strategies and Programs, edited by* Assefa, T. Addis Ababa: Forum for Social Studies (FSS).

Kelemework, F. and Hoogendoorn, C. 2016. Exploration of Transformative Investments in Agricultural Extension in Ethiopia. Amsterdam: Royal Tropical Institute (KIT).

Kelemu, K., Gebrekirstos, A. and Hadgu, K. 2014. *Innovation Platforms for Improving Productivity in Mixed Farming Systems in Ethiopia*: *Institutions and Modalities.* World Agroforestry Centre (ICRAF) and the Ethiopian Institute of Agricultural Research (EIAR).

Kelly, C. and Breinglinger, S. 2002. *The Social-psychology of Collective Action: Identity, Injustice and Gender.* UK: Taylor and Francis publications.

Kendall, D. 2003. *Sociology in Our times: The Essentials, (5th ed.)*, Belmont, California: Wadsworth Thompson.

Kidda, A.D., Lamersb, J.P.A, Ficarelli, P.P and Hoffmanna, V. 2000. Privatizing Agricultural Extension: Caveat Emptor. *Journal of Rural Studies*, 16(1): 95–102.

Kimball, T. 2011. Livestock Production Systems and their Environmental Implications in Ethiopia (third chapter). *Environmental Policy Review 2011*, a report produced by the Environmental Policy Group in the Environmental Studies Program, Maine: Colby College.

Kitzinger, J. 1995. Qualitative Research**:** Introducing Focus Groups. *British Medical Journal*, 311: 299-302. Available at: doi: https://doi.org/10.1136/bmj.311.7000.299

Kitzinger, J. 2005. Focus Group Research: Using Group Dynamics to Explore Perceptions, Experiences and Understandings *(56- 70)*. In: *Qualitative Research in Health Care,* edited by Holloway, I. Maidenhead: Open University Press.

Klandermans, B. 1997. *The Social-psychology of Protest*. Oxford: Blackwell.

Klandermans, B. 2002. The Demand and Supply of Participation: Social Psychological Correlates of Participation in Social Movements. *Revista Psicologia Política Capa,* 2(3).

Klandermans, B., Sabucedo, J.M. and Rodriguez, M.D. 2002. Identity Processes in Collective Action Participation: Farmers' Identity and Farmers' Protest in the Netherlands and Spain. *International Society of Political Psychology*, 23(2):360-379. Available at: doi:10.1111/0162-895X.00280.

Klandermans, B. 2004. The Demand and Supply of Participation: Social-Psychological. Correlates of Participation in Social Movements. *The Blackwell Companion to Social Movements.* Blackwell Publishing Ltd.

Kruijssen, F., Keizer, M. and Giuliani, A. 2007. Collective Action for Small Scale Producers of Agriculture biodiversity products, *Collective Action and Property Rights*- Capri Working Paper*,* No.71, USA: IFPRI.

Lahiffa, E. 2007. 'Willing buyer, Willing Seller': South African Failed Experiment in Market-led Agrarian Reform Trajectories and Contestations. *Third World Quarterly,* 28(8) 1577-1596. Available at: doi: 1.0.1080/01436590701637417.

Lefort, R. 2012. Free Market Economy, 'Developmental state' and Party-state Hegemony in Ethiopia: The Case of the 'Model Farmers'. *Journal of Modern African Studies*, 50(4):681-706. Available at: doi.org/10.1017/S0022278X12000389

Lemma, M. 2007. *The Agricultural Knowledge System in Tigray, Ethiopia: Recent History and Actual Effectiveness*. PhD dissertation, Weikersheim, Germany: Margraff Publishers.

Lewis, W. A. 1954. Economic Development with Unlimited Supplies of Labor. The Manchester School, 22: 139–191.Available at:doi:10.1111/j.1467-9957.1954.tb00021.x.

Liamputtong, P. 2011. *Focus Group Methodology: Principles and Practice*. Los Angeles, London, New Delhi, Singapore, Washington, D.C: SAGE.

Lines, T. 2009. *EU Food and Agriculture Policy for the 21st Century Alternatives to the CAP*. Discussion paper.

Lipsey, R.G. and Carlaw, K.L. 2001. *What Does Total Factor Productivity Measure?* Simon Vancouver: Fraser University.

Losby, J. 2012. Using Likert Scales in Evaluation Survey Work. National Center for Chronic Disease Prevention and Health Promotion. Available at: https://www.cdc.gov/dhdsp/pubs/docs/cb_

Lowery, D., Gray, V., Anderson, J. and Newmark, A.J. 2004. Collective Action and the Mobilization of Institutions. *The Journal of Politics*, 66:684-705. Available at: doi:10.1111/j.1468-2508.2004.00272.x

Maheu, L. (ed.) 1995. *Social Movement and Social Classes*: The Future of Collective Action London, UK: SAGE publications.

Mark, B. 2010. Agriculture and Landscape in the 21st Century Europe: The Post-Communist Transition. Available at**:** https://www.degruyter.com/

Marenya P.P. and Barrett C.B. 2007. Household-level Determinants of Adoption of Improved Natural Resources Management Practices Among Smallholder Farmers in Western Kenya. *Food Policy,* 32(4): 515–536.

Marshall, M.N. 1996. Sampling for Qualitative Research. *Family Practice*, 13(6): 522-525. Available at: http://dx.doi.org/10.1093/fampra/13.6.522 .

Mavedzenge, B.Z., Murimbarimba, F. and Mudzivo, C. 1991. Experiences of Farmer Participation in Soil Fertility Research in southern Zimbabwe. *Managing Africa's Soils,* No. 5 Nottingham: Russell Press.

McAdam, D., McCarthy JD and Zald, M.N. (eds.) 1996. *Comparative Perspectives of Social Movements: Political Opportunities, Mobilizing Structures and Cultural Framings.*

McAdam, D. 2010. *Political Process and the Development of the Black Insurgency 1930-1970*. USA: University of Chicago Press.

McArthur, J.W. 2013. *Good Things Grow in Scaled Packages* Africa's Agricultural Challenge in Historical Context. Africa Growth Initiative, Working Paper 11.

McArthur, J.W. 2015. Seeds of a 'Green Revolution' in Africa? *Future Development,* Brookings Blog on May 4, 2015. Available at: https://www.brookings.edu/blog/future-development/2015/05/04/seeds-of-a-green-revolution-in-africa

Mellor, J.W. 1996. Agriculture on the road to industrialization. In J. P. Lewis, & V. Kallab (Eds.), *Development Strategies Reconsidered.* New Brunswick, NJ: Transaction Books for the Overseas Development Council

Migiro S. O. and Magangi B. A. 2011. Mixed Methods: A Review of Literature and the Future of the New Research Paradigm. *African Journal of Business Management,* 5 (10):3757-3764. Available at: http://www.academicjournals.org/AJBM

MoA (Ministry of Agriculture). 2007. *Participatory Agricultural Extension System*. Guideline, Addis Ababa.

MoA. 2010. *Agricultural Growth Program: Project Implementation Manual.* Addis Ababa.

MoA. 2015. *Rural Land Certification and Administration SLM knowledge base*. Available at: http://www.slmethiopia.info.et/

MoANR/ATA (Ministry of Agriculture and Natural Resources and Agriculture Transformation Agency). 2017. Ethiopia's Agriculture Extension Strategy: Vision, Systematic Bottlenecks and Priority Interventions. Addis Ababa.

MoFED (Ministry of Finance and Economic Development). 2002. *Sustainable Development and Poverty Reduction Program. Addis Ababa.*

MoFED. 2003. Agriculture and *Rural Development Policy and Strategies of Ethiopia*. Addis Ababa.

MoFED. 2006. *A Plan for Accelerated and Sustained Development to End Poverty (PASDEP*). Addis Ababa.

MoFED. 2010. *Growth and Transformation Plan of Ethiopia (2010-2015*). Addis Ababa.

MoFED. 2013. *Annual Performance Report of the GTP.* Addis Ababa.

MoPED (Ministry of Planning and Economic Development). 1993. *An Economic Development Strategy for Ethiopia: A Comprehensive Guidance and a Development Strategy for the Future.* Addis Ababa.

Mogues, T., Cohen, M.J., Birner, R., Lemma, M., Randriamamonjy, J, Tadesse, F. and Paulos, Z. 2009. *Agricultural Extension in Ethiopia through a Gender and Governance Lens*. (ESSP 2) Discussion Papers. USA: IFPRI.

Morgan, D.L. 2007. Paradigms Lost and Pragmatism Regained Methodological Implications of Combining Qualitative and Quantitative Methods. *Journal of Mixed Methods Research,* 1(1): 48-76.

Moris, J. 1991. *Extension Alternatives in Tropical Agriculture*. London.

Moyo, S. 2008. *African Land Questions, Agrarian Transitions and the State: Contradictions of Neo-Liberal Land Reforms.* CODESRIA working paper series, Dakar: CODESRIA.

Moyo, S. 2010. The Political Economy of Land Acquisition and Redistribution in Zimbabwe, 1990-1999. *Journal of Southern African Studies*, 26(1): 5-28.

Moyo, S. 2011a. Three Decades of Agrarian Reform in Zimbabwe. *The Journal of Peasant Studies*, 38(3):493-531.

Moyo, S. 2011b. Changing Agrarian Relations after Redistributive Land Reform in Zimbabwe. *The Journal of Peasant Studies,* 38(5): 939-966.

Moyo, S. and Yeros, P. (eds). 2005. *Reclaiming the Land: The Resurgence of Rural Movements in Africa, Asia and Latin America*. South Africa.

Mutunga, J.K. 2015. *Impacting the African Agriculture Through Farmers Institutional Development*. Nairobi: BESCK Holdings Limited. ISBN: 98799667901362

Mwanje, J.I. 2001. *Qualitative Research Process*. Module 2. Addis Ababa: OSSREA

Mwangi, E., Markelova, H. and Meinzen-Dick, R. (eds). 2012. *Collective Action and Property Rights for Poverty Reduction: Insights from Africa and Asia*. Philadelphia: University of Pennsylvania Press.

Myatt, D.P. 2007. Collective Action: Current Perspectives. In: T*he New Palgrave Dictionary of Economics*, edited by Durlauf, S.N. and Blume, L.E, UK: London Business School

Narang, U. 2012. Self Help Group: An Effective Approach to Women Empowerment in India. *International Journal of Social Science and Interdisciplinary Research,* 1(8).

NPC (National Planning Commission). 2016. Growth and Transformation Plan II (2015/2016-2019/2020) Vol. 1, Main Text, FDRE, Addis Ababa.

NPC. 2017. Second Growth and Transformation Plan Annual Progress Report for 2015/2016, FDRE, Addis Ababa.

Nega, B., Adnew, B. and GebreSelassie S. 2003. Current Land Policy Issues in Ethiopia. In: *Land Reform 2003/3: Land Settlement and Cooperatives.* (Special edition) edited by. Groppo, P. World Bank and Food and Agriculture Organization. Rome.

Negassa, A., Rashid, S. and Gebremedhin, B. 2011. *Livestock production and marketing in Ethiopia.* Ethiopian Support Strategy Program II (ESSP II). Working Paper 26. Washington, D.C: IFPRI.

Netting, RM. 1993. *Smallholders, Householders: Farm Families and Ecology of Intensive Sustainable Agriculture.* USA: Stanford University Press.

Olson, M. 1971. *The Logic of Collective Action: Public Goods and the Theory of Groups (second printing.* USA: Harvard University Press.

Osmani, A.G, and Hossain, E. 2015. Market Participation Decision of Smallholder Farmers and its Determinants in Bangladesh. *Economics of Agriculture*, 62 (1):163-179.

Ottaway, Marina 1977. Land Reform in Ethiopia 1974-1977 African Studies Review Vol. 20, No. 3, Peasants in Africa: PP 79-90. Cambridge University Press. Available at: http://www.jstor.org/stable/523755

Oxfam. 2013. *Women's Collective Action: Unlocking the Potential of Agricultural Markets*. UK: OXFAM.

Pankhurst, R. 1986. The Ethiopian Famine: Cultural Survival's New Report. *Anthropology Today*, 2(3): 4-5.

Pankhurst, A. 2004. *Longer term Implications of Resettlement in Ethiopia*. In People, Space and the State: Migration, Resettlement and Displacement in Ethiopia, Pankhurst, A and Pigeut, F.(eds.), Addis Ababa: AAU.

Pawsewang, S. 1983. *Peasant, Land and Society: a social history of land reform in Ethiopia*. London

Phillips, L.W.1981. Assessing Measurement Error in Key Informant Reports: A Methodological Note on Organizational Analysis in Marketing. *Journal of Marketing Research*, 18(4):395-415.

Pallant, J. 2010. *SPSS Survival Manual: A Step by Step Guide to Data Analysis using SPSS for Windows* (3rd*ed*.). London: McGraw Hill Open University Press.

Persha, L., Greif, A. and Huntington, H. 2017 *Assessing the Impact of Second-Level Land Certification in Ethiopia.* Paper prepared for presentation at the WB conference on land and poverty (March 20-24, 2017), Washington. D.C: WB.

Pinard, M. 2011. *Motivational Dimensions in Social Movements and Contentious Collective Action*. London: McGill-Queens University Press.

Pingali, L.P. and Rosegrant, M.W. 1995. Agricultural Commercialization and Diversification: Process and Polices. *Food Policy*, 20(3): 171-185.

Pingali, L.P. 1997. From Subsistence to Commercial Production Systems: The Transformation of Asian Agriculture. *American Journal of Agricultural Economics,* 79(2): 628-634.

Polletta, F. and Jasper, M. 2001. Collective Identity and Social Movements. *Annual Reviews in Sociology*, 27: 283-305.

Pretty, J. 2003. *Social Capital and Connectedness: Issues and Implications for Agriculture, Rural Development and Natural Resource Management in ACP Countries*. Review Paper for CTA, CTA working document no.8032.

Ragassa, C., Berhane, G., Tadesse, F. and Taffesse, A.S. 2013. Gender Differences in Access to Extension Services and Agricultural Productivity. *The Journal of Agricultural Education and Extension,* 19(5):437-468.

Rahmato, D. 2005. From Heterogeneity to Homogeneity. Agrarian Class Structure in Ethiopia since the 1950s. Paper Presented to Land and Sustainable Symposium Organized by the FSS, EEA and AESE on 5 August 2005. Addis Ababa.

Rahmato, D. 2008. Ethiopia Agriculture Policy Review (*129-152).* In: *Digest of Ethiopia's National Policies Strategies and Programs, edited by* Assefa, T. Addis Ababa: Forum for Social Studies (FSS).

Riesman, D.1990. *Theories of Collective Action: Downs, Olson and Hirsch.* Hong Kong: the Macmillan Press.

Rivera, W. and Alex, G. 2004. The Continuing Role of Government in Pluralistic Extension Systems. *Journal of International Agricultural and Extension Education,* 11 (3). Available at: doi: 10.5191/jiaee.2004.11305

Rivera, W. and Sulaiman V.R. 2009. Extension: Object of Reform, Engine for Innovation. *Outlook on Agriculture,* 38(3): 267–273.

Rogers, E.M. 1995. *Diffusion of Innovations* (4th Ed.). New York: Free Press.

Roling, N.1988. *Extension Science: Information Systems in Agricultural Development*. Cambridge: Cambridge University Press.

Ruttan, V.W. 2002. Productivity Growth in World Agriculture: Sources and Constraints. *Journal of Economic Perspectives,*16(4):161-184.

Saldana, J. 2009. *The Coding Manual for Qualitative Researchers*. UK: SAGE.

Sanginga, PC., Lilja. N. and Tumwine, J. 2001. Assessing the Quality of Participation in farmers' research groups in the Highlands of Kabale, Uganda PRGA; CGIAR, *Future Harvest*. Working document/PRGA No. 19.

Saravia-Matus, S. and Saravia-Matus, J. *2009.* Agrarian Reform Theory and Practice: The Nicaraguan Experience. *Encuentro Año XLI, (84): 21-43.*

Schultz, T. W. 1964. Transforming Traditional Agriculture. New Haven: Yale University Press.

Schwandt, T.A. 2007. *Dictionary of Qualitative Inquiry (3rd Ed.)*. Thousand Oaks, CA: Sage.

Segers, K., Dessein, J., Hagberg, S., Develtere, P., Haile, M. and Deckers, J. 2009. Be Like Bees: The Politics of Mobilizing Farmers for Development in Tigray, Ethiopia. *African Affairs,*108(430):91-109.

Seckler, D. (ed). 1993. Agricultural Transformation in Africa. *Proceedings of the Seminar on Agricultural Transformation in Africa*, USA.

Seyoum, A, Dorosh, P. and Asrat, S. 2012. *Production in Ethiopia: Regional Patterns and Trends*. IFPRI Research note:11, Addis Ababa: IFPRI.

Shapiro, B.I., Gebru, G., Desta, S., Negassa, A., Nigussie, K., Aboset, G. and Mechal, H. 2015.*Ethiopia Livestock Master Plan*. ILRI Project Report. Nairobi: International Livestock Research Institute (ILRI).

Simon, B. and Stürmer, S. 2003. Respect for Group Members: Intragroup Determinants of Collective Identification and Group Serving Behaviors. *Personality and Social-Psychology Bulletin,* 29:183-193.

Smith, P. and Bond M. 1993. *Social-psychology Across Cultures: Analysis and Perspectives.* London: Harvester Wheatsheaf.

Sofaer, S. 1999. Qualitative Methods: What are they and Why use them? *Health Services Research,* 34: 1101-1118. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles

Spielman, D. 2005. *Innovation Systems Perspectives on Developing-Country Agriculture: A Critical Review*. ISNAR Discussion Paper 2, Washington, D.C: IFPRI.

Spielman, D. 2008. *Encouraging Economic Growth in Ethiopia:* Perspectives on Agricultural Input Markets, Agricultural Extension and Advisory Services, and Agricultural Education and Training in Understanding the Constraints to Continued Rapid growth in Ethiopia. USA: IFPRI.

Spoor, M. 1990. Rural Employment and Agrarian Markets in Transition: Nicaragua (1979-89). *The Journal of Peasant Studies, 17*(4): 520-545.

Staatz, J. 1998. *What is Agricultural Transformation*? USA: Michigan state university.

Stangor, C., Jhangiani, R. and Tarry, H. 2013. *Principles of Social-psychology* (1st ed.). Text book.

Steady, F.C. 2006. *Women and Collective Action in Africa: Development, Democratization and Empowerment.* USA: Palgrave Macmillar.

Stern, N. 2007. *The Economics of Climate Change*: The Stern Review., Cambridge, UK: Cambridge University Press.

Stoate, C., Báldi, A ., Beja, P ., Boatman, N.D, Herzon, I., van Doorn, A..de Snoo, G.R., .Rakosy, L. and Ramwell, C. 2009. Ecological Impacts of Early 21st century agricultural change in Europe- A review. *Journal of Environmental Management,* 91(1): 22-24. Available at: https://doi.org/10.1016/j.jenvman.2009.07.005

Stürmer, S., Simon, B. and Loewy M. 2008. Interorganizational Respect and Organizational Participation: The Mediating Role of Collective Identity. *Group Processes & Intergroup Relations,* 11(1): 5–20. Available at: doi: 10.1177/1368430207084842

Sunding, D. and Zilberman, D. 2011. *The Agricultural Innovation Process: research and technology adoption in a changing agricultural sector*. Department of agricultural and resource economics, Berkeley: University of California.

Swanson, B. 2006. The Changing Role of Agricultural Extension in a Global Economy. *Journal of International Agricultural and Extension Education,* 13(3):5–18.

Swanson, B. 2007. *Developing a Market-driven Extension System to Increase Farm Income and Employment:* Lessons learned from China, India, Egypt and the United States. In Proceedings of the 18th European Seminar on Extension Education, Prague.

Swanson, B. 2008. *Global Review of Good Agricultural Extension and Advisory Service practices*. Rome: FAO.

Swanson, B. 2009. *Strengthening Agricultural Extension and Advisory Systems*: Procedures for Assessing, Transforming and Evaluating Extension Systems. Washington, D.C: WB.

Swanson, B. and Peterson, W. 1991. *Strengthening Research-Extension Linkages to Address the Needs of Resource-poor Farmers in Rainfed Agriculture*. In: Extension strategies for rainfed agriculture, edited by Prasad, C. and Das, P. New Delhi: Indian Society of Extension Education.

Swanson, B., Bentz, R. and Sofranko, A.(eds.). 1997. *Improving Agricultural Extension: A Reference Manual.* Rome: FAO.

TAK-IRDI. 2018. *National Youth Status Report*-draft report submitted by Innovative Research and Development Institution (TAK-IRDI) to the Ministry of Youth and Sports (MoYS), Addis Ababa.

Tashakkori, A. and Teddlie, C. 2009. *Foundations of Mixed Methods Research:* Integrating qualitative and quantitative approaches in the social and behavioral sciences. UK: SAGE.

Taye, H. 2013. Evaluating the Impact of Agricultural Extension Programs in Sub-Saharan Africa: Challenges and Prospects', *African Evaluation Journal,* 1(1). Available at: http://dx.doi.org/10.4102/aej.v1i1.19.

Tearfund. 2013. *Partnerships for Change: Cost Benefit Analysis of Self-help Groups in Ethiopia*, Tearfund horn of Africa regional office. UK and Ireland: Tearfund.

Tashakkori, A. and Teddlie, C.1998. *Mixed Methodology*: Combining the Qualitative and Quantitative Approaches. Thousand Oaks: SAGE.

Teddlie, C. and Tashakkori, A. 2009. *Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences*. Los Angeles: SAGE.

Tashakkori, A. and Teddlie, C. (eds). 2010. *Handbook of Mixed Method Research in the Social and Behavior Sciences.* Thousand Oaks, CA: SAGE.

Tefera, T. and Jaleta, M. 2006. Rural Livelihoods and Extension Program Participation: Evidence from SNNPR, Ethiopia. In: *Commercialization of Ethiopian Agriculture.* Proceedings of the 8th annual conference of the agricultural economics society of Ethiopia, edited by Wale, E., G/Michael D., Emana, B., and Woldehanna, T. Addis Ababa.

Tesfaye, T. 2008. *Assessment of the Potential Roles and Contributions of Alternative Extension Service Providers in Ethiopia*. Addis Ababa: Sasakawa Africa Association

Thorp, R., Stewart, R. and Heyer, A. 2005. When and How Far is Group Formation a Route out of Chronic Poverty? *World Development,* 33(6):907-920.

Tilly, C. 1978. *From Mobilization to Revolution.* Addison Wesley Publishing Company.

Timmer, C. 1988. The agricultural transformation. *Handbook of Development Economics* 1: 275–331. Available at http://dx.doi.org/10.1016/S1573-4471(88)01011-3.

Timmer, C. 2009. *A World Without Agriculture: The Structural Transformation in Historical Perspective.* American Enterprise Institute for Public Policy Research, Washington, D.C: The AEI Press

Todaro, M. and Smith, S. 2003. *Economic Development*. (8th edition). New York: Addison-Wesley.

Tsakok, I. and Gardner, B. 2007. Agriculture in Economic Development: Primary Engine of Growth or Chicken and Egg? *American Journal of Agricultural Economics,* 89(5): 1145-1151.

US Department of Health and Human Services (DHHS). 2005. *Successful Strategies for Recruiting, Training, and Utilizing Volunteers.* A Guide for Faith- and Community-Based Service Providers, DHHS Publication No. (SMA) 05–4005. Available at: www.samhsa.gov.

Van Zomeren, M., Postmes, T. and Spears, R. 2008. Towards an Integrative Social Identity Model of Collective Action: a quantitative research synthesis of three socio-psychological perspectives', *Psychological Bulletin,* 134(41): 504-535.

Von Braun, J. 1994. Introduction. In *Agricultural Commercialization, Economic Development, and Nutrition,* edited by Von Braun, J., and Kennedy, E., Baltimore: Johns Hopkins University Press.

Wang, L., Bishop, J. W., Chen, X. and Scott, K.D. 2002. Collectivist Orientation as a Predictor of Affective Organizational Commitment: a study in China. *International Journal of Organizational Analysis,* 10 (3).

Wang, X. and Piesse, J. 2010. *The Micro-Foundations of dual economy models. Economics School of Social Sciences*. Economics Discussion Paper Series EDP-010, Manchester: The University of Manchester.

Weismuller, J.P. 2012. Social Movements and Free Riders: Examining Resource Mobilization Theory Through the Bolivian Water War. *The Macalester Review,* 2(2). Available at: http://digitalcommons.macalester.edu/macreview/vol2/iss2/4

Wennink, B., Nederlof, S. and Heemskerk, W. (eds.) 2007. *Access of the Poor to Agricultural Services: The Role of Farmers' Organization in Social Inclusion.* Bulletin 376, Royal Tropical institute, Development Policy & Practice, Amsterdam: KIT publishers.

Wigfield, A. and Eccles J.S. 2000. Expectancy–Value Theory of Achievement Motivation. *Contemporary Educational Psychology,* 25(1):68-81. Available at: http://www.idealibrary.com

WB (World Bank). 1994. *Agricultural Extension: Lessons from Completed Projects*. Washington, DC: World Bank.

WB. 2013. *World Bank Data: Ethiopia*, Available at: http://www /data.worldbank.org/country/ethiopia (accessed on: August 22, 2014).

WB. 2010. *Rising Global Interest in Farmland: Can it Yield Sustainable and Equitable Benefits*? Washington, DC: The World Bank

Wubneh, M.1990. Development Strategy and Growth of the Ethiopian Economy: A Comparative Analysis of Pre-and Post-Revolutionary Periods. In: T*he Political Economy of Ethiopia*, edited by Ottaway M. (197-219). New York: Praeger.

Wubneh, M.1991. Agriculture. In *Ethiopia: A Country Study*, edited by Ofcansky, T.P., and Berry, LaVerle. Federal Research Division. Library of Congress, Economic Research Service: US Department of Agriculture.

Yamaoka, T. and Stapleton, P. 2016. Exploring the Links between Culture, Locus of Control and Self Compassion and their Roles in the Formation of Weight Stigmatization. *The New School Psychology Bulletin,* 13(2).

Yauch, C.A. and Steudel, H.J. 2003. Complementary Use of Qualitative and Quantitative Cultural Assessment Methods**,** *Organizational Research Methods*, 6(4):465-481, Available at: http://www.eresearchcollaboratory.com/AOMComplementaryQualQuant. pdf.

APPENDICES

APPENDIX A: ***Consent Form***

INFORMED *CONSENT FORM (for individual group members, Key informants, and development groups)*

1. ……. (name and surname/ Group No.), understand that I am(We are) being asked to participate in a doctoral research study. This research study is aimed at investigating and describing the history, status and function of development groups in the study area and analyzing the transformative potential of the groups.

2. I (We) also understand that I will be given a research code name by the researcher which will not identify me (us).

3. I am (we are) aware of the benefits of this study.

4. I (we) realize that knowledge gained from this study may help either me(us), the researcher or other professionals and development workers in Agriculture development.

5. I (we) also understand that my(our) participation in this study is entirely voluntary, that I(we) may withdraw from this study at any time should I(we) wish to do so. If I(we) decide to discontinue my(our) participation in this study, I(we) will continue to be treated in the usual and customary fashion.

6. The study has been explained to me (us). I (we) have read and understood the consent form, all my (our) questions have been answered and I (we) agree to participate. I (we) understand that I (we) will be given findings should I (we) be interested to know about the outcome.

7. If I (we)agree to participate in the study, I (we) will be given questionnaire/check list administered by an enumerator/the researcher and give answers verbally for approximately 2 hours. I (we) are free to ask any questions about the study or about being a subject and I (we) may contact Ms Etenesh Bekele Asfaw (Doctoral student) at 0912021372

Signature of subject …….. Date ……...

Ms Etenesh Bekele Asfaw
Doctoral student

APPENDIX B: ***Interview Questions for Key Informants (KIs*****)**

Dear informant,

Thank you so much for your willingness to complete this questionnaire for a research entitled 'Farmers collective action and agricultural transformation in Ethiopia'. The research is being conducted by Etenesh Bekele Asfaw in order to comply with the requirements of her studies for the doctoral degree in Development Studies at UNISA. Your participation in this study is strictly confidential. To guarantee the anonymity of your response, you should ***NOT*** *write your name in the questionnaire. The questionnaire involves four major sections. You are kindly requested to complete only three sections. The first part poses questions concerning your social and demographic background. The second part comprises of general and specific questions on farmers' collective action and farmers Development Groups, respectively. The third section has questions to establish relationships between farmers' development group and agricultural transformation. The fourth section is to be filled only by Agricultural Development Agents at the study sites. In total there are 40 questions and filling this questionnaire will require 30 minutes. Kindly, respond frankly and accurately. Should you face any difficulty in completing this questionnaire, please call me on 0912021372*

Date of interview (DAY / MONTH / YEAR)
_____
Time interview started: _____
Time interview ended: _____
Location of interview: Region: _____;
Zone:_____ Woreda:_____
Kebele: _____
KI ID_____ (to be filled by the student)

SECTION A – PERSONAL DATA OF THE KI

This section of the questionnaire specifically asks a few questions about your background as KI. [Mark applicable answer with a cross (X) or circle the answer].

A1. Age:

16-30 yrs	1	30-55 yrs	2	56-65 yrs	3	>65 yrs	4

A2. Sex:

Male	1	Female	2

A3. Education:

None/Illiterate	1	Read and write	2	Grade 1 -8 elementary	3	Grade 9 -12 High-school	4	Diploma or degree (BA / BSc)	5	Post graduate (MA, MSc or PhD)	6

A4. Qualification:

Agriculture Plant science; Animal science; Natural resource mgmt, Ag. Economics, extension, cooperatives, rural development…..)	1	Non-Agriculture Any other field of study not related to agriculture	2

A5. Occupation:

Farmer	1	Government/public	2	Non-government(NGO)	3	Private Business	4

A6. Position at work:

Office head/director /manager process owners, case team leaders	1	Technical Expert	2

SECTION B: FARMERS' COLLECTIVE ACTIONS (Organizing smallholder farmers in groups)

In this section, you are asked about farmer's collective action ***(organizing smallholder farmers in groups)*** *in general and specifically about development groups (ye lemat buden) in the agricultural extension system of rural Ethiopia. Please mark applicable answer with a cross (X), highlight or put priority number in the appropriate box(s).*

General:

B1. In your opinion and experience, does smallholder farmers groups (collective action**)** have **agricultural extension benefits**?

Yes	1	No	2	I don't know	3

B2. If yes, what are the practical agricultural **extension benefits** of smallholder farmers' collective action (groups) in order of priority on a scale of 1 to 5 [1= most important; 2= very important; 3=important; 4= less important; 5 = least important]?

Social Capital (farmers help & support each other)		Scale: For training and advise from DAs at larger scale		Economic: To pull farmers resources (money, labor, land)		Demand Aggregation: To compile farmers demand for inputs		Output Marketing: aggregate products for market	

Other,
specify_____

B3. If collective action **(**smallholder farmers group) has benefits for farmers, **who in the community benefits** the most (by age, income, sex, and education level)?

Age		*Income*		*Sex*		*Education*	
young	1	Rich	1	Women	1	Educated	1
Old	2	Poor	2	men	2	illiterate	2
Same	3	same	3	same	3	same	3

B4. From experience, is Collective Action approach (organizing smallholder farmers in groups) more **efficient** (capable) compared to individual extension approaches to reach and transform individual farms?

Yes	1	No	2	I don't know	3

B5. If not, **why not?** in order of priority on a scale of 1 to 5 [1= most important reason; 2= very important reason; 3=important reason; 4= less important reason; 5 = least important reason]?

CA is time taking and complex		no punishment for not participating in the group		Group formation is costly and focuses on redistribution of resource		CA does not allow individual innovation		CA does not provide any private incentive or good for members	

Other, specify:_____

B6. In your opinion, what are the **success factors** for farmers' collective action (smallholder farmers groups**)** to be transformative, in order of priority on a scale of 1 to 5 [1= most important; 2= very important; 3=important; 4= less important; 5 = least important]?

Similarity of members (age, sex income, culture,)		Private rewards /incentives for members that non-members don't get		Neighbourhood based membership		Interest based membership		Strong Promotion leadership and control) from government	

Other, specify: _____

B7. From experience, what are the **challenges** of organizing smallholder farmers in groups (CA) in order of priority on a scale of 1 to 5 [1= most important; 2= very important; 3=important; 4= less important; 5 = least important]?

Lack of common interest & willingness from farmers		Lack of trust among members		Lack of resource of the SHF		Poor facilitation capacity from government		No challenges	

Other, specify: _____

Specific questions on Development Groups

B8 Are you aware of the farmers' Development Group (DG) or '*ye lemat buden*' arrangements within the participatory agriculture extension system of Ethiopia?

Yes	1	No	2

B9. If the answer to question No 8 above is "yes", in your opinion, is the DGs arrangement the best way for easy delivery of agricultural messages and technologies at a larger scale?

Agree	1	Disagree	2	I don't know	3

B10. Do you **work with DGs** directly or indirectly in your extension work?

Yes	1	No	2	I don't know	3

B11. Are you aware of the '**Participatory extension guideline'** prepared by the MoA in 2007 EC and disseminated to regions for utilization?

Yes	1	No	2

B12. The participatory extension guideline (MoA 2007) states that farmers come together to form a development group based on '***common interest'***, is this the current practice for formation of DGs?

Yes	1	No	2	I don't know	3

B13. If not a common interest, what **motivates** farmers to join a DG on a scale of 1 to 5 [1= most important; 2= very important; 3=important; 4= less important; 5 = least important]?

Political benefits (empowerment to fulfill political commitment		Social benefits (friendship and support to each other)		Economic benefits Credit and other resources		Professional benefits (to develop skills and knowledge)		Pro-collectivism policy of the extension system (joining is a must)	

B14.Since **when(in EC)** are DGs popular in the rural community?

Before 5 years <2002)	1	The last 4 years [2002-2005]	2	One year 2006	3	Very recent2007	4	I don't know	5

Other, specify: _____

B15.Are there farm households **who are not** members of DG?

Yes	1	No	2	I don't know	3

B16. If yes, **why not**? [Multiple answers are possible]

They are not interested	1	No body approached them	2	They don't need DGs to get extension support	3	They were not allowed to join	4	I don't know	5

Other specify_____

B17. What is the **role of the public extension system** in the formation and functioning of the DGs? [Multiple answers are possible]

Facilitation while DG formation	1	Follow-up progress on adoption of technologies	2	Provide training and other information	3	Make sure that group by-laws are followed	4	I don't know	5

Other. specify_____

B18. In your opinion, are the DGs **sustainably functional** by themselves without an external support from Development Agents or other extension workers?

Yes	1	No	2	I don't know	3

B19. Do DG's receive any **financial support or other services directly** from agricultural programs or projects?

Yes	1	No	2	I don't know	3

B20. What is the **level of participation of women farmers**/FHH **as members** in a mixed DG?

Very high	1	Somehow high	2	Neutral	3	Somehow low	4	Very low	5

B21. If **low**, **why**? [Multiple answers are possible]

Lack of time and other resources	1	Lack of interest from women	2	No perceived benefits(rewards) from participation	3	Not encouraged by DA's and DG leaders	4	I don't know	5

Other, specify_____

B22. What is the **level of participation** of youth farmers as members in the DG?

Very high	1	Somehow high	2	Neutral	3	Somehow low	4	Very low	5

B23. If **low, why**?

Lack of time and other resources	1	Lack of interest from the youth	2	No perceived benefits(rewards) from participation	3	Not encouraged by DA's and DG leaders	4	I don't know	5

Other, specify_____

B24. In your opinion, do you think women farmers will benefit more if grouped under women only DG?

Yes	1	No	2	I don't know	3

B25. If no, why not?

_____
_____
_____
_____

B26. In your opinion, has the farmer development group approach in the Ethiopian Extension system lessened the work burden of the Development Agents and shifted the burden to the 'model farmer' or executive committee of the DG?

Yes	1	No	2	I don't know	3

If yes, how?

_____
_____

B27. What general concerns do you have with regards to farmers Development Groups? Please use the space below to write down additional points (for example, observations regarding strengths/weaknesses or recommendations) you wish to mention in relation to the DGs arrangement in the participatory extension system.

SECTION C: DEVELOPMENT GROUPS AND AGRICULTURE TRANSFORMATION

In this section we are going to talk about farmers development groups (ye lemat buden) and their contribution to agricultural transformation (adoption of agricultural technologies, productivity and commercialization, over the last 5 years. [Please mark with a cross (X) in the appropriate box].

C1. Given the evidence that production for crops and livestock has increased in rural Ethiopia over the last 5 years, what is the level of usefulness/effectiveness of DGs in encouraging/promoting **adoption** of improved agricultural technologies and best practices?

Very effective (> 80 %)	1	Somehow effective (50-80%)	2	indifferent (40-50%)	3	Somehow ineffective (20-40%)	4	Very ineffective <20%	5

Other , specify _____

C2. Given that productivity has increased over the last 5 years, what is the level of usefulness/effectiveness of DGs in increasing agricultural productivity in terms of yield/area, yield/animal and yield/person?

Very effective (> 80 %)	1	Somehow effective (50-80%)	2	indifferent (40-50%)	3	Somehow ineffective (20-40%)	4	Very ineffective <20%	5

Other specify _____

C3. Given that rural commercialization has increased in the last 5 years, what is the level of usefulness/effectiveness of DGs in increasing the types and volume of agricultural commodities marketed?

Very effective (> 80 %)	1	Somehow effective (50-80%)	2	indifferent (40-50%)	3	Somehow ineffective (20-40%)	4	Very ineffective <20%	5

Other, specify:_____

C4. Explain the process of how agricultural input and technology demands are collected from DG members?

_____
_____

C5. How are short trainings organised for DG members?

_____
_____

C6. Explain the process of how agricultural messages and technologies are transferred /provided to and utilized by members of a DG?

C7. How is adoption** of extension messages and agricultural technologies monitored **and evaluated** among the DG members? Who is responsible for the M & E?

How is M & E done?
Responsible:

**Adoption: continuous use of improved agricultural practices or agricultural technologies by the smallholder farmer for more than one year

SECTION D: ADDITIONAL QUESTIONS FOR DEVELOPMENT AGENTS AND/ SUBJECT MATTER SPECIALISTS

In this section DAs and SMSs will be asked particular questions about the DGs you work with. [Please mark with a cross (X) in the appropriate box].

D1. How many DGs exist in one Kebele on average?

D2.How many members does one DG have on average?

D3.How are the DGs managed(leadership) and who are they accountable to?

Management:/leadership
Accountable to:

D4. How are executive committee (ex-com) members of the DGs selected and what are their roles?

Selection process:
Role of the ex-com members:

D5. What is the level of participation of women in the executive committee of DGs?

Very high	1	Somehow high	2	Neutral	3	Somehow low	4	Very low	5

D6.Generally, What kind of personality/ **characters** do the leaders/executive committee members of the DGs have?

_____
_____
_____

D7. What additional benefits/privileges do executive committee members of the DGs get?

D8. How often do Development Agents and Subject Matter Specialists meet with one DGs?

Once a week	1	Every day	2	Almost Every 2 weeks	3	Once in a month	4	On need basis	5

Other, specify: _____

D9. Who within the Group do DAs and SMS meet/discuss with to transfer extension message?

The ex-com	1	The chair of the ex-com	2	The general assembly	3

D10. What are the major crops grown in this area for household consumption (3) & the market (3)?

Consumption:
Market:

D11. What are the major livestock types reared (kept by SHFs) in the area for consumption (3) and market (3)?

Consumption:
Market:

D12. What are the new/improved technologies and best practices introduced in the community the last 1-3 years?

New/improved tech for crops (3):
New/improved tech for Livestock(3):
Best practices for crops (3):
Best practices for Livestock (3):

APPENDIX C: ***Individual Farmer Survey Interview Questionnaire***

Dear Interviewee,

Thank you very much for your willingness to be interviewed. This interview is part of a doctoral study entitled 'Farmers collective action and agricultural transformation in Ethiopia' being conducted by Etenesh Bekele. Your participation in this study is strictly confidential. To guarantee the anonymity of your response, your name should NOT be written in the questionnaire. The questionnaire involves three major sections. The first part poses questions concerning your social and demographic background. The second part comprises of specific questions regarding the Development Group you are member in and your interaction with the group. The third section has questions to establish relationships between your development group and your agricultural performance. In total there are 50 questions and filling this questionnaire will require 45 minutes. Kindly, respond frankly and accurately. Should you face any difficulty in completing this questionnaire, please call me on 0912021372

Note: This questionnaire is to be filled out by an interviewer. Please read out the instruction to the interviewee.

Name of interviewer: _____
Date of interview (DAY / MONTH / YEAR)_____
Time Interview Started (time):_____
Time Interview Ended (time):_____
Location of interviewee:
Region_____, Zone _____
Woreda_____
Kebele_____DG ID_____
Interviewee ID:_____

SECTION A: – PERSONAL INFORMATION OF THE INTERVIEWEE

This section of the questionnaire specifically asks a few questions about your background. There is no right or wrong answer. [Mark applicable answer with a cross (X)].

A1. Age:

16-30 yrs	1	30-55 yrs	2	56-65 yrs	3	>65 yrs	4

A2. Sex:

Male	1	Female	2

A3. Education:

None/ Illiterate	1	Read and write	2	Grade 1 -8 elementary	3	Grade 9 -12 High-school	4	Diploma or Degree	5	Post- graduate (MA, MSc or PhD)	6

A4. Religion:

Christian	1	Muslim	2	other	3

A5. Ethnic group:

A6. Marital status:

Single (not married)	1	Married	2	Divorced	3	Widow	4	Other, specify_____	5

A7. Family members: Number _____

No.	Sex	Age	Relationship	Education level	No.	Sex	Age	Relationship	Education level
1					5				
2					6				
3					7				
4					8				

A8. Income status: how would you classify your household compared to others in the community and the surroundings?

Very poor	1	Poor	2	Average	3	Rich	4	Very rich	5

A9. How do you rate your household income source on a scale of 1-3 1= most dominant, 2= dominant, 3=least dominant

Agriculture		Trade		Land or labor contract		Remittance		Can not say	

A10. Are you a model farmer?

Yes	1	No	2

SECTION B: FARMERS' MEMBERSHIP, BENEFITS, RESPONSIBILITIES & ROLES IN A DEVELOPMENT GROUP

In this section, you are asked about your membership, your benefits and roles and responsibilities in the farmers' development group (ye lemat buden) you are member in for the purpose of agricultural extension. Please mark with a cross (X), highlight or put priority number in the appropriate box(s).

B1. Since when are you a member of the DG?

Before 5 years (<2002)EC	1	The last 4 years [2002-2005] EC	2	One year ago [2006EC]	3	Very recent [2007 EC]	4

B2. What motivated you to join the DG? [Multiple answers are possible]

Political benefits (to fulfill political commitment	1	Social benefits (friendship and support to each other)	2	Economic benefits (Credit, cash or kind support)	3	Professional benefits(to develop skills and knowledge)	4	Pro-collectivism policy of the extension system (joining is a must)	5

B3. What is the grouping in the DG based on?

Based on common interest	1	Based on neighbourhood	2	Based on similar economic activity	3	Based on sex	4

Other, specify: _____

B4. What do you do collectively in the DG? in order of priority on a scale of 1 to 5 [1= most important; 2= very important; 3=important; 4= less important; 5 = least important]?

help & support each other	1	ask for common training and advise from DAs and others	2	pull resources money, labor, land for investment	3	compile demand for inputs and do bulk purchase	4	aggregate products for market	5

Other, specify: _____

B5. Is what you are doing now in the DG what you expected before joining the DG?

Yes	1	No	2

B6. Are all your expectations you had about group membership before joining met?

Yes	1	No	2

B7. If not, why not? [multiple answer is possible]

Need time and resource to participate	1	The executive committee is weak	2	DAs and other facilitators do not work as expected	3	No common interest among members	4	Members take advantage of the group	5

Other, specify: _____

B8. What agricultural extension benefits do you get in the DG? [Multiple answers is possible]

Social Capital: Agricultural support from other members	1	Scale: group training/ demonstration and advise from DAs and others	2	Economic: aggregated resources(money/ credit, labor, land) for investment	3	Demand aggregation: compile demand for inputs (fertilizer, seeds, credit etc…)	4	Output marketing: aggregate and transport products for market with better price	5

Other, specify: _____

B9. On an assessment scale of 1 to 5; how do you rate the benefits you get from your DG?

very high	1	High	2	medium	3	low	4	very low	5

B10. Personally, do you consider the group approach for agricultural extension more efficient compared to other extension approaches (individual DA facilitated extension methods) for the members?

Yes, more efficient	1	No, not efficient	2

B11. If not, why not? [Multiple answers is possible]

Group approach is time taking and complex	1	Groups do not allow individual innovation	2	Group formation is costly and focuses on redistribution of available resource	3	No punishment for not participating in the group	4	Groups do not provide any private incentive or good for members	5

Other, specify_____

B12. What additional/special support do you give to women farmers and other needy members of the group? [Multiple answers is possible]

Additional farm and market support (technical and economic)	1	Priority given in access to inputs and output aggregation	2	They are not expected to contribute the same as other members in the DG	3	No special support	4	I don't know	5

B13. What is your role in the DG?

Executive committee	1	Chair person	2	Member	3

B 14. If you are in the executive committee, how different is it than a general assembly member?

More work and too much expectation	1	More technical and economic benefit than others	2	No difference	3

B 15. In general, how do you rate your participation (attending meetings, making decisions, taking actions/tasks and implementing decisions made by the group) in the DG?

very high	1	high	2	medium	3	low	4	very low	5

B16. If any, what role(s) do your other family members have in the DG?

They participate in my absence	1	They work and participate with me	2	No role	3

B17. Do you participate in the planning of agricultural extension interventions and trainings for the group?

Yes	1	No	2

B18. How often does the DG general assembly meet in a month?

Once	1	Twice	2	Three times	3	Other,_____	4	May not meet, not scheduled that way	5

B19. How frequently do you meet with DAs in a month as a DG?

Once	1	Twice	2	Three times	3	Other,_____	4	May not meet, not scheduled that way	5

B20. How are you informed of your General Assembly meetings?

Date and time agreed during the earlier meeting	1	Convenient time for the ex-com, without prior notification to DG members	2	convenient time for ex-com, and with advance notice to all the DG members	3	Based on request of DAs or Woreda SMS without prior notification to DG members	4	Upon request of the DG members	5

B21. What is the means of extension information/technology communication among DG members?

Orally/lecturing	1	Using written material	2	Visual and audio-visual	3	Drama and role plays	4	Demonstration on model farmers plots	5

B22.Who makes agricultural extension decisions in the DG?

the general assembly	1	the executive committee	2	the DA	3	Other,----------	4	I don't know	5

B23.Are you happy how decisions are made?

Yes	1	No	2	Can not say	3

B24.On an assessment scale of 1 to 5; how do you rate the communication and transparency among group members?

very high	1	high	2	medium	3	low	4	very low	5

B25. What is your perception of the likelihood that your DG will sustain in the next two to five years?

highly likely	1	some possibility	2	small possibility	3	no possibility	4	do not know	5

SECTION C. AGRICULTURAL PERFORMANCE OF DGs (PRODUCTIVITY/ TECHNOLOGY ADOPTION/COMMERCIALIZATION)

In this section, you are asked about the agricultural performance of the farmers' development group (ye lemat buden) you are member in. Please mark with a cross (X), highlight or put priority number in the appropriate box(s).

C.1. What is your assessment of the performance of your DG in providing agricultural extension services to members (technical and material):

	Excellent	1	Good	2	Neutral	3	Poor	4	Do not know	5
In rearing livestock										
In crop production										
In natural resource mgt										
In market info & linkage										

C.2 What is your assessment of the degree of contribution of your DG to improvements in local agricultural production and productivity?

Strong contribution	1	Some contribution	2	Very little	3	No contribution	4	Do not know	5

C.3. How do you perceive the changes in your personal agricultural performance (adoption, productivity and commercialization) after joining the DGs?

Major improvement	1	Some improvement	2	No improvement	3	Deterioration	4	Do not know	5

C.4 How helpful is the DG for community conversation and networking on various issues other than agriculture?

Theme	Very helpful	1	Helpful	2	Neutral	3	Harmful	4	Do not know	5
Education										
Health and nutrition										
Politics and security										

C.5 On an assessment scale of 1 to 5 what was the reality of realizing increased *productivity* for major crops & livestock in the last two years among all members of the DG?

Item	very high	1	high	2	medium	3	low	4	very low	5
For crops										
For Livestock										

C.6 On an assessment scale of 1 to 5, how do you rate the *access to new technology* and best practices that members of your DG have?

Item	very high	1	high	2	medium	3	rather low	4	very low	5
For crops										
For livestock										

C.7 On an assessment scale of 1 to 5 what was the reality of realizing increased *adoption* of new technologies & practices in the last two years among all members of the DG?

Item	very high	1	high	2	medium	3	low	4	very low	5
For crops										
For livestock										

Land/crop productivity

C8. Do you have farm land?

Yes	1	No	2

C9. If yes, what size (in ha) did you farm in 2006/2007 EFY?

C10. Is part of your total land irrigable?

Yes	1	No	2

C11. How did you get your land?

Own/ family land		Rented		Share cropping		Other…….	

C12. What crops do you grow on your land in order of priority? [Multiple answers is possible] and how much (in qt.) did you produce of each commodity last year?

Cereals		Oil crops		pulses		fruits		vegetable		fodder	
Qt.											

C13.Did you receive any advice and technical training or demonstration through the DG to invest on your land to improve its productivity over the last two years?

Yes	1	No	2

C14.If yes, what advice and new technology where you introduced on farm land/crop yield improvement through your DG the last two years? [Multiple answers is possible]

Improved agronomic practices (weeding/ seed bed preparation/row planting/ soil and water conservation.)	1	Increased application of chemicals (fertilizer, pesticide/ herbicide)	2	Increased use of organic fertilizer	3	Use of high yielding/ improved seeds	4	Use of farm tools mechanization	5

C15.Which advice on best practice or technology did you use/apply the last two years and how much did each investment cost you in ETB per year?

Improved agronomic practices	1	Application of chemicals	2	Organic fertilizer	3	High yielding / improved seeds	4	farm tools mechanization	5
Cost:									

C.16 Did you receive any technical or financial assistance with your investment in C- 15 from the DG members?

Yes	1	No	2

C.17. Did your investment bring you crop productivity increment?

Yes	1	No	2

C18. Do you plan to continue investments on land/crop productivity in the future?

Yes	1	No	2	Can not say	3

Livestock productivity

C19. Do you have farm animals/ Livestock?

Yes	1	No	2

C20. If yes, which animals do you have (more than 3)?

cattle (dairy /oxen)	1	Sheep	2	goats	3	bee colony	4	poultry	5

Other, Specify_____

C21.Did you receive any advice and technical training or demonstration through the DG to invest on your livestock to improve productivity over the last two years?

Yes	1	No	2

C22.If yes, what advice or best practice and new technology were you introduced to on livestock productivity improvement through the DG for the last two years? [Multiple answers is possible]

Improved management practices (housing, cleaning, health care, feeding.)	1	Fodder production and processing	2	New/productive animal breeds	3	Use of tools mechanization	4	Other……	5

C23.Which advice or technology did you use/apply the last two years and how much did each investment cost you in ETB per year?

Improved management practices	1	Fodder production	2	New animal breed	3	Tools	4	Other…	5
Cost:									

C.24 Did you receive any technical or financial assistance with your investment in C- 23 from the DG members?

Yes	1	No	2

C.25 Did your investment bring you animal productivity increment, or have you witnessed any change as a result of using the technology?

Yes	1	No	2

C26. Do you plan to continue investments on animal productivity?

Yes	1	No	2	Can not say	3

Commercialization

C27. Do you consider yourself as a small commercial farmer?

Yes	1	No	2

C28. On an assessment scale of 1 to 5 what was the reality of realizing *increased quantity and quality* of products for the market in the last two years among all members of the DG?

Item	very high	1	high	2	medium	3	rather low	4	very low	5
For crops										
For livestock										

Quality

Item	very high	1	high	2	medium	3	rather low	4	very low	5
For crops										
For livestock										

C29. Which priority crops and animals did you take to the market last year and what is the proportion of what you produce (% age)?

Item		%		%		%		%		%
Crops										
Livestock										

C30. What is the average *profit (ETB) (revenue- cost) you got* last year from selling:

Item	Crops	Livestock
Profit (Birr)		

C31.What kind of support do you get from the DG to improve your commercialization (market production) in order of priority?

Advise	Demand assessment		Input provision		Quality at production		Value addition		Product aggregation and transport		Market linkage	
Crops												
Livestock												

C32.Where do you sell your products?

Item	Local Kebele mkt	1	Woreda market	2	Regional market	3	Out of the region	4	Other	5
For crops										
For livestock										

Labor productivity

C 33. Have you received any skill/knowledge enhancing formal training on improving agricultural productivity (land/crop productivity, animal productivity) as a group in the last two years?

	Yes	1	No	2
Crop				
LS				
Marketing				

C 34.If yes, how often did you get formal trainings the last one year?

Once in every month	1	Once every 3 months	2	Once in 6 months	3	Once a year	4	Can't say	5

Other, specify: _____

C 35. Who **mostly** gave you the trainings?

Development Agents	1	Model farmers	2	Woreda SMS	3	Others from region or AA	4	Can't say	5

Other, specify:……..

C36. How useful and relevant to what you are doing are the trainings you receive in a group?

very useful and relevant	1	Useful but not relevant	2	Not useful nor relevant	3	Can not say	4	Other…..	5

C37. Are your theoretical trainings followed by practical demonstration sessions?

Yes always	1	Sometimes	2	No not at all	3

C38. Where are most of the trainings and demonstrations held?

At FTC	1	At a model farmer plot	2	Other:	3

C39. Do you have the knowledge, skills, and tools to maintain and refer what you have learnt for the future?

Yes	1	No	2

C 40. What are your challenges as member of the DG group?

_____

_____

C41.What would you change to improve the usefulness and efficiency of your DG with regards to agricultural transformation?