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The Ethiopian Agricultural Extension System and Its Role as a Development Actor: Cases from Southwestern Ethiopia

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Dedication

To my father, the late Leta Dufera and my mother Himire Tuli who sparked my academic career and for their love, care and support in their prayer.

Abstracts

Smallholder agriculture forms the backbone of the Ethiopian economy, supporting about 85% of the country's population. Since the late 1960s, the state has been actively pursuing agricultural extension as a key means of agricultural and rural development as well as economic transformation. Over the years, the state has introduced several reforms to update and validate its agricultural extension agenda. However, despite reforms, the effectiveness of the extension service in promoting technology transfer and enhancing its adoption has remained low. Top-down planning and poor technology transfer have been identified as the main bottlenecks. In 2010, as part of its recent reform process, the Ministry of Agriculture has adopted the participatory extension system, which is characterized by the formation of farmer groups. Development agents and model farmers are key actors in the implementation of the participatory extension system. The *kebele* administration oversees the implementation at the local level. However, *kebeles* are weakly institutionalized with poor capacity; hence, their duties are often transferred to the development agents. Despite the steadily increasing number of development agents, most are insufficiently trained and involved in multiple activities, which diminishes their effectiveness in providing extension services and earning the farmers' trust. Attempts have been made to provide group extension services through public mobilization; however, community involvement is achieved through persuasion and pressure, which can lead to adverse effects on their participation. This study examines the participatory extension system from perspective of governance, participation and evolution of agricultural extension. The main aim of the study is to analyze and describe the Ethiopian agricultural extension system and understand its opportunities and challenges as a development actor. It draws on field research data collected in 2015 and 2016, using a mixed methods approach, secondary data, and literature reviews. Data were documented, coded and analyzed using ATLAS.ti and SPSS. The findings of the study show that the Ethiopian state has invested considerable resources in maintaining a strong agricultural extension system. Over the years, the state has developed and issued a series of agricultural policies and strategies to nurture service provision and promote rural development. However, the strategies are typically not well communicated to the actors and end users. The implementation of the participatory extension system is also inconsistent, showing limited impact and sustainability across study sites. Agricultural extension is constrained by multiple challenges: high input and low output prices, knowledge and skill gaps among development agents and model farmers, non-inclusive extension services system, ambitious top-down allocation of plans, and actors' involvement in non-extension activities. These limit farmers' participation in technology adoption and upscaling and weaken the efficiency of both the development agents and the model farmers. As a result, the majority of the farmers resort to social learning and local network for interactions and for acquiring knowledge. This analysis indicates that along with the public, involving the private and non-governmental organizations extension services may allow other actors to be involved in the extension services and help address the prevailing gaps of inadequate capacity and skills, shortage of inputs such as improved seeds, and price escalation. Understanding strengths, limitations and reform options of the current system through the lens of Evolutionary Governance Theory, can also enable top actors/planners to formulate better policies and strategies. Introducing pro-poor strategies is vital to involve the disadvantaged groups of the society. Promoting real farmer participation and a paradigm shift in focus—from targeting spatial coverage to effective outcomes—are essential for the agricultural extension system to succeed. Realistic decentralization also believed to promote real participation and allow farmers to develop a sense of ownership toward the development initiatives. Exempting development agents and model farmers' involvement in non-extension activities, while improving their skill sets, is also vital for improving the agricultural extension service system in Ethiopia.

Zusammenfassung

Kleinbäuerliche Landwirtschaft beschäftigt als Grundlage der äthiopischen Wirtschaft die Mehrheit (ca. 85%) der Bevölkerung des Landes. Seit den 1960er Jahren baut der äthiopische Staat die landwirtschaftliche Beratung als Mittel zur ländlichen Entwicklung und wirtschaftlichen Transformation massiv aus. Über die Jahre wurden die staatlichen landwirtschaftlichen Beratungssysteme häufig neu ausgerichtet. Trotz zahlreicher Reformen ist ihre Effektivität jedoch gering geblieben. Hauptprobleme liegen in einer hierarchischen Planung und unzureichendem Technologietransfer. Im Zuge neuerlicher Reformen hat das äthiopische Landwirtschaftsministerium im Jahre 2010 das partizipative, landwirtschaftliche (participatory extension system) verabschiedet, welches die Bildung von *farmer groups* vorsieht. Development Agents und sogenannte *model farmers* sind die Hauptakteure in der Umsetzung von landwirtschaftlichen Beratungssystemen. Die *kebele* Gemeindeadministrations sollen dabei die Umsetzung auf lokaler Ebene übernehmen. Da diese jedoch in der Regel über zu geringe Kapazitäten verfügen, werden diese Aufgaben häufig an die development agents übertragen. Die Anzahl von development agents im ländlichen Äthiopien hat in den letzten Jahren stark zugenommen. Allerdings sind sie zumeist unzureichend ausgebildet und in eine Vielzahl von Aktivitäten involviert, was ihre Effektivität in der Bereitstellung landwirtschaftlicher Beratung sowie in der Gewinnung des Vertrauens der Bauern einschränkt. Es wurde daher versucht, Gruppenberatungsdienste durch öffentliche Mobilisierung bereitzustellen. Dabei wurde versucht, die Einbindung der lokalen Bevölkerung weitgehend durch Druck zu erzielen.

Diese Studie untersucht das landwirtschaftlichen Beratungssystem in Äthiopien unter Nutzung der Konzepte von *governance*, Partizipation und der Entwicklung landwirtschaftlicher Beratungsdienste. Das Hauptziel der Arbeit besteht in der Beschreibung und Analyse des äthiopischen landwirtschaftlichen Beratungssystems und seiner Rolle als Entwicklungsakteur. Die Studie baut auf Feldforschung auf, die in den Jahren 2015 und 2016 in Äthiopien durchgeführt wurde. Dabei wurde ein Methodenmix angewandt. Die Primärdaten wurden mit Hilfe von ATLAS.ti und SPSS verarbeitet. Die Ergebnisse der Studie zeigen, dass der äthiopische Staat große Ressourcen in den Aufbau und die Bereitstellung von landwirtschaftlichen Beratungssystemen investiert. Über die Jahre hat der Staat dabei eine Reihe an Strategien entwickelt um landwirtschaftliche Dienste im Speziellen und ländliche Entwicklung im Allgemeinen zu fördern. Diese Strategien wurden allerdings häufig nicht ausreichend an die Akteure und Betroffenen kommuniziert. Die Umsetzung von landwirtschaftlichen Beratungssystemen erfolgt häufig widersprüchlich, mit eher geringer Wirkung und Nachhaltigkeit in den Untersuchungsgebieten. Generell stehen die staatlichen landwirtschaftlichen Beratungsdienste vor großen Herausforderungen, wie etwa hohen Kosten für landwirtschaftliche Produktionsgüter, niedrige Preise für die erzeugten Produkte, einer unzureichenden Qualifikation der Berater, nicht inklusiven Beratungssystemen, überambitionierten und hierarchischen Planungen, sowie der Mitwirkung von development agents in zahlreichen nicht-Beratungsaktivitäten. All dies beschränkt die Partizipation der Bauern sowie die Einführung und Hochskalierung von Technologien. Als Konsequenz vertraut

die Mehrzahl der Bauern auf informelles soziales Lernen und lokale Netzwerkkinteraktionen für den Wissens-, und Technologietransfer. Die hier vorgelegte Analyse zeigt, dass die Einbindung von privaten Dienstleistern und Nicht-Regierungs-Organisation – in Zusammenarbeit mit den staatlichen landwirtschaftlichen Beratungsdiensten - helfen könnte, grundlegende Probleme wie die ungenügenden Kapazitäten, das geringe Fachwissen, und den Mangel an Produktionsmitteln (etwa an verbessertem Saatgut) wirksam anzugehen. Die Stärken, Beschränkungen und Reformmöglichkeiten des gegenwärtigen Beratungssystems mit Hilfe der *Evolutionary Governance Theory* zu verstehen kann wichtigen Akteuren und Planern helfen ihre Politiken und Strategien besser zu formulieren. Armutsorientierte Ansätze sind dabei entscheidend um benachteiligte Gruppen der Gesellschaft einzubinden. Eine wirkliche Einbeziehung und Beteiligung der Bauern und ein Paradigmenwechsel weg von einer flächendeckenden Bereitstellung unzureichender Dienste hin zu effektiver Wirksamkeit ist dabei wesentlich um das landwirtschaftlichen Beratungssystems erfolgreich zu gestalten. Dezentralisierung kann dabei helfen Partizipation zu befördern und Bauern zu ermöglichen Beteiligungsstrukturen anzunehmen. Nicht zuletzt ist die Regelung der Mitwirkung von *development agents* und *model farmers* in nicht-Beratungsaktivitäten, sowie die Integration und Stärkung ihrer Expertise absolut erforderlich zur Verbesserung des landwirtschaftlichen Beratungssystems in Äthiopien.

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Glossary of Local Language Terminology

Terms	Local Language	Description
<i>Adda dures</i>	<i>Afan Oromo</i>	Model farmers who are locally called lead farmers in extension.
<i>Arfe</i>	»	The four local judges who are serving the <i>iddir</i> groups.
<i>Dado/Dugde</i>	»	Collective labor group where group of farmers share labor in reciprocal fashion.
<i>Debo/Jigi</i>	<i>Amharic</i> <i>/Afan Oromo</i>	Collective labor support group where the hosting person supply food and drink.
Gingema	<i>Amharic</i>	Politically motivated evaluation employed to reinforce development and service provision.
<i>Hiwas</i>	»	Political cell, formed as a learning and discussion platform for member of the political party.
<i>Hordoftoota</i>	<i>Afan Oromo</i>	Farmers who are follower of the model farmers.
<i>Iddir/Abalaga</i>	<i>Amharic/</i> <i>Yemsa</i>	An indigenous and voluntary self-help association (institution) established mainly to provide funeral services and bereavement consolations.
<i>Kebele</i>	<i>Amharic</i>	A lower administrative unit below district.
<i>Ketena</i>	»	It is a sub- <i>kebele</i> where most <i>kebeles</i> are divided into three to facilitate provision of extension and administrative service.
<i>Nikinake</i>	»	Name given to the mobilization of labor and skill development to promote collective action in agricultural extension.
<i>Qorannoo</i>	<i>A. Oromo</i>	Politically motivated evaluation employed to reinforce development and service provision.
<i>Raya-misooma</i>	»	Generic name offered for farmer groups. It is equivalent to the “development army.”
<i>Woreda</i>	<i>Amharic</i>	Administration level equivalent to district.
<i>Yelewut - budin</i>	»	Change team - constituted to assess progress of every staff who are working in closely related departments’ every week or two to reinforce implementation of seasonal activities according to the plan.

List of Acronyms

ADLI	Agricultural Development Led Industrialization
ADPLAC	Agricultural Development Partners Linkage Advisory Council
AES	Agricultural Extension System
AGP	Agricultural Growth Program
AMIP	Agricultural Marketing Improvement Program
ARDU	Arsi Rural Development Unit
ATA	Agricultural Transformation Agency
ATLAS.ti	Qualitative Data Analysis and Research Software
ATVET	Agricultural Technical and Vocational Education Training
BH660	Bako Hybrid maize variety
BoANR	Bureau of Agriculture and Natural Resources
BPR	Business Process Reengineering
CADU	Chilalo Agricultural Development Unit
CoC	Certificate of Competency
CPP	Comprehensive Package Project
DA	Development Agent
EGT	Evolutionary Governance Theory
EIAR	Ethiopian Institute of Agricultural Research
EPRDF	Ethiopian People’s Revolutionary Democratic Front
FGD	Focus Group Discussion
FTC	Farmers Training Center
GFRAS	Global Forum for Rural Advisory Services
GTP	Growth and Transformation Plan
HABP	Household Asset Building Program
ICT	Information Communication Technology
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund

ISSD	Integrated Seed Sector Development Project in Ethiopia
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MLND	Maize Lethal Necrosis Disease
MoA	Ministry of Agriculture
MoANR	Ministry of Agriculture and Natural Resources
MoFED	Ministry of Finance and Economic Development
MPP	Minimum Package Program
NEIP	National Extension Intervention Program
NGO	Non-Governmental Organization
NPC	National Plan Commission
NRM	Natural Resource Management
OCSA	Oromia Credit and Saving Association
OMF	Omo Microfinance
OSHO	Oromia Self-Help Organization
PADEP	Peasant Agriculture Development Extension Projects
PADETES	Participatory Demonstration and Training Extension Systems
PASDEP	Plan for Accelerated and Sustainable Development to End Poverty
PES	Participatory Extension System
PM&E	Participatory Monitoring and Evaluation
PRA	Participatory Rural Appraisal
RELC	Research and Extension Linkage Committee
RUFIP	Rural Finance Implementation Program
RWH	Rainwater Harvesting
SDG	Sustainable Development Goal
SDPRP	Sustainable Development and Poverty Reduction Program
SG 2000	Sasakawa Global 2000
SIDA	Swedish International Development Cooperation Agency
SMS	Subject Matter Specialist

SNNPRS	Southern Nations, Nationalities and People's Regional State
SPSS	Statistical Package for Social Sciences
T&V	Training and Visit
ToT	Training of Trainers
TVET	Technical and Vocational Education Training
WADU	Wolayita Agricultural Development Unit
WOANR	Woreda Office of Agricultural and Natural Resources
WSM	Watershed Management
ZOANR	Zone Office of Agriculture and Natural Resources

Chapter 1:

Agriculture in Ethiopia: An Overview

1.1 Introduction

Ethiopia is the second most populous country in Africa, with an estimated population of about 102,321,720 (World Population Review 2016). Agriculture is the mainstay of the economy, accounting for 38.5% of the gross domestic product (GDP) and 85% of the population's livelihood (NPC 2015; BMGF 2010; Dercon *et al.* 2009). Over the last four decades, the country's agricultural and rural development policies and strategies have changed to keep pace with the economic development and rural transformation goals of the regimes. However, agricultural production and productivity from smallholder farming has been very low and insufficient to feed the growing population in the country, which has been constantly struggling with problems of food and nutrition security. Recognizing the prevailing issues, the government consider improving agricultural production and productivity through expanding and reinforcing agricultural extension is the best resort to reduce poverty, ensure food security and sustainably manage the natural resources.

Historically, agricultural extension policies date back to early 1950s; however, the then government hardly focused on agriculture (Cohen 1987; Ottaway 1977). During the *Imperial* regime (1930 to 1974), Ethiopia passed only three consecutive five-year economic development plans from 1957 to 1973 (Adams 1970). Despite agriculture accounting for 90% of the country's exports and employment opportunities, the sector did not receive the attention it deserved until the third five-year development plan from 1967 to 1973 (Abate 2004; Belay 2003; Adams 1970). The third five-year plan was thus responsible for bringing Ethiopia's development strategy into focus, with a strong emphasis on increasing agricultural production. However, much of the focus and funding were directed toward large-scale commercial agriculture, with little attention being paid to subsistence (peasant) agriculture which are together makes up the majority of Ethiopian agriculture (Adams 1970). Moreover, the agricultural economy largely relied on donors fund support, interests, and developmental roadmaps. For instance, the United States Agency for International

Development (USAID) provided a large share of resources to Ethiopian agriculture from 1950s to 1970s (Adams 1970).

The history of integrated rural development efforts in Ethiopia dates to the late 1960s, when numerous extension programs and projects were designed and implemented throughout the country. The Chilalo Agricultural Development Unit (CADU), which was launched as part of a broader project known as Comprehensive Package Project (CPP) in 1967, received financial support from the Swedish government (Spielman *et al.* 2012; Abate 2007; Belay 2003; Adams 1970). CADU, which latter evolved to the Arsi Rural Development Unit (ARDU), used an integrated approach to agricultural development and served as the blueprint for similar area-based developmental activities such as Wolayita Agricultural Development Unit (WADU) in 1970 and Ada'a District Development Project (1972). The package involved some applied research initiatives, extension, credit, cooperative development, model farmers, and market intervention. Connecting sites through rural road development projects was also a part of the CPP. One might argue that, CADU was the first significant attempt to transfer knowledge and technology from the global north to Ethiopia within the framework of north-south hegemonic knowledge transfer, actioned by the non-colonial Sweden (Bruno, undated).

The successful outcome of CPP led to the project being replicated on a relatively large scale, as part of an upscaling lesson in area development and through minimum package programs (MPP I and MPP II). MPP-I was planned and implemented from 1971 to 1974, whereas the implementation of MPP-II extended from 1981 to 1985 because of the revolution and political instability, including the historic land reform process during early *Derg* military regime (1974 to 1991). MPP-I was expected to reach a large number of farmers; the project aimed at adopting and implementing the substantial experiences of CPP and area development projects (Abate 2007; Abate 2004; Belay 2003). MPP-I was known for its extraordinary approach and success in agricultural extension. Similarly, the aim of MPP-II was to cover as many districts (*woredas*) as possible, but it fell short of achieving its goals. Among others, the minimal availability of development agents (DAs) in the country was a challenge (Belay 2003). MPP-II was funded by the World Bank, the International Fund for Agricultural Development (IFAD), and, to a limited extent, by the Swedish International Development Cooperation Agency (SIDA) (Belay 2003). Later, from

1986 to 1995, the Peasant Agriculture Development Extension Project (PADEP), funded by the World Bank, Africa Development Bank, and other donors, was launched in seven of the eight agro-ecologically delimited zones of the country (Abate 2004; Belay 2003). The project aimed at applying the modified training and visit (T&V) extension approach.

PADEP, which was designed after a critical evaluation of the past extension strategies, was aimed at introducing noticeable changes to peasant agriculture through concerted and coordinated efforts in the areas of agricultural research and extension (Belay, 2003). An innovative extension strategy of PADEP was designed with different focus areas and objectives such as agriculture, comprehensive rural development, management of natural resources, rehabilitation of degraded land, and irrigation development (Abate 2007; Belay 2003). However, owing to the inflexible and prescriptive economic policies and strategies pursued by the *Derg* military regime, the multilateral donors withheld their financial assistance. As a result, the comprehensive program was not effectively implemented. The government rejected donors' demands for policy changes such as market liberalization and eventually obstructed the country's access to financial aid from abroad. This had a debilitating effect on the progress of the country's agricultural economy, particularly the agricultural extension services, and eventually led to the fall of the *Derg* military socialist regime in 1991.

In early 1995, an extension campaign known as National Extension Intervention Program (NEIP) was launched by the Ministry of Agriculture (MoA) of the government of Ethiopia to create farmers demand for agricultural technologies but failed short to achieve its goal. In the same year, the current government adopted a new comprehensive Agricultural Extension System (AES), which was based on a thorough assessment of the past system, known as the Participatory Demonstration and Training Extension System (PADETES). The system drew on the positive experiences of T&V and the Sasakawa Global 2000 (SG 2000) extension approach, which was a project operated by an international Non-Governmental Organization (NGO) that have been actively working in Ethiopia since 1992 (Abate 2007; Belay 2003). PADETES was established with the aim of (1) increasing production and productivity of smallholder farmers through research-generated information and technologies; (2) increasing farmers' participation in development process; (3) ensuring food security; (4) increasing the supply of raw materials to the industry; and (5) managing

the natural resource bases of the country (Spielman *et al.* 2012; Davis *et al.* 2010; Abate 2007; Belay 2003). Despite its introduction in 1995, PADETES was not fully implemented right from the start. The radical shift, ushered by the PADETES, from a commodity-based extension approach to a functional or process-based organizational structure was viewed as a threat by many actors (Abate 2007). As explained by van Assche *et al.* (2014), the legacy from the past restricted the progress of new governance in Ethiopia's agricultural extension. Abate (2007) adds, "the legacy of the top-heavy organizational structure in the MoA both at the federal and regional levels could not permit innovative and radical ideas to bring complete change to the *status quo*."

Governance paths continued to impede efforts at introducing changes via the PADETES. The existing federal and regional bureaucratic institutions and actors protested against the system (Abate 2007). Further, sufficient time was not allocated for introducing the system at all levels: region, *woreda*¹ and the *kebele*². *Woredas* were characterized by weak decentralization, insufficient capacity, and poor decision-making ability (Debebe 2012). As the final implementing institutions at the local level, the *kebele* administrations were too weakly institutionalized to provide the comprehensive administrative support that could stimulate the realization of agricultural extension. Additionally, almost all *kebele* administrators were uncertain of their level of autonomy with regard to decision-making on matters of socio-political and economic development.

Each administrative region was given the opportunity to contextualize the PADETES to its own specific situation. However, actors at all levels misunderstood the system, and some important elements were violated from the beginning. In 2004, following the reformation of the MoA to Ministry of Agriculture and Rural Development (MoARD), the official operation of the PADETES came to an end. However, its legacy, particularly the concept and some of its approaches, continues to persist in the newly adopted Participatory Extension System (PES), a modified version of the PADETES launched in 2010 (MoA 2010). As a result of an evolution in the coordination of agricultural extension (van Assche *et al.*

¹ *Woreda* is the administrative equivalent of a district in Ethiopia.

² *Kebele* is the smallest administrative unit in Ethiopia, below the *woreda* level. A sub-*kebele* is known as a "*ketena*." Decision-making is concentrated at the *kebele* level and led by an elected chairperson currently known as an "administrator."

2015), the new PES shares some of the goals of the PADETES: increasing the extension coverage and upscaling technologies and best practices by stimulating task-sharing between the DAs and model farmers who are labelled as development team leaders (see Figure 1.1).

Some senior and junior experts at different levels still refer to the PADETES, despite its formal termination and replacement by the PES. This hints at the fact that policies and strategies developed and issued by the MoA, which was replaced in mid-2016 by the Ministry of Agriculture and Natural Resources (MoANR), are often not streamlined well enough to reach the grassroots. The best approaches may be unnoticed, discarded, or replaced by new systems without testing or without the actors and/or end users gaining familiarity with them.

The AES is an administration-led endeavor that is mainly aimed at increasing production and productivity to meet the food security needs of the rapidly growing population. Apart from the efforts to modernize and link agricultural extension to the market, the system is not yet in place. Although the involvement of the private sector and farmer cooperatives in promoting market-oriented extension was anticipated, in reality, these actors have not been appropriately involved (see Appendix Table B1). In fact, non-governmental organizations (NGOs) are still actively engaged in linking farmers' products to the market. However, the scale and sustainability of their interventions are sporadic. Thus, their roles are limited to a definite time and domain. Further, a pluralistic extension services system has not been endorsed or implemented as part of the national strategy of the AES (Leta *et al.* 2017a). Instead, agricultural extension has largely focused on achieving the government's short-and long-term plans and other strategic goals such as increasing production and productivity, fostering state–farmers ties to secure a strong support base, and ensuring a stable state and governance.

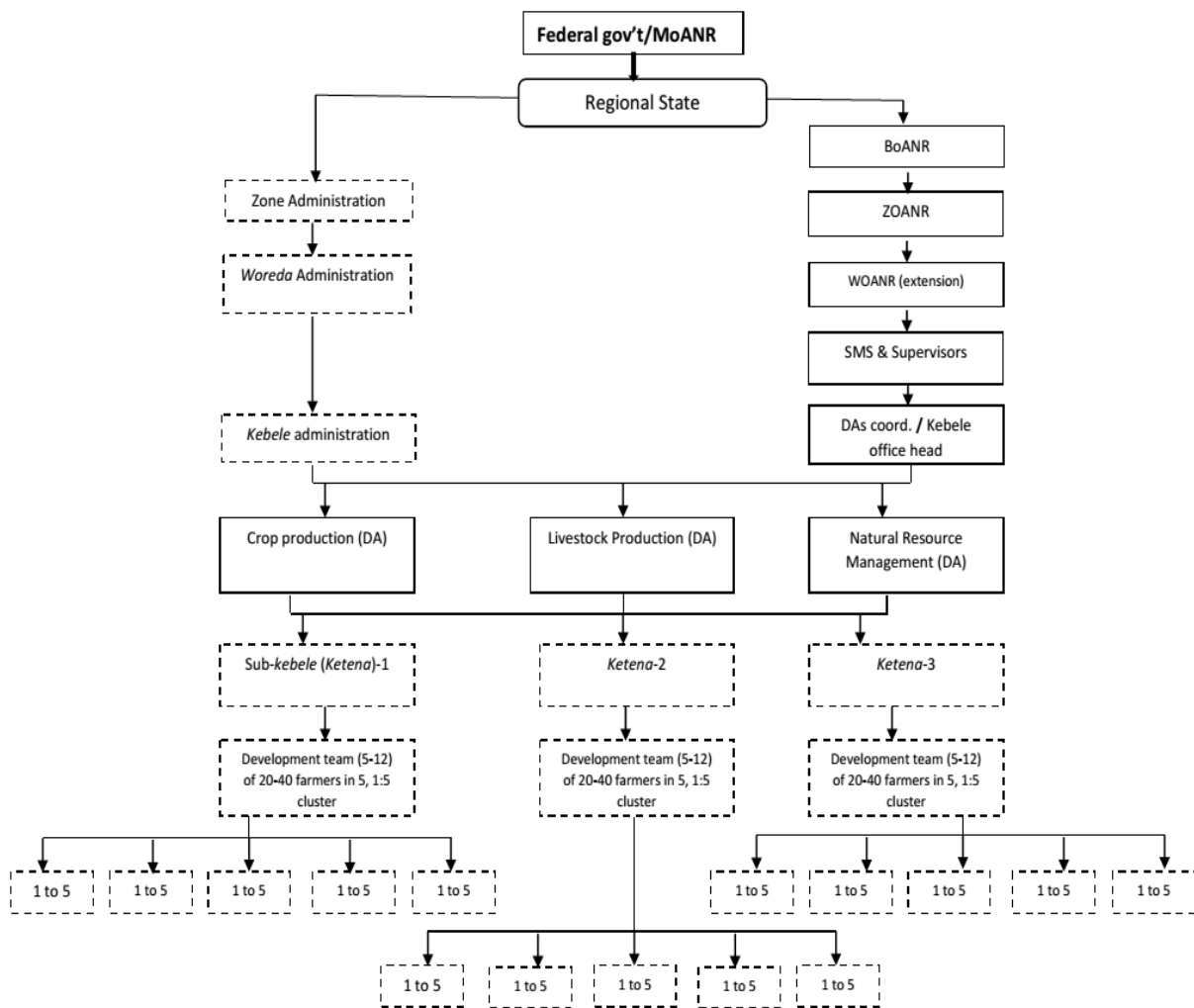


Figure 1.1: Functional structure of the PES where DAs receive instruction both from the administration and the agriculture line offices.

Source: Adopted from Leta *et al.*, 2017a.

Usually, the adoption and application of new technologies and knowledge are considered approaches to end poverty and food insecurity among smallholder farmers. To this effect, under the PES, technologies and best-practices are showcased by model farmers and Farmers Training Centers (FTCs) to stimulate upscaling. Nevertheless, inadequate efforts have been made to encourage technology adaptation, farmer's creativity, and the promotion and application of local knowledge or practices and use of local materials. In this thesis, I mainly focus on the recently adopted PES as a continuation of the AES reform process in Ethiopia.

1.2 Problem Statement and Relevance of the Study

During the previous two regimes in Ethiopia (the *Imperial* and the *Derg* military regime), a centralized administrative system prevailed, where planning and implementation of agricultural extension and rural development activities followed a top-down path. A decentralized federal governance system was introduced and adopted by the current Ethiopian People's Revolutionary Democratic Front (EPRDF) government in the early 1990s (Habīb and Mohammed 2010). However, in practice, the governance system has only experienced a quasi-transformation as the planning system, known as the quota system, continues to follow a top-down flow—from the center to the region and *woredas*. Moreover, different categories of farmers are not equally targeted by the extension services. Often, new technologies or practices are introduced for implementation, irrespective of their suitability to the farming system, the socio-economic conditions of the users, or their needs. Naturally, there is a tendency among farmers to resist new technologies or practices, which are recommended as a one-size-fits-all solution.

Considerable efforts have been made by the state to improve agricultural development and reduce poverty through the agricultural extension service³. The Ethiopian AES has witnessed several reforms over the years. However, despite efforts to halt and reverse the problems related to extension services, the centralized top-down route to technology transfer remains the overarching development paradigm (Spielman *et al.* 2010; Gebremedhin *et al.* 2006). Thus, although agricultural extension is targeted at ensuring food security, it has never resulted in a breakthrough in the Ethiopian agricultural sector, particularly in the interest of smallholder farmers. The extension system has not realized a truly decentralized management structure in Ethiopia (Davis *et al.* 2010). Further, there is a lack of in-built monitoring and evaluation systems at different levels (Davis *et al.* 2010; Gebremedhin *et al.* 2006). Since agricultural extension activities are now being planned and implemented at the regional level, distinctions have been made in the structure and functions of the system between regions and *woredas*. While slightly different strategies are adopted and implemented by regions and *woredas*, most changes to the extension system

³ The term “agricultural extension services” and “agricultural advisory services” are being interchangeably used in different countries and different context. In this thesis, however, I now work on the earlier term which is ever more common in Ethiopia.”

are often made without a thorough evaluation of the previous system (Abate 2007; Gebremedhin *et al.* 2006).

The adopted PES aims to increase the overall coverage of the extension through technology or best practice upscaling (Leta *et al.*, 2017a; MoA 2010). However, much is not known about how the new system operates to realize the government's strategic goals of poverty reduction, ensure food security and sustainably manage the natural resources. In addition to the considerable investment in agriculture, nearly all agricultural extension services in Ethiopia is provided by the state. However, the role and interest of the state in the PES is not clearly known in research. Specifically, the general roles of the state actors at different levels and their interaction and tradeoffs in addressing common goals are not well known. Additionally, a systematic study has not been carried out either on the role of DAs and model farmers in implementing PES and rural development or on the farmer's rationale for adoption or non-adoption of agricultural technologies. Another important gap in the AES is analyzing alternative means to foster knowledge transfer among resource-poor farmers, build their resilience against growing systemic inequalities, and enabling their access and contribution to epistemic resources. Thus, the social learning has not been documented in this context, despite its significance as a coping mechanism to the discriminatory policies of the extension services system and its role in stabilizing the mounting epistemic oppression compounded by the lack of pro-poor policies and strategies.

This study examines the challenges and opportunities of agricultural extension in Ethiopia and sheds light on the issues prevailing in extension services within AES. It also contributes to the understanding of the system, by identifying and describing the missing link between the public AES and its actual outcomes. I employ the Evolutionary Governance Theory (EGT) (Beunen *et al.* 2015; van Assche and Hornidge 2015; van Assche *et al.* 2014) and a broad understanding of extension, proposed by Leeuwis *et al.* (2003), to analyze *governance paths*, agricultural extension, knowledge development and its uses. By exploring inherent collective labor groups, how innovation is communicated to farmers through informal institutions, and other socio-cultural events, this study contributes to social learning and diffusion of knowledge, technologies, and best practices. It also contributes to theory building, conceptualization of knowledge, and identification of pertinent issues in agricultural extension by examining the associations and linkages between

actors/institutions, their interactions and tendencies to co-evolve; formal/informal institutions and their complementary effects; power/knowledge and their configurations; and the contradiction between the rhetoric and the reality of participation/representation. By analyzing the evolution of agricultural extension and the interplay between the past and the present governance systems, the concept and manifestation of *dependencies* in agricultural extension is clarified.

Moreover, as referenced in earlier section, this empirical study supports theory development and improves one's understanding and knowledge of the Ethiopian AES. The study shows challenges, potential opportunities and areas of improvement in Ethiopian AES to policy makers/planners, researchers and practitioners. Particularly, knowledge and understanding of the governance paths, through EGT lens, would help the planners and agricultural extension policy makers to analyze and recognize the strengths, limitations and reform options in the current agricultural extension and it enables to have contingency plan, in advance. Therefore, knowledge of governance evolution could enable to design proper strategic plans. Furthermore, adopting and contextualizing the suggested positive outcomes or recommendations of this study to the implementation of agricultural extension, may help to reduce the prevailing gaps in Ethiopian AES.

1.3 Research Objectives and Questions

This study uses a case study approach to clarify issues associated with the AES in Ethiopia. The overall objective of the study is “to analyze and describe the Ethiopian AES and understand its opportunities and challenges as ‘a development actor’.”

Given the problems stated above, the study has the following specific objectives:

1. To analyze the role and interest of the state in agricultural extension, and describe its challenges and opportunities;
2. To examine the role of DAs and model farmer in implementing the PES;
3. To analyze the mobilization of labor and skill development as an extension measure;
4. To analyze and discuss how participation is perceived and realized in Ethiopia, and compare the rhetoric of participation with the reality.

5. To identify the informal institutions and socio-cultural events, understand and describe their contribution to social learning; and
6. To analyze and describe the strengths, limitations and reform options of the Ethiopian AES through the lens of EGT.

To fulfil these objectives, the following main and specific research questions are addressed:

The main research question considers “how does the AES in Ethiopia define and fulfill its multiple roles as ‘a development actor’?”

In order to meet all the objectives, the following specific questions are addressed:

1. What are the roles and interests of state in agricultural extension, how is it structured and operating?
2. What are the challenges to and potential opportunities for the Ethiopian AES?
3. What roles do the DAs and model farmers play in the agricultural extension?
4. What are the motives and interest of DAs, model farmers and other players in the Ethiopian AES?
5. How the public agricultural extension does operating?
6. How do farmers and other actors perceive the concept of “participation” in the Ethiopian AES?
7. What are the other sources for agricultural knowledge transfer than the public extension services system?
8. What are the strengths, limitations and reform options of the Ethiopian AES?

Answering these questions can provide a better understanding of the Ethiopian AES including its strength, weakness, opportunities, and threats. This work also introduces additional concepts into the analysis of the Ethiopian AES by contextualizing it within the framework of the EGT. Concepts such as *governance paths*, *dependencies*, *path creation*, *actors/ institutions*, *power/knowledge* and their configurations and methods of analysis can add new dimensions to future studies on the Ethiopian AES.

1.4 Summary of the Main Arguments

The term *extension* and the activities it covers are rather complex (van Assche 2016). Countries and scholars define extension differently and contextualize it to their own situations. The use of the term *extension* varies between developed and developing countries. *Advisory services* is an alternative to *extension*, used in the UK, Germany, and Scandinavian countries (Swanson and Rajalahti 2010; Christoplos 2010; Leeuwis *et al.* 2003; Röling 1988). Röling (1988) explains that apart from the diversity of terms, the concept of extension is confusing because of the “politics and other traditions” that are associated with it. Thus, extension is expected to take on different roles depending on the policy and purposes within which it functions in different countries and among different scholars.

In Ethiopia, for example, the goal of extension goes beyond the agricultural development goals of achieving food security, reducing rural poverty and improving livelihoods, and natural resources management (NRM). Nurturing state ties with farming communities to maintain and strengthen social order and a political support base are underlying interests (Berhanu 2012). Like the term *extension*, the phrase *service delivery* too adapts to the emerging development needs, competition, preferences, and objectives of the country in question. Accordingly, the methods used for the provision of extension services vary from country to country. There are three main arguments regarding the provision of agricultural extension services. The first underlines “public agricultural extension” as the main “development actor” in providing agricultural extension services to smallholder farmers, who have low incomes and may be unable to afford the services (Qamar 2005). Limited ability to secure sustainable budget sources for provision of extension services by either the private or civil society organizations is another threat to the provision of agricultural extension services, as shown in Chile and Uganda by Swanson and Rajalahti (2010). The public extension service can also address NRM-related problems, which may not be of interest to the private sector (GFRAS 2010; Leeuwis *et al.* 2003). The latter assertion and the argument, respectively, conforms to the current NRM and the extension services system in Ethiopia.

The second argument highlights the transition to pluralistic agricultural extension services. In pluralistic agricultural extension services, a set of stakeholders and institutions

or partners engage with and support farmers in solving their development goals (Birner *et al.* 2006). Pluralistic agricultural extension services are likely to better meet the diversity of rural life and needs. The practice of using more than one organization to deliver services to farmers is gaining popularity in countries such as China and India (Swanson and Rajalahti 2010; van Crowder and Anderson 1997). In places where private organizations are economically competent, government monopoly is not encouraged (Qamar 2005). In essence, a “pluralistic agricultural extension services is a service orientation and a move away from [the] top-down models of technology transfer” (see Birner *et al.* 2006; Qamar 2005; Christoplos and Kidd 2000). However, top-down technology transfer continues to be an operational approach in Ethiopian AES.

Apart from the assumed inability of farmers to pay for extension services, the fear of job insecurity induced by restructuring in privatized and commercialized agricultural extension services and the difficulty in attaching monetary value to extension services, and the uncertainty to secure sustainable budgets are considered threats to privatization, and then, to the pluralistic extension services system (see Swanson and Rajalahti 2010; Ajieh *et al.* 2008). Further, given that profit-making is the first priority of the private sector, it is less likely to invest in agricultural extension unless it is financially feasible, especially in a country with smallholder-dominated agriculture, like Ethiopia.

The third argument suggests a combination of the public/private agricultural extension services system. According to Swanson and Samy (2002), extension is usually somewhere between a public and private good. Kalna-Dubinyuk and Stanley (2005) as cited in Danieli and Shtaltovna (2016, p. 159) state that “mixed public/private models of extension appear to be most suitable under a rapidly changing world.” Therefore, along with the public sector, involving the private sector and NGOs can help accelerate improvements in agricultural extension services, especially in providing technical inputs, information, and training (Swanson and Samy 2002). Thus, encouraging the private and NGOs involvement along with the public, could better address the emerging needs of extension services in a growing economy such as Ethiopia.

Furthermore, evidence has shown that extension services that accommodate farmers’ varying interests, needs, and capacities help improve agricultural production and

thereby reduce rural poverty and food insecurity in poor countries like Ethiopia. Hence, improving public agricultural extension services is vital along with the necessary policy and institutional reforms that create an enabling environment for the involvement of the private sector and NGOs, and in the long run facilitate transformation towards pluralistic agricultural extension services (see Figure 1.2). Thus, the agricultural extension services can enable smallholders to meet the Sustainable Development Goals (SDG 1 and 2) that Ethiopia is committed to pursuing as a UN member state. The goals are increasing agricultural production and productivity to reduce poverty, achieve food security, improving nutrition, and promoting agricultural sustainability (FAO 2015; Griggs *et al.* 2013).

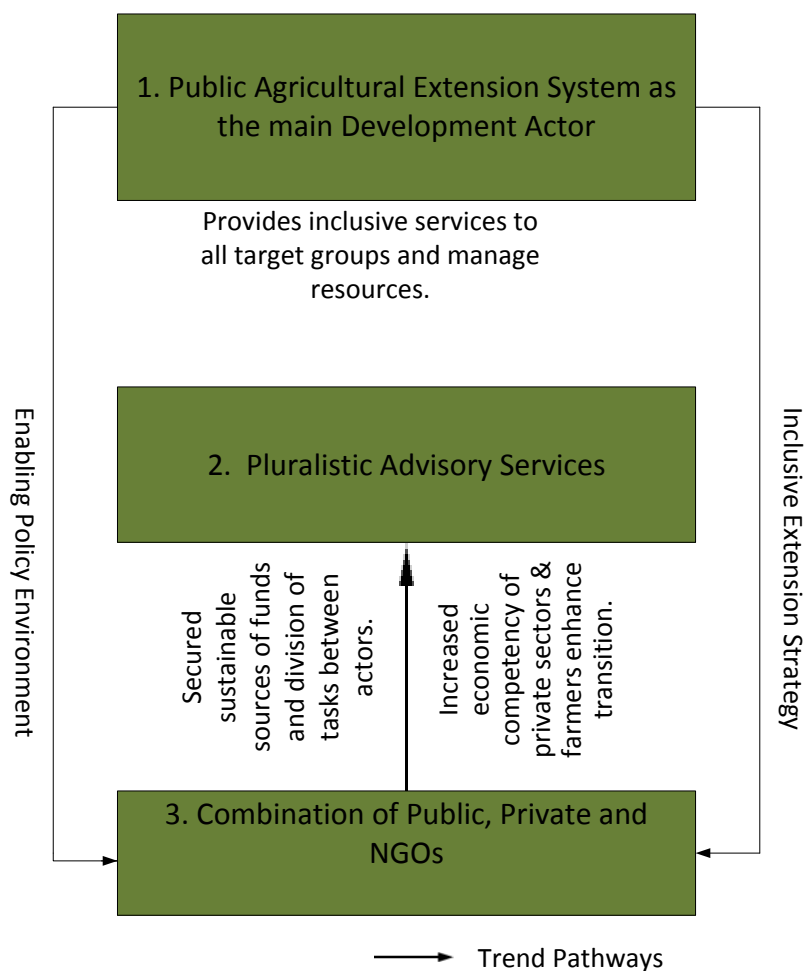


Figure 1.2: Logical trends of arguments for provision of extension services in Ethiopia.

Source: Author's illustration.

1.5 Structure of the Thesis

This thesis is structured in a way that the main research topics are addressed in logical order. Chapter one presents an overview of Ethiopian agriculture, the background and problem statement, the rationale for the study, and its relevance. This chapter also lists the main and specific objectives, the research questions, and a summary of the study argument. Chapter two presents the research methodology, the lessons learned from field research, and the research ethics. Chapter three introduces the conceptual frame, the EGT, used to analyze the Ethiopian AES on the basis of its *governance paths, dependencies*, and evolution of agricultural extension.

The empirical findings of the study are presented in six separate chapters. Chapter four presents the details of the Ethiopian AES, including the role and interest of the state, the effect of evaluation on extension services, and the challenges and potential opportunities for agricultural extension. Chapter five summarizes the problems with Ethiopia's agricultural extension services with emphasis in the role of the DAs and model farmers. Chapter six discusses *nikinake* or the mobilization of labor and skill development in rural Ethiopia. Chapter seven assess *participation* – the rhetoric versus the reality of implementing agricultural extension. Chapter eight provides an account of *social learning* in agriculture and its role as a source of accessible knowledge for resource poor farmer and other majority. Chapter nine analysis strengths, limitations and reform options of the current AES through the lens of an EGT.

Finally, the Conclusion and recommendations in Chapter ten articulate the future of the agricultural extension services system in Ethiopia.

Chapter 2:

Research Methodology

2.1 Selection and Description of the Study Areas

In order to have a broad understanding of the Ethiopian AES, it is vital to consider different regional states, agro-ecologies, farming systems, tradition and culture of different inhabitants as it caters opportunity for clear comparative over site analysis. Then based on my personal experience about Ethiopia and the anticipated convenience to capture necessary information, I selected two regional states: Oromia and SNNPRS and respective *woredas*, Bako-Tibe and Yem. Thus, Southwestern Ethiopia was targeted, which is simultaneously the site of intervention for the BiomassWeb research project. This project, designed by the Center for Development Research (ZEF) in University of Bonn, aims to improve food security in Africa by increasing the system productivity of biomass-based value webs. Maize (*Zea mays* L.) and enset (*Ensete ventricosum*) are the two main crops selected for the project. The Bako-Tibe *woreda*, one of the study sites is located in the sub-humid agro-ecology of Oromia and is known for being at the very center of the country's maize belt (Negassa *et al.* 2007). On the other hand, Yem *woreda* is located in SNNPRS and is well known for its *enset* production, which is one of the *woreda's* staple crops. The study areas were selected to facilitate a clear comparison between the farming systems and implementation modalities of agricultural extension evident at two regional states and *woredas*. This selection approach is in line with the methods proposed by Bernard (2006).

2.1.1 The Bako-Tibe *Woreda*

Bako is located 251 km west of Addis Ababa on the road to Nekemte, the capital of the East Wollega Zone. The *woreda* covers 28 rural and 4 urban *kebeles*. Agro-ecologically, Bako comprises highlands (12%), midlands (37%), and lowlands (51%) (Leta *et al.* 2017a). In the *woreda*, agriculture is characterized by a mixed crop-livestock system. The average land holding

per household is approximately 1.23 ha, and the average family size is 6 members per household.

Maize mono-cropping is the dominant crop production system practiced in the *woreda* (Negassa *et al.* 2007). *Teff*, sorghum, haricot beans, wheat, barley, and the oil crop *nug* are the other crops grown in the *woreda* (Tariku *et al.* 2014). In Bako-Tibe study *kebeles*, maize accounts for approximately 75% of a household's food intake. The average yield from maize in the study area is approximately 5.2 tons/ha as compared to the national average of 2.12 ton/ha (Taffesse *et al.* 2011). Livestock production is the second most important agricultural activity after crop farming.

2.1.2 The Yem Woreda

The special *woreda* of Yem is located in SNNPRS, and its capital, Saja is situated 240 km to the west of Addis Ababa. The *woreda* is divided into 31 rural and 3 urban *kebeles*. Agro-ecologically, the *woreda* comprises highlands (18.4%), midlands (57.7%), and lowlands (23.9%). The *woreda* receives bimodal rainfall—*belg* (short rain) from February to April, and *meher* (long rain) from June to September/October. Agriculture is the main source of livelihood for 93% of the population (Leta *et al.* 2017a). It is characterized by a mixed crop-livestock system. The average land holding per household is approximately 1.2 ha, and the average family size is 5 members per household. *Enset* and maize are the two main food crops. However, crops such as sorghum and *teff* grow in the lowlands as well as the midlands, whereas wheat, barley, faba beans, field peas, and potatoes are grown in the highland areas. Livestock production is the second most important agricultural activity.

2.2 Stakeholders and Kebeles Selection

I conducted rapid preliminary assessments of the study *woredas* as well as mapping the stakeholders at different levels. Stakeholders mapping and informal discussions with various experts at different levels were conducted to understand the setting before finalizing the study

tools for data collection. Four *kebeles* were selected as local case study areas (Dembi-Gobu and Gudina-Walkite of Bako-Tibe, and Gorum-Angari and Saja-Laften of Yem), based on their geographical distance to the *woreda's* capital (see Figure 2.1). Accordingly, the first village is most easily accessible, whereas the second village is relatively far from the center of technology and agricultural input distribution. The Gudina-Walkite *kebele* is located 25 km to the northeast of Bako town, but Dembi-Gobu *kebele* is adjacent to Bako, the *woreda's* capital. Similarly, the Gorum-Angari *kebele* of Yem is located 27 km south of the capital, whereas the Saja-Laften *kebele* is adjacent to Saja, the *woreda's* capital. These differences in the *kebeles'* location was intended to help compare the effects of accessibility and distance on the appointment and retention of DAs as well as to assess the effects of distance and other barriers on the farmers' accessibility and adoption of agricultural technologies.

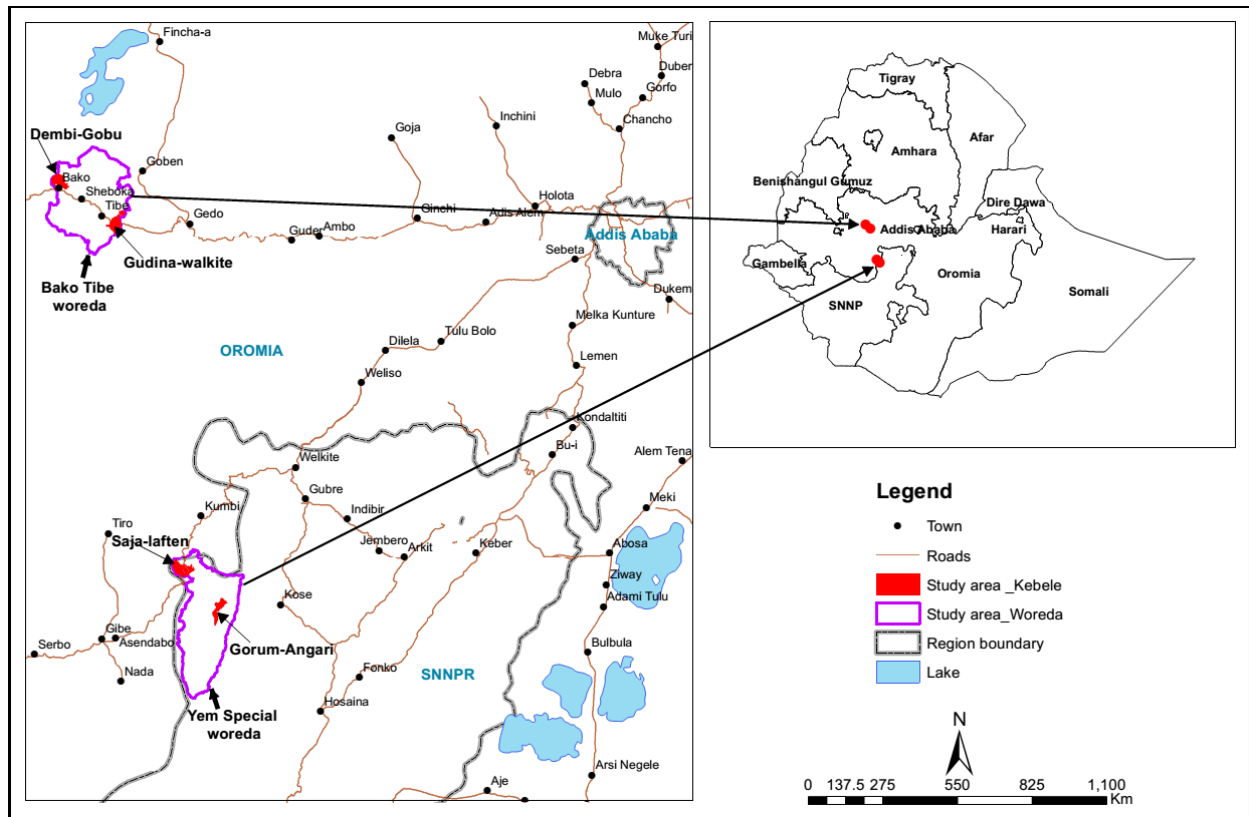


Figure 2.1: Map of the study areas in Southwestern Ethiopia.

2.3 Data Collection and Analysis

The data for this thesis were drawn from empirical field research conducted in 2015-2016. A mixed methods approach (Creswell 2009; Bernard 2006; Ritchie and Lewis 2003) was used, combining qualitative and quantitative data-collection tools: household survey, expert and key informant interviews, Focus Group Discussions (FGDs), participant observation, informal discussions, and model farmers' case studies. This was further complemented by secondary data and a desk literature review.

The mixed methods involved philosophical assumptions, the use of qualitative and quantitative approaches, and a combination of both approaches. Thus, the process involved more than merely collecting and analyzing two kinds of data. The use of both approaches in tandem, rather than the use of either qualitative or quantitative research alone, added to the overall strength of the study (Creswell and Plano Clark 2007). It also helped better understand the research problem, since each method brings a specific set of insights to the study. It also helps to triangulate information generated through different methods (Kelboro 2013; Bernard 2006).

Based on preliminary analysis of my quantitative data from household survey, I recognized that qualitative data and applications of its various collection methods can help me to actively engage myself and deeply understand the extension system. Furthermore, I noted that qualitative social science research could also enable me to use my field based empirics. As a result, I developed further my research questions and tools into the direction of more of qualitative data reaping mechanism. The qualitative data are also more insightful for extensive analysis of the AES. As a result, it comprises the core portion of my analysis and the arguments that I made in this thesis. The preliminary data that I accessed during informal exploration of the field research also dictated me to consider various qualitative data collection methods. However, quantitative data linger to play substantial role to triangulate different sources and complement the qualitative facts with quantitative figures.

I collected every piece of data myself with the facilitation of DAs and extension supervisors in Bako-Tibe. In Yem, similar activities were conducted with the assistance of DAs, a translator (in Gorum-Angari), and the *kebele's* agriculture office heads. The Head of the *kebele's* agriculture office is a newly created position to help represent agriculture and coordinate agricultural extensions and other socio-political activities at local level. Although collecting, transcribing, coding, and analyzing both the quantitative and qualitative data imposed a significant pressure on me, independently conducting all the activities by myself enabled me to document consistent and high-quality information. Further, it mitigated any bias in the data collection that could emerge from the involvement of various enumerators or interviewers with different interests, expectations, and biases of their own. The main mixed methods and tools I employed for data collection and analysis are briefly summarized and presented below.

2.3.1 Household Survey

A household survey was conducted with 120 (94 male and 26 female) farmers randomly selected using the research randomizer based on the farms' typology (Urbanika and Plous 2013). The number of respondents was uniformly distributed—60 each from the Bako-Tibe and Yem *woredas* and 30 from each *kebele*. I used a semi-structured interview checklist (see Section-1 of Appendix C) that I developed myself after exploring the study sites, informally probing the target actors and beneficiaries of information related to agricultural extension. I then validated the tools through an informal group discussion and pretesting with the farmers in order to enrich and prove its reliability for the interviews. In line with Bernard (2006), I conducted one-on-one interviews (see Figure 2.2) by going house-to-house primarily to observe and analyze the status of the farmers' categorization into different farm typologies based on the resources and wealth category, such as resource poor, medium, and better-off (see Appendix Table A2). Through observations of the housing and main physical/fixed assets they possessed, I had the opportunity to understand what model farmers and their followers look like. In the farmers' interviews, I laid a particular emphasis on their access to the agricultural extension services, information, their knowledge regarding the roles of DAs, and their

satisfaction with the existing extension services (see Section 1 of Appendix C; Appendix Table B3). Although the quality and reliability of the data generated through face-to-face and house-to-house farmer interviews was high, the exercise was time and energy intensive.



Figure 2.2: Household survey in Bako-Tibe *woreda*. Photos: Gerba Leta

2.3.2 Focus Group Discussion

I conducted FGDs with eight groups of farmers, both male and female, in four *kebeles*—Dembi-Gobu and Gudina-Walkite in Bako-Tibe and Gorum-Angari and Saja-Laften in the Yem *woreda*. I randomly selected the participants from exhaustive lists of the inhabitants of four villages organized by their respective *kebeles* (Walda and Ilala in Bako-Tibe, and Dirosi and Gurage in Yem). The inhabitants were selected on the basis of their wealth status, age, and educational qualifications so as to capture diverse range of views. On average, eight farmers were involved

in each FGD (see Figure 2.3). The intention behind conducting a sex-based FGD was to get gender-specific macro-level information about the AES being implemented in their *kebele* and/or their development team. Semi structured interview guideline or checklist was employed for discussion and probing information during the FGDs (see Section 6 of Appendix C). The guideline focused on the farmers' participation in the AES, their impression of technology and its adoption, access to credit, extension services, agricultural inputs, and analysis the strength, weakness, opportunities and threats of the AES.



Figure 2.3: Women's FGD in Saja-Laften *kebele*, Yem *Woreda*. Photo: Gerba Leta

The FGD was also intended to generate additional information to complement the data generated through a household survey and informal discussions with groups/individuals. According to Lemma (2007), unlike participant observations, individual interviews and household surveys, focus groups elicit multiple views and emotional responses within a group. They also enable the researcher to triangulate and validate the information drawn through other methods, such as individual interviews and surveys (Kelboro 2013; Bernard 2006; Groves 2004; Ritchie 2003). However, an FGD neither replaces surveys nor does it simply assist in them but complements surveys and helps identify why people feel as they do about something when

making a decision. It can also help explore how people think and talk about a topic and how their ideas are shaped, generated, or moderated through conversations with others (Bernard 2006; Ritchie and Lewis 2003). As a result, information that needs interaction and debate can be better captured through an FGD. In general, FGDs do provide a social context for research and serve as an opportunity to explore macro-level data that cannot be captured through individual interviews. Further, it helps to easily apply Participatory Rural Appraisal (PRA) tools (Chambers 1994) and conduct Strength, Weakness, Opportunity, and Threat (SWOT) analysis about a given issue or research topic (Hanyani-Mlambo, 2002).

2.3.3 Expert Interviews

I conducted in-depth expert interviews with 80 agricultural staff members at different levels, such as extension coordinators, Subject Matter Specialists (SMS), *woreda* extension supervisors, DAs, and other stakeholders from, for instance, farmers' cooperatives, cooperative agencies, *woreda* and *kebele* administration, research institutes, universities, civil society organizations, as well as private and state-owned companies working at the case study sites (see Appendix Table 1). Additionally, I interviewed senior experts and higher officials who are working in the zones, regions, and the MoANR. Accordingly, I managed to contact the relevant actors and partners related to the agricultural extension. The list of experts includes actors from different institutes such as federal offices and agencies like the Livestock Agency, Microfinance Institutes, and Agricultural Technical and Vocational Education Training (ATVET) colleges. Per the types of informant, various checklists/guidelines for the interview were used (see Section 2 to 5 of Appendix C). Finally, I conducted two informally organized discussions with experts at the *woreda* level in order to gain an in-depth understanding of how the AES functions, the reformations within the organization, the separation between the departments/organizations, and the impact of frequent reforms on the inter-organizational collaboration and effectiveness in implementing agricultural extension at the grassroots level.

2.3.4 Interviews with Key Informants

I consulted with five key informants on a regular and intense basis throughout the field research period in the two regional states and two *woredas* to help me triangulate and augment the data generated from the different sources. In addition, based on their location, key informants also guided me through an area and facilitated access to and sourcing of important information for my research. These key informants were knowledgeable, trusted, and reliable individuals who could provide significant information and tips. They are also potential resources who can help source any information needed through different means of communication such as telephone and text messages. Therefore, the key informants were key assets in my field research whom I could trust most, their support and facilitation of my access to and the best use of the available information.

2.3.5 Participant Observation

I conducted a participant observation of community-based Watershed Management (WSM) activities in two *kebeles* and at three micro-watersheds where hundreds of male and female farmers and youth were engaged. Participant observation gave me the opportunity to more closely observe their routine agricultural practices and understand their lifestyle and feelings toward the community. According to Bernard (2006), participant observation involves getting closer to people and making them feel comfortable enough with the presence of the researcher so that the researcher can observe and record information about their lives. Along with the implementation of the agricultural extension being encouraged by the state agricultural sector in the Yem *woreda*, there is also the WSM campaign and women farmers' collective labor groups. Through participation in three micro-watersheds and one women's collective labor group, I was able to closely observe and analyze the situation on ground (see Figure 2.4). In addition, the participant observation gave me the opportunity to access implicit technical information that may not be narrated during the formal group discussions or in-depth interviews. This created the opportunity to visualize the mode and precision of the technical application of, for instance, the soil and water conservation activities through the WSM

campaign. I was able to observe the farmers' motivation to participate in communal activities, the nature of interactions within the community, etc. Participant observation also enabled me to validate the data I had collected through various means and enriched by triangulating sources. According to Bernard (2006), participant observation is both a humanistic and scientific method that produces experiential knowledge, which gives the researcher a confidence and authority on the subject. In addition to the WSM campaign, I observed the on-farm and FTCs demonstration to complement my qualitative data collection.



Figure 2.4: Women's collective labor group, Saja-Laften *kebele*. Photo: Gerba Leta

2.3.6 Case Studies of Model Farmers

I frequently visited four model farmers who comprised my case study population—two each from both *woredas*. My visits and observations of the model farmers' routine activities, lifestyle, housing, diversity of their business, etc., enabled me to understand the reality of model farmers. Further, the interviews I conducted created the opportunity to capture the model farmers' state of affairs in terms of, for instance, their innovation, the role they play in the PES, how they run their own private businesses, their motivation for and interest in either

remaining a farmer or whether they seek to stop farming and take up other businesses including those in the services sector. These are just some of the points I questioned them about and learned through my observations and interviews. I also understood in detail their consistent efforts to improve their livelihoods through, for instance, the generation, adoption, and adaptation of new agricultural technologies or best practices (see Figure 2.5); their time management; and their overall sense of ambition. The model farmers' case study also helped me understand their popularity in socio-economic and political spheres.



Figure 2.5: Model farmer adapted modern silos in Dembi-Gobu *kebele*. Photo: Gerba Leta

2.3.7 Informal Group and Individual Discussions

I conducted multiple informal discussions with both individual and group of farmers and other actors. Apart from the pre-testing exercise, in line with Groves (2004), these informal discussions with various actors helped me to develop and validate my study tools. Furthermore, for explanatory or evaluative purposes, it is helpful to crosscheck the data generated through various data collection techniques. When conducted in groups, it also helps to cross-fertilize ideas through generating evidence (see Figure 2.6). Accordingly, I conducted numerous informal individual and group discussions with farmers, DAs, and experts both separately and together. The informality of the discussions helped me gain access to information that people may consider too sensitive to mention in a group setting, either from a political or social perspective. Furthermore, issues that are not raised in groups because of any uncertainty are communicated during informal individual discussions.



Figure 2.6: Informal group discussion with farmers in the Saja-Laften *kebele*. Photo: Gerba Leta

2.3.8 Literature Review

I conducted an extensive review and mining of secondary data and a desk-literature review to substantiate the data generated through the different techniques described above. Accordingly, I visited various organizations, such as the MoANR, the central library of the Ethiopian Institute of Agricultural Research (EIARI), the International Livestock Research Institute's (ILRI) electronic repositories, the Central Statistics Agency, and the National Planning Commission (NPC), to access policy and strategy documents and articles to enrich the information gathered and triangulate my various sources.

2.3.9 Data Documentation, Coding, and Analysis

I documented both qualitative and quantitative data, which I then coded and analyzed using ATLAS.ti 7 (ATLAS.ti 7 2012) and SPSS (SPSS Inc. 2012). I used ATLAS.ti to organize various documents, such as primary, secondary, and published materials, such that they could be easily combined during coding and thematic data analysis. It also helped simplify the retrieval of information when necessary. I analyzed the data using deductive approach, which is more analytical based on the EGT (Neuman 2007; Braun and Clarke 2006). I used SPSS for a similar purpose, mainly for the quantitative data management and analysis and the documentation of additional respondents' observations in a string format. I used simple descriptive statistics, such as a measure of the central tendency and, primarily, the mean-for-mean comparison as well as the percentage in order to complement the qualitative facts with numerical figures. The findings from both tools provided two sets of information that were complementary to each other and permitted the cross-fertilization of ideas during the write-up phase.

2.4 The Field Research Experience: A Personal Reflection

2.4.1 Knowledge of Local Language and its Effect on the Research

As an Ethiopian, conducting field research in my home country was an excellent experience. Although I am a local with extensive field experience, conducting research in rural Ethiopia is not as easy as working with national or international research organizations with ready access to logistics services. Thus, I encountered many situations that were unexpected.

Ethiopia is a multi-ethnic and multilingual country. One of the challenges that I faced during my field study in the Gorum-Angary *kebele* of Yem *woreda* was my unfamiliarity with the local language, *Yemsa*. Further, finding a reliable and knowledgeable translator proved to be a challenge. Finally, using a local extension worker's suggestion, I found a local who could speak both *Yemsa* and *Amharic* languages. Despite the translator's capabilities, it was difficult to train him to avoid bias that may emanate from his own political inclination or interests while translating the respondents' statements. The translator often tried to complement the respondents' answers or modify their statements. Thus, one of the main challenges I encountered was training the translator to be neutral to the participant's views. This experience taught me that different types of biases can impede the collection of reliable data, systematically particularly if the local assistants lack a research background. However, I used my field research experience of rationally considering the respondents views to avoid any influences or biases. By probing and validating information systematically, I could mitigate the problems of exaggeration or underestimation that might have seeped in because of the translator's personal bias. As Yem *woreda* is surrounded by *Hadiya*, *Gurage*, and *Oromo* ethnic groups, the local people spoke one or more native languages. My knowledge of the widely spoken local language, therefore, helped me triangulate information with the participants and reduce unexpected bias on data collection. My knowledge of *Afan Oromo*, my mother tongue and a language that is spoken in the study sites, was an asset. It helped me assimilate myself with the local people and earn their trust and credibility for generating reliable data.

2.4.2 Selection of Study Sites and the Use of a Mixed-Methods Approach

The selection of the study sites posed another challenge. I wanted to compare two farming systems (based on maize and *enset*) by choosing candidate crops for the BiomassWeb project in southwestern Ethiopia. The plan to compare the implementation of agricultural extension both in Oromia and SNNPRS forced me to select two *woredas*: Yem and Bako-Tibe, which are located more than 500 km apart. Finding the *woredas* and identifying the regional stakeholders was not only difficult but also time- and resource-consuming compared to conducting research in one region or *woreda*. Further, employing a combination of quantitative and qualitative data collection techniques considerably increased the burden of field work, while also contributing to the scientific rigor of the work and generating rich information. Because data was entirely collected, transcribed, coded, and analyzed by me, I was constantly pressed for time. However, my previous field research experience helped me to cope well. I successfully managed to access a wealth of data in a consistent manner.

2.4.3. Extension Reforms and the Actors' Unfamiliarity with the Reform Process

The Ethiopian AES is on an evolutionary path, reforming over time. Despite reforms, the knowledge and implementation of the newly adopted system remains unclear to the practitioners and end users. Conceptual knowledge of the system is confined to a few senior officials and experts, even though agricultural extension is largely implemented by local actors at the *woreda* and *kebele* levels. The new system (approach) developed and issued for implementation was largely unknown among the majority of the stakeholders. The PADETES was officially terminated in 2004 without any clear intimation to the actors and local implementers. Further, the PES, adopted in 2010-11, has not yet been clearly communicated to the numerous actors. As a result, many experts at the Bureau of Agriculture and Natural Resources (BoANR) continue to refer to the PADETES, which is now an obsolete system. The state at the federal and region level has paid little or no attention to popularizing the new approach, issued by the MoANR, among experts/practitioners and the farmers at the grassroots. Not surprisingly, there is less effort to adopt and contextualize the new approach to

local conditions. For example, in PES, the role of DAs is mainly limited to training and mentoring model farmers, who share tasks with DAs and act as leaders of the development teams. However, because the new role has not been communicated to the wider community, farmers continue to criticize the lack of one-to-one contact with DAs, as they rarely conduct house visits.

From my observation and the responses of the key informants, I find that effective implementation of agricultural extension depends on the quality and accountability of the management team in each *Woreda* Office of Agriculture and Natural Resources (WOANR), operated with the support and guidance of the *woreda* administration. Dedicated officials with relevant professional experience in agriculture can contribute to the development of a *woreda* plan and enforce its implementation better than non-professionals selected for their loyalty and the commitment to the ruling party. Unfortunately, loyalty to the political party is a sought-after requirement for an individual to be appointed. Besides, it is common to find non-professional leaders in charge of the office.

2.4.4 Variations in Implementing Agricultural Extension

The implementation of PES varies from Yem to Bako-Tibe. Compared to Bako-Tibe, in the Yem *woreda* and *kebeles*, DAs are more submissive and pushed by the *woreda* and *kebele* officials to translate the new system into reality. The development teams and one-to-five farmer groups do not function effectively in either *woreda*. The development teams are entirely non-functional in Bako-Tibe *woreda*. Instead, voluntary self-help association known as *iddir* provide facilitation services to mobilize the community for communal activities, transfer information, and enforce the implementation of rural development and agricultural extension through such as community-based WSM. In addition, the process of DA evaluation at the local level varies from *woreda* to *woreda*. In Yem, it seems more critical for DAs to be promoted within the system or access salary increments once in two years as the *woreda* has its own independent and relatively unattainable evaluation criteria. Such distinction could influence the motivation

of DAs to provide effective extension services as they share their experiences with DAs from other regions during meetings at various national fora, in training institutes, or at other events.

2.4.5 Differences: Farmer Participation, Size of *Kebeles*, and Partner Linkage

In the FGDs that involved farmers of different ages, education levels, sex, and wealth status, model farmers tended to dominate the discussion. Virtually all model farmers in Ethiopia are members of the ruling political party and have exposure to politics and related training and education. They feel more confident and knowledgeable about agriculture than other farmers. As a result, they tended to use the FGDs to assert their knowledge, gained through various exposures in the political field. Such situations were potential sources for hot debates, with the exchange of polarizing views by member farmers on the one hand and the non-member farmers to the political party, on the other hand. While reaching a common understanding on discussion points was desired, building political was not the aim of the study. On such occasions, some farmers preferred to remain quiet, fearing the possible negative consequences. However, I employed innovative facilitation approaches to mitigate conflicts and narrowed the divergence between participants. Systematically stopping the offensive and directing the discussion toward the common interests of the group could fuel the group discussion. In general, by calming the hot debate, I managed to capture the views and knowledge of farmers from all categories, regardless of their political opinion while still safeguarding their right and security.

The size of *kebeles* varies from *woreda* to *woreda* as well as region to region. In SNNPRS, zones and *woredas* are formed based on ethnic backgrounds. Over the years, the number of *kebeles* has increased to create the economic opportunities and facilitate effective governance and service delivery. Accordingly, one Oromia *kebele* is three times the size of the *kebeles* in SNNPRS in general and Yem in particular. The large *kebele* size, along with a large population, in Oromia has influenced the effectiveness of extension services provided by the three or less DAs per each *kebele*. In contrast to the size of the *kebeles* and the population, Oromia FTCs received

lower operational budgets, typically allocated as seed money or block grant to support the demonstration of technologies.

Although the Agricultural Development Partners Linkage Advisory Council (ADPLAC) is not a highly active body across regions and *woredas*, it functions in minimal capacity in Bako-Tibe with limited budgets allocated via the Agricultural Growth Program (AGP). The body facilitates meetings of partners across Ethiopia for purposes of activity planning and evaluating the output/outcome. However, the ADPLAC is non-operational in Yem *woreda*. Despite the prevailing various issues and inconsistencies, there still strong political support as well as influence exerted by the state on agricultural extension—both to nurture development toward ensuring food security, and to secure the state’s interest by promoting closer ties between farmers and the state at all levels.

2.5 Research Ethics

The principle of voluntary consent is an ethical consideration in research. According to Neuman (2007) and Bernard (2006), social researchers have a moral and professional obligation to be ethical, even if research participants are unaware of or unconcerned about ethics. It is unfair to harm innocent participants for providing information in good faith. Ethics, therefore, help determine whether a certain action is legitimate, or what “moral” research procedure should be involved (Neuman, 2007). The most fundamental ethical principle is avoiding coercion while seeking participation or information. Individuals who participate in social research should consent to participate, and informed consent should be based on the understanding of voluntary participation (Neuman 2007; Bernard 2006; Ritchie and Lewis 2003). A signed informed consent statement is optional for most surveys, field and secondary data research (Neuman 2007). The thumb rule for consent is as follows: the greater the risk of potential harm to the research participants, the greater the need to obtain written informed consent (Neuman 2007). In my personal experience with household surveys in Ethiopia, informed consent is more

easily obtained orally than in writing. Oral consent is a credible approach to involving participants and generating reliable information without creating suspicion.

Nearly 90% of Ethiopian farmers are illiterate. The documents that they are expected to sign to access credit and inputs or to register for participation in agricultural extension and rural development often arouse fear and suspicion. Further, failure to fulfill such requirements makes farmers susceptible to severe punishment and penalties. Such negative associations with written documents possibly lead them to view consent forms with fear and suspicion. Hence, despite learning about the survey process and the nature of questions, they were disinclined to sign the forms. The locals find it easier to trust outsiders when paper-based negotiations are not involved. Speaking the local language, respecting the local culture, familiarity with local customs, and active interactions with individuals can help an outsider gain better access to local information and knowledge. Knowledge of the local language, especially, is an asset as it narrows the gaps between the locals and the researcher. In my field research, I used it as a means to build trust among the research participants.

Protecting the identity of the participants is a moral and legal obligation of the researcher. In this study, the anonymity of the participants was preserved during in-depth interviews, household surveys, and individual and group informal discussions (see Appendix table A). The real names were replaced by a code number to safeguard personal data. According to Neuman (2007), the pursuit of knowledge should be balanced with the rights of the participants. Accordingly, all the interviews were conducted only after obtaining consent from the respondents. In addition, interview sites were selected to suit the preferences of the respondents. In many cases, house-to-house farmer interviews were conducted to ensure that the respondents were in an ideal and secure environment. Similarly, experts were interviewed mostly outside their office premises, in environments where they could comfortably share their views, even on sensitive matters such as political interference in agriculture and rural development. Since Ethiopia adopted the Business Process Reengineering (BPR) system in the mid-2000s, the seating arrangements in most government offices follow a pool model, where all the experts are seated together. While the pooling system was adopted to encourage

transparency and control corruption, it also deprives experts of privacy. In my field research, though, every effort has been made to safeguard the privacy of the participants—all the sources of information are anonymous.

Chapter 3:

Evolutionary Governance Theory: Conceptual Frame

3.1 Introduction

“Governance” in agricultural extension and rural development is characterized by evolution. “Evolution” from the EGT perspective is a process of creating and weeding out variations (van Assche *et al.* 2014). As identified by van Assche *et al.* (2014), governance in this study is conceived as coordination in the taking of collectively binding decisions within a community, by governmental and other actors. The EGT presents a new and cohesive perspective to analyze “governance paths” and “dependencies” (van Assche *et al.* 2014). It is a valuable framework because the effects of governance arrangements are always influenced by the dynamic networks of actors, institutions, and discourses. I employed the EGT framework (Beunen *et al.* 2015; van Assche and Hornidge 2015; van Assche *et al.* 2014) to analyze governance paths, the evolution of the Ethiopian AES, how the AES is linked to knowledge development and transfer, and more broadly to the development approaches. EGT offers new insights or understanding how actors/institutions, power/knowledge and their configurations and discourses are in a continuous process of co-evolution (Beunen *et al.* 2015). In the governance of agricultural extension, actors/institutions and power/knowledge are integrated and co-evolve (see chap. 9).

EGT is relevant to developmental and public-sector reforms. The framework enables users to track changes and development in the society. It offers a new perspective from which to analyze certain governance paths, thus facilitating better solutions to governance problems (van Assche *et al.* 2014). One of the main problems of policy makers and planners is failure to understand, predict, or prepare for unexpected events or changes in society and devise appropriate mitigation measures. However, knowledge of EGT can help preclude or manage anticipated issues. The Ethiopian AES is a large public-sector development effort that attracts dynamic reforms, which makes it an ideal setting for the application of EGT. EGT has been applied to define governance paths and dependencies in agricultural extension and rural development (chap. 9). A web of actors is involved in the coordination of agricultural extension

and rural development, with the centralized operational system playing the main role. In the following section, using the framework of the EGT, I briefly define and discuss agricultural extension, regime changes and the evolution of extension, and governance paths and dependencies.

3.1.1 Agricultural Extension

As referred in the main arguments of this thesis, van Assche (2016, p. 381), argued “what we can call agricultural extension – was bound to be ambiguous and complex.” However, based on the empirical analysis of the Ethiopian AES and my experience in rural development and agricultural extension, I develop a working definition of “agricultural extension” that suits to the Ethiopian context. Accordingly, “agricultural extension” is defined as an approach to rural development and agricultural transformation where knowledge, teaching, and learning play key roles to ensure food security, reduce rural poverty and sustainably manage the natural resource basis. It is practiced in many forms and involves multiple actors such as from universities/colleges, research systems, the public agriculture and rural development sectors and the farmers. These actors play leading roles in knowledge production and management, teaching, learning and defining the knowledge needed for specific developmental goals. These networks of actors are acting in quite similar manner to the Soviet system of knowledge production where a complex system of agricultural, academic, research and other development actors are organized for action (Danieli and Shtaltovna 2006, p. 159). EGT recognizes the co-evolution of actors and institutions and power and knowledge configurations as key concepts in the coordination of rural development and agricultural extension (see chap. 9).

Given the current developmental scenario in Ethiopia, agricultural extension mainly involves introducing and disseminating new knowledge and technologies through training and skill development as well as community mobilization (chap. 6). As identified by van Assche and Hornidge (2015), knowledge is the key driver of Ethiopian agricultural extension and rural development. The state controls knowledge production and dissemination, which is indicative of a high level of state investment in agriculture (Spielman *et al.* 2012). However, the top-down

approach to knowledge transfer undermines the local resources, practices, and indigenous knowledge. Typically, extension actors consider new knowledge and technology as a panacea to the problems of rural development and agricultural transformation.

Diverse sources of knowledge are active in agricultural extension. However, despite the diversity, the integration of actors/institutions and power/knowledge in translating the epistemic resources into reality has been proved low and identified as the reason for the current state of agricultural development (see chap 5 and 6). As a “developmental state,” Ethiopia seems to have adopted a combination of capitalist and communist extension approaches. For instance, on the one hand, the state actively engages in agricultural extension and rural development by supporting agricultural research, education and training, like its counterparts in the Netherlands (van Assche and Hornidge 2015). On the other, agricultural extension in Ethiopia is highly expert-and technology-driven, production-oriented, and relies on scientific expertise and high input production, as seen in the ex-Soviet states and China. However, the integration of expertise and technology with the farming system, the farmers’ needs, as well as the coordination of the system, in general, are low.

3.1.2 Regime Changes and the Evolution of Extension

The Ethiopian AES has evolved with changes in the regime and its forms of coordination. The extent of the agricultural extension services, actors/institutions, and power/knowledge configurations have changed in response to new interactions or new strategies and forms of action. The EGT helps understand the co-evolution of multiple level governances, of actors and institutions, and of power and knowledge (chap. 9). Co-evolution always seen as a mutual shaping of agents over time, through interactions between actors/institutions, power/knowledge and their configurations. As noted by van Assche and Hornidge (2015), their configuration and co-evolution can influence an actor’s access to knowledge.

The EGT posits that all elements of governance are subject to evolution (Beunen *et al.* 2015). Thus, coordination often changes and assumes unique forms in each community. Agricultural extension and rural development, in Ethiopia, have co-evolved with other domains of policy and intervention. Examples of co-evolution of actors and institutions within the PES include a larger framework of state coordination; new policies such as *nikinake* which use social mobilization as a tool for agricultural extension (chap. 6); new collective production systems and extension services piloted via farmer groups; a direct seed marketing system; specialized training for DAs; and relatively new forms of agricultural extension services systems in which DAs and model farmers play key and complementary roles (see chap. 4 and 5).

Despite that state's governance ambitions for agricultural extension and rural development, it has incomplete control over many parts of the countryside. Further, the state strongly believes in wielding its power and expertise in the management of natural resources (see chap. 6). These beliefs are remnants of Ethiopia's socialist regimes, particularly influencing the power/knowledge configurations and their tight linkage with actors/institutions. Informal institutions are also needed to support mobilization of farmers for common activities; however, the government's poor reach and high ambitions as well as the lack of appropriate tools and necessary inputs for implementing agricultural extension prevent extension activities from succeeding. Experiments in rural governance have shown that informal institutions serve as alternative routes for the actors in the formal system (Leta *et al.* 2018a; 2017a). Hence, in Ethiopia, the informal institutions have been linked to formal rules for better implementation of agricultural extension (chap. 6).

The concept of "governance" is also linked to learning *objects* and *subjects*. Learning can initiate the transformation from *object* to *subject* (Kooij 2015; van Assche *et al.* 2014). According to van Assche and Hornidge (2015), the identity of an actor is the *subject*, whereas *objects* refer to what is talked about or the product of discursive evolution. Model farmers in the AES are trained to lead their followers and demonstrate technologies for upscaling. Accordingly, in the governance paths, space is created for the formation of *objects* and *subjects* in the power/knowledge continuum. As indicated in chap. 5, the PES is associated with

formation of farmer groups and the provision of technical and skills training to model farmers. These steps engender *object* and *subject* formation and can serve as the basis for understanding the shift in relations between DAs and model farmers. By sharing tasks with DAs, model farmers manifest the effect of learning that leads to transformation in an agricultural extension services system. Changes linked to new rules can lead to reciprocity between actors, which is suggestive of transformation (van Assche and Hornidge 2015).

As mentioned earlier, extension is an approach to rural development and agricultural transformation, where DAs and farmers access knowledge through teaching and learning opportunities. However, access to knowledge through learning and teaching is limited to a few elite, the model farmers. In governance, learning is considered a key driver of development (van Assche and Hornidge 2015). Self-motivated individual learning and social learning are widely practiced in agricultural extension and rural development projects to extend program coverage to all farmers, through the existing networks, informal institutions, and collective labor groups. As shown in chap. 8, social learning is adopted and used as a mechanism to counter the problems of discrimination and unequal opportunities in rural development and agricultural extension. While it entails learning through interactions with others, individuals learn “more importantly by comparing and testing their perspectives” (van Assche and Hornidge 2015). In Ethiopia, not all users have equal access to rural development and extension knowledge. This disparity is marked despite repeated reforms. Governance paths remain *rigid*, and the interaction between actors and the implementation approach remains consistent despite regime changes (van Assche *et al.* 2011). The reality of decentralization, participation and equity to the services and benefits, as described in chap. 7, contradicts the stipulated rural development policies, adopted agricultural extension approaches and related-ideas advocated by the state media and extension actors. Thus, as identified by van Assche and Hornidge (2015), in Ethiopia, governance is not entirely *flexible* in its approach to rural development.

3.1.3 Governance Paths and Dependencies in Agricultural Extension

The governance paths in Ethiopian agricultural extension are characterized by “path dependency”, “goal dependency”, and to a weak extent by “interdependencies.” Typically, the interaction between various players or agricultural extension partners is poorly designed and leads to unsatisfactory outcomes (see chap. 4 and 5). According to van Assche and Hornidge (2015), governance is self-referential by nature in that the present decisions are linked to previous decisions taken by the actors. Thus, new structures are always grounded in earlier ones (van Assche *et al.* 2014). In reality, strong path dependency, and to some extent goal dependency influence the coordination of actors and institutions in taking collectively binding decisions (chap. 9). Weak interdependency between actors, and actors and institutions can negatively affect the execution of reliable coordination. A positive model of interdependence was only manifested between SG 2000 and agricultural extension system; in which the development actors and the end users, the farmers, adopted the pilot project of extension package and the minimum tillage practices from the former. Then, the local actors could manage to perpetuate the beneficial practices through the state system. In the following paragraphs, I briefly discuss the three types of “dependencies” that are unevenly manifested in the Ethiopian AES.

i) Path Dependencies

Rural development relies on knowledge acquired through teaching and learning opportunities facilitated by DAs and model farmers (chap. 5). In Ethiopia, new knowledge and technologies are considered the main means to address the food security problems. Hence, intensification of crop production is a national priority: a legacy from the past that continues to influence actors’ decision-making in the present. Improving production and productivity are the main targets of the AES instead of post-harvest (product) planning or improving market intervention. This rigid model has been followed for decades, even though, diversification and intensification have been conceptually integrated into the country’s short- and long-term developmental plans and strategic directions (see chap. 9). According to van Assche and Hornidge (2015), “path dependencies are the legacies from the past influencing collective decision-making now.” In

most cases, agricultural extension is flexible to the use of only inputs and new technologies such as improved seeds and associated packages. Even then, participation is limited to only those farmers who are afford the access (see chap. 7; chap. 9). As a result, better-off farmers are likely to learn fast and afford the use of agricultural inputs and technologies.

ii) Interdependencies

In agricultural extension, repeated reforms have been undertaken to promote the linkage between different development actors. According to EGT, interdependencies are the links between various players, rules, and resources that shape what is possible in governance (van Assche *et al.* 2015). In Ethiopian agriculture and rural development, the interdependence between different actors as well as actors and institutions to achieve the common purposes and shared goals of agricultural extension and rural development is weak or ineffective. The interdependency between DAs and model farmers did not play complementary role (see chap. 5 and 9). Whereas, an international NGO known as SG 2000 left his legacy whereby the development actors such as agricultural experts and the farmers adopt and emulate the pilot projects on their own. However, the interdependence between DAs and model farmers, which is vital for the implementation of the PES, is poorly designed and realized.

iii) Goal Dependencies

Goal dependencies are the influences of imagined futures on present-day decision-making (van Assche and Hornidge 2015; van Assche *et al.* 2014). As a UN member state, Ethiopia has currently adopted SDGs. For the realization of these goals, the country has formulated new actors and institutions such as new farmer groups through the newly adopted PES. Group extension and mass mobilization such as *nikinake* (Leta *et al.* 2018a) is employed to reach the imagined future.

However, the adoption and use of *nikinake* and enforcement of public participation through formal and informal institutions have lowered farmers' ownership of developmental activities and even led to the development of resistance toward some actors. Such situations can lead to unexpected consequences, such as weak co-evolution of actors, institutions, and

actors and institutions that eventually influences the sustainability of natural resource management activities (chap. 6). The quota planning system coupled with low technical skills of some of the local actors, could also lead to undesirable outcomes in extension and rural development. The social mobilization spurred by the AES to meet the imagined future, where the quantity of work completed and the number of participants are key factors, real impact and sustainability of the projects are often lacking. In such cases, local knowledge and needs of the farmers are rarely considered; instead, more attention is given to expertise, scientific technologies, and practices learned through development assistance and experience-sharing opportunities. Mass mobilization is typically used to implement technologies, including, that are not conducive to the farming system or the farmers' needs. Per the EGT framework, application of systematic pressure can trigger resistance among farmers, leading to adverse effects on technology adoption and sustainability. This implies, the impact of the envisioned future on the actual implementation at present. An in-depth discussion on the roles and interactions of different dependencies in pursuing agricultural extension and rural development and the positive interplay that leads to the *path creation*, a reform option, in agricultural extension is analyzed in chap 9.

3.2 Conclusion

The framework of the EGT serve as a tool to examine the ongoing rural development and AES. It enables to anticipate the future direction of the evolving governance based on the history of governance paths and dependencies. The knowledge of EGT concepts that are actively working and integrated into practical applications would enable to grasp the essence and direction of change process so as to design, in advance, the adaptation to changes introduced by the new extension system. Overall, the EGT enables to conduct consistent analysis of the evolving coordination with reforms in agricultural extension and rural development, such as, in Ethiopia.

Chapter 4:

The State: Its Role and Interest in the Ethiopian Agricultural Extension System

4.1 Introduction

Ethiopian state is one of a few African countries to adopt the “developmental state” paradigm (Stellmacher 2015). Ideologically, a “developmental state” is one in which the authorities aim to achieve rapid socio-economic development through the process of industrialization and high rate of capital accumulation (Bolesta 2007; Mkandawire 2001). Bolesta (2007, p. 109) defined, a developmental state as an “institutional environment in which the state dictates the norms and rules of the social, political, economic existence and the direction of development.” Similarly, state is actively engaged in the Ethiopian AES. The AES can be defined as a set of actors and institutions that act as a whole to achieve a common purposes or shared goals of the agricultural extension. For state, agricultural growth, agricultural extension and rural development are intertwined and complementary to one another (Leta *et al.* 2017a). The association between the state and the agricultural sector is longstanding one, handed down from the past regimes, particularly the *Derg* military socialist regime where the state organized and controlled smallholder farmers through peasant associations (Stellmacher 2007a).

As part of promoting nexus of agricultural development and industrialization, reduce rural poverty and food insecurity, the current Ethiopian state adopted the Agricultural Development-Led Industrialization (ADLI) strategy in the early 1990s (ATA 2014; Lefort 2012; MoARD 2010). It is aimed at promoting industrialization through agricultural growth and close linkages between agriculture and industry. The strategy was based on the premise that an increase in farmer wealth would lead to more demand for basic commodities that would, in turn, foster industrialization. Further, industrialization would lead to improved agricultural inputs, which again would increase agricultural productivity (Lefort 2012).

To promote rural development and strengthen “agricultural modernization,” the state also developed and implemented a country-wide AES in the early 1990s. Agricultural extension

is seen as a critical component of rural development as it contributes to poverty reduction, ensure food security, and conservation and sustainable use of natural resources. The country adopted a PADETES in 1995, which was eventually replaced with the PES in 2010 (MoA 2010; Abate 2007). The PES intends to increase the coverage of the agricultural extension service, focus on natural resource management, involves the disadvantaged groups of the society, and increase farmers' participation and effectiveness at local levels by introducing and upscale new technologies or best practices.

Within Africa, Ethiopia is probably the country with the greatest state involvement in the agricultural sector (Lefort 2012). In the recent decades, the Ethiopian state has allocated massive resources to its AES. In fact, agriculture has attracted more investments in the current regime than that the earlier two regimes – the imperial regime (1930-1974) and the *Derg* military regime (1974-1991) (Spielman *et al.* 2012). Today, Ethiopia has the largest number of local agricultural extension workers, known as DAs, which is the highest number in Africa and the fourth largest in the world, after China, India and Indonesia (Swanson and Davis 2014). The state has also invested heavily in agricultural infrastructure such as ATVET colleges and FTCs, among others. In the early 2000s, 25 ATVET colleges were set up throughout the country (Davis *et al.* 2010), and a total of 62,303 diploma graduates were trained in these colleges up to 2011 (unpublished ATVET report, 2016). Over 10,000 FTCs have been constructed in the country over the years (Breen 2014). According to Gebremedhin *et al.* (2006), the future of the extension services in the country relies heavily on the use of these FTCs.

For decades, agricultural extension in Ethiopia has largely focused on crops, with less attention being paid to livestock. This has also been the case with agricultural research programs (Flaherty *et al.* 2010). In fact, crop production contributes to 29% of the Ethiopian Gross Domestic Product (GDP) whereas livestock contributes 12% (BMGF 2010). However, PES aims to fix this imbalance by focusing on both livestock and the specialization and diversification of crops.

Over the years, many state policies and strategies have been introduced to support the implementation of agricultural extension in the country. Agricultural extension is seen as an

important component of the Sustainable Development and Poverty Reduction Program (SDPRP) and the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP), which were developed and implemented during 2002-2005 and 2006-2010, respectively (MoFED 2006; MoFED 2002). SDPRP helped farmers enhance their production capacity by providing agricultural extension services and assigning three DAs to each *kebele* in the country (MoFED 2002). The key objective of PASDEP was to accelerate the transformation of smallholder agriculture from subsistence to commercial purposes by strengthening extension services through increasing such as technical and vocational trainings (MoFED 2006). The Growth and Transformation Plan (GTP) is the current state-based development strategy, which in its second phase of implementation (2016–2020). The plan aims to maintain agriculture as the main source of economic growth and as the foundation of the structural transformation towards industrial growth in the long run (MoFED 2010). In this context, the GTP also aims to strengthen the agricultural extension efforts (NPC 2015).

In the last decade, state-sponsored strategies and investments in rural development have produced positive impacts on growth and poverty reduction (Dercon *et al.* 2009). These achievements have been realized through technology transfer and the reduction of transaction costs, (e.g. through the construction of roads and other infrastructure in rural areas). However, the operation of the agricultural extension system in Ethiopia is plagued with large-scale ineffectiveness. Davis *et al.* (2010) and Spielman *et al.* (2010) argue that the root cause of the ineffectiveness is the centralized top-down state control. Berhanu and Poulton (2014) link the shortfalls to the trade-offs between the twin objectives of the state extension policy: (a) to improve production and ensuring food security, and (b) to win and maintain the support and loyalty of farming communities.

In Ethiopia, the explicit role and implicit interests of the state, the types and magnitudes of its contribution to the AES and their implications for the currently adopted PES have not been scientifically and empirically studied or analyzed. This study aims to bridge this research gap.

4.2 The Role of the State in Agricultural Extension

4.2.1 Developing Agricultural Extension Strategies

The Ethiopian state has developed and enacted many agricultural development policies and strategies that define approaches for agricultural extension. The PES is the most recently adopted one (Leta *et al.* 2018a; 2017a). PES aims to use group training and demonstration to promote the upscaling of technologies and best practices. In the West Showa Zone of Oromia region, for example, a “cluster formation-based” extension has been introduced as part of PES since 2014 (Intr code no. 3, 2015). An initiative of the Agricultural Transformation Agency (ATA), “cluster formation” encourages peers and farmers with adjacent plots to form groups and jointly grow a crop with the aim of boosting production and access to technical support and markets. The Oromia regional BoANR considers “cluster formation” an important approach to provide technical support and inputs to farmer groups.

The Ethiopian AES has implemented technology upscaling as part of the PES. However, non-selective introduction of technologies or best practices targeted at increasing crop yield is also practiced. Röling (2011) found that focusing exclusively on yield increment at the farm level through technical means ignores other important elements in integrated agricultural development. Farmers have their own reasons for adoption or non-adoption of a given technology. For instance, interview responses of both farmers and experts indicated that the advantages of planting of the *teff* crop in rows, which has been promoted by the extension system, are debatable, and the move has not been welcomed by farmers. Further, in Yem *woreda*, as in other parts of Ethiopia, *teff* straw is used for animal feed, sale, and construction. While row planting of *teff* may allow for more efficient use of fertilizer and seeds, it can significantly reduce the crop residue production, and is far more labor-intensive, which considerably limits adoption of the technology by farmers (Vandercasteelen *et al.* 2016). In the household survey, a farmer described, adopting row planting of small cereal crops, particularly *teff* and its consequences as follow:

The topographic orientation of our land is not ideal for row making. Further, most of our land that is located in downstream part of Gorum-Angari kebele is characterized by rock out crop. Thus, it is not ideal for row planting. However, non-compliance to the state recommendation risks deprivation of agricultural inputs and/or subjects to penalties (Intr code no. 0062/2015).

Blanket recommendation of technologies or practices is one of the issues in technology transfer and its upscaling. According to Hornidge *et al.* (2009), the “‘lack of fit’ of externally developed technology could be the reason for non-adoption by the farmers.” However, in practice, such technologies are often enforced by the AES without any thought to the needs and experiential knowledge of farmers, which is, again, a legacy of the past (van Assche and Hornidge 2015).

4.2.2 Training of Development Agents

Proper selection, training and education of DAs forms the core of Ethiopian AES. Skillful staff is needed for local facilitation, planning and implementation (World Bank 2012; Ul Hassan 2012; Hornidge and Ul Hassan 2010). Selection and training of eligible and enthusiastic candidates is a key for the effectiveness of the extension services because the DAs work at the grassroots level to bridge the gap between higher state bodies and the farmers. An aspiring DA should firstly be trained in an ATVET college. Earlier, the eligibility requirement for DA training was the successful completion of high school 12th grade. However, since 2005, this requirement has been lowered to completion of the 10th grade (PRIME 2014; MoFED 2006). Other requirements for the selection include gender (female applicants are encouraged by a lower cut-off point for admission to the colleges, an “affirmative action”) (PRIME 2014), knowledge of a local language, socio-political affiliation and a willingness to work in remote rural areas (Adem 2012). Berhanu and Poulton (2014) explain that subjective considerations like commitment to ensuring the success of the agricultural extension are also additionally used as selection criteria.

Qualified candidates are selected by the WOANR together with the *woreda* administration. However, the selection of candidates is, in practice, often not based on qualifications or competences or interest in agriculture. Most candidates are attracted to the employment opportunity than their interest to work with farmers (Intr code no. 71, 2015). Selection bias is another limitation to choosing competent candidates. On the one hand, individuals are chosen based on their socio-political views; on the other hand, urban youths with low interest to serve in remote rural areas are also selected and trained. DAs can strongly influence the quality of extension services provided, and generally, DAs are known to be disinterested in serving the farmers. According to a senior expert at the MoANR, the real challenge of the agricultural extension service in Ethiopia is finding candidates who are interested in agricultural activities (Intr code no. 71, 2015). In many cases, recruited candidates have weak academic achievements and little or no interest in agriculture and/or working closely with the farmers. Thus, despite the high number of DAs trained at ATVET colleges, many graduate with relatively low qualifications to provide effective extension services to the farmers.

The training for agricultural extension in the ATVET colleges and the curricula have changed frequently in the last few years. In 2005, DAs had to specialize in a three-year course (two-year course work plus one-year apprenticeship) on crop, livestock or NRM (Berhanu 2009). Davis *et al.* (2010) argued that such an approach to DA training introduced constraints on the provision of extension services as farmers require integrated services for managing diverse farm activities. In 2009, the ATVET training system was reformed again: the training duration was reduced to only two years, and the training system transitioned from output to outcome orientation, with increased emphasis on specialization (Leta *et al.* 2017a). Specialized training that focused on a specific commodity was believed to enhance the expertise of the DAs, but it also reduced their ability to provide generic and integrated extension services. Along with the reform in 2009, a budget cut was introduced (Breen 2014). After 2009, the ATVET training system and curricula have been reformed twice: in 2011 and 2015. In fact, the problems of non-comprehensive curricula and several abrupt changes in the training system had and still have implications on the quality of the training provided to the DAs and ultimately

on the provision of efficient and effective extension services to smallholder farmers. In principle, ATVET colleges are expected to impart 70% practical training and 30% conceptual knowledge. However, this has not been followed in practice.

The ATVET training system in Ethiopia has been modelled on the extension services system in Australia and was introduced to Ethiopia by experts from the Philippines (Intr code no. 37, 2015). The commodity-based specialized level training has four levels – level one (L1) to level four (L4) with an intervening certificate of competency (CoC) examination (Leta *et al.* 2017a). The aim of the CoC is to ensure that competent medium-level professionals are trained and educated according to the occupational standards of the training courses. However, once graduated and employed, most DAs have to provide generic and integrated extension services to farmers. An expert from the ATVET College in Bako, Oromia region, explained that the purpose of the existing specialized training was:

(i) To produce medium-level labor force for the market, (ii) to produce trainers to be employed in FTCs, and (iii) to encourage the rural youth towards self-employment. However, these objectives do not align with the needs of the current Ethiopian economy where agriculture is mostly smallholder with little room for specialization, and very low job creation role played by the state for rural youths and the marginalized group of the society. [...] after their graduation, however, the competent are employed as DA to provide generic extension services (Intr code no. 37, 2015).

During participant observation, I identified a certain inability among ATVET college graduates, now DAs, to provide basic technical support to farmers or help them implement natural resource management or conservation activities. For example, soil and water conservation structures such as soil bunds and trenches in Yem *woreda* were improperly designed. This issue can not only worsen the prevailing problems but also become a reason for farmers' denial to adopt and upscale land management technologies. Some interviewed farmers complained that the DAs are not capable of answering their questions pertaining to their specialization domains; therefore the farmers are unwilling to seek technical support from

the DAs. Thus, a sense of fatigue among the farmers prevents them from participating in DA-facilitated events, particularly in the Bako-Tibe *woreda*.

One of the objectives of the CoC examination is to screen out eligible candidates from ineligible ones and promote the former to the next level and prepare candidates completing L4 for employment as a CoC certificate is a prerequisite for being employed as a DA. However, the majority of the trainees fail to qualify in the CoC, which is a nation-wide examination. The poor performance is linked to the quality of training provided at the ATVET colleges. In most of the colleges, trainees are instructed by less-experienced or same-level graduates. Maguire (2012) explains that ATVET's trainers are often poorly qualified, and lack practical field experience. As a result, ATVET trainings focus more on science and less on process facilitation, entrepreneurship, extension and communication, which in turn leads to less intuitive skills to approach and support farmers (Leta *et al.* 2017a; Davis *et al.* 2010).

Extension experts at the *woreda* and regional levels are generally aware of the low quality of the ATVET training and the incompetence of many DAs. The state has been striving to mitigate these quality gaps through seasonal on-the-job skill training for DAs. The trainings are mainly provided on crop production during the long rainy season (*meher*), irrigation development, livestock production and WSM. Accordingly, the BoANR organizes training of the trainer (ToT) sessions for *woreda* SMS so that they can train the DAs on the job. The DAs are, in turn, expected to provide skill training to development team leaders, who are then supposed to provide technical support to the farmers in their respective groups (Leta *et al.* 2018a; 2017a).

4.2.3 Assisting in Planning and Implementation

In Ethiopia, the agricultural extension planning and implementation is operationalized via two routes: (i) "top-down," which is in line with the national strategic plan that is centrally controlled by the MoANR and broken down into a quota plan based on population size and implementation potential of the regions, *woreda*, *kebele* and farmers group, and (ii) "bottom-up," which is used for agricultural input planning, collected and compiled by development

team⁴ leaders and DAs using a format prepared by the WOANR. From my interviews with experts and DAs, I found that the bottom-up planning mainly focuses on the demand side of agricultural extension. It is “nominal” route of planning as a *woreda*’s planning exercise and final implementation plans are developed and distributed by the BoANR. My FGDs with farmers revealed that they have been participating in agricultural input planning since 2012. Apart from demands for agricultural inputs, the planning exercise encompasses land use and land cover estimates of farmers in each *kebele*. My household survey showed that the majority of the farmers in sampled areas are involved in agricultural inputs planning, though, numerous farmers were not involved in implementing their plan due to resource shortage and other constraints (see Table 4.1). In fact, lack of participation in administering the planning format or in the meetings organized for the planning can result in penalties imposed on the farmers (e.g. less or no access to agricultural inputs, such as improved seeds).

Table 4.1: Farmers’ participation in planning of agricultural inputs (n=120).

Respondents answer	Participation			
	Planning		Implementation	
	Freq.	Percentage (%)	Freq.	Percentage (%)
Yes	107	89.2	73	60.8
No	13	10.8	47	39.2
Sum	120	100	120	100

Source: Household survey data collected by Gerba Leta (2015-2016).

State involvement in agricultural extension planning aims at enhancing production and productivity of smallholder farmers. *Woredas* try to balance bottom-up and top-down planning by studying past experiences, ambitions of the *woreda* and the capacities of the *kebeles* (Intr code no. 39, 2015). Accordingly, the inputs plans of the *woreda* are reviewed and adjusted by the Input Coordination Unit (ICU). Bako-Tibe *woreda* extension expert described the ICU members, their roles and process in the annual agricultural inputs planning as follow:

⁴ A development team is known as “*yelimat budin*” in *Amharic* and “*gare misooma*” in *Afan Oromo*. It refers to a group of 20 to 40 neighbouring farmers and five one-to-five farmer groups in a village organised for the collective implementation of AES under one farmer leader (a model). However, the number of members varies from *kebele* to *kebele*, according to the size of population and their settlement patterns.

The ICU committee comprises woreda sector offices (such as from agriculture, irrigation, police, cooperative agency and farmers union) and is chaired by the head of the WOANR. The decisions of the ICU are reported to the BoANR for further revision and adjustments. Eventually, the BoANR approves the documents for purchase of agricultural inputs. Thus, many state-based agencies involve and play key roles in the facilitation and follow up of agricultural extension planning and farmers' access to agricultural inputs (Intr code no. 54, 2015).

Top-down plans often fail to inspire a sense of ownership among the farmers. Farmers' responses and my observations indicate that activities that are centrally planned and implemented through the existing system encounter serious challenges. Rainwater harvesting and WSM activities are among the most relevant examples in this regard (Leta *et al.* 2018a; 2017a). The annual WSM plan for the Bako-Tibe *woreda* in 2011 anticipated 8000 km long soil bunds, covering an actual area of a varied size, based on the topography of the farmland (Intr code no. 54, 2015). Such ambitious plans are the cause for exaggerated reporting by the DAs, keen to achieve better performance evaluations, which may translate into salary increment and, in some cases, promotion or an opportunity for further training.

As with WSM, extension of livestock production is also implemented through top-down plans, often in the form of campaigns. For instance, in 2013–14, an estrus synchronization for artificial insemination (AI) campaign was centrally planned and implemented by the MoANR/BoANR and NGOs across the study *woredas*. Participants of the FGDs found that most efforts were ineffective as the campaign did not consider numerous local factors such as limited feed availability, suitability of local breeds and weather conditions. A regional livestock expert noted that the delay in importing semen and the extended dry season in that year were the reasons for the ineffectiveness of the campaign (Intr code no. 63, 2015). In the Saja-Laften *kebele* of the Yem *woreda*, for example, farmers strongly resisted the AI initiative. Many Muslim farmers viewed artificial insemination as unnatural and a cultural and religious taboo (Intr code no. 53, 2015). Thus, many of the extension approaches aimed at upscaling of technologies or

best practices in Ethiopia have not complied with the will of the adopters through a gradual process, which is essential for successful technology adoption (Röling 1988).

The implementation of agricultural extension is centrally coordinated by the Ethiopian regional bodies. The *kebele* administration reinforces the implementation by promoting the adoption of new technologies or practices at local level (Leta *et al.* 2017a). As explained by Berhanu and Poulton (2014), the implementation plan is generally enforced by the *woreda* administration and networks of actors at the local level.

4.2.4 Facilitating Access to Credit Services

Farmer access to credit services in rural Ethiopia is vital for agricultural development, increased productivity and food security. The state and its agricultural extension service system are engaged in the facilitation of credit services through multiple channels. In the two regional states of SNNPRS and Oromia, credit services are provided mainly by state-owned microfinance organizations, notably Omo Microfinance (OMF) and Oromia Credit and Saving Association (OCSA). According to the household survey, less than half of the interviewed farmers had taken loans from the state affiliated microfinance organizations, OMF and OCSA at some point (see Table 4.2). The regional expert of OMF itemized the sources of finance as follows:

The main source of funding for OMF is the Rural Finance Implementation Program (RUFIP). In addition, OMF currently administers about 20 funds, including the Agricultural Marketing Improvement Program (AMIP), an aid funds to enable SNNPRS farmers' better access to agricultural inputs. Most other sources of funds are NGOs (Intr code no. 28, 2015).

For the OCSA in Oromia, the sources of finance are limited to shareholders' capital, profits from credit association investments, and loans from the National Bank. OCSA was originally established by a local NGO known as the Oromia Self-help Organization (OSHO), the regional state, two municipalities (Sebeta and Bishoftu), and the Oromia Development Association (Intr code no. 28, 2015).

In SNNPRS, AMIP and the Household Asset Building Program (HABP) offer in-kind credit services, the fertilizers, to resource-constrained farmers. These credit services can be availed by farmers on at least 25% down payment and additional savings records of about 500 birr⁵, which can serve as a collateral. Access to in-kind credit services needs approval from the WOANR, and is facilitated by the local DAs. In my FGDs, male farmers from the Gorum-Angari *kebele* discussed how the lengthy process and other requirements to access in-kind credit services affects the benefit derived from the services. They communicated the requirements as follow:

[...] despite the availability of in-kind credit services, the prevailing lengthy bureaucratic system to access fertilizer including the requirement of saving, in advance, some portion of the total price, and the resultant high interest rate dishearten some of us not to take loan. If we do, usually, by the time our request get approval, the planting calendar for the needed crop, is already overdue.

According to the regional micro finance expert, the OMF collects the repayment through its 3,400 agents appointed in SNNPRS alone (Intr code no. 65, 2015).

The eligibility criteria for accessing cash credit services are demanding. With OMF, the beneficiaries of the services are expected to have savings worth at least 10% of the total loan amount before accessing the services. Further, the beneficiaries have to satisfy a number of other requirements: a) they should be legal residents of a given *kebele*, b) they should volunteer to be part of a group of five to ten farmers, who serve as group collateral, c) they should possess farmland, d) they should be free from debt, and e) they should be submissive and “well-mannered” individuals, who respect the rules for accessing the services. The interest rates for loans range from 15% in OMF to 17% in OCSA. Even though private microfinance institutes have emerged, their capacities are still limited, and their requirements and interest rates are higher than those of the state-owned OMF and OCSA (Leta *et al.* 2017a). In general, the agricultural credit service sector is controlled by the state and it strongly linked to the AES.

⁵ About 24 Ethiopian birr is the equivalent of 1 euro (as on 14 February 2017).

Table 4.2: Sources of credit service and user access (n=120).

Sources of credit service	Frequency	Percentage (%)
State microfinance organizations	35	29.2
Other informal institutions	4	3.3
Individuals	1	0.8
Not applicable*	80	66.7
Total	120	100

*Indicate nonusers of the credit services.

Source: Household survey data collected by Gerba Leta (2015-2016).

4.2.5 Supply of Agricultural Technologies and Inputs

In Ethiopia, the AES is mainly responsible for facilitating farmer access to packages of technologies and agricultural inputs such as inorganic fertilizers, improved seeds and agrochemicals. The input delivery is largely organized by state-formed input distribution centers associated with farmers' primary cooperatives. The Yem *woreda* has 11 such input distribution centers whereas Bako-Tibe has 25. However, many primary cooperatives do not have the facilities, technical and personnel capabilities needed for effective distribution of the inputs. As a result, FTCs and *kebele* offices often serve as temporary centers for inputs stocking and distribution (Intr code no. 5, 2015).

Access to improved seeds is vital to improve smallholders' crop production and productivity, and the distribution of improved seeds is largely controlled by the state. Ethiopia has two seed marketing systems: regular and direct market. More than 88% of the improved seeds are supplied through the regular seed marketing. The BoANR and the inputs and marketing department of the WOANR serve as facilitators while the farmer cooperatives play the role of suppliers. Apart from a few small private companies and regional seed enterprises, the main source of improved seeds is the Ethiopia Seed Enterprise (ESE). The ESE is a state-owned for-profit enterprise, tasked with the key mandate of producing and distributing quality seeds in the country. To meet the growing demand for improved seeds, the ESE works with out-grower farmers and state farms and buys their produce at a premium of 15% and 10%, respectively, from the grain floor market prices (Intr code no. 33, 2015).

“Direct seed marketing” is a new initiative (2011) under the Integrated Seed Sector Development Program (ISSD) that has been piloted in a few *woredas* across the country. The direct seed marketing system supplies seeds to farmers’ demand. The system is intended to improve access to quality seeds at the relevant place and time. It also envisages to resolve the prevailing problems of seed impurity and poor accountability among seed-producing enterprises. The “direct sale” is realized through producers’ agents (dealers), and payments are accepted in cash only. According to an expert from the MoANR, direct seed marketing has several advantages:

(i) the competition between firms is believed to improve the quality and reduce prices, (ii) involvement of agents or dealers from the woreda capital reduces the costs of seed supply to the woredas, (iii) it shortens the supply chain so farmers can access the preferred seeds early on and (iv) it is believed to improve the accountability of the producers (Intr code no. 38, 2015).

In 2015, direct seed marketing was piloted in the Bako-Tibe *woreda*. However, comparatively less amount of high yielding maize variety such as *Shone* was supplied to the farmers. As a result, farmers were forced to acquire improved seeds from neighboring *woredas*. My survey respondents described how the dealers tried to hoard some stock of improved seeds and sell them on the black market for higher prices. Despite the control and monitoring by the agricultural extension actors to ensure fair distribution as per the *woreda* or *kebeles* plan, the dealers sold seeds to some farmers who were not in the *woreda* or *kebele* plan by forcing them to pay nearly two times the regular price (Intr code no. 0023, 2015). While it may be premature to comment, the direct seed marketing system has not been considered successful in its first year of implementation in Bako-Tibe. It attributes mainly to the shortage of improved seed that the farmers like most. In the Yem *woreda*, direct seed marketing was not piloted because of lack of suitable dealers. Here, improved seeds are distributed only through farmers’ primary cooperatives. However, farmers complain about the impurities and poor germinability of the seeds distributed through the cooperatives. Problems with the seed quality is widely experienced issue among Ethiopian farmers (Elias *et al.* 2015).

Despite some improvements in seed production and distribution, shortage of improved maize seeds, particularly the BH 660 variety, is still a problem for the farmers in Bako-Tibe. The early onset of monsoon leads to a spike in the demand for the BH-660 variety, as it grows well under conditions of adequate and uniform rainfall. However, state-owned seed producers produce and supply seeds according to the previous year's demand plans. Thus, seed producers or suppliers are unable to cope with the annual changes in farmers' demand (Carlsson *et al.* 2005). Another reason for the shortage of maize seeds is the Maize Lethal Necrosis Disease (MLND), a viral disease that has been recently discovered in Ethiopia (Intr code no. 33, 2015). MLND is responsible for the rejection of some lots of seeds produced by the ESE. Based on my observation and analysis, the production and distribution of improved seeds in Ethiopia is plagued by several challenges: (i) monopoly of the state-owned seed enterprises; (ii) low capacities of other commercial seed producers; (iii) the biological phases of seed production itself, which leads to shortage of breeder seeds from the research system; (iv) poor seed varieties (segregated), which lead to low productivity and are susceptible to diseases; and (v) the slow growth of regional seed enterprises.

However, the scenario seems to be changing. Unlike in the past, regional seed enterprises, community-based seed producers and commercial farmers have become increasingly involved in seed production throughout the country. In some places, seed-producing farmer groups have begun to produce standardized quality seeds, although, this is still at the initial stage of development. Overall, the production and distribution of quality seeds is still not adequate despite increasing support from the MoANR and programs such as ISSD and the East Africa Agricultural Development Project (Intr code no. 38, 2015). Nevertheless, as the number and diversity of seed producers continues to increase, more competition, more varieties, better quality and lower prices are expected to benefit smallholder farmers.

The supply of agricultural inputs to farmers also depends on local power relations and networks. Farmer access to agricultural inputs needs the support of the *kebele* administration and the DAs. For example, in the Gorum-Angari *kebele* of Yem, some farmers who did not plant their wheat/*teff* crops in rows were denied access to agricultural inputs (Intr code no. 0064,

2015). According to Berhanu and Poulton (2014), *kebeles* and DAs tend to reward farmers loyal to the administration while side-lining others for their either non-participation, non-adoption or non-implementation of technologies.

The AES also facilitates access to inorganic fertilizers for farmers. The purchase and import of fertilizers is centrally organized by the department of agricultural inputs and marketing of the MoANR. At national and regional levels, the state auctions fertilizer imports and its distribution to a few cooperative federations in the country. The federal and regional states finance and organize the import of inorganic fertilizers based on the demands communicated by regional bureaus and the WOANR. However, the distribution to the farmers is carried out by primary cooperatives, which are financially and institutionally dependent on the state. The case study areas have witnessed an improvement in fertilizer supply during the last years. Extension experts in the Bako-Tibe *woreda* discussed the situation in 2011 when it was nearly impossible for most farmers in rural *kebeles* to procure fertilizer on time. The interviewed farmers also confirmed the improvements in fertilizer supply in their area. However, they also expressed concerns over the steadily increasing prices and seasonality. As the auctioning of fertilizers at the national level is confined to the long-rainy season (*meher*), farmers face seasonal input shortages during the dry season and, occasionally, in the initial periods of the rainy season (Intr code no. 54, 2015).

In the past, DAs were actively involved in the distribution of fertilizers to farmers and the collection of credit repayments. However recently, these services are being increasingly performed by the primary cooperatives (Spielman *et al.* 2012). This shift is indicative of a significant step towards reducing the work monotony of DAs, mitigating dependencies and potential conflicts between DAs and farmers and preventing possible resource abuse (Leta *et al.* 2017a). However, DAs continue to play the important roles of generating interest and identifying farmers' input needs, which are then communicated to the ICU through primary cooperatives and WOANR. In Oromia, the primary cooperatives supply both fertilizers and seeds directly in cash. In SNNPRS, coupons are issued to the farmers by OMF agents. The coupon system allows farmers' access to inputs through cash and the credit system and avoids

the involvement of farmers' cooperative committees in direct input selling and collection of repayments. The new agricultural input distribution system has enabled more efficient task sharing, increased accountability and reduced resource abuse. In general, fertilizer distribution currently in the case study areas is considerably better than that a few years ago.

4.2.6 Enhancing Technology and Knowledge Transfer

Agricultural knowledge and technologies generated by universities, national research systems and bureaus of agriculture are transferred to farmers through extension services. Thus, these extension systems serve “an important service component in the knowledge system as well as in agricultural development processes” (Rivera and Suliman 2009, p. 272). Knowledge is also locally generated and scaled up through media and the extension systems. Moreover, local indigenous knowledge, such as Konso's land use and management practices, have been used, adapted and integrated into the Ethiopian AES (Gebretsadik 2012).

The Ethiopian AES is actively focused on and engaged in technology and knowledge transfer. Hornidge *et al.* (2009) recommend that stakeholders should be involved in the testing of the technologies in their respective agro-ecological conditions to ensure effective technology dissemination and adoption. However, in Ethiopia, technologies and knowledge transfer are largely delivered by state-planned public mobilization drives and campaigns (Leta *et al.* 2018a; 2017a). This is why “blanket” recommendations, such as row planting of *teff*, are promoted and implemented across the country. The state media also promotes the dissemination and adoption of technologies or best practices in every corner of the country without educating farmers about its compatibility to local agro-ecological conditions or farming systems (Intr code no. 62, 2015).

According to the experts and farmers, knowledge transfer in the Ethiopian AES is achieved via different communication mechanisms. Training is the main tool for knowledge and skill transfer at different levels (Leeuwis *et al.* 2003). First, training starts with ToT at the federal level and then percolates down to regions, *woredas* and eventually to DAs, who then train

farmers at the *kebele* level. Second, media, such as FM radio stations, operational in each region, provide information on weather and markets. In fact, the local radio is widely used for the dissemination of technical information, weather forecast and crop market prices in the local ethnic language (Farrington 1995). Third, information communication technology (ICT) has been introduced in a few *woredas* through projects such as Improvement of Production and Marketing Success of Ethiopian Farmers (IPMS)—ILRI, ILRI-Livestock and Irrigation Value-chain for Ethiopian Smallholders (LIVES), and the SG 2000 project, which is funded by the Bill and Melinda Gates Foundation (BMGF) (Intr code no. 40; 42, 2015). Van den Ban (2000) argues that the cost of providing extension services can be reduced through the wider use of media and ICT. ICT, especially, can play a crucial role in granting farmers access to suitable knowledge, information and appropriate training and advice (Ramachander and Jhunhunwalla 2006). However, ICT-based tools have not yet been widely used in the Ethiopian AES.

Adaptation knowledge and technology to the local situations is a popular approach to transferring information. Agricultural knowledge is widely transferred through farmers' training, and on-farm technology demonstrations by various research and development actors. The ATA and Agricultural Growth Program (AGP) provide extensive skill training to enhance technology and knowledge transfer through the AES (Intr code no. 80, 2016). In general, extension knowledge can be introduced, adapted, generated and disseminated for use through various actors. However, in practice, the recipients of knowledge transfer are typically model farmers instead of "ordinary" smallholders. Model farmers are wealthy and larger producers who fall under the category of *kebele* elites. Mostly, model farmers are members of the ruling political party.

In most cases, technology packages are pushed to the farmers with the aim of reducing poverty and ensuring food security. In fact, a senior expert from the BoANR at SNNPRS remarked that a "technology-supply-push" in Ethiopia is essential for survival. The expert suggested promoting the approach as the best resort with the following assumptions:

Shortage of farmlands prevents farmers from increasing their overall production.
Technologies which are highly productive and economical to the smallholder farmers are

persistently vital to improve their livelihoods. Hence, agriculture needs to be intensified through the use of technology supplied in top-down fashion (Intr code no. 13, 2015).

However, my household survey and field observations showed that farmers are often skeptical of and resistant to technologies or best practices that are blindly recommended by the AES such as row planting of crops or physical Soil and Water Conservation (SWC) structure and implemented by DAs. Further, these practices are not accompanied by the relevant inputs and packages such as farm tools. Eventually, because of improper implementation, the sampled *woredas* witnessed complete failures of the technology/practice and a surge in farmer resistance (Intr code no. 56, 2015). Thus, some of the technologies promoted by the extension system had inconsistent and unwanted effects on agricultural productivity and technology adoption.

4.3. The Role of Evaluation in the Agricultural Extension System

In Ethiopia, a politically-driven evaluation system (*gimgema* in *Amharic*; *qorannoo* in *Afan Oromo*) was introduced in government organizations to assess civil servants in the early 1990s. *Gimgema* is an approach that was developed during the political struggle to topple the *Derg* military regime by the Tigrian People Liberation Front (TPLF), but was later incorporated into the bureaucratic system for progress assessment (Keeley and Scoones 2000). Its use has now been extended from civil servants to farmers. Farmers and the agricultural extension staff carry out *gimgema* in the Yem and Bako-Tibe *woredas*. During the WSM campaign, participants are evaluated every day, but the progress of the development team is evaluated every Friday by the *kebele* cabinet. However, the leaders of the one-to-five farmer groups meet every three days or during the weekend to evaluate one another's performance.

The *kebele's* permanent council members, totaling to 25 people, under the leadership of the *kebele* administrator conduct monthly evaluations (Leta *et al.* 2017a). Ideally such evaluations should be conducted by the *kebele extension unit* (the main decision-making body in extension at local level); however, such a unit has not been formed at the Yem *woreda*.

Following the evaluation by the permanent council members, the *kebele* council of 150 members conducts a follow-up evaluation once a month, which is based on the *kebele* administrator's summary report. After the *kebele* council's feedback, the report goes back to the development team in the *sub-kebeles (ketena)*. The evaluation and feedback not only focus on agricultural extension work but also on multiple rural development activities as well as socio-political and security issues. The *gimgema* occasionally affects the morale of the farmers, since their evaluation has implications for their access to agricultural inputs and related services. Similarly, the career progression and promotion of the DAs depends on the outcome of the *gimgema* (Leta *et al.* 2017a).

Woreda sector offices and *kebele*-based public servants (such as DAs, cooperative agents, veterinary technicians, etc.) jointly carry out weekly and biweekly evaluations through the established one-to-five groups. In addition, a team of experts from closely related departments either at the *kebele* or *woreda* level, collectively known as “*the change team*” (or *Yelewut buden* in *Amharic*) jointly assesses and fixes technical problems related to the execution of their annual or seasonal plans. Separately, the one-to-five group of experts or civil servants, who are members of the ruling political party (the majority), receive political instructions through the political cell (*hiwas*) to evaluate participants' political strengths and their professional performance (Intr code no. 61; 67, 2015).

The government of Ethiopia has been actively using the *gimgema* for collecting feedback and creating a synergy between the key actors to the anticipated Ethiopia's agricultural transformation. However, my empirical findings show that most farmer evaluations focus on politics and security rather than on the agricultural extension activities. Further, the *gimgema* is too detailed for evaluating model farmers as they perform various roles in the one-to-five farmer groups, within the development teams, in the *kebele* council, and in the *kebele* cabinet. A series of *gimgema* can dilute not only the roles that the model farmers are supposed to perform but also their overall contribution to the AES. The modality of evaluations is specific to a region—or a *woreda*—and to the implemented agricultural and rural development activities within the region. The experience of participating in the *gimgema* process is positive and is

considered an opportunity to think about the future of agricultural extension in Ethiopia. However, focusing the evaluation on agricultural extension and rural development, on the lessons learned from providing extension services, and time management and utilization of local actors may make the system more suited to the changes introduced by the PES.

4.4 Challenges to the Agricultural Extension

Despite heavy investment of resources by the state, the AES is faced with number of serious challenges. Most of these challenges have persistently passed over from regime to regime. On basis of the study findings, I have categorized these challenges into three main groups: technical, policy, and organizational and institutional dimensions.

4.4.1 Technical Challenges

Davis *et al.* (2010) note that DAs lack the skills required for functions important to the farmers, such as agricultural marketing (value chain) and agricultural intensification and diversification. They also lack soft skills such as process facilitation, communication, and the ability to organize farmer-producer groups. According to the study, most DAs have highly specialized backgrounds, and they lack the comprehensive skills required to combine crop, livestock, and natural resource management. Early in their careers, DAs tend to work hard to make a positive impression (images) and secure available opportunities for long-term training (Intr code no. 62; 64, 2015). However, gradually, most lose their original commitment to work. The work of most DAs is not strategic or goal-oriented; rather, it targets short-term gains (Intr code no. 62, 2015). As a result, despite a high number of local staff and program coverage, agricultural extension has relatively had little impact in Ethiopia. Experts explain that increasing the number of highly specialized DAs necessitates an intensive monitoring and mentoring system, which is too demanding given the low availability of resources and logistics services.

Shortage of skilled personnel is another problem observed in the studied *woredas*. Only a few experts are available to represent the different divisions of the WOANR, such as crop agronomy, protection, horticulture, and natural resource management. According to the DAs, the SMSs do not provide comprehensive and problem-solving technical support because they are short on resources, transportation and manpower (Intr code no. 54, 2015). Poor coordination among the SMSs has also been identified as a problem. The SMSs rely on a checklist to determine the progress of the extension activities via DAs. In the Yem *woreda*, lack of interdisciplinarity is more of an issue than the lack of physical presence of the SMSs in the *kebeles* because of a shortage of experts. My participant observation revealed that SMSs in the Yem *woreda* frequently traveled to rural *kebeles* to backstop the DAs by clustering three to four *kebeles* in one central area. Practical and field-based support is, however, minimal. In fact, the SMSs focus on the *gimgema*, which is based on the DAs' progress reports. Some DAs point out that the *gimgema* addresses shortfalls more than innovative advice (Intr code no. 49, 2015).

The NRM extension is often based on state-organized campaigns. Röling (1988) notes that activities implemented through such campaigns are often not sustainable. For instance, in the case study areas, the soil and water conservation activities are poorly designed and implemented (Leta *et al.* 2018a). Besides, physical structures are poorly matched with biological barriers, such as multipurpose trees or grass species that could have stabilized the system and served as feed/ fodder for the livestock (Leta *et al.* 2017a). Degraded and abandoned land are retargeted merely to complete the seasonal quota plan (see Figure 4.1). Further, the WSM plan does not allow for integration of maintenance work with the new SWC structures (Leta *et al.* 2018a). As a result, the campaign leads to poor outcomes. Additionally, *nikinake*, the mobilization of labor and skills development (see chap. 6), is linked to enforcing farmer participation in WSM. This approach leads farmers to associate the WSM intervention with the *Derg* military regime's NRM campaign, wherein they were coerced into compliance (Merrey and Gebreselassie 2011; Intr code no. 67; 70, 2015).



Figure 4.1: Farmers reuse abandoned land to satisfy the quota plan. Photo: Gerba Leta

The performance evaluation system for DAs differs from region to region and *woreda* to *woreda*. In Yem, DAs are evaluated entirely by their immediate bosses, mainly the department heads, based on the BPR plan jointly agreed upon with the DAs. The BPR is the outcome-based planning system that relies on lists of activities planned in a top-down fashion from BoANR to WOANR, with some activities being jointly planned by the department heads along with *kebele* supervisors and DAs. In Bako-Tibe, however, the operational achievements and involvement in non-extension activities of the DAs are largely assessed by the *kebele* cabinet (MoA 2010). Even though DAs are involved in providing multiple services, their performance evaluation is limited to the role they play in their respective department. This approach fails to acknowledge the generic services provided by the DAs. The lack of recognition of their participation in multiple activities could adversely influence the DAs' motivation to engage in and provide services of extension and coordination of rural development.

4.4.2 Policy-related Challenges

The government of Ethiopia does not have a long-term strategic vision for an AES. As a result, the implementation approach of the existing AES has witnessed repeated changes. A serious

challenge to the system is that the policies and focus of agricultural extension and rural development are constantly revised (Intr code no. 69, 2015). For instance, the AES' focus has changed from national-level issues such as rainwater harvesting to rainfed agriculture or small-scale irrigation, which are relevant at the local level. Such sudden changes in policies and strategies deplete the farmers' trust in the extension and planning system.

Although a decentralized system of decision-making was introduced in the early 2000s (Dickovick and Gebre-Egziabher 2010), most *woredas* are yet to implement the plan. Theoretically, decentralization encourages public participation (Swanson and Rajalahti 2010). However, in the case study areas, DAs continue to estimate farmers' agricultural input demands without consulting the farmers and simply by using data from the previous year. As reported by Bingen and Simpson (2015) and Cabral (2011), in Ethiopia's decentralized system, the ruling elites at the center (federal and regional administration) seek to expand and consolidate their support base by integrating with *woreda* and *kebele* administration and local elites (model farmers). This nominal decentralization *system* can potentially weaken the power and authority of the WOANR. As a result, agricultural extension may not receive the emphasis it deserves.

One of the key features of the AES is that it is a public-run system. The private sector has not been encouraged to participate in the provision of extension services (Intr code no. 42; 62, 2015). However, the increased involvement of the private sector is expected to introduce efficiency and competition into the system. The rhetoric and the reality of the AES are poles apart (see chap. 7). On the one hand, the Ethiopian AES advocates participation. On the other, its implementation is still centrally planned and managed. In the FGDs, the participants noted that the development teams and the one-to-five farmer groups do not work uniformly toward the goals for which they have been established—to increase the coverage of agricultural extension and promote collective action, labor sharing, and technology upscaling. According to an expert, adoption of the farmer groups is largely hampered by the following reasons:

[...] farmers do not prefer to work their routine agricultural activities via farmer groups. As each farmer have different size of farmland and labor demands, their interest is

highly variable. Therefore, collective action is not equally benefited by all member of the farmer groups (Intr code no. 24, 2015).

In Ethiopia, agricultural extension is strongly linked to politics. Through numerous *hiwas* meetings, farmers and DAs are involved in political matters. When extension workers promote a political agenda, it is difficult to realize “a dynamic demand-driven system” (Berhanu and Poulton 2014). In fact, political influence in the AES has been identified as one of the reasons for its ineffectiveness. In general, the priority given to agricultural extension is lower than that given to governance and security.

The main thrust in the AES is on transfer of new knowledge and technologies. According to Kassa (2008), agricultural extension in Ethiopia does little to equip farmers with problem-solving skills and organizational power. The system is designed as a tight top-down structure, where the technology transfer follows a set pattern. While DAs may urge farmers to “take and use” new technologies, they rarely encourage them to develop and adapt these technologies to their own situations.

4.4.3 Organizational and Institutional Challenges

Evidence of organizational reforms and decentralization *are* more common in Oromia than SNNPRS. An expert explains that reform processes often fail to consider the demand for interdisciplinary collaboration and collective action in AES (Intr code no. 54, 2015). They are suddenly planned based on the steering of new ideas or interests of a few politically influential individuals. An MoANR official considers reforms positive coping mechanisms to deal with the emerging national and global changes in economic development, market and consumer demands (Intr code no. 72, 2016). In contrast, another expert argues that frequent organizational reforms are only meant to boost the ego of a few elites who aspire to highlight their status and position (Intr code no. 71, 2015). The latter view was supported by informal experts in a group discussion. At local levels, the DAs continue to provide services to both the old and new organizations. New reforms and sector offices overload the DAs by adding to their

tasks. DAs are expected to implement the activities of every *woreda* sector office in the rural *kebeles* (Intr code no. 72, 2016). Although the general trend is similar, such issues are more of a concern in Bako-Tibe than in Yem.

The ADPLAC was established as a platform to strengthen the linkage between research, extension, and farmers (MoA 2010). However, the links between these three components are far from satisfactory. In fact, this problem has been repeatedly cited as one of the major causes of underdevelopment in the Ethiopian agriculture sector (Belay 2003; Deressa and Seboka 1997). While ADPLAC holds periodic meetings, it has no decision-making power or budget. It does not monitor the progress of any of the planned activities. Lack of commitment among the ADPLAC members is another challenge because most members are temporary. Among the study sites, ADPLAC is slightly more active in Bako-Tibe, where partners jointly address serious farming problems of the *woreda*, such as termite infestation and mono-cropping. The ADPLAC received some budget support from the AGP (Intr code no. 54, 2015). However in the Yem *woreda*, ADPLAC has been non-functional, except for a workshop organized five years ago (Intr code no. 55; 60, 2015). Overall, ADPLAC has not been actively working across the country.

Credit services help resource-constrained farmers' access agricultural inputs as well as conduct off-farm businesses. However, microfinance institutes in rural Ethiopia are poorly developed and provide only limited services. The initial credit ceiling for a farmer is about 3,000 *birr*/person. The major challenges, however, are the group collateral system and the requirement of advance savings for loan eligibility (Intr code no. 29; 65, 2015). Women in the FGDs also identified the "interest rate" as another problem that kept farmers in the credit cycle. The interest rates in Ethiopia range from 15% to over 24% per year for public and private microfinance loans, respectively (Leta *et al.* 2017a). Given these rates, farmers are unable to settle their debt quickly, which in turn dissuades them from taking loans. Apart from high interest rates, farmers are discouraged by the low output prices and negative experiences linked to debt repayment.

Farmers do not have much choice in the matter of technology adoption, particularly when it comes to improved seeds. The number and capacity of seed producers in the country is

never adequate to meet farmers' demand. Mellor and Dorosh (2010) reported that the lack of seeds is the most serious obstacle to meeting agricultural growth targets. Farmers in Ethiopia lack adequate improved seeds for wheat, barley, *teff* and faba beans (Intr code no. 42, 2015). Both government enterprises and private investors have directed their efforts to producing hybrid maize seeds because the hybrid seed business is more lucrative. The dearth of generation of seed supply are other problems identified by seed producers (Intr code no. 33, 2015).

High input and low output prices discourage farmer participation in extension initiatives. Ethiopian farmers produce crops on small and fragmented plots of land, and their efforts are not organized to gain market power. Moreover, farmers deliberately store their crops over extended periods to sell them when the market prices increase (Intr code no. 5; 34, 2015). Unfortunately, these crops succumb to postharvest losses because of poor storage conditions and pests. Crop loss is often accompanied by severe market failure. These conditions exacerbate the farmer's inability to adopt agricultural technologies.

Agricultural extension services are characterized by a high staff turnover. Not surprisingly, unattractive remuneration, poor amenities and a weak incentive structure are the main reasons behind this trend. The emergence of a new private education system in the country has also created better opportunities for extension staff, in better-paying service sectors (Intr code no. 64, 2015). The inflexible political system, which compels DAs and experts to become members of the ruling political party, is another contributor to the increasing turnover. Some DAs look for alternative jobs to overcome their conditions of rural hardship (Intr code no. 71, 2015).

4.5 Potential Opportunities for Agricultural Extension

The steady growth in both domestic and global market demands for crop and livestock products presents the biggest opportunity for Ethiopia's agricultural and rural development. McDermott *et al.* (2010) explain that demands for livestock products, in particular, have been increasing

with the changes in population size, lifestyles, and consumption behavior. Reforms within Ethiopia's agricultural sector can help the nation cope with rapid changes and address emerging needs. Improving access to agricultural inputs and technologies that assist farmers in boosting production are other opportunities available to the state. While a high number of DAs have been appointed to improve the AES and its overall coverage (see Davis *et al.* 2010; Abate 2007), my FGDs revealed that farmers' awareness, motivation, and readiness to use the extension services need to be increased, there is growing demand for livestock and livestock products.

Improving access to all-weather roads as well as communication and media services are alternative approaches to link the smallholder farmers to market information. The use of mobile phones should be promoted so that farmers can receive free advice on production technology or agronomic practices from the hotline service, established in 2014 by the ATA in collaboration with other national partners (Leta *et al.* 2017a; ATA 2014). DAs explain that the adoption of the PES and formation of farmer groups can ensure better technology transfer to the grassroots, with model farmers acting as the facilitators. The PES has helped overcome some of the challenges that DAs faced in reaching out to many farmers. However, as also referred in previous section, the survey findings reveal that development teams and one-to-five farmer groups have been largely ineffective, except for engaging in political dialogue, security, and community mobilization for the WSM. Other specific opportunities for the AES are briefly discussed below.

The state is politically committed to improving farmers' livelihoods by investing in the agricultural extension service. Senior experts from the MoANR add:

[...] the agricultural policy and strategy is open to reform or to introduce and embrace new approaches. As to my understanding, the existing agricultural development policy and strategy are conducive to the improvement of agricultural extension (Intr code no. 72, 2016).

In reality, however, the state is promoting agricultural extension to fulfill twin imperatives: ensure food security, and deepen existing political control (Berhanu and Poulton 2014; Adem 2012).

Access to capacity building and credit services are among the basic requirements to promote agricultural extension. From the survey and expert interviews, I learned that, like DAs, farmers also receive seasonal skill training through a development team in Yem as part of the regular extension service. However, in Bako-Tibe, skill training is delivered only through *nikinake* (public mobilization) and combined with other issues (Leta *et al.* 2018a). Ideally, DAs are expected to motivate and systematically engage farmers in modular specialized training for a period of about 6 months so that they can earn a green certificate. This is step toward promoting specialization in agriculture and enhancing farmer's access to the market. Unfortunately, none of the four case-study *kebeles* have implemented specialized training in the FTC. The level and quality of the existing training services also vary from *woreda* to *woreda*. Further, although numerous microfinance institutes have emerged to provide cash and in-kind credit services to farmers, the in-kind services are only available in the Yem *woreda* of SNNPRS.

Directing seed money or block grants toward FTCs is another opportunity available to the state for promoting demonstration of new technologies. This practice was initiated in 2014-15, when almost all the FTCs in the country received seed money for their working budgets. The Oromia region, for instance, allocated 50 million birr in 2015-16. However, budget allocation varies from region to region. Each FTC in Oromia receives only 8,000 birr as against 10,000 to 15,000 birr allocated to FTCs in SNNPRS. Budget disparities aside, some DAs in Bako-Tibe were completely unaware of the operational budget received by the *kebele*. Instead, they were themselves forced to perform the menial tasks of weeding and applying fertilizers at the FTC (see Figure 4.2). In the Yem *woreda*, the *kebele* agricultural office head, along with the FTC committees, highlighted the bureaucratic challenges in withdrawing money, as withdrawals have to be authorized by the WOANR.



Figure 4.2: Weeding demonstration at a plot by the DA in Gudina-Walkite *kebele*.

Photo: Gerba Leta

Agricultural extension services in Ethiopia are seen as entirely state-sponsored, with little or no credit being given to other developmental actors (Intr code no. 42, 2015). In reality though, international donors and NGOs have substantially contributed to the development of the AES. One of the key contributing NGOs in the Bako-Tibe *woreda*, through its combined efforts in training and introduction of the agricultural extension package, is SG 2000. Since the 1990s, this international NGO has focused on introducing productivity-enhancing food-crop technologies, in keeping with the philosophy of the late Dr. Borlaug: “Take it to the farmer!” (Abate 2007). Farmers in the Bako-Tibe *woreda* are more inspired by the interventions of SG 2000 than those of the public agricultural extension services. The current food crisis faced by the country has also motivated the government of Ethiopia and other donors to focus on agricultural extension (OXFAM 2016). Thus, in future, donor support for agricultural

development is expected to increase. Similarly, growing challenges are likely to motivate farmers to adopt technologies and best practices as coping measures.

4.6 Interests of the State in the Agricultural Extension

Agricultural extension, largely executed through DAs at the *kebele* level, acts as a link between the state and the farmers. The DAs link farming communities to the state structure through their engagement in extension, administration and rural development activities (Leta *et al.* 2017a). Beyond their extension work, DAs are also involved in the collection of state land tax, in mobilizing farming communities for parliamentary elections, in the formation of farmers' development teams; and in mobilizing campaigns. They also provide adult education training to farmers and are involved in socio-economic and political activities of the *kebeles*, including local conflict resolutions (Intr code no. 46, 2015).

The state has been striving to transform the Ethiopian agricultural sector with a view to achieving the status of a middle-income country by 2025 (ATA 2014). The state has recognized that promoting agricultural extension can help maintain its growth, and provide peace and stability. Accordingly, since 2003, significant investments have been made to increase production, ensure food security and end extreme poverty (ATA 2014; Spielman *et al.* 2012; MoARD 2010). Further, as a UN member state, Ethiopia is also committed to the pursuit of SDGs – of ending poverty (SDG 1) and hunger (SDG 2) by 2030 (FAO 2015; Griggs *et al.* 2013; UN 2013) – through proper implementation of the agricultural extension. As also identified by Devereux and Guethe (2009) and Keeley and Scoones (2000), the state considers its investments in agriculture and rural development as a means to reduce poverty and ensure food security. Hence, increasing its rural presence and improving the livelihood of smallholder farmers through agricultural extension is likely remain a primary interest of the state for the years to come.

4.7 Conclusion

The data analyzed in this chapter suggests that the Ethiopian state considers agricultural growth and rural transformation as essential to the long-term survival of the “developmental state” of the country. Agricultural extension is perceived as a vital tool to increase the production and productivity of the millions of Ethiopian smallholder farmers and to forge strong links between the state and the farmers. In fact, reports have suggested that the massive focus on and investments in the AES are targeted at twin objectives: increasing production, actuating rural development and ensuring national food security as well as securing societal stability and state governance across Ethiopia’s large and diverse countryside.

The DAs and the *kebele* administration act as anchors linking the Ethiopian state to the farming communities. However, DAs are involved in extension as well as non-extension activities and are often not sufficiently qualified. This has adversely affected their local credibility. In the current scenario, the political views of the DAs are considered more important than contribution to the provision of extension services. Often, DAs and the *kebele* administration coerce farmers into participating in extension-related activities, which is a legacy from the past according to the EGT perspective. Such coercion, however, tends to reduce farmers’ willingness and active participation in technology adoption and is possibly a threat to the sustainability of the newly introduced PES. Therefore, despite, numerous opportunities for rural development and agricultural extension, some challenges are yet a hurdle to sustainable transition.

The Ethiopian state is directly or indirectly involved in the supply, access to and use of agricultural inputs, technologies and farming practices by each farmer. My empirical findings suggest that associating access to agricultural inputs, training services and farmers’ technology adoption to their social positions and political affiliations could jeopardize the efforts of the agricultural and rural development initiatives. To help farmers gain access to good-quality, timely, and affordable inputs and services, the involvement of private-sector organizations in the input market should be encouraged. In the long run, state bodies should focus more on quality control and price regulation. For an effective extension services system, the state should

place the farmers' real needs at the Center, and this cannot be achieved without enhancing the skill of the extension staff and ensuring more autonomy in local decision making.

Chapter 5: Development Agents and Model Farmers

5.1 Introduction

In Ethiopia, the agricultural extension services system work with DAs and model farmers. These days, the mainstream extension approach, which considers farmers as the recipients of agricultural technology, has been ineffective in addressing the problem of smallholder farming. Recognizing that the status of existing knowledge and technology adoption and transfer among farmers was too low to generate rapid public impact, the government introduced the AES reform in 2010. In the recently adopted PES, DAs and model farmers considered as the main development actors to facilitate the implementation of agricultural extension with aim to increase agricultural extension coverage and achieving food security within a short period of time (Leta *et al.* 2018a; 2017a; MoA 2010).

Apart from introducing, testing, and demonstrating technologies, PES has also promoted the formation of farmer groups. Each *kebele* has about 24 to 30 development teams, each comprising 20 to 40 farmers and five “one-to-five” farmer groups, led by model farmers (Leta *et al.* 2017a; Abate 2007). The number of development team in Yem *woreda* is one-third of those in Bako-Tibe *woreda* of Oromia regional state. The other farmers in the development teams or the one-to-five farmer groups are known as the “followers.” Within the PES, DAs provide skill training to the “model farmers” known as “*adda dures*” in the *Afan Oromo* language. These model farmers then engage in technology upscaling and knowledge transfer. Specifically, the model farmers: (i) provide technical orientation to their followers, (ii) assist in preparing action plans, networking farmers and in the transfer of information, (iii) collect basic data of their followers for public or internal use, and (iv) assess farmer training needs and facilitate farmer-to-farmer experience exchange opportunities (MoA 2010). DAs, who directly interact with model farmers, support the knowledge dissemination process through training and technology demonstrations and by addressing the emerging demands of the model farmers. Although model farmers help DAs perform their roles, they are not as well connected as the DAs to

political decision-makers and the agricultural extension actors distributing agricultural resources like seeds and fertilizers. This task sharing between the DAs and model farmers is a paradigm shift introduced by the PES in Ethiopia.

Under PES, new technologies are first demonstrated on the farms of model farmers and in FTCs. Demonstrations are held on farms to let the followers learn in spaces closer to their residence. Apart from demonstrating new technologies, model farmers are also expected to be knowledgeable about effective management. They serve as the common points of contact between farmers and the DAs, allowing the latter to access the large majority. Essentially the model farmers and DAs share a reciprocal relationship (Röling 1988).

Typically, every new technology that is showcased in a model farm is also demonstrated at an FTC by the DAs. The FTC serves as a technology demonstration and transfer center that facilitates better implementation of the extension initiatives (Leta *et al.* 2017a). It is one of the rural agricultural extension infrastructures that has received much backing and investment from the government of Ethiopia (Spielman *et al.* 2012). An FTC has a management committee of five to nine members consisting of those involved in the *kebele* administration, DAs and farmer representatives. The MoANR hopes that FTCs will gradually evolve into a single point of contact for all agricultural extension services (cf. Davis *et al.* 2010; Gebremedhin *et al.* 2006). This is why an FTC has been established in almost all rural *kebeles*, although their operational capacities and services vary.

DAs play an instrumental role in the introduction and establishment of agricultural technologies. To increase extension coverage and ensure food security (MoFED 2002), the state increased the number of DAs from 2,500 in 1995 (Gebremedhin *et al.* 2006) to around 50,000 at the end of 2008 (Swanson and Davis 2014). All the DAs receive specialized training in crop, livestock and NRM to facilitate improvements in these fields. In addition to human development, AES also targets nurturing collective action and increasing the extension coverage (Leta *et al.* 2017a).

As part of their role, DAs organize field days for raising community awareness about newly introduced technologies or best practices⁶ and encourage farmers to scale them up. Overall, the DAs demonstrate, nurture and enhance the dissemination of new technologies at a larger scale. Although the *kebele* are designed to support DAs, their administration has been in the process of transformation over the last decade, and they have not yet strengthened their governance. As a result, DAs are expected to be involved in numerous activities, including those not related to extension (cf. Leta *et al.* 2017a; Davis *et al.* 2010; Gebremedhin *et al.* 2006; Belay and Abebaw 2004). In fact, Berhanu and Poulton (2014) challenge the politically neutral position of the DAs because of their involvement in extension and non-extension activities.

The government of Ethiopia has officially divided the farming community into two unequally sized groups: model farmers and followers or “*adda dures* and *hordoftoota*,” in *Afan Oromo* language. According to Lefort (2012), few elite farmers have been categorized as model farmers, and the majority have been grouped into the follower category. The aim of the division is to establish a new extension service system, with special roles for model farmers and DAs. Model farmers are considered the “frontline farmers” and key actors in the agricultural extension system and rural development. They are privileged actors, with access to newly introduced technology packages, training and experience exchange opportunities. In turn, they are expected to provide advisory and knowledge transfer services to their followers. However, not much is known in research about the task sharing between DAs and model farmers, the effectiveness of the new model farmers role, the integration of the efforts of model farmers and DAs’ and the outcome thereof. This chapter, therefore, analyses the roles of DAs and model farmers by examining their similarities, differences, complementarities in their role fulfilment and their provision of the planned extension services.

⁶ Best practices - represent existing technology adapted by the farmers such that it outsmarts the initial package offered by either the research or extension system. In principle, such best practices are collected from farmers and repackaged by the agricultural extension for wider application.

5.2 Development Agents-Model Farmers Interaction

In the Ethiopian AES, as in many other systems, changes are triggered by either internal or external forces or a combination of the two. According to van Assche *et al.* (2011), “elements, structures and procedures utilized in and by a system in its ongoing reproduction gradually transform each other in the process, while the system as a whole adapts to the changing environment.” In Ethiopia, the PADETES was adopted in 1995 to facilitate technology transfer via farm demonstration as opposed to the conventional on-station technology demonstration. PADETES focused on increasing production and productivity on farm lands measuring quarter to half a hectare, with participation from a few model farmers. However, it side-lined social dimensions and NRM issues (Abate 2007). PADETES was criticized for neglecting the disadvantaged groups of society such as women, youths and the poor in its pursuit of technology transfer.

Van Assche *et al.* (2014) argue that such intervention models are the legacy from the past rooted the age-old bureaucratic system, or the commodity approach, that retard progress towards a comprehensive system, addressing diverse societal needs. The contradictory goals of the past impede the transformation towards improved systems. Limitations in PADETES such as inequitable access to services and benefits of the system and the slow progress necessitated systemic reforms. Hence, PADETES was replaced by the PES, marking a milestone in the evolution of the institution.

The EGT posits that all elements of governance are subjected to evolution, which is marked by dependence (van Assche and Hornidge 2015). Accordingly, the PES derives some of its beneficial aspects from PADETES: T&V extension, on-farm technology demonstration and upscaling of proven technologies and best practices. Further, model farmers remain important actors, who demonstrate technologies and bridge knowledge transfer gaps between research/extension and the farmers.

In the PES, interaction between actors has given rise to power relations and new institutions that can influence the role and behavior of actors (van Assche *et al.* 2015). The

adopted system promotes integration and coordination between the DAs and model farmers. This is a reflection of the extension worker–model farmer engagement in demonstrating technologies from older version of AES. Currently, the actors share tasks as some functions of the DAs have been transferred to the model farmers. The aim of task sharing is to increase extension coverage and ensure effectiveness of the services (Leta *et al.* 2017a; MoA 2010). Model farmers entrusted with the task of knowledge and skill transfer are typically more inclined to provide extension services (MoA 2015). Ultimately, the PES aims to improve service provision by increasing the range and speed of extension through technology transfer or upscaling (Leta *et al.* 2018a, 2017a).

In the 1970s, South Korea directed the residents of each village to elect their own leader, who would serve the community with diligence to promote rural development (Sonn and Gimm 2013). Mimicking the South Korean efforts, Ethiopia has promoted the formation of farmer groups as part of the PES (Leta *et al.* 2018a). Model farmers in Ethiopia are selected to serve as group and team leaders and demonstrate new technologies to their followers. Further, they use direct persuasion or exert pressure on followers to stimulate technology upscaling.

The state considers the PES as a means to access a large number of farmers and improve their accessibility to the agricultural extension services. Farmer groups are instrumental to implementation of the PES and are locally known as “development army” or “*raya misooma*” in *Afan Oromo* language. This name symbolizes collective action and adaptation to changes introduced by agricultural extension and rural development reforms (MoA 2010). As proposed in the EGT, actors/institutions and power/knowledge co-evolve in the AES. In the case of Ethiopia, this has manifested in the form of participation and provision of extension service. An attempt to devolve the role of DAs to model farmers and participate a large number of farmers in technology upscaling manifests the evolving features of the extension services.

5.3 Development Agents in the Agricultural Extension System

5.3.1 The Role of DAs in Agricultural Extension

While the ultimate beneficiaries of the agricultural extension activity are farmers, DAs serve as the crucial link between the state agencies and the beneficiaries. The interviewed experts and household survey participants are familiar with the following functions of DAs: (i) providing skill training to smallholder farmers, (ii) supplying and demonstrating technologies, (iii) collating and disseminating the necessary information to the farmers, (iv) providing technical support and extension services, (v) building farmers' organizational capacity and (vi) providing administrative support to the *kebele*. However, not all DAs contribute equally to each of these functions. For instance, most DAs lack the soft skills needed for building farmers' organizational capacity and they have little available information for dissemination.

DAs participate in three to four seasonal trainings organized by WOANR annually. Subsequently, they offer similar training to farmers at the *kebele* level. In Bako-Tibe *woreda*, public mobilization meetings (*nikinake*) are organized by *woreda* cabinet members and experts to raise farmers' awareness and improve their skills (Leta *et al.* 2018a). In Yem *woreda*, once the DAs are trained by SMS, the DAs themselves train the farmers. SMS are experts who specialize in crop and livestock sciences, natural resource management, and home economics. They are stationed at the WOANR office, and their responsibilities include training, providing support and supervising DA activities in all the *kebeles* of the *woreda*. According to Swanson and Rajalahti (2010), frontline extension staff facilitate training and support. Per the PES policies, the DAs are to provide training to model farmers, who, in turn, provide technical orientation to their followers to ensure proper implementation of technology packages or best practices advocated by the state (Leta *et al.* 2017a). However, if the introduced technology is too complex to understand and implement, all the farmers are trained by the DAs. In reality, model farmers lack the experience, capability or diligence needed to mentor their followers collectively. This can be attributed mainly to the numerous activities that the model farmers are expected to coordinate.

Currently, the DAs are not authorized to convene farmers meetings; they use the meetings organized by the *kebele* administration as an opportunity to transfer extension-related messages (Leta *et al.* 2017a). Their dependence on the goodwill and support of the *kebele* administration curtails their direct involvement in delivering the agricultural extension solutions. FTCs, where DAs are expected to play a key role in technology demonstration, sourcing, skill development and knowledge transfer, have become operational only recently. In fact, results showed that the extent of service provision is inconsistent across the FTCs in the case study sites. Further, participant observation showed that the DAs do not have the necessary tools and inputs to provide effective skill training within the FTC. Moreover, half the FTCs in the studied *kebeles* have inadequate farmland for technology demonstration (see Figure 5.1). Shortage of financial resources has also constrained effective technology demonstration over the years. These reasons for the ineffectiveness of FTCs agree with those reported by Davis *et al.* (2010). They identified critical shortage of resource and infrastructure as the primary limitations in service provision and technology demonstration at the FTC.

Typically, study results showed that the FTC contribution to promoting technology upscaling has been below expectations. Even if DAs in some *kebeles* piloted new technologies, they were not concerned with demonstrating these to the neighboring farmers. Instead, the DAs used this opportunity to showcase their efforts to their supervisors and other *woreda* officials, in the hope of enhancing their career prospects. In fact, the on-ground situation in the *kebeles* is in stark contrast with the role of DAs, as defined in the PES, or the motives of the FTC. Even though each FTC in the sampled *woredas* has its own management committee, little effort has been invested in diversifying the FTC's output, boosting its income generation capacity, or building the center into an independent and self-governing institution. FTCs are weakly institutionalized. The committees preside over the sale of produce and its reuse; however, they rarely mobilize available farm labor for land preparation and harvesting. The future of Ethiopia's extension services relies heavily on fully functional and efficient FTCs. In fact, the FTC network has been established to enable training, information-sharing, knowledge transfer; technology demonstration and access to extension services (Davis *et al.* 2010; Gebremedhin *et al.* 2006).



Figure 5.1: Small plots to demonstrate technologies at the Saja-Laften *kebele* FTC.

Photo: Gerba Leta

DAs provide extension services pertaining to crop production, animal husbandry and NRM. They also assist farmers in planning and sourcing their agricultural inputs (Leta *et al.* 2017a). Although the government has been striving to increase the extension coverage, more than half the *kebeles* in SNNPRS do not have a DA or the minimum number of DAs (Intr code no. 64, 2015). In Bako-Tibe and Yem, three of the four *kebeles* have two DAs each instead of three. In principle, each *kebele* is to be divided into three sub-*kebeles* (*ketenas*) so that a DA can be assigned to each *ketena* to provide general extension services in crop and livestock production and NRM. The limited number and capacity of DAs has been identified as the main problem in providing agricultural extension services in Ethiopia (Gebremedhin *et al.* 2006). A senior extension expert in the BoANR, SNNPRS, explained that inadequate human resources and

capacity development have been a fundamental bottleneck in the provision of effective extension services (Intr code no. 64, 2015). In fact, capacity development is highly relevant to the effective implementation of agricultural extension (Ragasa *et al.* 2016).

One of the aims of PES is to resolve the existing problems in providing extension services through technology upscaling at a larger scale. Globally, access to information communication technology (ICT) has been identified as a key factor for social and economic development (Hornidge and Antweiler, 2012). Within the context of agricultural extension services, ICT has the potential to facilitate communication and information exchange between farmers and DAs. However, FTCs in Ethiopia lack the requisite infrastructure and technology to disseminate agricultural information. Moreover, DAs are unfamiliar with using ICT (Davis *et al.*, 2010). Another promising information tool is the Ethiopian agricultural information hotline – a collaborative effort between MoANR, ATA, Ethiopian Institute of Agricultural Research (EIAR) and Ethio-telecom. Operational since 2014, the hotline enables farmers to directly access agronomic advice from their mobile phones (Leta *et al.* 2017a; ATA 2014). However, most DAs and farmers in the study sites were not equipped to utilize this option because they lacked access to the facility and network services. The survey showed that over 60% of the farmers do not have mobile phones and about 34% have no radio (see Appendix Table B2). The lack of communication tools and widespread illiteracy have adversely affected the access of information on crop and animal husbandry. The dearth of amenities and transportation services have also added to the challenges in dissemination of information and technologies.

Because DAs receive specialized training only on crop, livestock or NRM, they lack the soft skills and leadership skills needed to help farmers improve their produce and market it (Intr code no. 35; 37, 2015). Courses on supply value chains are not included in the curriculums of the ATVET colleges. Further, because commodity-based farming has not yet been promoted in the country, farmer do not singlehandedly manage diverse farm activities; as a result, they are not expected to seek such specialized management training from DAs.

5.3.2 Development Agents and their Involvement in Non-extension Activities

DAs are involved in multiple activities and consequently have less time to work with farmers on issues of farming and agricultural technology transfer. As per government definitions, most of their activities are targeted at “development,” and not specifically agricultural extension work, which involves technology transfer and providing extension services to farmers. Information and instruction flows through multiple channels from the *woredas* to the DAs. Apart from WoANR, DAs are instructed to implement the initiatives of different *woreda* offices, which rely on their support to fulfil their agendas (Leta *et al.* 2018a, 2017a). Similarly, research organizations and development partners seek DA assistance to connect with the community on an *ad hoc* basis. As reported by Abate (2007), we found that the absence of a clear line of command is a key drawback in the Ethiopian AES. A development agent commented on their involvement in non-extension activities in the following words:

We bridge the government with the farmers, form farmer groups, establish and nurture “political cell” locally known as hiwas in Amharic language. We provide trainings on issues that have got up-to-date political momentum, facilitate farmer meetings on security issues, mobilize farmers for parliamentary election, facilitate and engage in land tax collection campaign, etc. (Intr code no. 50, 2015).

According to a senior officials, the MoANR expect DAs to collaborate with all the research and development sector actors (Intr code no. 72, 2016). As the ultimate public agents at the local level, the DAs facilitate various events for actors from various *woreda* sector offices and research and development organizations (Intr code no. 57, 2015). However, because of their involvement in agricultural and non-agricultural activities, some farmers view them as double agents (Belay and Abebaw 2004). Some view them as bosses instead of facilitators or advisers on farm management, providing access to resources. Thus, some farmers do not trust DAs and consider them gatekeepers to the agricultural inputs. In fact, apart from being engaged in multiple activities, DAs generate demand for technologies and agricultural inputs among farmers; however, they are sometimes unable to fulfil these their demand owing to supply shortages.

DAs are also occupied with numerous non-extension activities that compete with their extension service functions towards smallholder farmers (Leta *et al.* 2017a; Kassa 2008). The interview responses indicated that the frequency of farm visits by DAs has been declining in Bako-Tibe. However, many farmers are unaware the low frequency of visits is attributable to the new modality of extension services under the PES, which requires model farmers, instead of DAs, to directly interact with the farmers. The farmers continue to criticize the limited contributions of the DAs, which could potentially increase the divide between the two parties. A knowledgeable better-off farmer used his mother tongue (*Afaan Oromo*) to illustrate the situation of the current DAs as follow:

[...] “hojjettaa fi hojiin misooma dur hafe,” [...] its equivalent in English—the moniker DAs and their real actions prevailed only in the past. [...] during the Derg and early EPRDF regimes, small number of DAs such as one person was serving about one to five kebeles. However, with the hindsight and comparative analysis of the role played by the DAs in the past with that of the current one, considerable role was played then than at present. DAs in today’s agricultural extension, do not want their shoes or the clothes they wore get any filthy. They rather turn their blind eyes and prefer to walk along asphalt road to get information for reporting than addressing our felt needs at local level. Some of them cherish more to involve in the politics than in rural development and agricultural extension (Intr code no.0001, 2015).

The extent of DA involvement in non-extension works varies across the study areas. For instance, a DA who acts as a *kebele* extension coordinator in Oromia (Bako-Tibe) performs both coordination and advisory roles. Whereas, in Yem *woreda*, the head of the *kebele* agricultural office mainly focuses on coordination of various socio-economic and political activities of the *kebele* (Leta *et al.* 2017a). Unlike in Bako-Tibe, DAs in Yem *woreda* are not involved in tax collection, which possibly prevents their reputation from being further damaged among the farmers. However, in Bako-Tibe, DAs have been directed by the *woreda* and *kebele* administration to engage in collection of government taxes (Leta *et al.* 2018a). Christoplos (2010) explains, “it is problematic when DAs are tasked to collect taxes and loans since

extension agents must retain the trust of their clients.” Tax collectors are often associated with the state administration and are expected to persecute or pressure non-payers. In some parts of Ethiopia, farmers’ livestock is forcibly taken away to threaten the farmers and indirectly coerce them into selling their animals or crops to pay the taxes. Understandably, farmers are unlikely to accept advice from the same people who have driven them to deprivation.

As previously indicated, in Ethiopia, DAs have been reported to engage in multiple activities, including those that are not directly related to agriculture (Gebremedhin *et al.* 2006; Kelemework and Kassa 2006; Belay and Abebaw 2004). Picclotto and Anderson (1997, p. 250) noted that “because extension agents were among the few government officials available at the village level, they were often asked to undertake clerical, statistical, or even political chores.” In places where the *kebele* manager is either unavailable or otherwise busy, DAs serve the *kebele* administration for minute-taking and report-writing tasks.

During elections, DAs are engaged in mobilizing farmers. In fact, their involvement may even extend to influencing voters (Berhanu and Poulton 2014) in favor of the ruling party. According to Picclotto and Anderson (1997), DAs are viewed as the foot soldiers of “nation building” campaigns targeting at different economic and social objectives, although their involvement in non-agricultural activities is considered as a distraction from their main tasks (Berhanu and Poulton 2014; Davis *et al.* 2010; Christoplos 2010). Abate (2007) noted that “more than 90% of agricultural staff time at all levels is used for accomplishing *ad hoc*, sporadic, reactive and non-professional duties.” My observations and expert interviews indicate that most trainings offered to the DAs also tend to combine technical, political or ideological roles such as the “developmental states.” However, for effective delivery of extension services, training on technical and facilitation skills is vital.

5.3.3 Incentives and Disincentives for DAs

Incentives not only improve DA commitment, they also help the employing organization retain valuable staff (Scott *et al.* 2012). Salary improvement, future training opportunities and promotion to higher positions are typically what the DAs expect when they assume their roles.

Every two years, DAs must avail their career structure⁷ options and salary increment. To meet expectations and access benefits such as career structure, the DAs rely on their performance evaluation.

Performance evaluation is a measure of a DA's accomplishment as assessed by a plan, implemented as part of the BPR strategy adopted by the country. However, the BPR plan may not consider the available resources and local implementation capacity, and as a result, a DA's accomplishment may not be accurately captured. Some officials believe that centralized BPR plan helps to control some underestimated planning system a few individuals exploit it and unfairly claim the incentives stipulated for industrious workers (Intr code no. 60, 2015). Per the BPR plan, performance is measured by parameters such as the size of the distributed agricultural inputs and the execution of WSM plans. The average weighted performance of the last three years is expected to touch a cumulative score of at least 80%. As noted by Gebremedhin *et al.* (2006), achieving the quota⁸ plan is still a criterion in a DA's performance evaluation. Failure to meet the performance criteria deprives the DAs of benefits. Technology demonstration at the FTC is currently an evaluation criteria with 20% of the total weight. The performance of the DAs is evaluated by the *kebele* cabinet and immediate bosses from the employing organization (WoANR).

In Bako-Tibe *woreda*, the *kebele* administration and its cabinet assess most of the DA's functions, accounting for 60% of the total score. Extension supervisors and *woreda* extension coordinators jointly assess 30%. The remaining 10% of the score is derived from the employee's self-assessment (MoA 2015; MoA 2010). The evaluation by the *kebele* cabinet is subjective: a DA may gain or lose depending on his or her relationship with the evaluators and the ruling party's opinion.

In Yem *woreda*, in place of the performance evaluation criteria set by the MoANR for career structure and salary increment, the *woreda* has established its own, more challenging criteria

⁷ Career structure refers to a DA's developmental ladder (advancement within the profession) with salary increment being based on the efficiency or performance evaluation.

⁸ Quota is a share of activities or tasks. It is prepared by MoANR or BoANR and distributed by the WOANR to the DAs for implementation.

for DA career structure. The woreda expects the junior DAs to score at least 80%, and seniors to score at least 90%. Such high expectations may not be realistic given the limited resources and facilities available to DAs to perform their jobs. Two Yem *woreda* relevant informants justifies the condition as follows:

We could not fairly entitled to access the career structure every other two years. The top-down ambitious plan and the desire for over 90% achievement by WOANR, as a requirement, particularly for senior DAs is a terrible constraint to achieve the plan and access the benefit. The performance evaluation system that introduced with BPR and adapted by our woreda, strongly limit us from accessing similar benefits with our peers in neighboring woredas/regions. This criteria is a potential source of discontent that deprives our right and harm our motivation and interest to provide effective extension services (Intr code no. 48; 52, 2015).

However, a senior expert from the MoANR summarized the situation as follows:

The MoANR had issued the career structure packages equally to all regional states with minimum efficiency requirement of 70% but the implementation varies from region to region and woreda to woreda. Therefore, the variation could be attributed to the decentralized decision making, applied either by the regions or the woredas (Intr code no. 71, 2015).

Being involved in multiple activities weakens the effectiveness of DAs. Repeated system-based expectations to perform tasks without being trained adversely affect the morale of the DAs and limit their interest and passion to serve. In the interviews, DAs complained that the system forces non-members of the ruling political party to become members in order to be trusted. Therefore, DAs have no choice to stay politically neutral (Berhanu and Poulton 2014). Eventually, the growing challenges of their role become a strong disincentive, and they begin to consider other job opportunities. Thus, the pressures on DAs strongly contributes to staff turnover.

The involvement of DAs in non-extension activities tends to fuel farmers' resistance towards adopting technologies. Further, the overlapping project demands of different *woreda*

sector offices jeopardizes their performance achievement. DAs identified the overlaps are a result of diverse sources of commands and the lack of a clear planning system between various *woreda* sector offices and the *kebele* agricultural office. In general, DAs work hard throughout the year, even foregoing their annual holidays; however, they are less effective in providing the extension services to the farmers – the core role for which they have been trained and employed. Their innumerable responsibilities possibly add fatigue experienced by the DAs and can be viewed as an impediment to the provision of effective extension services.

5.4 Model Farmers and Their Role in the Agricultural Extension System

5.4.1 Selection Criteria for Model Farmers

Under the PES, model farmers are responsible for extending the coverage of agricultural extension services to beneficiaries via the development team and one-to-five farmer groups. However, a model farmer's eligibility to serve as a role model is highly debatable. The PES document defines a model farmer (MoA 2010, p. 36) as:

(i) a farmer who fully uses agricultural technology package and demonstrates his/her efficiency, (ii) a person with good behavior and demonstrative interpersonal relation with other farmers, (iii) a person who volunteers to share his/her knowledge and skills, (iv) a person who collates members' ideas /queries and seeks solution from the DA, (v) a person who is fast to adopt new technologies and practices, and (vi) a person who can articulate himself or herself and listen to the others.

In practice, however, these definitions of the MoANR are hardly observed or met. The *kebele* administrator sets the selection criteria, along with the cabinet members, for choosing model farmers. My observations revealed that farmers belonging to the poor to medium economic categories are selected as model farmers in the Gudina-Walkite *kebele* of Bako-Tibe *woreda*. Wealthy farmers with houses, large farmlands and perennial crops such as mango and eucalyptus, are categorized as followers in the Dembi-Gobu *kebele*. In most cases, though,

wealthy farmers are, by default, model farmers. However, the conventional approach of categorizing farmers based on farm typology is not effective in practice (Intr code no. 70, 2015). In some cases, wealth per se is not sufficient parameter; loyalty to the political party also implicitly employed as criterion for model selection. The limited numbers of wealthy or active and literate farmers in the development team is another challenge to model selection and thus to implementation of the PES. The overall ambition to lead other farmers among most farm owners and loyalist has forced the selectors to define alternative criteria, and as a result, the selection criteria are modified locally as needed.

Essentially, model farmers should be diligent towards their core tasks of demonstrating new technology or best practices. While the state supplies technologies such as improved seeds to the model farmers, it may not necessarily provide fertilizers or agrochemicals. In such cases, model farmers should be financially capable of sourcing these inputs on their own (Röling 1988). Model farmers typically manage their farms well to ensure high productivity – from land preparation to harvest. This is why they act as role models – they work diligently through all stages of the crop cycle and can afford the appropriate agricultural inputs, unlike the farmers in the other category. However, the transfer of technology and knowledge from model farmers to the followers is not a linear process. In Ethiopia, not only is model farmer selection a highly subjective process, the effectiveness of the services provided by the trained DAs to the models is also poor (cf. Davis *et al.* 2010; Abate 2007; Chaudhry and Al-Haj 1985). Thus, model farmers are inconsistent in their performance across *woredas* and *kebeles*.

5.4.2 Benefits of Agricultural Extension to Model Farmers

Agricultural technologies, mainly improved seeds, are not easily accessible in Ethiopia. Financial capacity is an essential but not a sufficient condition to access these technologies. However, model farmers can access various inputs better than the followers. Apart from their financial capacity, these farmers deliver the crucial service of technology upscaling and knowledge transfer to other farmers. They thus have priority access the technologies or inputs, and skill training from different sources. Model farmers receive production packages from the government to demonstrate new technologies and enhance upscaling. Moreover, model

farmers also act the middlemen between farmers and public agricultural extension actors, research organizations, NGOs and private seed companies such as PIONEER. Such in-kind access to technologies or inputs, and skill training may act as an incentive/benefit for some model farmers to extend their loyalty and dedication towards their role.

Direct training from the DAs gives the model farmers an opportunity to gain first-hand exposure to new technologies and practices, which possibly improves their sense of self-worth. Other farmers and community members also consider some of them as more important individuals. I observed that the AES favored an existing model farmer instead of attempting to appoint new ones. A few mid-level farmers reported that existing model farmers are often valued and incentivized every other year. In fact, some of the model farmers had held the position for more than four decades, owing to their large resources and popularity among the communities and local administration (Intr code no. 62, 2015). Apart from accessing new technologies and inputs, model farmers are provided training opportunities and motivation, which makes them more empowered than other farmers. Further, the excessive government-led advocacy around model farmers has led a few to view themselves as the local elite.

5.4.3 Model Farmers and the Agricultural Extension Services

With the adoption of the PES in 2010, most activities implemented by the DAs have been devolved to the model farmers. Model farmers, who lead the development teams, have since offered mentoring services and technical support to their followers. This task-sharing with the models is an advantage for the DAs as it eases their burden of reaching out to the farmers. Further, the involvement of model farmers also potentially widens the reach of the agricultural extension services.

However, my interviews with the farmers and experts indicated that the quality and efficiency of the services provided are unsatisfactory for various reasons. First, the farmer groups are not effective in promoting collective action and upscaling of technologies. Second, model farmers are too preoccupied with meetings to execute their own private responsibilities.

Third, multiple sources of commands (*kebele* administration, political cadres, and the DAs) have overworked and confused the model farmers. Fourth, no concrete incentives are available to model farmers even though they nearly act as fulltime DAs in their areas of charge. Fifth, the knowledge and skill required for agricultural extension services facilitation are largely lacking among model farmers. Deviating from van Assche *et al.*'s (2015) EGT, in Ethiopia, actors and institutions have not consistently co-evolved: model farmers have largely failed to match the requirements of the PES, except for mobilizing labor for WSM and sporadically encouraging collective action within the one-to-five farmer groups. In fact, for the latter, model farmers have effectively engaged only with their extended family and neighbors.

In principle, agricultural extension services implementation needs professional soft skills related to critical thinking, problem solving, organizational development and negotiation (GFRAS 2010); however, most model farmers have not been systematically trained in these skills. As a result, despite efforts to increase the coverage of agricultural extension services through the model farmers, the quality of services and its effectiveness have remained very low. A model farmer's responsibility towards their followers is mainly enforced through the political system. Through various platforms and fora, the government motivates model farmers to extend their support to their followers. However, these efforts have hardly borne fruit.

As leaders of the development teams, model farmers are the default leaders of the political cell (*hiwas*). *Hiwas* meetings are thus used by political members to motivate model farmers and strongly embed the message of "growing together: hand-in-hand." They are encouraged by the ruling party to work in solidarity with their followers and engage in collective action – the guiding principle towards reducing poverty and ensuring food security among smallholder farmers (MoA 2010). However, some model farmers criticize the approach as it forces them to devote their precious time "to helping followers help themselves," while the rest are busy pursuing their private interests. Nurturing collective action through participation is a key element of implementing agricultural extension. However, "governance produces many of the elements and structures that conversely will influence its evolution" (van Assche and Hornidge

2015). Thus, appointing many incompetent and non-diligent model farmers may retard the progress that the PES aims to introduce.

My informal discussions with farmers revealed that they have not embraced the PES: some associated collective action with the *Derg* military regime's coercive farmer-producer cooperatives. State failure in introducing the PES system to the actors at different levels replicates the PADETES experience. It is also in line with the EGT, which posits that past legacy influences the steps through the present to the future (van Assche *et al.* 2014 ; Shtaltovna 2013; Abate 2007). Nevertheless, because of the PES, farmer groups have been successful in creating a platform for political and security dialogue and for mobilizing farmers for NRM. Unfortunately, task-sharing between the models and DAs has not been effectively implemented, and the farmers, because they are not duly informed of changes in the extension approach, hold the DAs responsible for this failure.

Model farmers are influential actors in the extension system. They are considered fast learners, with the ability to assimilate new information and the economic means to experiment with new ideas (Röling 1988). They are viewed as early adopters, risk takers and less averse to new technologies. A regional senior expert, summarized the role of a model farmer as follows:

The principle of having the model farmers lead the development teams is vital because during the upscaling of technologies or best practices, they are believed to take risk as they are at the frontline to adopt technologies and demonstrate to their followers. So, others can follow their footsteps. But the prevailing issue is the failure to select the right model farmers. Mostly, better-off individuals are often nominated as models over the years, instead of creating new vibrant ones, attributing to selection bias (Intr code no. 62, 2015).

The state relies on model farmers to achieve its strategic objectives. The state and the public agricultural extension rely more on the model farmers than others (MoA 2010; MoFED 2010). A senior regional expert explained why models are considered important:

The DAs are relying on the model farmers since the pressure imposed through the top-down planning system forced them to target the model to successfully achieve their

quota. This is because model farmers are committed and afford to access inputs to implement the plan and are quick technology adopters with minimum supervision. As a result, the DAs could deliver their duty and meet their performance evaluation requirements (Intr code no. 67, 2015).

The state uses model farmers not only to showcase new technologies but also to achieve its political goals on the strength of their leadership at the local level. The aim of the MoANR and BoANR is primarily to foster farmer capacity through “capable, proactive and diligent model farmers” at the frontline. Eventually, farmer groups are used both to enhance the implementation of the agricultural extension and to strengthen the political base and popularity of the ruling party.

In the PES, the model farmers are expected to not only serve as team or group leaders but also pilot new technologies introduced by DAs. Agricultural extension policies provide awareness and skill training to the model farmers. The model farmers, in turn, should disseminate this information to their followers at development team meetings and through technology demonstrations on their own farms. They are to encourage others to adopt the technology and thus fulfil the AES objectives of skill development and information transfer to the end users. In reality, however, their contribution is limited to mobilizing their followers for communal and other socio-political activities (Leta *et al.* 2017a).

Farmers’ field day is another approach by which technology adoption is promoted and popularized by the model farmers. According to an extension expert, in Yem *woreda*, at least five to twenty model farmers from each *kebele* are provided with new technology (such as improved seeds) each year for farm demonstrations (Intr code no. 55, 2015). Eventually, properly managed farms are identified, and a field visit is organized by a few model farmers for *kebele* cabinet members, heads of *woreda* sector offices and the administration. Despite the learning potential of this event, the invitation is extended only to a few model farmers from within and outside the *kebele*. According to a *woreda* expert, the field day is important to the model farmers as well as the hosting farmer who is recognized by the authorities and often rewarded for his/her performance, unlike the poor farmers (Intr code no. 70, 2015). In line

with Bailey (2014) the poor are badly marginalized in the Ethiopian AES, which leads to epistemic oppression.

Model farms and FTCs are demonstration centers for crop, livestock and NRM-related technologies. According to Taye (2013), adoption of technologies or best practices is the core aim of the extension intervention in Ethiopia. The MoANR expects model farmers to facilitate technology showcasing and transfer (MoA 2010). According to senior extensionists, all demonstrable practices in FTCs are to be replicated on the plots of model farmers to ensure that the technology is at an accessible distance to other farmer residences (Intr code no. 72, 2016). Several exposures and training opportunities have helped the model farmers enjoy the knowledge and power at their disposal. Van Assche *et al.* (2015) argues that the knowledge of the world is always embedded in power relations. Agricultural extension officials and administrative authorities support model farmers to achieve certain pre-determined motives. However, the poor farmers are neglected or victimized by the market forces (Lefort 2012). Despite provisions in the PES, hardly any opportunities have been created for financially deprived farmers.

Because of their relatively high social status within the community, model farmers are trusted by both the government and the farmers at the local level. They are considered suitable to transfer innovations to a large audience and influence the political opinion of smallholder farmers. Realizing that model farmers can boost their popularity among the masses, the government has entrusted them with political tasks. Neither the development teams nor the existing extension system enables followers to learn well or benefit from the model farmers in PES. In fact, some followers believe that the model farmers are the biggest beneficiaries of the existing system. Despite efforts, the upscaling of technologies through PES – from 2011–2015 – has been reported as ineffective (NPC 2015).

The outcome of devolving the role of DAs to model farmers varies from site to site. While inconsistent efforts have been in Yem to coordinate *collective action* by the model farmers, such efforts have been nearly absent in Bako-Tibe. Apart from commitment and skill-sharing capacity of model farmers, most farmers are in doubt about the PES itself. According to EGT, a

new system only allows a certain degree of change (van Assche *et al.* 2015). With the PES, changes have been confined to the role definitions of DAs and model farmers instead of improvements in the provision of extension service to the farmers. In compliance with Abate (2007) the introduction and information dissemination about PES has not been effective, which is similar to the problems with the PADETES. The actual implementation of PES is in contradiction with its objectives and intentions. Effective extension services and upscaling of technologies requires political will, commitment and cooperation from the state, model farmers and followers.

5.5 Conclusion

In this chapter, I described the PES and the revamped roles of DAs and model farmers in the new extension system. Formation of farmer groups, network building and devolving the role of DAs to model farmers are the building blocks of the PES. In practice, the PES implementation relies on *collective action*. While the number of DAs has steadily increased, the extent of technology diffusion realized by the PES's upscaling initiative, led by model farmers, is debatable. Further, trained DAs, expected to provide extension services, have been criticized for lacking the capabilities and skills needed. The overall inefficiency of the extension services is magnified as the incompetent DAs train model farmers, and, in turn, expect them to educate their followers.

Model farmers, under the PES, are introduced to new technologies and various skills through training, experience-sharing opportunities and participation in various forums including *hiwas* meetings. However, despite these efforts, most model farmers have failed at mobilizing *collective action*. Inadequate support from model farmers is one of the factors leading to poor achievements in the upscaling of technologies.

The role of DAs is largely limited to demonstrating new technologies at FTCs and mentoring model farmers on upscaling. Unfortunately, half the sampled *kebeles* do not have adequately sized farm plots for demonstrating technologies. The involvement of DAs in non-agricultural

activities (e.g., tax collection, mobilizing farmers during elections, etc.) reflects a fragmented chain of command and distracts the DAs from being engaged in new plans/activities. This possibly aggravates their ineffectiveness in the provision of the actual extension services. It also negatively affects their credibility among the farming community. Most farmers doubt the commitment of DAs as they seem to switch between being facilitators and arrogant managers.

The DAs themselves lack incentives to mentor model farmers and coordinate technology and knowledge dissemination. Most consider the task of mobilizing farmers to support the ruling party an incentive as they secure short- or long-term gains such as allowance, training opportunities or promotions. Thus, they use their agency to serve party politics and improve their careers and livelihoods. Not surprisingly, their involvement in such non-extension activities deprives them of the trust of farmers and distracts them from their regular activities. It thus undermines the rationale and purpose of the DA role and the overall extension service system, which is designed to provide agricultural services and improve agricultural production. In some cases, though, the lack of funds prevents them from executing tasks that are a part of their routine functions, such as organizing field days to showcase new technologies.

Overall, the implementation of the PES through farmer groups has not yielded the desired results of upscaling technologies or promoting knowledge transfer through appropriate task sharing between the DAs and model farmers. Instead, the farmer groups have come to serve as a platform for political dialogue, public mobilization and parliamentary election. The development team leaders coordinate rural development, agricultural extension, and socio-political activities. They have managed to link farmers more strongly to the political than the extension system. In line with the EGT, the legacy of the preceding system has led to path dependency in Ethiopia's agricultural extension services. In particular, the government's failure in familiarizing the ultimate users with the new system is a reflection of the drawbacks of the preceding extension system. While the newly designed approaches are well conceptualized, the tendency to practice the old system is indicative of path dependency. Apart from successfully forming farmer groups, the PES has been unable to effect the envisaged paradigm shift in extension services.

On the basis of my empirical findings, I suggest that a thorough understanding of the farmers' needs pertaining to agricultural technologies and extension services could potentially correct the implementation of the PES. Designing appropriate knowledge and skill development schemes for DAs and an incentive system that rewards high quality agricultural extension work, rather than non-agricultural tasks, is vital for effective service provision and to facilitate technology adoption. Further, keeping DAs out of non-extension activities can mitigate their fatigue and improve their trustworthiness and credibility among the farmers. As model farmers provide honorary services, their role should be limited to technology demonstration, providing technical support and promoting collective action for the upscaling of technologies. The involvement of DAs and model farmers in multiple non-professional and non-incentivized activities instructed by either the regional, *woreda* or *kebele* administration, and other sector offices could adversely affect their effectiveness. Immediate steps should be taken to address over-burdening of these actors.

Chapter 6:

Nikinake: the Mobilization of Labor and Skill Development in Rural Ethiopia

6.1 Introduction

Public mobilization is currently employed as an approach to rural development and agricultural extension. The Ethiopian agricultural sector is highly influenced and shaped by the *developmental state*. For decades, agricultural extension has been at the forefront of state involvement (Lefort 2012): new knowledge and technologies are seen as the keys to development. Röling (1988, p. 49) defined extension as “a professional communication intervention deployed by an institution to induce a change in voluntary behaviours with a presumed public or collective utility.” That said, Leeuwis *et al.* (2003, p. 25) describe it more broadly and self-referentially: “extension is everything that people who think of themselves as extensionists do as part of their professional practice.” With the complexity of extension, it is widely understood and used as a knowledge-centred approach to rural development (Van Assche & Hornidge 2015). In this chapter, I investigate a form of extension linked to public mobilization called *nikinake*, in which teaching, learning and collective action are closely entwined. I assess the evolution and strengths of the approach to rural development and suggest possibilities for improvement. The case studies are introduced below. Conclusion is drawn on potential linkages between extension and mobilisation as a starting point for theory-building on the notion of extension-as-collective action.

6.1.1 The Ethiopian Rural Context

In Ethiopia, an ethno-federalism was established in the early 1990s. The Federal Democratic Republic of Ethiopia (FDRE) comprises nine regional states and two city administrations (Ḥabīb and Mohammed 2010). Ever since federal reforms in the early 1990s, the regional states have gained substantial power in preparing and implementing their development plans and providing basic social services (Merrey and Gebresilassie 2011). Among others, the regional states have strong mandates to implement their own land and water management activities,

partly to reverse the country's resource degradation problem. Ethiopia is heavily affected by natural resource degradation, largely due to overuse and unsustainable agricultural practices (Stellmacher 2015; Muche *et al.* 2014; Ogunwole *et al.* 2014; German 2012; Van Oost, Govers and Desmet 2000). In the past, NRM efforts have targeted only a few highly degraded parts of the country, with limited outcomes (EEPFE/ERDI 2006).

Rapid population growth and land shortage coupled with increasing natural resource degradation has threatened agricultural productivity and the country's ambition to achieve food security (German *et al.* 2012; Vlek, Le, and Tamene 2010). Adverse effects of erosion and land degradation on crop production and productivities have increasingly alarmed Ethiopian policymakers. The MoANR has strongly emphasized the necessity for an upscaling of existing NRM practices by tailoring them to fit agro-ecology and farming system-inspired practices (MoARD 2010). Since 2010 and 2011, NRM has become an integral part of the GTP. The GTP considers soil and water as the two most important natural resources. Accordingly, in 2015, a community-based WSM approach managed 8.12 million hectares of land; the plan is projected to reach 27.23 million hectares by 2020 (NPC 2015).

6.1.2 Extension and *Nikinake*

Since the late 1960s, Ethiopia has introduced and adopted various agricultural extension and rural development models and strategies. The classical models of technology transfer in which researchers develop technologies to address problems and try to disseminate them through DAs to farmers for adoption, by means of extension communication tools such as the T&V and integrated package programs, traditionally formed the core of extension activities (Swanson and Rajalahti 2010; Cohen 1974; Adams 1970). Massive soil and water conservation, as well as tree planting campaigns in the 1970s and 1980s, have been part of state-driven development programs. Mass mobilization of rural communities was used to make labour available for implementation of centrally-set targets. The campaign work included tree planting, constructing soil and stone bunds, checking dams, and other biological and bio-physical structures. Upon this backdrop, Ethiopia's government introduced and adapted *nikinake* in

2010 and 2011 as an approach to promote rural development and agricultural extension. In this sense, *nikinake* reflects a continuity of centrally planned, environmentally-oriented development interventions by the state.

The concept and principle of *nikinake* is based on the Saemaul Undong (SMU), New Village Movement initiated in South Korea in the early 1970s (cf. Douglass 2013; Sonn and Gimm 2013; Asian Development Bank 2012). The SMU concept was developed as a community-based, village-modernization program and implemented in South Korea with considerable impacts on community and individual livelihoods (Douglass 2013; Asian Development Bank 2012). Over the past several decades, the SMU model was exported as a model for integrated rural development in Africa, Latin America, and Asia. As of 2011, about seventy countries with very diverse socio-political backgrounds, such as Timor-Leste, Russia, Philippines, and Democratic Republic of the Congo, have adopted the SMU approach and used it for both rural and urban development schemes (Douglass 2013). In addition to Ethiopia, other African countries such as Uganda, Tanzania, and Rwanda have also adopted and are implementing the model (Korea SMU Centre 2016).

Saemaul Undong (SMU) was subsequently linked with the advent of the Green Revolution in rice production (Douglass 2013). It can be considered as a South-South travelling hegemonic discourse and economic cooperation (Hornidge 2014a, b; Odularu 2010). The core principle of SMU is to use voluntary labor provided by members of local communities for rural development (Sonn and Gimm 2013). Various media were intensively used to encourage participation under the three main principles of SMU: diligence, self-help, and cooperation.

Since 2011, SMU has been adopted in Ethiopia under the name *nikinake*. Under the first GTP (GTP-I) from 2010/11 to 2014/15, Ethiopia applied *nikinake* for NRM through WSM, as well as to other extension activities (MoFED, 2010). The genesis of *nikinake* in Ethiopia can be related to the rural public mobilization activities that have been implemented in Tigray regional state since the early 1990s (Liniger *et al.* 2011; Jabbar *et al.* 2000). It is presumably based on the regional state implementation of the approach in Tigray that was then emulated and adopted at the national level. In Oromia regional state, *nikinake* is known as “*Sochi hubbannoo Ciimsuu*,”

the equivalent in English being “skill promotion movement.” Therefore, *nikinake* takes on the function of mobilizing labor and promoting skill development amongst mobilized workers.

Since 2010, the MoANR has adopted a PES, accompanied by farmers’ group formation (MoA 2010). *Nikinake* enhances the implementation of the PES through social mobilization and community involvement in rural development and agricultural extension. Many state actors from various levels of the administrative structure, such as *kebele* administration and extension, various *woreda* sector offices, zones and the BoANR, and administration are involved in *nikinake*. The *kebele* administration is the most prominent state institution in rural Ethiopia, and acts as a tool for the mobilization and engagement of rural people in their social, political, and economic development. The power of *nikinake* also draws from political support and the impetus given by the federal, regional, and local governments.

Implementation of *nikinake* in Ethiopia relies on two intertwined concepts: *voluntary participation* and *enforcement*. The latter is implicitly embedded in the former. They coexist and operate together to mobilize labour. *Voluntary participation*, in other words, is not entirely voluntary. This does not mean one can speak simply of coercion: in the history of state-community interaction in Ethiopia, power relations were often acknowledged by answering requests from higher governments’ offices. Those higher governmental actors were often successful in creating a certain degree of awareness and in developing skills at the local level through *voluntary participation*, most recently under the form of *nikinake*.

Enforcement manifests itself in the process in two ways: issuing strong instruction directly and disciplining indirectly through a web of governmental rural actors and institutions. Failing to comply with the directions from *kebele* administrations (local governments) could result in farmers risking losing their access to technologies, services or agricultural inputs. In addition to the state structures and bodies, informal social institutions such as *iddirs*, which were initially established as voluntary self-help associations, are instructed by local government actors to mobilize, and enforce participation in WSM and other activities that require collective action.

De facto, the Ethiopian extension service system, and the broader system of rural governance, have become known for using—amongst other means—pressure to convince farmers to change their farming practices. Many state representatives, especially at lower levels, know that there are limits to what can be achieved by pressure. They are also aware that ignoring local views, participation, and informal institutions have negative repercussions.

The authoritarian, top-down, collectivist, rural development approaches pursued during the *Derg* military regime led to the destruction of many communal resources. After the fall of the *Derg* in 1991, farming communities disliked tree plantations in particular, and often destroyed them. Following the downfall of the *Derg*, the material destruction of state and community property and the unravelling of associated governance structures manifest itself in a lack of sense of ownership and trust between state authorities and farmers in many parts of Ethiopia. The mobilization of farmers by the state under *nikinake* (and other campaign activities) must be analysed against this background.

Despite the growing publicity of the term *nikinake* under Ethiopian agricultural extension experts, development practitioners, and farming communities across the country, its services, processes, and effectiveness have not been given sufficient attention in research. Therefore, the aim of this chapter is to examine the role *nikinake* plays in community mobilization and analyse its stepwise process and effectiveness in implementing agricultural extension in Ethiopia.

6.2 Analyzing *Nikinake* through the Lens of Evolutionary Governance Theory

Evolutionary Governance Theory (EGT) argues that there are always forms of participation and representation at work in communities (Beunen *et al.*, 2015), as expertise associated with governmental actors cannot steer all activities. For example, in rural areas bottom-up initiatives and local knowledge cannot manage the complexities of multi-level governance, evolving expertise, and overlapping and competing communities and interests. Where systems look expert-driven and hierarchical, it is a matter of looking for local knowledge, hidden

participation, and associated informal institutions. Where participation is high on the agenda, it is a matter of looking better for formality, hierarchy, and expertise. Once the actual relation between these forms of organising is carefully observed, one can more productively assess the function of a particular institution, such as *nikinake* (also Easterly *et al.*, 2006).

For EGT, governance changes, such as the introduction of *nikinake* as a new institution and also such as a possibly improved version of *nikinake*, are always enabled or disabled and formed and transformed by the governance context into which they are introduced. Therefore, we need to look for dependencies in the evolution of *nikinake* and its context of rural governance, to assess its transformative potential (van Assche *et al.*, 2011; David, 2007).

In the Ethiopian context, with its history of ambitious rural development schemes and dramatic regime changes, the potential of *nikinake* must be understood as emerging from several governance evolutions: extension per se, rural development and governance, in different forms of the nation-state (regimes) and its constituent elements (units of government). If *nikinake* is extension and mobilisation, then EGT points the attention to embedding local *nikinake* forms in histories of *nikinake* and a series of rural governance restructurings, development efforts and ideological shifts at both national and regional levels. All of these governance evolutions are likely to shape *nikinake* to be a formative context. However, the study and comparison of *nikinake* initiatives is useful to grasp which contexts most affect development efforts.

As can also be observed in Ethiopian forest governance (Stellmacher, 2007a), the regime changes can be seen as waves of institutionalisation and de-institutionalisation. Each new form of institutionalisation is marked by a large difference between formal and informal institutions, between development rhetoric and reality, and between written and actual rules and roles. Evolutionary Governance Theory (EGT), for such a context, highlights the importance of tracking dependencies in evolving governance within and across regimes. In Ethiopia, de-institutionalisation associated with regime collapse sometimes led to an actual breakdown of governance. This forced a reliance on local and informal solutions. Re-institutionalisation, even by ambitious and knowledgeable governments, is never simple, as governance evolution is

marked by positive feedback-loops where successful coordination leads to increased capacity to manage complexity (Luhmann, 1995). In other words, starting from scratch is starting with new and simple experiments, erasing the value of precedent. In summary, EGT helps to frame this chapter by:

- Placing the *nikinake* projects in the context of rural governance and state development efforts.
- Directing the gaze towards the interplay of formal and informal institutions, participation, and representation (to locate mass mobilization better in rural life).
- Placing the projects within a history of regimes and regime changes, with current efforts part of a nationwide re-institutionalisation project.
- Enabling the comparison of cases as contexts by mapping the different dependencies: legacies of the past(s) and dependencies on other actors and institutions.

6.3 Nikinake and Its Application

In principle, *nikinake* promotes a participatory form of community mobilization, and both formal and informal institutions are used to elicit participation. As referenced in earlier section, the implementation of WSM relies on farmer groups in each development team. The development teams create their own bylaws to control farmers' participation— a practice that was witnessed in the Yem *woreda*. In Bako-Tibe, monitoring and enforcement of participation were devolved to the *iddir*, an informal self-help voluntary institution. Thus, formal and informal institutions enforce *collective action* and network-building between farmers in Yem and Bako-Tibe.

The *iddir*, as an informal institution, serve as an alternative to the development teams in community enforcement (Helmke and Levisky 2004; North 1990). This substitution is systematically designed and enforced by the *kebele* administration. In Bako-Tibe, the *iddir* is an active and reliable association for implementing rural development and agricultural extension, whereas development teams are nominal representatives of the state extension structure at the local level (Intr code no. 56, 2015). However, the *iddir's* approaches to enforce community participation have had negative consequences on the adoption and sustainability of NRM. Apart

from community mobilization and enhancement of *collective action*, the *nikinake*, too, has been associated with unreliable outcomes, particularly in NRM. One of the main reasons for this is the rigidity of coordination of the current agricultural extension, which borrows heavily from past social mobilization approaches and experiences. In fact, these very approaches were considered repressive by the farming community during the *Derg* military-socialist regime. Technical inefficiency among the practitioners (the experts and DAs) is another contributor to farmers' resistance towards adopting and promoting NRM. The state at different levels—bureaus and *woreda* offices of agriculture and natural resources—plays joint and distinct roles in executing the *nikinake* (see Figure 6.1). However, the actors usually pay more attention to the process than to its real outcome or impact.

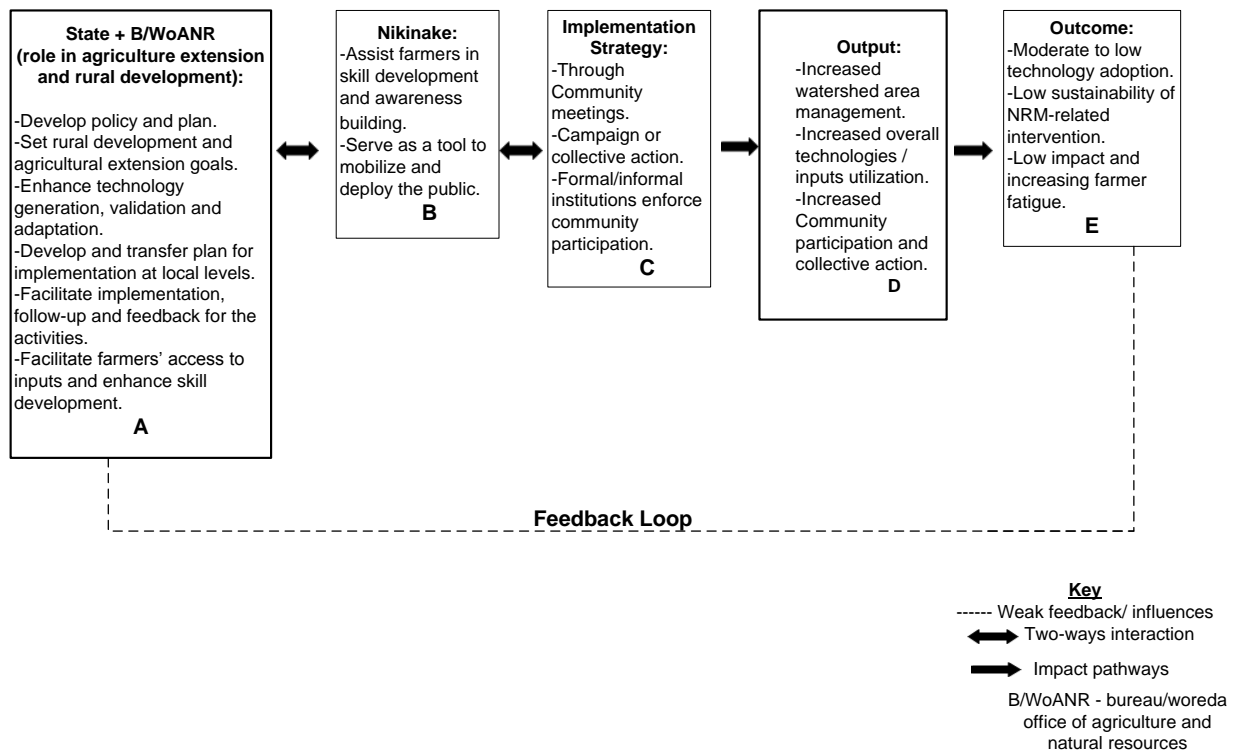


Figure 6.1: Overview of the design and application of *nikinake* for NRM.

Source: Adopted from Leta *et al.* (2018).

6.3.1 Design and Process of *Nikinake*

Nikinake is designed to mobilize voluntary labour and engage farmers in seasonal WSM and other extension activities. Since 2011, millions of Ethiopian farmers have participated in WSM

campaigns for at least one month each year, mainly in four regional states (Tigray, Amhara, Oromia and SNNPR). According to a regional expert, *nikinake* is planned by the authorities at the regional BoANR and the regional state (Intr code no. 67, 2015). In SNNPRS, the authorities jointly form committees to plan and manage *nikinake*. They steer the preparation of *aketatay sened* ('fueling documents' in English) through regional experts (Leta *et al.* 2016). The documents include a checklist, which is reviewed and used to organize *nikinake* at the regional level.

Participants in the regional *nikinake* include all sector office heads or representatives, who are also cabinet members of the respective zone/*woreda* councils and the relevant SMS. The aim is to create a common understanding and achieve informed consent on the *ginbars* (seasonal activities) and to reinforce *collective action* through campaigning (Intr code no. 75, 2016). *Ginbars* refers to types of agricultural activities, and these are implemented, according to the calendar, via *nikinake*.

The *aketatay sened*, the guidelines and checklist (for skill training) and the quota plan are distributed among the participants. Political directions are issued to reinforce subsequent implementation at *woreda* level. Each *woreda* executes *nikinake* with the participation of the *kebele* cabinets and the relevant lower-level development actors, tasked with the implementation of *kebele* quota plans (Leta *et al.* 2016). *Nikinake* is extended to the *kebeles* and farmer groups to raise awareness and engage the community. According to key informants, *nikinake* is deployed for different *ginbars*, such as irrigation development, WSM, *belg* (short rains), and *meher* (long rains) crop production. Such activities are organized at least three to four times a year. However, it is most commonly used to mobilize and engage the community in WSM. Because of these efforts, the number of participants in WSM and other extension activities increased from 5.1 million farmers in 2010-11 to 13.95 million farmers by the end of 2015. The managed watershed area coverage also grew to 20.2 million hectares (NPC 2015, p.22).

As is evident from this brief description, *nikinake* is a complex process. While some forms of it simply involve mobilized labor, others include elements of training or education or

even instructional demonstration projects. Of course, the mere involvement of officials, whose designation includes the term *extension*, does not imply that an extension approach to rural development has been used. However, some forms of *nikinake* can be considered examples of extension. Mostly, such examples are found more in capacity-building efforts and less in planning for the WSM.

6.3.2 Planning Watershed Management

Two months before the beginning of every WSM activity, the DAs and development team leaders of each *kebele* in Yem are tasked with identifying the households involved in the campaign. As farmers are expected to carry their own farm tools, the types and number of farm tools are also identified in advance. With regard to the farm tools, an expert explains his practical experience in Yem *woreda* as follows:

The WSM campaign focus both on communal and private farmlands. Currently, the WOANR and woreda administration through network of actors urge farmer to purchase their own farm tools before the launching of the seasonal campaign. In the beginning of nikinake and the WSM campaign (in 2011/12), a few farm and technical tools were supplied by the state as an incentive to each kebele via the WOANR. These tools are currently used by the FTCs. The aim of supplying farm and other technical tools such as strings, line level and meter was to promote the NRM goal of the country. However, pushing farmer to buy new tools including by embedding the type and quality of farm tools that owned by farmer in a criteria set for daily farmer performance evaluation during the campaign, might influence farmer's motivation to involve in WSM activities (Intr code no. 79, 2016).

Household member participation varies from *woreda* to *woreda*. In Yem, all active individuals in a household, including males, females, and the youths, are involved. In Bako-Tibe, however, only household heads are involved. Through FGDs and participant observation, I found that older male farmers encourage others by giving their blessing while pregnant

women, or those with health issues, supply drinking water and snacks (see Figure 6.2). The manpower plan is based on the *woreda's* mode of labour mobilization and engagement.



Figure 6.2: A woman serving water and snacks for participants of WSM campaign.

Photo: Gerba Leta

WSM is a part of the GTP distributed by the MoANR to the regions and by the regions to the *woredas* and *kebeles*. The quota planning system defines the WSM activities for each *kebele*. Mostly, the plans do not align with the local agro-ecological situation (Intr code no. 75, 2016). For instance, in the Gorum-Angari *kebele*, soil bunds, an eyebrow basin, and trenches were constructed in 2016. In principle, the latter two are rainwater-harvesting physical structures, ideal for moisture-deficit areas rather than the humid highlands, where the *kebele* was located. Similarly, rainwater-harvesting ponds were part of the quota plan for the year in the *kebele*, without any feasibility assessment. In the Saja-Laften *kebele*, the structures built in the mid-2000s were not utilised for their intended purpose (see Figure 6.3). Thus, the quota system, which assigns rainwater-harvesting structures, such as ponds or trenches, to the *kebeles* compels farmers to implement practices irrelevant to the farming system or to their actual needs.



Figure 6.3: Unused rain water harvesting pond. Photo: Gerba Leta

Many of the agricultural extension plans are too ambitious to be properly implemented by the *kebeles* and *woredas*. For example, the quota plan for tree planting in the Bako-Tibe *woreda* targeted the planting of 22 million seedlings in 2015 (Intr code no. 54, 2015). Achieving such an ambitious plan would have required about fifty more small- to medium-sized nursery sites—unrealistic given the limited budget, time, and staff. Such overstretched plans tend to promote exaggeration in reporting, which, in turn, impedes the availability of reliable data on Ethiopian agriculture.

6.3.3 Capacity-building

Since 2011, the WOANR in Bako-Tibe has deployed *nikinake* to promote awareness-building and skill training. In this *woreda*, *nikinake* activities are conducted by categorising farmers into three farm typology/wealth groups: better-off farmers, medium-income farmers, and poor farmers. The aim of differentiated training and awareness-building is to better understand farmers' specific needs and to optimize their benefits according to their demand and wealth status (Intr code no. 3, 2015). The event takes an average of one to three days, during which

farmers are informed about seasonal agricultural activities and many other issues and receive directions for implementation.

Since 2014, training has been delivered according to farm typology, which involves grouping better-off farmers with adjacent farmlands into a *cluster*. The purpose of the training is to introduce farmers to better technologies and extension services and ultimately boost group production and facilitate linkage to markets. The skill-training packages and training documents are developed by the BoANR. The *woreda* is expected to adapt the checklist and training documents to its local context—a step that is often ignored because of capacity problems. According to an expert, the new approach did not supply the required technologies or inputs introduced in the documents (Intr code no. 70, 2015). With no change in market, prices, or supply of new inputs, it is difficult to fathom any real transformation in the domains of agriculture or rural development (Röling 1988).

Some farmers in the Bako-Tibe *kebeles* were affronted by their “poor label.” Others stated that they would benefit more from joint training with model farmers, in which case the latter could share their practical experiences. As it is a relatively new system in Oromia, it is too early to offer critical remarks. However, combining skill training with non-agricultural extension activities in *nikinake* greatly reduces the role and contribution of the DAs. As DAs also participate in the *nikinake* with the farmers, their contribution is limited to merely responding to technical questions. Thus, the current situation limits farmers’ access to adequate skill training for different *ginbars*.

The new approach also reduces farmers’ opportunities to interact with and learn from one another. As *nikinake* is facilitated by *woreda* cabinet members, politically appointed sector office heads, and *woreda* experts, the events are formal in nature, with most farmers serving as mere listeners. Further, *nikinake* sessions address various issues under one umbrella, such as extension, rural development, security, politics, tax collection, etc. Combining different topics into a single discussion denies participants the ability to focus on one specific agenda at a time. This reduces farmers’ interest in participating and adds to their fatigue (Intr code no. 70, 2015). Implementing agricultural extension requires adequate capacity and awareness-building among

the farmers and the DAs. As political directions are issued every season, *nikinake* can be considered a highly lobbied approach to development, which is intensively endorsed by the state at large.

In Yem, however, after each *woreda nikinake*, the DAs separately receive skill training specific to each *ginbar* so that they can train farmers in turn. In the initial days of *nikinake* and the WSM campaign (in 2010-11), DAs were intensively trained. Now, the training is almost non-existent, especially for WSM (Intr code no. 49, 2015). The capacity-building situation is more or less similar in both *woredas*; however, in Yem, farmers are separately given skill training for various *ginbars*. Farmers' skill training usually focuses on proper utilisation and application of new technology packages, best practices, sustainable WSM, etc.

6.3.4 Natural Resource Management

In Ethiopia, the rise in population has brought about a corresponding increase in the scale and intensity of natural resource exploitation. Natural resources such as land, water, and forests are increasingly being overused, depleted, and destroyed (Stellmacher 2015; Ogunwole *et al.* 2014; German *et al.* 2012; Dejene 2003). The growing pressure on land resources has led to land degradation and a decline in crop production (Ogunwole *et al.* 2014; FAO and UNEP 1999). A better-off farmer from Gorum-Angari *kebele* of Yem *woreda* narrated the current effects of land degradation on their livelihoods as follows:

[...] "Lije tirs siyawota, yemibela tata," [...] its equivalent in English is "when my young born learn to eat, I do not have enough food on the table." In comparison to the past days, currently, soil is severely eroded and the land is highly degraded and become the potential threat for the dearth of household food reserve. Similarly, crop production and productivity highly declined mainly owing to overuse and numerous other natural and anthropogenic factors that exacerbate the rate of degradation (Intr code no. 0064, 2015).

To reverse these trends, the sustainable use of natural resources—both by the government and the local communities—has been identified as the need of the hour. However, despite massive state investments in agricultural extension, only a few technologies and practices have noticeably helped in mitigating the problems of erosion and land degradation. These include soil bunds and tree planting practices, both of which have been widely implemented in the study woredas and the country at large.

Hundreds of kilometres of SWC structures have been constructed in the studied *kebeles*. However, the sustainability of these structures has only been ensured at a few model farmers' plots, where they have been integrated with biological barriers, such as forage grass, locally known as *desho* (Mulema *et al.* 2017; Leta *et al.* 2013). Model farmers can access inputs that are in short supply because they are encouraged by the state to demonstrate new technologies to their followers. In this sense, the model farmers act as para-professional extensionists, representatives of their fellow farmers and providers of mentoring services. They are better linked to state resources, services, and networks than most other farmers. The development teams are only nominal representatives of farmers, with little autonomy to set their common goals or work toward them (Leta *et al.* 2017a).

Nikinake can be used to mobilize the community for any purpose required by the state. Although the range of participatory methods is burgeoning, the impact is often diminished by enforcement, which is an evolutionary trend inherited from the preceding regime. Farmers are not equipped to communicate whether the social mobilization or the introduced technologies are relevant or not to their own circumstances.

In the Bako-Tibe woreda, farmers entirely avoided participating in *nikinake* and the WSM campaigns in 2015-16. According to one expert, this was mainly due to the perceived laborious nature and unsustainability of the WSM activities, which led to a certain degree of resistance among farmers (Intr code no. 56, 2015). The quota system also failed to trigger a sense of ownership. In addition, the lack of monitoring and evaluation of past and present activities, as well as a deliberate disregard for previously built beneficial structures, has been observed. In the Yem woreda, improperly designed structures have led to negative

consequences, engendering resistance. According to a DA, there is no binding rule that forces farmers to safeguard the structures (Intr code no. 49, 2016). Despite these limitations, WSM continues to be implemented in Yem and other neighbouring *woredas*, more frequently in SNNPRS than in Oromia. Further, the community in SNNPRS has begun to target abandoned communal or private farmland (see Figure 6.4) merely to achieve the annual quota, instead of focusing on potentially degradable land for management.

Nikinake does not typically involve assessing, documenting or evaluating the sustainability of the previous year's WSM activities. My participant observation revealed that technical inefficiencies of the *nikinake* interventions may limit their impact. DAs are often not adequately trained in technical skills and didactics (Davis *et al.*, 2010; Kassa, 2008). The design and construction of the SWC structures are managed by three to four farmers, known as foremen, in a development team. They are selected and trained by the DAs to help the community with any layout work. However, some foremen seemed technically incompetent, which led to unexpected consequences. The poor layout of soil bunds, for example (see Figure 6.5), obstructed traditional ox-ploughing practices. Farmers also complained that these soil bunds occupied large parts of their small land. Such experiences tend to strengthen a sense of resistance. Additionally, farmers in some places have become weary of the WSM campaign, which was introduced with the GTP-I and extended to the GTP-II.



Previous soil bunds

Figure 6.4: Degraded and abandoned farmland re-targeted to achieve the quota plan by overlapping previous year soil bunds with new trenches. Photo: Gerba Leta



Figure 6.5: Narrow width between soil bunds on gentle slope that obstruct farming operations, e.g. with ox ploughs. Photo: Gerba Leta

According to informal discussions, farmers' reluctance to participate in *nikinake* is further strengthened by a lack of promising achievements. Additionally, the enforcement practices exercised by informal institutions such as the *iddir* have added to tensions among communities. Many who are required to sanction those who do not follow the WSM campaign requirements are not recognized by the formal extension system. As such, actions that work towards achieving state-driven interests negatively affect farmers' long-established relations with others.

Another contributing factor to land degradation is inappropriate advice from the DAs. In the Yem *woreda*, which has a rugged terrain, DAs have advised farmers to till their land five to six times per year. Frequent tillage practices in steep-sloped agricultural lands ultimately lead to a higher rate of erosion (see Muche *et al.* 2014; Van Oost, Govers and Desmet 2000). Almost none of the farmers in the Yem *woreda* have heard of the minimum tillage practice. Interestingly, almost all farmers in Bako-Tibe practice minimum tillage both for large and small cereal crop production (see Appendix Table B4). Further, in the Saja-Laften *kebele*, DAs have advised farmers against intercropping climber beans with maize. This, again, can have negative consequences on farmers' product diversity and soil fertility.

Proponents of *nikinake*, such as a senior expert in the MoANR, consider it the most successful extension system for mobilizing millions of farmers and enhancing *collective action* (Intr code no. 72, 2016). However, farmers' work availability highly depends on the cropping calendar. For example, during *belg* and *meher*, following the onset of rains, farmers typically have little time to contribute to *nikinake*.

6.3.5 Working Norms and their Enforcement

As mentioned earlier, *kebele*-level *nikinake* is facilitated by *woreda* officials (Intr code no. 49; 69; 70, 2015). This implies strong support from the *woreda* administration. However, the working norms for NRM campaigns are developed at two levels: at the *kebele* level by development teams and at the *woreda* level by the WOANR. Basically, the *kebele*-level norms

include setting rules, such as start and end time of the activities, number of working days a week and disciplinary measures for noncompliance (Intr code no. 49; 75, 2015). According to farmers, the fines range from three to five *birr* for latecomers to 10 to 15 *birr* for one-day absentees. Being absent for the entire length of the campaign may invite a severe penalty. *Woreda* norms, on the other hand, pertain to the total number of days for the campaign and the activity units allocated to each farmer daily. In 2016, for example, the norms in Yem *woreda*, Gorum-Angary and Saja-Laften *kebeles* stated that in a day, each male, female and youth participant must dig soil bunds that were half a metre deep and 5 m, 4 m and 3.5 m in length, respectively (Intr code no. 75, 2015). But for structures more than half a metre deep, a length of only 1 m per person per day was expected. The total number of working days per week was five, for four consecutive weeks. While these working norms were defined by state authorities and local actors, they did not follow participatory approaches (Pretty 2003).

Unlike in Yem, the WSM campaign in Bako-Tibe was enforced by the local *iddir*. As previously referenced, the *iddir* is a traditional voluntary self-help peer group or social support association, which offers community and individual services, such as funerals (Kelboro 2013; Stellmacher 2007b; Pankhurst and Haile-Mariam 2000). Discussions with the *iddir* leaders revealed that the *kebele* administration in Bako-Tibe *woreda* uses the *iddir* to facilitate its WSM campaign (Intr code no. 70, 2015). Non-participation for one day, for example, may invite a penalty of up to 50 *birr*. But, repeated noncompliance risks a member's exclusion from the *iddir*, a serious social sanction in rural Ethiopia. The interplay of *kebele* and *iddir* structures and bylaws can also be seen in other NRM contexts in Ethiopia (Stellmacher 2007b).

Apart from the WSM campaign, the *kebele* administration enforces technology adoption as well as the implementation of other agricultural extension activities (Intr code no. 79; 49, 2016). In most cases, farmers are considered laggards when it comes to adopting new technologies (cf. Hornidge *et al.*, 2009; Rogers, 1995). Hence, they are coerced to adopt them. Local enforcement is realized either through development teams, the *iddir*, or the *kebele* administration. Extension is often used as a policy instrument to impose unwanted practices, which then triggers non-voluntary changes (Röling 1988). According to farmers, more demand-

driven extension and participation would promote a higher sense of ownership and could increase the effectiveness of the measures.

6.3.6 Monitoring the Efficiency of Farmer Groups

During the campaign, the development team leaders evaluate the farmers' performance daily, based on the work done, its quality, and the farm tools used. Each farmer is then graded from A to D (best to worst), and the grades are recorded. A brief evaluative discussion is had with every individual farmer regarding their grade, according to the PES guidelines (MoA 2010). If a farmer achieves a low grade, such as a C or D, the team leader suggests improving his or her performance. The DAs or another assigned supervisor from the *kebele* cabinet evaluates each team leader. Their evaluation is based on daily achievements and the relative quality of work. The WSM campaign outputs are communicated on a daily and weekly basis by the *kebele* first to the *woreda*, next to the region, and then to MoANR. Generally, the monitoring and evaluation systems are poorly defined and implemented with weak feedback.

6.4 Nikinake in its Many Roles

For a comprehensive understanding of *nikinake*, we conducted a SWOT analysis. A SWOT analysis makes it possible to assess various strengths, weaknesses, opportunities, and threats within an organization, or within the agricultural extension system (Hanyani-Mlambo 2002). In our study, SWOT analysis was done based on the empirical data collected through FGDs, expert interviews, meetings with *woreda* expert groups and participant observation in the four study *kebeles*. The results are presented in Table 6.1.

Table 6.1: SWOT analysis of *nikinake*.

<p>Strengths</p> <ul style="list-style-type: none"> - State, at all levels, paid attention to NRM. - Increased outreach and overall extension coverage through technology upscaling approach. - Farmers better accessed to seasonal skill training and awareness-building. 	<p>Weaknesses</p> <ul style="list-style-type: none"> - Community-enforced participation in <i>nikinake</i>. - Short, unfocused and inefficient skills training. - Lack of clear and systematic community participation in planning. - State unable to supply some necessary inputs to the farmers. - Low skilled farmers and technical foremen. - Lack of clear chain of command for NRM and agricultural extension initiatives. - Top-down introduction of land management technologies. - Frequent organizational restructuring and weak inter-organizational collaboration.
<p>Opportunities</p> <ul style="list-style-type: none"> - Increased government commitment towards NRM. - Emerging tradition of <i>collective action</i> through the agricultural extension system. 	<p>Threats</p> <ul style="list-style-type: none"> - Climate change negatively affects efforts. - Labor enforcement triggers farmer resistance. - Lower adoption of NRM practices. - Lack of monitoring, evaluation and maintenance of previously built infrastructure. - Excessive emphasis on quantitative goals instead of outcome and effectiveness. - Free livestock grazing system destroys soil and water conservation structures.

Source: Adopted from Leta *et al.* (2018).

Strengths and opportunities aside, the current version of *nikinake* is fraught with weaknesses and threats, which pose a challenge to the outcome and sustainability of NRM intervention. Addressing its main limitations of labour enforcement, poor access to necessary inputs, and unfocused and inefficient skill development may make the *nikinake* useful for improving farmers' participation. Its effectiveness as an extension or alternative tool to mobilize and deploy the community in labor-intensive activities could be nurtured by understanding and ameliorating the bottlenecks. Below, we further detail the analysis of *nikinake*.

Nikinake has proven to be a powerful tool for mobilization and engendering *collective action*. However, our evidence shows that *collective action* in *nikinake* is often far from what is desired: the groups are often artificially created, do not identify themselves as groups, and have goals that are not arrived at through consensus (compare Ostrom, 2005; Ostrom, 1990). Groups are formed by higher-level government decisions, and plans are imposed by superiors.

The number of farmers participating in *nikinake* and the subsequent WSM campaign in the study areas have been progressively declining. In fact, in Bako-Tibe, farmers did not participate in *nikinake* and subsequent activities in 2015-16. Most farmers are not in favor of it, but carry out the work only to fulfil the quota targets. Some practices are over-ambitiously planned; others are incompatible with the agro-ecology and farming systems. Technical inefficiencies further impede farming operations and can lead to destruction of existing structures and aggravate soil erosion. For example, most soil bunds established in Yem by the campaign eventually collapsed and were ploughed over by the farmers. Such failures can be attributed to extension officials' and the *woreda* administration excessive focus on high coverage instead of on real outcomes and sustained benefits.

Informal discussions with farmers and experts highlighted that WSM activities are not adequately monitored or evaluated. Maintenance work from the previous year is not integrated into new plans. A lack of essential inputs—such as forage grass for stabilizing bunds—tends to exacerbate soil loss through erosion. *Nikinake* simultaneously attempts to address seasonal agricultural extension activities along with skill training, rural development, tax collection, politics, and security issues. The farmers, overloaded by the multiple agendas and activities, tend to lose their motivation. The time-and labour-intensive nature of WSM during the dry season also dissuades farmers' participation.

Nikinake is thus not always extension; it does not always work and where it does include forms of extension, and it often does not work in that capacity, either. Groups for *collective action* exist in the area but are not the ones that are organized by the developmental state in *nikinake*. Informal institutions that might engender *collective action* and learning exist, but are similarly not seen-or are used for coercion. Regarding knowledge, the crucial element in an extension approach—the existing local knowledge of the agro-ecological system and of existing, possibly useful, informal institutions—are not systematically included and considered in the *nikinake* system. Learning in such a context becomes more a risk than an asset for farmers. Actual deliberation of the value of old and new agricultural and NRM approaches in *nikinake* does not take place and a sustainable transition is not likely. The high expectations for

campaigns also point at the problematic functioning of many other governmental actors and institutions. Many development goals and collective goods are not achieved through everyday governance, and must rely on short campaigns of forced mobilization. The persistence of *nikinake* can then be seen as contributing to the instability of the governance system. Other actors rely on it, and incentives are slight to work towards functioning checks and balances, sustainable NRM, and the decision-making procedures and forms of knowledge needed for that.

In terms of EGT, we can say that Ethiopian rural development strategies have relied on central planning and steering (reliance on plans as institutions, a web of governmental organizations as actors), reliance on external expert knowledge, and routinely ignored parallel forms of organization and of knowledge. In previous regimes, the grip on the countryside was weak, and local governments were barely existent. The socialist roots of mass mobilization can still be traced in the decision to implement *nikinake*, but the mobilization now takes place in a much more refined institutional framework for rural governance, where the national, regional, and woredas government have undertaken a serious effort to establish a series of local actors (including at *kebeles*, *ketenas*, development teams, and the one-to-five farmer groups), intended to increase the impact of any development efforts. This approach is likely inspired by the histories of de-and re-institutionalization, which marked rural governance and NRM through different regimes.

The socialist efforts towards comprehensive rural planning have been refashioned, *de facto*, by the government, where old-fashioned, forced mobilization, under the new name of *nikinake*, now must take up the burden of planning systems that normally rely on a web of governmental organizations with a specialized role. Whereas previous Ethiopian rural development efforts more closely resembled the Soviet approach, with such a web of plans and organizations, these actors and institutions still exist and have been expanded, yet for their actual functioning, they rely on others, on the tool of mass mobilization. One can say that *nikinake* thus has the dual nature of an institution and a temporary organization—a project organization, renewed each year. In the project organization, a local synthesis of the plans of

many other actors must be made to take a step towards implementation. The projects are the sites of learning for many locals, hence the extension aspect, and they are the places to immediately implement new knowledge in *collective action*. One can compare the functioning of *nikinake* with Soviet *kolkhoz*, also responsible for policy integration, implementation, local adaptation, and learning. Yet, in the Ethiopian version, the lack of stability of the organization and of roles, the lack of incentive structures, and the overall enforced character make *nikinake* much less suitable for rural development. In addition, the thoughtlessness with respect to local agro-ecological, economic, and organizational contexts makes the adaptation aspect sorely lacking. Yet, the results of these campaigns are less important, in terms of quality, local suitability, and sustainability. They seem to identify more with the process than with the results, or with the actual ideology of development embedded in the system.

6.5 Conclusion

In this chapter, I examined the *nikinake* approach in rural Ethiopia within the context of improving sustainable land management and agricultural production. *Nikinake* has been adopted and exercised in Ethiopia with the intention to mobilize rural communities, build local capacities and promote the implementation of agricultural extension. Despite the aim and efforts of *nikinake* to implement agricultural extension and achieve rural development through *collective action*, it has only successfully managed to mobilize and engage the communities collectively in WSM.

Since 2011, *nikinake* has become the main state-driven, seasonal activity in the four major regional states of Ethiopia. Every other year, considerable awareness-raising and skill development efforts are made towards its implementation. The importance of achieving the plan is emphasised, and commitment is required from the farmers. Meetings are organised with the purpose of raising awareness and ensuring the farmers' intended commitment. However, its effectiveness, technical efficiency, and sustainability largely remain unsatisfactory. *Nikinake* follows quotas and plans that are centrally-developed by regional BoANR. The labour

mobilization system, as such, differs by regions and woredas. Some technologies used and introduced are incompatible with local agro-ecologies and farming systems. Also, physical structures, such as soil bunds, established are often not well-maintained over the years.

Nikinake, in terms of EGT, represents a strong path dependency in Ethiopian rural development, relying on mass mobilization campaigns both in earlier regimes and in the present. The imported Korean model was strongly reinterpreted along the lines of centralized top-down planning and in terms of the state definition of actors, institutions, and development narratives. Extension also seamlessly fits into a former socialist mode of rural development, in which goals and tools were clearly defined by science, and the state had to implement objectively progressive policies and redefine the actors at all levels, down to the individual.

Nikinake-as-extension, or *extension-as-nikinake*, is, therefore, an ideologically and organizationally logical progression of governance evolution in Ethiopia. However, it is easy to grasp that *nikinake* was also a response by higher-level actors to weak *goal dependencies*, and weak impacts of plans in previous generations, by tying every actor to the plans, quotas and other goals for rural development. New actors and the relations between them were meant to create new *interdependencies* with the aim of stabilizing rural governance and creating new incentives to push for the goals set by the state. In the new reliance on temporary organizations, however, speed and scope were more important than stability and learning. Short-term teaching activities—a form of extension—were possible, but not so much deeper learning, nor learning in several directions, or the inclusion of different forms of knowledge and expertise towards local adaptation and, hence, sustainability.

Reflecting on the valuable Ethiopian experiences, one can see that extension-as-mobilization is a powerful but risky tool for rural development. The socialist legacies of the Ethiopian state and its learning experiences have made it possible to restructure rural governance in such a way that centrally-made plans trickle down to the lowest level and mass mobilization of farmers takes place. The first goal is clearly labour towards NRM, infrastructure development, and other collective goals. Speed is an undisputable result. Learning itself is not a sufficient reason to attract the masses, and the extension aspect is likely to stay marginal.

Moreover, when the focus is on implementing plans, and not on effectively making plans, policies, and visions for the local future, the link between mobilization and extension is likely to lead to unidirectional teaching and little deliberation of what might be useful locally.

While participation and localism are not a panacea and central planning and mobilization have demonstrated their value in developing countries, the Ethiopian experiences do point to some important questions regarding the use of an extension approach for rural development, especially one carried by community mobilization. If the “community” is not the community as it is actually organized and sees itself, and if the mobilization is not encouraged but is imposed by others, then few will identify with the process and outputs of the mobilization. The interactions within the temporary organizations of mobilization will probably not engender full engagement with the local community, and the learning will feel even more imposed. Even when it could be locally useful, incentives to participate could be low. When the knowledge is not locally useful or needs local tailoring, local target groups are not likely to speak up and render the process more adaptive.

If, on the other hand, higher-level state bodies can convince existing social identities that short-term intensive mobilization can fix some problems that they also recognize, then a combination with short-term extension can be a very powerful development tool.

Chapter 7:

Participation: Rhetoric and Reality

7.1 Introduction

In the past decades, the notion or concepts of “participation” have seeped into the Ethiopian agricultural extension system. However, the rhetoric of participation is increasingly observed and widely applied in the agricultural extension. Yet on the ground, this chapter investigates and describes, how it is implemented and which manifold roles it plays in the Ethiopian agricultural extension. The goal of agricultural extension is to help farmers solve problems and constraints related to agriculture through behavioral changes toward adoption and use of innovations. In the process of implementing agricultural extension, both voluntary participation and pressure have been used to induce the expected behavioral changes.

The Ethiopian AES has been changing with time (cf. Leta *et al.* 2017a; Davis *et al.* 2010). In 2010, the MoANR introduced a PES, which is a modified version of the PADETES implemented in 1995 (Leta *et al.* 2018a; MoA 2010). The PADETES combined farmer training, farm visits, and plot-based extension system with the SG 2000 fertilizer and seed credit package (Ayele and Mandefro 2011). However, PADETES was abruptly halted, before it could be assimilated by practitioners or end users (Abate 2007). The PES was introduced with the aim of reinforcing farmer participation and increasing the coverage of agricultural extension through the formation of farmer groups and nurturing of social networks (Leta *et al.* 2017a). More recently, the participatory approach has been complemented by a strategy to upscale technologies and best practices in agriculture. However, to engage farmers in the adoption of these technologies, and thus support the implementation of agricultural extension in the country, the Ethiopian state has often applied pressure as a resort (Abate 2007).

Some explanations are available to why agricultural extension in Ethiopia employs enforcement. Firstly, extension services are almost entirely provided and financed by the state (Abate 2007). As a result, the state has the liberty to employ any approach to steer agricultural

extension toward a future imagined goals. Secondly, agricultural extension is used as an instrument to achieve multiple development goals, including poverty reduction, ensure food security, and sustainably manage the natural resources (MoFED 2010; Dessalegn 2008). These goals are to be achieved through various routes of labor mobilization and community participation including through steering via state actors and institutions (Leta *et al.* 2018a). Thirdly, agricultural extension is a means by which the government exerts political control over the majority of the population (Berhanu and Poulton 2014). Most importantly, the government views farmers as a key support base. Hence, it is more concerned with strengthening its presence among the farmers than merely enhancing technology adoption to increase agricultural production, reduce poverty, and ensure food security (Berhanu 2012).

The government has invested substantial resources in agriculture, specifically in training and employing new extension staff, developing infrastructure such as FTCs, and strengthening agricultural research (ATA 2014; Spielman *et al.* 2012; Swanson and Rajalahti 2010). However, despite huge investments, no notable changes have been evident in ensuring proper participation or providing inclusive extension services. DAs, who are appointed by the state as intermediaries between them and the farmers, seldom address farmers' technology needs, which include safeguarding access to inputs such as improved crop varieties, sharing practices to manage crop disease and pests, and ensuring access to farm tools. Unfortunately, DAs are unable to supply or arrange for the supply of such inputs and technologies. They depend on the state structure and related organizations who supply agricultural inputs and distribute them throughout the country. This failure to respond to farmers' demands has negatively affected the trust reposed in the DAs and their ability to promote sustainable participation in agricultural extension. Moreover, problems such as high input and low output prices and the lack of pro-poor agricultural extension services have considerably limited farmer participation. Elias *et al.* (2015) identify high input price as one of the key reasons for farmers' reduced participation and the source of farmer disappointment with the existing agricultural extension service system in Ethiopia.

Farmers' cooperatives have been established to provide economic support to member farmers by facilitating their access to finance, agricultural inputs, information, and output markets (MoA 2012). However, they have not been developed to a level where they can act as the link between farmers' outputs and reliable markets (ATA 2014). In reality, the role of farmers' cooperatives is limited to supplying agricultural inputs and distributing consumer goods, mainly because of their constrained structural, financial, and human resource capabilities. As such, agricultural inputs such as fertilizer, agro-chemicals, and improved seeds are only accessible to those farmers who can pay in cash. Historically, those without the monetary means, particularly the disadvantaged groups of the society, the landless youth, and women, have remained marginalized in the Ethiopian AES (Kassa 2008). As a result, their participation in agricultural extension is negligible.

The condition of the agricultural extension employees is another factor influencing the performance and reach of the AES. DAs, extension supervisors, and experts are key public actors in the implementation of agricultural extension. Despite their local representation and involvement in multiple activities, DAs lack incentives that reinforce their commitment to provide effective services to the farmers. In fact, agricultural extension staff are among the least paid employees in the country. Leta *et al.* (2017a) and Davis *et al.* (2010) note that lack of incentives is a key driver of low job satisfaction in Ethiopia. Most DAs live in despair and rarely engage in providing extension services to the farmer. The WOANR is also characterized by weak institutional decentralization, poor capacity to plan, and diminished decision-making power. Thus, the overall capacity to enhance participation at the grassroots is limited. Ekpo (2008) notes that decentralization can lead to better service delivery through nurturing participation. Rivera *et al.* (2001, p. 38) add that participation in extension can make "services more responsive to local conditions, more accountable, more effective and more sustainable." Regions and *woredas* are thought to nurture participation with the help of policies and strategies for efficient and effective implementation of agricultural extension. However, participation is typically confined to engaging the community in communal activities through various means.

Despite the poor state of agricultural development in Ethiopia, not much scholarly literature is available on the problems. Specifically, few studies have examined the challenges associated with farmer involvement in the PES or the effects of rapport-building between farmers and extension actors or Ethiopian farmers' perceptions of the PES. The aim of this chapter is therefore, to analyze and discuss how participation is perceived and realized. It compares the rhetoric of participation with on the ground reality of farmer participation in the agricultural extension.

7.2 Concepts and Application of Participation

In Ethiopian agricultural extension, the introduction of new technology and knowledge has been considered the route to ensuring food and nutritional security. Experience has also shown that extension services that accommodate farmers' varying interests, needs, and capacities improve agricultural production and thus reduce food insecurity. At least, in principle, this is why Ethiopia has adopted an extension system that is rooted in farmer participation. However, the term participation is used merely as a catchphrase by the state and public agricultural organizations, responsible for implementing agricultural extension and rural development. It is also a contemporary concept, widely used by donors and development actors, worldwide (Streeten 2002; Mekonnen 2001). Naturally, positioning development within the participation context enables the state to attract and cater to the needs of many development partners.

According to van Assche and Hornidge (2015), development approaches are heavily influenced by the governance path. Governance paths are specific evolution of governance characterized by the interaction of dependencies. In a given context, they are dependent on external contexts, governance at other levels, and factors outside the governance environment. Evolving institutions, actors, their roles, how processes are organized and how they interact are key factors of governance (van Assche *et al.* 2014). It is important to note that how a process progresses, for example, towards participatory approaches in agricultural extension, cannot be considered a linear process from conception and planning to practice.

Van Assche *et al.* (2015) emphasize that new development strategies such as participatory extension do not follow a smooth process from inception to implementation. They are conceived by a few actors, modified by others with different views, reformulated further by some others, or even ignored and distorted in a web of dependencies, which ultimately mold governance. Van Assche and his colleagues argue that the outcome of a development strategy is shaped by people's ideas of past successes and failures, the needs of the present and the future, and the conflicting desires of a community and its circles of governance. For example, the agency and position of those responsible for implementing the participatory policy have influenced both the practice and interpretation of participation in Ethiopia (Harrison 2002). Given these diverse influences, changes in the governance of participation are unpredictable and uncontrollable even though the intentions based on the rhetoric may be noble.

In line with van Assche and Hornidge (2015) explanation, in the Ethiopian PES, governance processes determine the basis of inclusion and exclusion (who is included/excluded in participatory extension), the formal and informal rules of system, power relations among the actors (also, the values and whose values should be prioritized and actioned), and which forms of knowledge and whose knowledge is considered. These governance processes may be *rigid* or *flexible*. *Rigidity* refers to a situation in which governance follows only one direction and is deemed beneficial without considering any other options. This is a characteristic feature of path dependence in governance.

According to van Assche *et al.* (2014), "path dependency can reside in the presence of certain actors (and their conservative views or strategies), the presence of certain formal institutions (restraining change), informal institutions (in the guise of traditions, or traditional ways to deal with formal institutions), and in some societies, [the] dead institutions." Participation can also be understood in this context. From the perspective of evolutionary governance (van Assche *et al.* 2015), participation is not a new concept and has always existed in some form. Typically, a current attempt learns and maintains some tenets of the past, adds some new elements with inputs from diverse actors, and passes it on to the future.

Decentralization has been officially defined as a government policy direction in Ethiopia since the early 1990s with the change in government—from the *Derg* military regime to the EPRDF. Christoplos and Kidd (2000) note that decentralization and management of extension are major themes in the domains of business and governance. In the context of administration, decentralization implies the transfer of political power from central to local governments as a means of improving the efficiency and accountability of the public sector (cf. Cabral 2011; Ekpo 2008; Rondinelli 1987). However, from the perspective of EGT, an attempt to engage with people through participatory approaches, which is also a form of decentralization, is well recognized. For example, the *Derg* military government in Ethiopia maintained that their revolution was of the people and was aimed at empowering the people. The official name of the country was also changed in 1987 from the Transitional Military Government of Ethiopia to the People's Democratic Republic of Ethiopia. However, the rhetoric of democracy (participation) differs from the on ground reality: the latter is based on the knowledge, institutions, actors, and their interaction processes, which integrate learnings from the past with those of the current.

Given this background, path dependency, which is one of the pillars of governance paths in EGT, is an appropriate tool to analyze the extent to which participation in PES has followed the long-established mechanisms in Ethiopia across different regimes. Starting from the *Derg* military regime to the current government, although institutions, actors, organizations, and their roles have been changing and assuming new significance, they still retain former codes of operation. This is a signal of path dependency, within the *kebele* and *woreda* administrations, and in the Ethiopian AES at large.

7.3 The Conundrum of Participation

In Ethiopia, the concept of participation has been introduced in rural development and agricultural extension by civil services organizations (Spielman *et al.* 2011). Subsequently, it has been included in the state development policy, strategy documents, and initiatives such as the

PES. However, because harmonizing participation and administrative processes is difficult (Bliss 2008, p. 28), the inclusion of participation in policy and strategy documents does not translate effectively into practice.

In the Ethiopian AES, the outcomes expected from participation are conflicting: while one outcome is achieving considerable output (from donors and state bodies), the other is to reach out to all categories of the target groups, including the poor, medium, and better-off farmers and males and females alike (the NGOs). The latter objective is intended at ensuring equity, developing a sense of ownership and sustaining development initiatives. By observing the nature of participation, we learned that there is no specific model of participation in agriculture. Nor is it being considered as a panacea for socio-economic development since participatory procedures often result in simplification and distortion of local knowledge. *De facto*, local knowledge is an integral part of participation, though, not directly accessible through the public meetings (Bliss 2008). Because of cultural diversity and varying interests and capacities of community members, a uniform model of participation cannot address member needs.

In Ethiopia, the state imposes participation on some activities, which are communal by virtue. However, because the interest to participate is limited to only certain groups, it eventually leads to a complete lack of participation and failure in achieving the intended objectives. Only a few people consider participation in public activities as a benefit instead of a cost. For instance, the poor people seek benefits from participation that are not otherwise available (Mekonnen 2001). However, such benefits are not available in Ethiopia's extension system and are particularly lacking in relation to natural resource management (NRM), except in areas with safety net programs. Ignoring the motives of the target population for engaging in participation can lead to negative outcomes (Leta *et al.* 2018a; Bliss 2008). With many predefined state development goals, participation is seen and implemented in a practical and useful way but not as a tool for empowering the community. Reflective of the erstwhile *Derg* military regime, such situations show path dependency in rural development and agricultural extension. The basic assumption in Ethiopia is that farmers lack knowledge and technology

needed to achieve the required productivity improvement. Agricultural professionals can fill in that gap by transferring their knowledge and technologies obtained from research systems to the farmers. Thus, the concept of participation is only notional; in practice, as always, information flows from one side (extension) to the other side (farmers) is expected to implement.

However, ideally, self-motivated and broad-based participation can ensure sustainability of the intervention. As noted by Bliss (2008), participation of the target groups, in line with their understanding and interest, can generally increase the effectiveness of projects. In the following sections, I analyze the current status of participation in Ethiopia and how it really manifests itself based on the following two premises.

The first premise considers the concept of participation from the perspective of NGOs. For them, participation is vital to equity—to enable every category of the society to equally benefit from the development intervention. As a result, NGOs use participation as a tool to reach out to the poor and marginalized people (Streeten 2002). The NGOs aim to liberate the poor from marginalization and from being treated as passive recipients of benefits. They consider that the participants themselves are responsible for controlling the development process (Bliss 2008). Hence, the goal of NGOs is to enable the disadvantaged groups of the society to adopt and internalize the essence of participation for their own cause. Generally, they consider participation as an end to development, a motive that should be internalized and nurtured by the beneficiaries themselves.

The second premise refers to the role of donors, financial institutions, state bodies, and the public agricultural extension network. Typically, these actors (and the development partners of the state) aim to achieve an immediate and quantifiable output from participation. Donor communities seek tangible or measurable changes and expect the state to satisfy their interests. The state, on its part, strives to attract and cater to its development partners to ensure a steady source of funds. Thus, donors and financial institutions view participation as a means in the sphere of development, which is in stark contrast to the NGO's viewpoint. According to Streeten (2002), donors desire a short-run project that is visible, quantifiable, and

pursues interests that are different from those of the NGOs who want to see the impact and sustainability over a long period of time. Cornwall and Eade (2010, p. 90) highlight that to lure international financial institutions, many poor countries do things that are clearly against their interests. Thus, satisfying donors' desires becomes an obligation for the state that seeks to build a certain national image or needs a sustainable source of finance for its development endeavors. This is an inevitable experience for countries that rely on loans for their development programs, and it has implications for the nation's overall economic development. Apparently, the state and donors consider participation as a means to economic development, and this is especially true for the later, irrespective of the deep-seated interest to address the target groups at the grassroots level.

As a developmental state with free market economic policy, Ethiopia places less emphasis on the financially marginalized farmers. More emphasis and coverage are given to model farmers, who function as role models and actors in transforming agriculture. Currently, intensive efforts are underway to hasten the transformation of the economy—from that of a few model farmers or local elites to an economy of farmer investors, which is indicative of the state's characteristic interest in capital accumulation.

The PES, broadly, engages a few model farmers and asks them to develop plans on behalf of all the farmers of the *kebele*. Model farmers are farmer group leaders, selected for their active role in farming, technology adoption and use, and their relatively better living conditions (Leta *et al.* 2017a). They are among those who can produce surplus yield for sale in the market, in addition to feeding their families. Model farmers are highly involved in agricultural extension and benefit considerably from participating in the process. However, some farmers believe that extension measures unfairly favor model farmers, who are recognized as local elites and as representatives of the ruling party at the village level. As a result, model farmers receive more attention than the others under the AES (Leta *et al.* 2018a).

The focus on a few elite farmers implies that farmer participation in public extension services is practically low and runs contrary to the claim of those who reported an increase in farmer participation within the Ethiopian AES (such as Wasihun *et al.* 2014). The lack of

participation from all categories of farmers in agricultural extension is particularly problematic—it can lead to inequity and fuel the growing disparity in farmers’ access to resources and knowledge.

Despite the rhetoric provisions in the state’s AES documents, poor farmers are yet to benefit from tangible economic opportunities. They suffer not only from low incomes but also from a sense of exclusion from cluster-based agricultural extension services, as poor farmer training is not associated with the relevant agricultural input supply indicated in the training documents (Leta *et al.* 2018a). From my analysis of the two premises above, I believe that treating participation as both “a means and an end” to development could provide beneficial and sustainable outcomes to all beneficiaries, as against the existing notion and reality.

Undoubtedly, the government of Ethiopia needs to address participation both as a *means* and an *end* to improve the livelihoods of different categories of the community. However, so far, participation has been regarded more as a *process* (a means) than as a *product* (an end). Overall, “participation and decentralization” are often used as slogans than as thought-out strategies (Streeten 2002). In fact, Mekonnen (2001) argues that participation cannot be effective without decentralization, as discussed later in the chapter. Democracy is another important concept that is close to participation, but the lines between the two have blurred. As argued by Streeten (2002), people do not always have the right to participate in decisions that affect their lives because of various constraints. For example, in the Ethiopian agricultural extension, new technologies and best practices have been implemented without heeding the demands of end users or assessing their compatibility with the native agro-ecology.

7.4 Participatory Extension System

In Ethiopia, since 2010, PES and the upscaling of technologies or best practices have replaced the PADETES. Under PES, many farmers are simultaneously trained to adopt technologies. Group extension and mass mobilization are a part of the extension methods implemented by the public AES to realize the PES (Leta *et al.* 2018a, 2017a). DAs and model farmers are local

actors who play key roles in technology transfer via farmer groups and their networks. Social networks at the local level enable local governments to foster farmer participation by enhancing collective action (Cabral 2011). Further, network building and the formation of farmer groups are expected to support the implementation of PES.

In line with the strategy to implement PES, new knowledge flows along a linear path. Unfortunately, the approach is characterized by path dependency and it is an agricultural extension tradition in Ethiopia. Under the PES, DAs provide skill training to the appointed development team leaders or model farmers. The model farmers, in turn, share their knowledge and provide technical support to their followers in their respective areas. They also develop a follow-up plan for the practical use of the knowledge and report their progress back to the DAs. This mechanism has served as the dominant approach to facilitate the provision of extension support to farmers in the PES, although hardly any feedback has been sought from farmers about its usefulness. My household survey results showed that despite the introduction of PES, nearly half the farmers are dissatisfied with the extension services.

Failure to satisfy farmers' desire is a common phenomenon in Ethiopia's agricultural development. The PES is founded on the assumption that correcting the "required" knowledge gap and mobilizing collective action can increase extension coverage and improve agricultural productivity. However, for the farmers, the main concerns are limited access to improved seeds and the high input prices as against output prices of the crops. In the study *woredas*, particularly in Bako-Tibe, lower output prices considerably affected farmers' participation in technology adoption (see Table 7.1). For example, in 2015, the price of 100 kg of maize was 300 *birr* (Ethiopian currency) whereas the same quantity of di-ammonium phosphate (DAP) fertilizer costed about 1500 *birr*. Having to sell 500 kg maize to access 100 kg of DAP is likely to lead to insufficiency of food crops, especially among smallholder farmers.

Table 7.1: Influences of output price on technology adoption (n=120).

Degree of influence	Number of responses	Percentage of the total (%)
High	69	57.5
Low	51	42.5
Total	120	100

Source: Household survey data collected by Gerba Leta (2015-2016).

Although farmers have been mobilized to engage in communal activities under the PES, this approach met with little success for the purpose of knowledge and technology dissemination. My FGDs and household survey revealed that in Bako-Tibe *kebeles*, farmer groups had been successfully established at different levels from 2011 to 2015, and the groups had succeeded in mobilizing the community for *kebele* meetings and other such communal activities. In Yem *woreda*, the development team mobilized and engaged farmers in a WSM campaign. The team also engaged women farmer groups in reciprocal collective labor, such as *enset* processing (Figure 7.1). However, farmer participation in upscaling technologies or best practices was not successful (NPC 2015). Typically, poor access to technologies and agricultural inputs dissuades farmers from participation. Thus, participation in agricultural extension is restricted mainly to planning agricultural inputs, which is facilitated by the DAs and the development team leaders. In fact, farmers' presence at community meetings, organized to announce and approve the annual top-down plans of agriculture and rural development, is regarded as participation, as farmers have to give their consent to the *kebele's* quota plan⁹. Such events are considered as evidence of bottom-up participatory planning in the popular rhetoric (see Table 7.2). However, in reality, despite the introduction of PES and the formation of farmer groups to increase extension coverage and promote collective action, the upscaling of technologies has not lived up to expectations.

⁹ Quota plan: A planning system where tasks for implementation are assigned in a top-down fashion, without community participation in the planning process.



Figure 7.1: Women working group in Saja-Laften kebele of Yem Woreda. Photo: Gerba Leta

Table 7.2: Comparison of rhetoric vs. reality based on some determinants of participation.

Determinants of farmers' participation	Manifestation /Appearance	
	Rhetoric	Reality
1. Empowerment and capacity to initiate development agendas	Farmers are regarded as empowered and capable of initiating and implementing their plans.	Farmers have low capacity and opportunity to initiate development agendas on their own.
2. Collective decision-making power of the community	Conceptually, communities are empowered to take their own decisions in agricultural matters.	Decision making is still driven by hierarchy, characterized by top-down planning and enforcement.
3. Involvement in joint planning, implementation, and participatory monitoring and evaluation (PM&E)	In principle, all farmers are entitled to be involved in all activities.	Most activities are expert driven, planned in top-down fashion with little farmer participation in implementing and PM&E. Model farmers are encouraged to be more involved than the others.
4. Autonomy to adapt/adopt or reject ideas or irrelevant development plans	Farmers are supposed to exercise their choice.	Farmers encouraged or coerced to accept and implement new ideas or development plans.
5. Women and poor farmer participation in agricultural	Women are claimed to be equal beneficiaries of the	Practically, women and the poor do not benefit much

extension	services and benefits.	from the existing system.
6. Scope or scale of participation	Farmers are considered to be involved in all processes of agricultural extension and rural development.	Farmer participation is largely limited to demanding inputs and implementing NRM and other communal activities.
7. Impact of participation	The impact is considered to be substantial and reliable by the state actors.	The impact is low and often leads to the development of fatigue and resistance such as in NRM campaign.

Source: Author's compilation based on 2015-16 data.

7.4.1 Role of *Woreda* Actors in Agricultural Extension

In principle, decentralization of governance in Ethiopia aims at empowering the *woredas* through provision of greater decision-making power and division of tasks between the central/regional governments (cf. Debebe 2012; Dickovick and Gebre-Egziabher 2010). The extension department of the WOANR provides skill training and backstopping services to the DAs through its SMSs. In Oromia, the WOANR supervises *kebele* activities through its supervisors, whereas in SNNPRS, these activities are performed by the *kebele* agriculture office heads. However, the level of decentralization of planning to the farmers is the same in both *woredas*.

In practice, the *woreda* agriculture operates under the guidance of the regional BoANR and relies on its regional implementation strategy and plans. A *woreda* is expected to limit activities to its size with little changes to the content of the plan, which is prepared at the regional level. Generally, decentralization in agricultural extension and rural development is not fully devolved to the *woreda*, though the intention is to extend governing authority to local levels (Dickovick and Gebre-Egziabher 2010). Typically, *woredas* do not have adequate planning and implementation capacity or decision-making authority (Intr code no. 15, 2015). Further, technical and managerial capacities are often weak at the local level (Cabral 2011). Such limitations prolong a *woreda's* reliance on the top-down regional plans.

The *woreda* administration can either reinforce or influence the implementation of agricultural extension. In fact, supporting agricultural extension and rural development is the

interest of the state—from the federal to the *kebele* level. According to a senior expert, the state’s emphasis on agricultural extension is driven by the following two objectives:

(i) The state is convinced that focusing on agricultural extension can ensure food security, and (ii) by enhancing farmer participation in agricultural extension and local administration, the state aims to politically reach out to 80% of the population (Intr code no. 42, 2015).

On the one hand, the *woreda* and *kebele* administrations jointly support the implementation of agricultural extension and rural development by promoting the participation and agency of farmer groups. On the other hand, these objectives of positive action and support provision have largely been on paper. Training workshops on social mobilization and skills development for the DAs and the farmers, organized by the *woreda* administrations every year since 2011, are politically driven (Leta *et al.* 2018a). The mobilization is apparently intended to involve farmers collectively in seasonal agricultural extension and rural development. However, the *woreda* administration enforces implementation by issuing political directions, and it monitors the process through its politically motivated networks that basically link it to the grassroots.

7.4.2 Actors and Their Participation in *Kebele* Agricultural Extension

Kebele cabinets are the final decision makers in the socio-economic development of the *kebele*. In agricultural extension, however, the “extension unit” is another decision-making team (Leta *et al.* 2017a). For the provision of agricultural extension services and the facilitation of rural administration, each *kebele* is divided into three *ketenas*. Each *ketena* has one DA; therefore, each *kebele* has three DAs. In Oromia, one of these three DAs is appointed as a DA coordinator, and, usually, this DA is a member of the ruling party. In Yem, however, this role is performed by the *kebele* agriculture office head. The BoANR at SNNPRS instituted the position of a “*kebele* agriculture office head” in 2014, with the aim of strengthening the coordination of extension activities at the *kebele* level (Debut Negarit Gazeta 2014).

The extension unit of each *kebele* in Bako-Tibe has 12 members: one leader and three members from each *ketene*. The three DAs plus state actors at local level such as a school director and a health extension representative together form the main decision makers of the *kebele* agricultural extension (Leta *et al.* 2017a). Depending on the place of their residence, key members of the *kebele* administration such as the administrator, deputy or council member can be appointed as a *ketena* leader, as this structure extends the role of the administration too, to the grassroots level. A model farmer, youth, and women representative are also included as member of the *ketena* team. Unlike in the Bako-Tibe *woreda* of Oromia region, in the Yem *woreda* of SNNPRS, the physical division of a *kebele* into *ketenas* is not associated with appointment of leaders. Only development team leaders are contacted for extension and other administrative activities. My observation shows that the variation in the approaches of the *woredas* can be attributed to differences in size of the *kebele*. Most *kebeles* in Yem are one-third of the size of those in Bako-Tibe.

The DA coordinator in Oromia *kebeles* serve as the secretary of the extension unit. All the formal state institutions, including the *kebele* command post¹⁰, operate under the leadership of the *kebele* administrator. The *kebele* administrator, who is a state representative at the lowest administrative unit, provides directions to the three DAs specialized in crop, livestock, and natural resources management. The DAs are expected to follow the instructions given by the *kebele* administrator, who in turn has received guidance from the *woreda*. Even if the DAs are technically competent, their actions and duties are dictated by the administrator. Following the *kebele* administrator's instructions is crucial, particularly for the DAs in Oromia, as the administrator is in charge of the largest chunk of DAs' performance evaluation (cf. Leta *et al.* 2017a; MoA 2015; MoA 2010). In SNNPRS, a DA's performance evaluation is conducted entirely by the DA's respective department heads. In any case, however, the DAs have better voice if they are also members of the ruling party. In other words, their future depends on how integrated they are into the system.

¹⁰ The command post is an integrated information development and reporting system developed by the MoANR (MoA, 2010).

The division of *kebeles* into *ketenas* is intended to promote farmers' participation and make them the beneficiaries of the extension services. A *ketena* is expected to bring people closer to knowledge and information, passed on by the DAs through the model farmers who familiarize it via farmer groups meeting. A specialized DA is assigned by the *kebele* cabinet to the three *ketenas* on a rotational basis to provide advisory services. In reality, however, every DA work in one *ketena* and provide general advisory services on a permanent basis. They mentor and assist the development team leaders in implementing the agricultural extension activities. DAs receive directions from both the agricultural line offices and the administration at different levels. Thus, they are expected to perform extension and non-extension activities, whereas, farmer participation in agricultural extension, rural development, and other socio-political tasks is mainly mobilized via the development team leaders.

In many *woredas*, DAs trained and employed to do agricultural extension work are engaged in non-extension activities. However, the government turns a blind eye to such issues as it is chiefly concerned with ensuring the continuity of regime. Throughout Ethiopia's development history, most interventions, whether targeted agriculture, or infrastructure, are primarily undertaken to perpetuate the *status quo*. This is the most visible example of path dependency.

Farmers' political inclination and commitment play an important role in their selection for extension-related activities; unfortunately, their competence at farming has little or no bearing. Leaders of the development team and the one-to-five farmer groups are typically members of the ruling political party. Regardless of their performance or efficiency at demonstrating technologies or best practices, some farmers may be excluded from being considered "model" if their political views or interests deviate from the ideology of the ruling party. Farmers' participation in initiatives is also mandatory and not left to their discretion. During interviews, farmers in Gorum-Angari *kebele* mentioned that failure to participate or adopt new technologies risked their access to agricultural inputs (Intr code no. 0064, 2015). From my FGDs and household survey, I learned that the actual role and functions of the development team leaders and the one-to-five farmer groups are not aligned with the

theoretical plan; therefore, they are ineffective in enhancing collective action, technology adoption, or upscaling. In the name of promoting technology adoption, farmers are steered more by the local administration to participate in campaigns and other communal activities.

Further, formal (*kebele* administration and the extension) and informal institutions (such as *iddir*) are employed to enforce farmers' participation in communal activities in Yem and Bako-Tibe. Thus, the essence of participation is being systematically replaced with enforcement by the local government actors and a voluntary self-help association known as *iddir* (Pankhurst and Haile-Mariam 2000). As a consequence, the farmers are not satisfied with the current state of the extension services. Participation does not stem organically from within the community but is imposed/prescribed by the authorities to achieve the national extension goals. In general, numerous development teams are led by model farmers who are viewed as surrogates of the state, facilitating information transfer and networking farmers. This approach is similar to the massive rural development, villagization, and environmental conservation campaigns of the *Derg* military regime in Ethiopia, in which participation was compulsory and absence invited serious "revolutionary" consequences (see Harrison 2002).

The longstanding trend of top-down intervention has led to an intergenerational information flow in the country where the government has come to be viewed as an authoritative and powerful body, responsible for collecting taxes and enforcing programs that serve its interest. Thus, most farmers do not trust the agricultural activities steered by the development team leaders. In an interview, a farmer from Bako-Tibe nick-named the team leaders in *Afan Oromo* language as "*gareen garaaf*," which can be roughly translated as "development team leaders are greedy or selfish" (Intr code no. 0001; 0003, 2015). Team leaders are generally seen to be serving the regime and gain personal advantages since they participate in training, meetings, and have priority access to agricultural technologies, inputs, and incentives. Apart from facilitating farmers' collective action, the development team leaders are also in charge of other social issues such as local policing and conflict resolution. Despite their unpopularity among some farmers, they continue to facilitate and enforce farmer participation in activities such as community-based WSM.

7.5 Changes and Challenges in the Extension Services

In many countries of the world, agricultural extension services have evolved from training and dissemination of specific innovations to formation of farmer groups and partnership-building with various service providers such as credit institutions (cf. Rivera and Rasheed Sulaiman 2009; Birner *et al.* 2006; Leeuwis *et al.* 2003). Ethiopia has also embraced the process of bringing its agricultural extension service closer to the farmers by forming farmer groups and nurturing farmer participation.

Despite these efforts, the system still follows a top-down model of technology transfer with quasi-farmer participation, which is limited to planning inputs and endorsing the quota plan developed at the regional level and handed down through the *woredas* to the *kebeles* – in line with the public rhetoric of participation. Mostly, the top-down nature of the planning cannot consider the available financial and natural resources or the labor demands at the *kebele* level for implementing the plans. This could have an adverse effect on the annual implementation of the quota meant for the *kebele*.

Because of the lack of broad-based participation, the benefits of a top-down approach to technology transfer are passed on only to a few farmers. Essentially, it is real farmer participation that can have equitable and sustainable impacts on agricultural extension and rural development. As mentioned in the preceding section, the concept of participation was initially introduced into the Ethiopian AES, and promoted at different levels, through participatory pilot projects implemented by local and international NGOs and donors. These projects confirmed that participation and collective action can help increase extension coverage and enhance access to equitable services for all farmer categories, including the poor, landless youth, and women. However, minor efforts were made to incorporate the lessons learned from the pilot phase to upscale extension implementation. In Ethiopia, numerous factors restrict participation to the realm of public rhetoric, preventing it from translating into a reality. The main factors are briefly analyzed in the following sections.

7.5.1 Decentralization

The level of decentralization in the Ethiopian agricultural extension is limited to communication of farmers' input demands. This is considered as "bottom-up planning" in the PES. However, the concept of decentralization appears ambiguous in practice. For instance, in the name of autonomy, some *woreda* offices have refused technical expertise and support from federal bodies (MoANR) and the regional BoANR even though they may lack the technical efficiency to successfully implement their agricultural extension and rural development plans (Intr code no. 15; 71, 2015). For these *woreda* offices, accepting support and implementing the suggestions of experts from regional or federal offices are signs of loss of authority and decision making. It is also an acknowledgment of incompetent leadership at the *woreda* offices in the context of decentralization.

Inadequate human resources and poor planning capacity (Debebe 2012) in the *woredas* have adversely affected their ability to implement the PES. Lack of professionalism is another problem. It is not uncommon to find unqualified leaders in several *woredas*, including Bako-Tibe and Yem, as political allegiance is given priority when selecting the head of a WOANR or an extension unit leader (Leta *et al.* 2017a). Kassa (2008, p. 167) notes that "successful decentralization needs competency and leadership quality." However, those qualities are certainly lacking in the studied *woredas*. Besides, frequent and forced reshuffling for political reasons, mainly based on *gimgema* (evaluation), is a major bottleneck for the officials in charge. Thus, the professional experience and leadership needed to nurture participation and collective decision making are lacking.

Well-planned decentralization can increase participation and accountability of the extension actors to the rural people (GFRAS 2010; Cohen and Peterson 1997). However, the objective of devolving decision-making power to *woredas* and *kebeles* has been impeded by the tradition of historically established top-down approaches in the Ethiopian governance system. Debebe (2012) also identified several weaknesses among Ethiopian *woreda* executives in exercising their powers of planning, implementation, and decision-making. For instance, they are unable to contextualize the prescribed regional plan to their respective settings by bringing

the processes closer to the people. These prevailing weaknesses percolate down to the *kebeles*, where the DAs and the *kebele* administration have failed to involve farmers in the participatory extension process. According to Swanson and Rajalahti (2010), decentralization includes encouraging community participation. However, the practice in Ethiopia is quite the contrary. Local-level government officials do not encourage or provide sufficient room for community involvement in coordination and collective decision-making, which, in turn, affects community livelihoods (Debebe 2012). The failure of local actors and authorities to understand and better use the decentralized system as well as the weak links between the WOANR, BoANR, and MoANR actors has possibly adversely affected the opportunities to promote farmer participation in agricultural extension.

7.5.2 Agricultural Advisory Councils

The Ethiopian state established advisory councils, comprising researchers, extension staff, and farmers, to improve stakeholder participation and the provision of extension services (Deressa and Seboka 1997). The assumption was that the council would better facilitate the flow of knowledge and technology, and the existing gap between research, extension service provision and farmers' needs can be addressed at the national level. The premise was that problems are identified primarily by farmers but studied by researchers. The extension staff was expected to work closely with both researchers and farmers, acting as a link between research and practice. However, the implementation of this system again suffered from path dependency. The traditional boundaries between researchers, extension staff, and farmers continue to persist, and the platforms have remained largely ineffective. Ethiopia's classical education system is rooted in the assumption that individuals with university or college education are more knowledgeable in modern science and technology and capable of teaching others without knowledge or without an equivalent level of university or college education. By this view, most farmers do not know much about farming, technologies, or marketing, and are in need teaching. The experiential knowledge they possess about the problems in farming, land management, and seed and other input selection practices is considered "backward" and

“irrelevant.” Generally, the situation in Ethiopia is similar to that in other Sub-Saharan African countries reported in the literature (Anandajayasekera *et al.* 2007; Gebremedhin *et al.* 2006; van Crowder and Anderson 1997).

In 2010, the existing advisory councils were reformed and replaced with the ADPLACs, a body that aims to strengthen the linkage between research, extension, and farmers. In earlier time, they were once known as Research and Extension Linkage Committee (RELC). The main aim of the ADPLACs is to bring stakeholders together to plan, implement, and jointly analyze the development plans in AES. Further, the reform is intended to promote the role that the council plays by integrating various other actors or partners such as the civil service organizations. According to Leeuwis *et al.* (2003), “an innovation process needs to include deliberate efforts to create effective linkages between technological arrangements, people and social organizational arrangements.” The ADPLACs function under the leadership of the MoANR (Leta *et al.* 2017a; MoA 2010). However, despite reforms, it continues to suffer from lack of funds. Further, it operates under the leadership of an *ad hoc* committee that barely contributes to improving stakeholder participation in solving agriculture-related problems. Consequently, like its predecessors, ADPLACs have remained ineffective; the reformation has only resulted in a nominal change while its mode of operation remains the same.

The councils’ efforts are fragmented and non-sustainable as its reach and effectiveness vary according to the attention paid by the government in general and the local officials, in particular. As the body lacks autonomy and a sustainable budget, it is steered either by agricultural research or by public agricultural development organizations, and currently it is the latter. Agricultural extension programs in Ethiopia follow a pattern: new measures are initiated and then abandoned without any active engagement or any attempt to support the measures with the necessary resources. These measures are then replaced with another new approach, based on a new concept that is again implemented in the same tradition. Agbamu (2000) explains that the constraints that hinder research-extension linkage potentially affect farmers’ participation and their output. Lack of staff commitment is another challenge in the operation

of the council as the MoANR has currently appointed non-paid members to the council, by positioning it as an add-on task.

In the *woredas* I studied, ADPLACs had been slightly active in Bako-Tibe, but they had not made any significant differences to the delivery of extension services to farmers (Intr code no. 54; 55; 60, 2015). This illustrates how path dependency is deeply rooted in the Ethiopian government's "organizational culture."

7.5.3 Dearth of Financial Resources

Apart from technological and technical issues, farmers in the studied *woredas* also faced financial limitations, and this is a nation-wide crisis. The country lacks financial mechanisms that can support farmers or cover the operational costs of the agricultural offices established to support the implementation of extension programs.

For the farmers, access to agricultural inputs, mainly seeds, fertilizers, and pesticides, is determined by their financial capacity. As part of its efforts to move away from a centrally-planned economy to a market economy, the Ethiopian government has initiated a legislation that supports the establishment and operation of private financial institutions (Micro-Financing Business Proclamation no 626, 2009).

Recently, numerous microfinance institutions have begun to offer credit services to farmers, both in cash and kind. The in-kind services are only available in the Yem *woreda* of SNNPRS. However, several issues prevent farmers from accessing these credit services, including high interest rates, group collaterals, and the requirement of a historical savings record. Most farmers have poor saving practices and lack trusted peers who can partake in collateral arrangements. Consequently, the goals of addressing farmers' financial limitations and, thus increasing their participation in agricultural extension, have remained unaccomplished. In an FGD, female farmers mentioned the high interest rate as a trap that entrenches the farmers in a vicious credit cycle. As farmers continue paying their debts, they fail to break the credit cycle and are then obliged to demand further credit for inputs every

other season. This adds to their financial burden in addition to the rising debt. The loan interest rate to access cash credit ranges from 15% to over 24% per year (Leta *et al.* 2017a). Not surprisingly, the fear of debt accumulation dissuades farmers from accessing loans (Intr code no. 29; 65, 2015). In an FGD, male farmers from the Saja-Laften *kebele* named low output prices, high input prices, and negative experiences associated with debt repayment (i.e., selling assets) as the reasons for poor participation in the extension system.

Financing the operation costs of agricultural extension services is also another bottleneck to effective extension work and supervision of the participatory extension work among farmers. Since 2014-15, only a portion of the seed money or block grant has been allocated to *kebeles* to support technology demonstration on FTCs. Even then, transparency and access to this budget differs from region to region (Intr code no. 26; 45, 2015).

7.5.4 Non-extension Activities, Extension Services and Farmer Participation

The use of the agricultural extension services system for non-extension purposes is another factor that weakens farmers' desire to participate in agricultural extension. The priority of farmers is to improve agricultural productivity and address shortage of food and income for their families. They are in dire need of technical and financial support and access to inputs and a better market for their products. However, DAs, serving as local representatives of the state-sponsored extension system, are usually occupied with organizing meetings through the political cell (*hiwas*) and explaining "what has been achieved by this government." These details are of little interest to farmers faced with food and nutritional insecurity, who lack income to cover their daily expenses and are possibly in debt because of the inputs purchased the previous year.

The actual implementation of the agricultural extension policy in Ethiopia is in stark contrast to its provisions. Although the policy documents advocate participation, authorities often employ pressure, a legacy from the past, to enforce the implementation of agricultural extension. Moreover, farmer groups are expected to participate in non-extension activities such

as discussion on *developmental state* ideology and other newly emerging themes through the political bulletin, *addis rayi* (new vision, in English). As Rahnema (2010, p. 127) notes, “though participation is the action or fact of partaking, people are asked or forced into partaking in operations of no interest to them in the very name of participation.” In Ethiopia, the farmers are forced by their development team/group leaders to participate in WSM and other communal activities, which are reminiscent of the forceful communal work imposed on the farmers during the *Derg* military regime. Under the existing extension system, the farmers are claimed to be free; however, in practice, they are forced to participate in collective action initiatives and in the coordination of agricultural extension by formal and informal institutions.

In line with its national development strategy of ADLI, the government of Ethiopia has demonstrated a steady commitment to agricultural development at the policy level, allocating resources to improve the sector’s contribution to the envisioned transition to industrialization. Over the past decades, the country has made substantial investments in agricultural and rural development (Spielman *et al.* 2012; Swanson and Rajalahti 2010). However, political interference has often been identified as the main factor slowing the progress in the agricultural sector, despite efforts and investments. For instance, although *kebeles* are weak institutions, the implementation of agricultural extension has been entrusted to the *kebele* administration, which represents the government at the local level. The *kebele* administration has, in turn, transferred the extension work and some non-extension activities to DAs and thus burdened them with additional responsibilities. The DAs’ involvement in multiple activities has possibly damaged their reputation among the farmers. As a result, farmers are reluctant to participate in agricultural extension services provided by the DAs, who not only represent government but also reprimand the farmers for failing to attend meetings that are of little interest to farmers. Improper use of power to influence farmer participation in NRM, via campaigns, is another issue that needs citing.

The supply of agricultural inputs such as improved seeds and fertilizers is also a key factor impeding farmers’ participation in agricultural extension. In Yem, availability of seeds

(Intr code no. 6; 68, 2015) is a problem mainly because of shortage of financial resources rather than poor supply of inputs.

7.5.5 Frequent Policy and Organizational Reforms

Another serious challenge to farmer participation in agricultural extension is the flexible and inconsistent approach to policy and strategy development, wherein previously introduced practices are abandoned and replaced with new ones before they can be assimilated (Intr code no. 69, 2015). Continuous changes in policies and strategies and frequent transitions from one initiative to another induce fatigue among farmers. Farmers eventually lose their trust in government action and withdraw their participation.

In an FGD, an expert group from the Oromia Irrigation Authority attributed organizational instability to “power corruption” by a few elites. They felt that the existing institutional structures are modified or replaced with new ones mainly to fulfil the interests of powerful individuals in the political system. On the one hand, such changes may threaten the job security of some staff within the system. On the other, the movement of staff from one position to another or from an old to a new organization can affect interdisciplinary initiatives and reduce inter-organizational collaborations. At the local level, such issues, are more prevalent in the Bako-Tibe *woreda* of Oromia, where organizational restructuring is more frequent than in Yem.

Kassa (2008) lists examples of when the government has identified new indicators that have induced prompt changes: from production of food crops to cash crops and from rain-fed agriculture to irrigation development. Further, frequent organizational reforms tend to diminish the reliability of DAs to engage farmers in farming activities and to facilitate various activities for different *woreda* sector offices, which were previously controlled by WoANR.

7.6 Conclusion

In this chapter, I presented a comparative analysis of the concept of participation: the rhetoric versus the reality of implementation of the PES. According to the national development policy framework, the aim of the Ethiopian AES is to ensure food security, improve livelihoods, and sustainably manage the natural resources by adopting PES. However, in practice, PES is characterized by path dependency and, consequently, limited effectiveness. The classical approach, which defines farmers as recipients and the extension system as providers, persists as the main method of transferring knowledge and technology. The BoANR is the key architect of PES implementation at *woreda* level. As a driver, BoANR pushes farmers to adopt and practice new technologies and techniques by delivering instructions and guidance via local actors. The vision, articulated in national and regional documents, of model farmers leading the process of PES with advisory and technical inputs from the AES, has remained only on paper. Throughout the Ethiopian history of agricultural development, farmers are assumed to know little about farming and, therefore, expected to learn from extension workers. Little space is provided to obtain feedback and take corrective action on the content and approach to knowledge and technology flow from the AES to the farmers. Local elites assume the role of bridging the link between extension workers and the majority of the farmers. I illustrated and discussed that model farmers who are richer and relatively prosperous have direct access to knowledge and technology in the AES.

Model farmers are considered the key players in the system, serving as role models for other farmers in terms of adopting knowledge and technology measures. The extension wing—from the federal MoANR to the DAs at the local levels—is also a key agent, enabling farmers to access the necessary technological and technical inputs for achieving food security and improving their livelihoods.

Decentralization in agricultural extension is extremely poor: the involvement of farmers is restricted to communicating input demands and registering consent for the strategic quotas of the *kebele*. In fact, even input are not demanded exclusively based on farmers' assessment; it largely draws on records from the previous year and the ambitions of the government

authorities in the regions and *woredas*. Thus, the decentralization of agricultural extension in Ethiopia has not been nurtured in a way that supports bottom-up planning or farmer participation in decision-making.

The ADPLACs have the potential to strengthen the AES by integrating various stakeholders—policymakers, researchers, and practitioners—to jointly address agricultural issues. However, lack of autonomy, a limited budget, and the body’s reliance on an *ad hoc* committee limit its role in engaging farmers toward coordination and collective decision-making. As a result, its efforts have been ineffective in furthering the research-extension-farmer linkage.

In agricultural extension, the disadvantaged groups of the society such as the poor, the youth, and the women have rarely received adequate attention. In other words, more than half the farming population has been excluded. The newly reformed PES pushes for technology transfer through an upscaling approach, based on the traditional assumption that farmers who can afford to obtain inputs will use the technologies, and others will follow them.

The farmer groups, formed in the recent years (since 2011), are not capable of pursuing the original motives of labor-sharing, joint learning, and collective action to upscale technologies or best practices. Rather, they (a) serve as a platform for political dialogue, advocating the government’s ideology of a *developmental state*; (b) mobilize communities for campaign work; and (c) resolve local conflicts to ensure security. This linkage of politics with agricultural extension, via farmer groups, has been used as a tool to expand the government’s reach among farming communities. My findings suggest that integrating agricultural extension measures with non-agricultural extension activities may have adversely affected the trust-building processes between farmers and DAs as well as the overall efforts to enhance farmer participation.

Improving decentralization efforts through capacity-building of actors could enhance the planning and implementation power of the *woredas* and ensure farmer participation in agricultural extension. As a public good, agricultural extension should engage the poor and

disadvantaged groups of the society and thus bring about a complete transformation of the agricultural sector. The state should cease the practice of integrating extension efforts with non-extension or non-professional activities. To promote farmer participation and stakeholder engagement in agricultural extension and rural development, the government of Ethiopia should strive for realistic implementation—one that is in line with the documented goals of the AES. It is only through such positive action that agricultural extension can benefit the livelihoods of smallholder farmers.

Chapter 8:

Social Learning in Agriculture: A Struggle against Systemic Inequalities

8.1 Introduction

Social Learning is widely used as a coping mechanism against the unidirectional knowledge and technology transfer experienced in the Ethiopian agriculture (Leta *et al.* 2018b). Basically, the Ethiopian agricultural extension services system relies heavily on model farmers, who are entrusted with the task of technology demonstration and dissemination. This emphasis on select farmers in the system may work to the detriment of the rest of the farmers, and is known to be related to the concept of epistemic oppression (Dotson 2014). According to Doston (2014), “epistemic oppression refers to a persistent and unwarranted infringement on the ability to utilize persuasively shared epistemic resources that hinder one’s contribution to knowledge production and possession.” While Ethiopia operates a large extension services system, access to epistemological systems¹¹ and their resources is largely limited to model farmers. Hence, the majority of the farmers, and especially those who are resource poor, resort to Social Learning for the acquisition of knowledge or contribution to knowledge production.

Social Learning involves the application of formal knowledge to informal settings, and it uses interpersonal information exchange as the basis for behavior change (Rogers 1995). Scholars have attempted to highlight different facets of social learning by proposing varied definitions. According to Pahl-Wostl (2006), social learning refers to processes of learning and changes in individuals and social systems. Thus, learning not only remains in the cognitive realm but leads to joint practices and collective action (Pahl-Wostl 2006). van Assche and Hornidge, (2015) endorse social learning “as a solution for communities in an impasse, and as a way towards more sustainable resource uses.” Shaw and Kristjanson (2014), define social learning as “a change in understanding that goes beyond the individual to become situated within wider social units or communities of practices through social interactions between actors within social

¹¹ An epistemological system is a holistic concept that refers to all the conditions enabling knowledge production and possession (Dotson, 2014)

networks.” Van Assche *et al.* (2013), noticed social learning occurs when a group enables individual learning and further underpinned the sum of individual learning is more than its elements. Social learning, therefore, can be grasped as learning in a situation of participatory coordination and *collective action*. In social learning systems, new patterns of behavior can be acquired through direct experiences, observing the behavior of others, or interactions within a group (e.g., by imitating role models) (Bandura 2001; Bandura 1971). For instance, such new patterns of behavior can stimulate adoption of technologies.

The adoption theory examines the individual and the choices they make for accepting or rejecting a particular innovation (Straub 2009; Rogers 1983). In some models, the adoption choice does not pertain to acceptance but to the extent to which an innovation can be integrated into the relevant context (Straub 2009). Innovation is an idea, practice, or object that is perceived as new by an individual or other units of adoption (Ul Hassan *et al.* 2011; World Bank 2010; Rogers 1995). The diffusion theory describes how an innovation spreads through a population (Straub 2009). According to Hornidge and Antweiler (2012), embracing innovation is a signal for its diffusion. For Rogers (1995), however, diffusion is the process by which an innovation is communicated via certain channels over time among the members of a social system. It is a special type of communication, in that the messages pertain to new ideas. As Leeuwis *et al.* (2003) identified, communication is a core ingredient of extension workers’ strategies for inducing change in the Ethiopia’s AES. Any diffusion process is bound to have technology adopters and non-adopters. Rogers (1995) warns against viewing non-adopters as “irrational” or “stupid” because innovation decisions are “idiosyncratic” and “particularistic,” and non-adopters may have good reasons for not adopting an innovation. For instance, epistemic oppression, which prevents the poor and other disadvantaged groups of the society from directly accessing knowledge and contributing to its production, could be one of the reasons for non-adoption of innovations (Dotson 2014). In such situations, social learning can facilitate adoption of innovation by serving as a coping mechanism to the prevailing limitations. Hornidge *et al.* (2009) explain that adoption and diffusion of innovation typically “needs contextualization to local situation.” Similarly, no standardized methods can explain the process in which an individual engages before adopting an innovation (Leta *et al.* 2018b).

Historically, adoption is understood as a kind of behavior change (Straub 2009). However, successful adoption is shown by individuals' technology adoption patterns (Straub 2009). Several factors can contribute to the adoption of innovations. For instance, household education significantly contributes to the early adoption of an innovation (Weir and Knight 2000). In Ethiopia, social learning through stakeholders' interactions enables "less educated" farmers to copy from "more educated" ones. Much of the agricultural extension learning in rural settings is based on direct interaction between farmers. The interaction between farmers with direct access to technology and inputs (as educators) and those without access (learners) is more beneficial to the latter than the earlier. Thus, social learning in an informal setting aids the diffusion and adoption of technologies being promoted by the formal extension service system. As van Assche *et al.* (2013) argued, social learning cannot be expected to be amenable to formal process of design for all issues. It also contributes to alleviating the growing systemic inequalities in farmers' access to epistemological systems.

Technology diffusion and adoption beyond the formal agricultural extension system is not well documented in Ethiopia. Social learning in an informal setting has been traditionally serving as a coping mechanism for farmers who lack of access to knowledge, technologies, and inputs. Thus far researchers have not examined social learning in an informal setting in the context of Ethiopian smallholder agriculture. Further, its effectiveness, reliability, geographical characteristics, and influences on speed of technology diffusion and adoption have not been well investigated. Social learning, which is participatory by its virtue, can take place both formally as well as informally. Unlike the formal learning processes, learning in an informal setting is spontaneous or a naturally occurring form of learning grounded on everyday experiences (Kyndt *et al.* 2016; Cofer 2000; Boekaerts and Minnaert 1999). It occurs in dynamic social arrangements in which people unintentionally share knowledge and experiences among themselves. Despite the widespread use of this learning in Ethiopian agricultural extension for knowledge and technology transfer, the topic has hardly received any research attention. In the context of rural Ethiopia, scholars have not analyzed how it influences the translation and adaptation processes through which knowledges are embedded into the local system of knowledge production and sharing. Hence, the purpose of this chapter is to identify the

different methods of social learning in an informal setting (such as through informal institutions and socio-cultural events) as well as their contribution to innovation development and diffusion within the agricultural context of Ethiopia.

8.2 Social Learning: An Overview

Despite the Ethiopian state's substantial investment and involvement in the agricultural extension service system, mostly only model farmers have access to formal extension knowledge (Leta *et al.* 2018b). Agricultural social learning in an informal setting is widely practiced as a coping mechanism for the inequitable distribution of knowledge, technologies, and agricultural inputs. According to Leeuwis *et al.* (2003), "social learning captures the fact that change is connected with individual and/or collective changes of various kinds." In Ethiopia's agriculture, social learning is practiced in unstructured or informal ways in collective settings. Therefore, it can be described as learning in an informal setting (Leta *et al.* 2018b). Or it can best be described as "learning that is predominantly unstructured, experiential and non-institutionalized" (Marsick and Watkins 2001). It is a category that includes incidental learning, and its control rests primarily in the hands of the learner (Cross 2013; Marsick and Watkins 2001). Incidental learning is characterized as a byproduct of some other activities such as task accomplishment, interpersonal interaction, or trial-and-error experimentation. According to Marsick and Watkins (1990), incidental learning occurs continuously although people are not always conscious of it. Van Assche *et al.* (2013) also remarked that social learning is elusive but productive as it offers unexpected forms of adaptation.

Social learning in an informal setting can be encouraged by neighbors, friends, extended families, or relatives. It can even occur in an environment that is not conducive to learning. For instance, in Ethiopia, it is neither intentional nor structured compared to the formal social learning initiatives of agricultural extension such as through campaign that introduce farmers to new technologies and practices (Leta *et al.* 2018b). Caffarella (1993) explains that the focus of social learning in an informal setting is on the individual and on self-development, and learners are expected to assume responsibility for their own learning. Boud and Middleton (2003) add

that learning at work, which is a form of social learning, constitutes a large part of the learning undertaken by adults during their lives.

Even in academic circles, informal interactions with peers are a more dominant way of learning than “formal training” (Boud 1999). However, despite its contribution to learning and knowledge transfer, social learning in an informal setting is often not recognized as a complementary learning approach to the formal efforts of transferring knowledge. In the workplace, individual learning is typically regarded as a “part of the job” or a mechanism for “doing the job properly” and is thus rendered invisible (Ellinger 2005; Boud and Middleton 2003). However, much of what individuals learn is via informal practices (Conlon 2004). In fact, Sorohan (1993) and Marsick and Watkins (1990) concluded that over 80% of workplace learning takes place through informal means, which is similar to the learning strategy employed by the majority of smallholder Ethiopian farmers.

The effectiveness of social learning in an informal setting for capacity development and as a means of technology transfer has not been well recognized by the Ethiopian state. To the contrary, the learners, who directly not involved in technology adoption via the formal extension system, are considered by the development actors as resistant to technology. Interestingly though, majority of the smallholder farmers rely on the knowledge and skills they acquire through informal learning. Thus, social learning in an informal setting aids as a coping mechanism for smallholder farmers who are marginalized from accessing knowledge, technologies, or inputs through the formal extension system (Leta *et al.* 2017b). Formal access is essentially available to those who can afford to access technologies, agricultural inputs, and extension services. Therefore, identifying and documenting the numerous types of social learning methods through which the farming community shares inputs, technologies, practices, and norms with one another—the community of practices—is vital for promoting the agency of resource poor farmers, struggling against the discriminatory extension services in Ethiopia. According to Wenger (2006), “community of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.”

Social learning in an informal setting enables learners to implement their activities efficiently as the learning focus on action (Marsick and Watkins 2001). It involves a range of strategies, including conversations, social interactions, teamwork, observation, and mentoring, and it is not limited to a predefined body of knowledge (Le Clus 2011). Despite its unstructured, experiential, and non-institutionalized nature, it represents one of the most prevalent forms of learning in Ethiopia's agricultural domain. According to a farmer, it complements the formal extension system by aiding technology diffusion in informal ways (Intr. code no. 0014, 2015).

8.3 Knowledge in Agriculture

Knowledge is defined in many ways. Berger and Luckmann (1966) define knowledge as everything that is regarded as such in and by society. Thus everything regarded as worth knowing is also regarded as knowledge. Hornidge (2007) explains that the awareness of knowledge is socially determined. On the basis of its role, Hornidge (2007) further remarks that "knowledge is key for economic growth and for facilitating patterns of a global social order." Leeuwis *et al.* (2003) view knowledge as the basic means through which we understand and define the world around us. Van Assche and Hornidge (2015) also identify knowledge as the driver for development. It has also been defined as an active discursive construction of a given reality within the historical and cultural context in which it is produced and performed (van Assche *et al.* 2015). According to Morgan and Murdoch (2000), knowledge is one of the key elements that binds partnerships, by playing a prescriptive or negotiative role. Prescriptive knowledge is associated with rules and norms that lead to conformity, and where coercive elements are possibly exercised. Negotiative knowledge, on the other hand, tends to be about local autonomy and cooperative action (Murdoch 1998). The different types of knowledge define the power relations within partnerships. The prescriptive type of knowledge is considered a characteristic feature of knowledge transfer and use in Ethiopian agriculture.

Farmers in Ethiopia have a wealth of indigenous knowledge and practices. However, these are hardly integrated into the innovation development efforts of the state. Although local

knowledge/practices have been used by myriads of smallholder farmers in fragmented settings, new expert knowledge and technologies, which are either imported or generated within the country, continue to be considered more important. As a result, local knowledge or practices are viewed as backward and are less likely to be combined with expert knowledge (Intr code no. 13, 2015). Whereas, van Assche and Hornidge (2015) argue that local knowledge tends to be more natural resource friendly than expert knowledge.

In a globally changing economy, access to external or new knowledge is essential to stay competitive. Since smallholder farmers mainly practice traditional farming, characterized by low input and low output agriculture, knowledge of new technologies and practices is undeniably important. However, knowledge distribution and access to knowledge resources are not uniform among all beneficiaries. The extension knowledge and new technologies (such as the use of improved seeds) are, for example, rather distributed in areas closer to agricultural research stations (Intr code no. 57, 2015). As a result, *woredas* in far-flung areas only hear of the new technologies on media. According to Bjerke (2016), knowledge spillovers are affected by accessibility. Despite the growing number of DAs in Ethiopia, internal knowledge – which provides target groups with the cognitive skills to interpret and adopt external knowledge – in agriculture continues to remain low.

In smallholder Ethiopian farming, experience is still more valuable than schooling, as only few farmers are educated (Intr code no. 72, 2006). Because the agricultural sector is still largely traditional, the focus of the extension system is on promoting the adoption of new knowledge or technologies through teaching and learning (training). As a result, transfer of technology is the most conventional and prevalent approach to accessing agricultural knowledge, in which science-based farming practices are pushed to farmers to enhance learning and adoption. However, farmers' poor farm management experience and lack of access to the desired agricultural inputs act as bottlenecks, impeding the agricultural transformation of the country.

Agricultural knowledge is strongly entwined with power dynamics, and the two complement each other within the context of agricultural extension and rural development.

According to van Assche and Hornidge (2015), knowledge creates power and power creates knowledge. They further explain not only does knowledge benefit individuals in negotiations and strategies, it also makes individuals to influence others' understanding and thus influence the people themselves. Overall, knowledge plays a vital role in the agricultural extension and rural development of the country. It is a core part of the development that is associated with actors and institutions (Fey 2016, p. 99). As Ethiopian agriculture in general, and agricultural extension, in particular, rely on the adoption of new technologies, the associated knowledge is equally indispensable. However, currently, access to knowledge and technologies is limited to a few model farmers, who are responsible for not only using it but also demonstrating it/ sharing it with other farmers. Given that the majority of smallholder farmers have poor access to knowledge or technology in Ethiopian agriculture, social learning is an important alternative means to access knowledge.

8.4 Social Learning in Smallholder Ethiopian Agriculture

In Ethiopian agriculture, in general, and agricultural extension, in particular, social learning has not been recognized as an important means of technology adoption and diffusion. Results of the household survey, conducted as part of this study, showed that weak traditions of formal learning; lack of time, labor, and resources to access inputs or technologies; and the existing service delivery systems discourage farmers from participating in the formal extension system. The prevailing trend of combining extension training with other socio-political activities, apart from inadequate supplies of the necessary inputs or technologies, has adversely affected farmer participation (Leta *et al.* 2018ab). The existing conditions in the Ethiopian agricultural extension services system are indicative of epistemic oppression (Dotson 2014). Because of limited access to formal extension, farmers resort to social learning in an informal setting from neighbors, friends, and relatives in group as a means of accessing skills.

Social learning is self-directed, free from any coercion and other compulsions. It is also known as the learning of practical skills in *ad hoc* settings (Leta *et al.* 2018b). Pelling *et al.*

(2008) describe social learning as learning involving individuals and social collectives. Of the interviewed farmers, 55% reported that social learning in informal setting was the most useful mode of skill acquisition followed by 35% of farmers who used it to complement the knowledge they accessed through public agricultural extension services. The rest 10% found it to be slightly useful as they relied mainly on the extension system. Overall, we found that 90% farmers informally learn and use the skills and knowledge of agricultural practices from other farmers, friends, and relatives. In rural Ethiopia, the many channels of farmer interaction provide ample opportunities for farmers to learn from one another. Informal institutions and various socio-cultural events are the main source of interactions between people, which eventually become learning opportunities in agricultural extension.

8.4.1 Informal Institutions — a Social Learning Platform

Institutions are rule of coordination between actors (van Assche and Hornidge 2015). They further unfold, “institutions can take the form of rules, laws, policies and plans, with institutions in each case referring and linking to others, and often containing others.” In rural Ethiopia, the most prevalent (and scientifically discussed) informal institutions, which also double as social learning platforms, are *iddir* or *abalaga* (a self-help voluntary association) and collective labor support groups such as *debo* or *jigi* and reciprocal labor groups such as *dado* or *dugde* (Leta *et al.* 2018b, 2017b). According to van Assche and Hornidge (2015), informal institutions support the actual rules, unwritten, in defiance of the law. Other learning platforms in rural Ethiopia are socio-cultural events (such as weddings and funerals), market places, peer or group socialization sessions (drink and chewing *khat*), and community meetings (Leta *et al.* 2018b, 2017b). The nature of social learning suggests that the social and cultural environment in which learning takes place has the potential to influence how learning occurs (Le Clus 2011). In rural Ethiopia, too, learning is a social process and can be influenced by the relationships in which individuals, in this case farmers, engage.

In the studied areas, *iddir*, *debo*, and *dado* are the informal institutions from which farmers mostly learn and adopt the best agricultural practices (Intr code no. 55, 2015). The

original sources of innovations could be the formal agricultural extension system, NGOs, or even innovative farmers. Informal institutions bring people together through their conventional system of cooperation. Unintentionally, members of these institutions or participants in reciprocal labor-sharing arrangements (e.g., row planting, fertilizer application, and harvesting) may learn new technologies or best practices adopted by their neighbors or peers. Each local institution plays a distinct role in the social learning process. Particularly, in southwestern Ethiopia, *iddir*, *debo*, *dado*, socio-cultural events, and group socialization sessions are the main social learning platforms for knowledge transfer (Leta *et al.* 2018b, 2017b). In the following section, I describe each of these institutions in detail.

a) *Iddir*

The *iddir* is an indigenous and voluntary self-help association, established mainly to provide funeral services and bereavement support (Leta *et al.* 2017b; Kelboro 2013; Stellmacher 2013; Pankhurst and Haile-Mariam 2000). According to Pankhurst and Haile-Mariam (2000), the *iddir* is a widely known institution in urban and rural Ethiopia. Although some scholars associate the origin of *iddir* with the Italian invasion of Ethiopia, it is a traditional institution that can be traced back to much earlier. Aredo (1993) described the *iddir* as an indigenous, uniquely Ethiopian institution that is linked to other traditional rural institutions. The *iddir* is known by different names. While it is the *iddir* in Bako-Tibe, in the Yem *woreda*, it is known as *abalaga*, which means “the father of streams or rivers” in English. Interestingly, Yem and the surrounding *Oromo* communities are made up of inhabitants hailing from areas close to 3 to 5 streams. In most parts of rural Ethiopia, *iddir* is still an informal institution. In fact, the *abalaga* is known for its informality, including the provision of services without any written rules.

Iddirs have had inconsistent functions and relationships with successive Ethiopian regimes. During the *Imperial* regime, *iddirs* were less autonomous and had restricted roles. Under the *Derg* military regime, they were largely marginalized, and their role was limited to the burial function (Pankhurst and Haile-Mariam 2000). Currently, however, rural *iddirs* provide different functions across *woredas*. Apart from local policing and judiciary services, they facilitate social supports and rural development. They also engage in implementing government

activities such as enforcing public mobilization and aiding information transfer for agricultural extension, political activities, and rural development (Leta *et al.* 2018a). For instance, public enforcement for WSM campaigns is specific responsibility of the Bako-Tibe *iddir*. Stellmacher (2007b) notes that in some parts of the country, *iddir* help enforce the management of natural resources. In Yem, however, *abalaga* mostly participate in local policing, judiciary, provision of funeral services and other social supports. The *abalaga* rarely see any change in their structure, function, autonomy, or leaders, who are appointed for life, unless they commit a crime. However, the leaders of the *iddir* in Bako-Tibe are likely to change when the members or the leaders themselves need the change. Therefore, the *iddir*, through its committees, mobilizes and engages its members for rural development and agricultural extension in the Bako-Tibe *woreda* (Intr code no. 57, 2015). In places where formal government institutions have incomplete control or do not function effectively, the state uses *iddir* as an alternative informal institution to enforce seasonal activities.

In rural Ethiopia, members of an *iddir* typically meet once a month with drinks and snacks. In such meetings, the *iddir* provide labor support to their members according to their needs. Such labor support opportunities among member groups create a learning platform. Thus, the *iddir* serves as a social learning platform, where members informally share their agricultural experiences. The group members tend to trust each other more than external agents such as DAs. In rural *kebeles*, where development teams or farmer groups do not function properly, *iddir* serves as a platform through which DAs transfer extension-related information and new messages about rural development. Thus, it provides complementary services to formal institutions (Helmeke and Levitsky 2004; Lauth 2000). It also serves as a medium for farmers' information and experience sharing. According to Pankhurst and Haile-Mariam (2000), through actors, *iddir* serves as a source of information, education, and communication on HIV/AIDS in Ethiopia. In addition to aiding the facilitation of the collective labor, social learning, and provision of healthcare services, the *iddir* is also used to extend insurance in kind or in cash to farmers during emergencies such as food shortages (Haile-Mariam, 2003; Aredo, 1993). In Bako-Tibe *kebeles*, the *iddir* helps the needy by offering interest-free cash or in-kind loans. It also imposes labor support to families that are bereaved

(who have lost the head of their household) or those whose members are sick during the main agricultural season. Generally, *iddir* as an institution is inseparably integrated with actors to perform the learning and its other functions.

According to informal group discussions with *iddir* committees and members in Bako-Tibe (see Figure 8.1), an *iddir* may also serve to reinforce the spiritual ties between its member groups. For instance, followers of the Orthodox Church and other beliefs meet once in a month on day of a particular saint or another common day to pay their monthly membership fee (contribution) and receive the blessings of religious leaders (local priest) or elders. Among the traditional believers (*Waqefata*), the blessings are given by the elders of a prominent lineage of the clan to the younger ones in the area. Attendants of the monthly *iddir* meetings never leave before receiving the elders' blessings. The *iddir* also undertakes local policing or judiciary services to ensure the security of its surroundings. Minor disputes between neighbors or individuals are solved by knowledgeable and trusted elders (*jaarsa biyyaa*), who are appointed by the community. Further, some cases from the formal judiciary system are also redirected to the elders for local arbitration once both parties agree to the terms of reconciliation. Cases that are more serious, such as attacks on or damage to livestock and suspected criminal, are investigated and adjudicated by the *arfe* (the four) local judges, who are member of the *iddir* group committees. However, number of judges in *abalaga* system are three and are known as *anole*. Minor violence, robbery, and other local crimes are penalized according to the *iddir* group rules.



Figure 8.1: Informal discussion with *iddir* committees, Bako-Tibe *woreda*.

Photo: Gerba Leta

b) Debo

A *debo* (*jigi*) is a collective labor support group that promotes learning and adoption of knowledge and innovations (Leta *et al.* 2017b; Intr code no. 47, 2015). The *debo* is designed to back an individual in need for labor. It involves a large number of people, engaged in various agricultural activities such as land preparation, planting, and harvesting. It differs from other labor-sharing institutions such as *dado* because it mobilizes and engages relatively large numbers of people, and the hosting individual also provides the participants with food and drinks (Intr code no. 49, 2015). A *debo* is organized specifically on the request of an individual or on the recommendation of elders or leaders from informal institutions such as *abalaga*, which highlights the *interdependency* between institutions. The neighbors then provide labor support, accordingly. For example, a farming household that has lost its chief member, an ill

person, or old, disabled, or weak farmers looking for a large number of laborers for planting or harvesting typically seek support from the surrounding communities. Apart from agricultural activities, a *debo* is used for other activities such as house building, firewood collection, or post splitting and hauling for rural house construction. Because individuals learn from the experiences of others around them, and particularly through observations, *debo*, like other informal institutions, facilitate knowledge acquisition through social learning (Straub 2009).

c) *Dado*

Dado (*dugde*) is a reciprocal labor-share arrangement where farmers select one another based on the trust and confidence they have in each other and other factors such as fitness and enthusiasm to work with the group and accomplish the job. Although *dado* is mostly employed during crop planting seasons, it can also be used during harvesting seasons. Both seasons are very labor intensive, and *dado* is employed to fill the labor shortage. Promoted by the formal extension system, row planting of large and small cereal crops has currently replaced the conventional broadcasting system. As a result, labor requirements are inevitable, and *dado* is employed to curb the labor shortage for planting and harvesting, during which participants learn by doing. According to Marsick and Watkins (2001), people learn from their experience when they face a new challenge or issue.

Dado is an inherent institution for labor sharing and collective action. Despite the current state initiatives to form farmer groups, such as the one-to-five farmer groups, *dado* remains a functional institution for labor sharing. The formation of the one-to-five farmer groups is based on the neighborhood or extended family and not on the ability to efficiently work together. The approach bears the legacy of collectivization from the *Derg* military socialist regime. As a result, most farmers never opt for the formal route to reciprocal labor-sharing. Thus, the *dado* continues to serve as a labor-sharing institution as well as an experiential learning ground that enables farmers to acquire knowledge or skills through repeated practice (Intr code no. 48, 2015).

Farmers socially learn the application of agricultural practices from knowledgeable peers in their *dado* group more than another institution. Hands-on participation helps members of the group learn and validate the output from a given technology or innovation implemented by a few farmers. For instance, actual participation of farmers in harvesting is an opportunity to validate the productivity of new crop packages. An increase or reduction in yield will immediately be discussed. The *dado* serves as an institution for learning-by-doing, and the orientation provided by more knowledgeable peers helps other farmers learn about new innovations or practices, without participating in the formal agricultural extension system.

Practical involvement of the farmers in labor sharing through *dado* and other collective labor groups creates opportunities to learn and maintain the *status quo*. At different stages of farming operations, particularly during planting and harvesting, farmers can easily learn informally. They can acquire the technical packages of a given technology, including specific activities such as land preparation, planting, harvesting, and post-harvesting. Marsick and Watkins (1990) describe social learning in an informal setting as an experiential and incidental form of learning as it focuses on unintentionality. Such learning serves as a coping mechanism for inadequate formal agricultural extension services and the lack of access to training and technologies. Apart from crop production, social learning also supports other farmer activities of livestock production and natural resource management.

d) Group Socialization and Socio-cultural Events

Group socialization sessions such as drinking alcohol and chewing *khat* (*Catha edulis*) present other opportunities for farmers to gather, discuss, learn about, and internalize agricultural innovations or practices (Leta *et al.* 2018b, 2017b). In fact, group socialization sessions are learning places for new agricultural technologies and practices, and for diffusion or information transfer. A farmer from the Dembi-Gobu *kebele*, in Bako-Tibe, shared that a drinking house is a potential learning place, as anyone who drinks is open to discussion, as alcohol allows for sharing of experiences without reservations (Intr code no. 0030, 2015). In the Saja-Laften *kebele*, in Yem, where most of the farmers are Muslim, the spaces for chewing *khat* bring farmers together and enhance information exchange and social learning. Lemessa (2001)

highlights the contribution of *khat* to collective labor work and other social events. The socialization methods vary according to the geography and the traditions of the inhabitants.

Socio-cultural events such as weddings and funerals are other potential social learning sites, reported in the household survey and FGDs. Further, visits to other areas provide opportunities to exchange agricultural practices. The tradition of information transfer through conventional social networking is another important mechanism by which farmers learn and adopt new practices. Social networks facilitate the transfer of knowledge by improving access to information (Spielman *et al.* 2011). Apart from serving resource-poor farmers, social learning increases the number of indirect beneficiaries of the formal agricultural extension services. It widens the reach of the extension system by adapting the technologies to farmers' circumstances—their needs and affordability.

Furthermore, observation is another opportunity that helps farmers cope with the discriminatory and inadequate formal extension services (Leta *et al.* 2017b). Farmers can easily learn from their neighbors by practically observing new practices on ground. Observation of the performance of a given technology can motivate farmers to compete, pique their interest or curiosity, and encourage them to learn or adopt it. Various informal institutions and systems serve as learning platforms and coping mechanisms for the rural community, slightly reducing the actual coverage and inefficiency of the formal agricultural extension services. In a way, the informal institutions bridge the gaps left behind by the formal institutions in catering to the agricultural and rural development needs (van Assche and Hornidge 2015).

8.4.2 Importance of Social Learning

Social learning helps farmers cope with one or all of these shortages: labor, inputs, technologies, information, extension services, and farmer's deliberate resistance to the formal extension services. In social learning, apart from an individual's interest, there is no coercion or any other special requirement that forces an individual to become a learner. Marsick *et al.* (1999) argues that people are able to realize their potential when they are driven by their own

internal vision. Therefore, farmers' own decisions—free from pressure or influence—helps them benefit from social learning, which is essentially learning from everyday experience. As it can be learned through repeated practice and observations, it enables mastery of the practices effectively. Since the learning occur either through planned or unplanned interactions, more so by the latter one, with other peers, neighbors, or co-workers, social interactions play a significant role in facilitating social learning.

8.4.3 The Speed of Social Learning for Knowledge Transfer

While social learning does enable farmers to access and acquire knowledge and technologies, it also presents some serious challenges. According to the household survey, a slow rate of knowledge transfer is one of main limitations of social learning, especially given the need for rapid agricultural transformation in Ethiopia. Limited collaboration between better-off and resource-poor farmers also prevents economically weaker farmers from accessing new technologies. Despite the rich tradition of knowledge-sharing through social interaction and learning, some better-off farmers do not volunteer to demonstrate new practices to other farmers (Intr code no. 54, 2015). Some superstitious farmers are not open to being visited by other farmers and do not allow others to learn through observation (Intr code no. 0006, 2015). Such lack of transparency can be attributed to regressive traditional beliefs such as fear of witchcraft. Needless to say, such traditions adversely influence agricultural practices and hinder the best use of knowledge and innovations among farmers.

Overall, social learning regulates the increasing epistemic inequalities and inadequate formal extension services provided by Ethiopian state (Leta *et al.* 2018b, 2017b). The adoption of new agricultural practices through social learning is a part of farmers' routine livelihoods. This is in line with the view of Marsick *et al.* (1999), who consider social learning to be integrated with work and daily routine. Though, it is difficult to analyze the speed at which lessons are transferred through the informal system, the majority of the survey respondents identified social learning as a slower approach than learning through the formal agricultural extension system that involved forcible technology adoption (see Table 8.1). Further, people do

not instantly know what they learn and how useful it is unless in the retrospect analysis. Nevertheless, social learning continues to be used by the majority of farmers to acquire knowledge that could support their livelihoods as knowledge is a key tool helping farmers cope with the changes (Hornidge and Antweiler 2012; Spielman *et al.* 2011). Thus, resource-poor farmers continue to benefit from the knowledge that they informally access through social learning.

Table 8.1 Characteristics of social learning in agricultural extension (n=120).

Farmer reaction	Determinants					
	Beneficiary		Highly reliant		Prompt for technology transfer	
	Freq.	%	Freq.	%	Freq.	%
Yes	108	90	66	55	8	6.7
No	12	10	42	35	112	93.3
Sum	120	100	108	90	120	100

Source: Household survey data collected by Gerba Leta (2015-2016).

8.5 Conclusion

This chapter analyses how farmers acquire agricultural knowledge collectively and informally through various approaches. Specifically, they acquire knowledge through social networking, information exchanges, hands-on participation, observation, and other formal means. In Ethiopia's agricultural extension, direct access to planned formal training and extension services is largely limited to better-off model farmers. Nearly all the other farmers, for generations, have relied on their existing social networks, interactions with co-farmers, and observation of pilot experiences for transfer and acquisition of agricultural practices. Informal institutions such as *iddir*, *debo*, and *dado* facilitate learning, adoption, and diffusion of technologies or best practices. Although these informal institutions aid the process, social learning in informal setting is often not coordinated. The learning is driven by the will of the learners on a voluntary basis.

The speed at which knowledge is acquired and technology is transferred via social learning is relatively slow. However, it is a vital coping mechanism for the discriminatory, inadequate, or inequitable access to extension services, technologies, and inputs. It also regulates the mounting systemic inequalities in accessing and contributing to knowledge production and use. Through various means, social learning helps farmers adapt to changes in the existing extension services. It also complements the formal system by extending technologies or practices introduced by a few farmers in the technology supply-push approach. Social learning is stimulated by resources and labor constraints; lack of equitable access to extension services and technologies; and farmers' resistance to formal extension. This resistance may also stem from poor education levels and the state's tendency to combine socio-political activities with agricultural extension and rural development efforts. Enforcement, exercised as part of public agricultural extension efforts, is another factor that prompts farmers to opt for social learning of technology.

The findings of this study indicate that the contribution of social learning and the role played by informal institutions in complementing the limitation in formal extension services need to be better documented. Further studies are needed to understand the extent of social learning's contribution to maintaining the *status quo*, the credit it deserves as an alternative approach of knowledge acquisition, and its level of outreach among indirect beneficiaries of the formal extension services. Recognizing and encouraging social learning may help achieve a trade-off between formality and informality and thereby narrow the growing systemic inequalities between different farmer categories, their access to, and benefits from rural development and agricultural extension knowledge.

Chapter 9:

Strengths, Limitations and Reform Options of Ethiopia's Extension System

9.1 Introduction

As previously referenced, “governance” is understood as coordination in the taking of collectively binding decisions within a community, by governmental, and other actors. In an AES, governance is self-referential. That is, present decisions rely on the knowledge and expertise of the past (van Assche and Hornidge 2015). The evolution of agricultural extension in Ethiopia has been characterized by reforms such as (a) adoption of new institutions, (b) increase in the number of players, (c) changes in the interaction between actors and their roles, (d) increase in the expertise of the actors, (e) increase in the overall coverage of agricultural extension, and (f) introduction and use of agricultural technologies and inputs. These dynamic reforms capture the evolution of coordination along with agricultural extension.

However, the changes in the number of extension experts and DAs, their expertise, and roles persistently rely on the experience of the past actors/institutions and the past power/knowledge configurations. This trend reveals the path dependency in the governance paths. Despite the increasing number of extension staff, particularly DAs, in the country, the nature of their technical specializations has remained inconsistent over the regimes. For instance, in the past, most trained DAs in the country completed diploma courses in general agriculture. In the mid-2000s, however, as a result of evolving coordination and changes in the state policy and strategy toward agriculture, new batches of DAs were made to specialize in three domains of agricultural extension: crop, livestock, and natural resources management. In 2009, to boost capacity-building in agricultural extension, the MoANR has introduced another level of specialization in subject-specific content, which has effectively reduced the duration of three-year course to two years (Leta *et al.* 2017a). Moving the training system from relatively broad to narrow-level expertise (specialization) may introduce problems of inefficiency in the

provision of extension services to smallholder farmers, who single-handedly carry out multiple agricultural activities (Leta *et al.* 2017a).

The state has planned to align human development with the skilled labor demands of the market economy. However, there is mismatch between actual economic development and the availability of specialized skill labor and its demand at the grassroots level. The transition in the capacity-building system neither addresses the needs of smallholder farmers nor matches the actual agricultural economic development of the country. As a result, most DAs lack the knowledge needed to address farmers' dynamic needs, which changes with the emerging market and customer demands. However, the state has made efforts to bridge the knowledge gaps by offering seasonal but very short on-the-job training. Further, to complement these efforts, power relations are used to enforce the implementation of rural development and agricultural extension, through actors and institutions (Leta *et al.* 2018a).

9. 1.1 A Historical Perspective of *Dependency* in Ethiopia

Historically, dependency in Ethiopia, has followed a well-established center-to-periphery pattern, where the rural community depends on the urban population and the rural elites. Rural elites serve as the spokespersons of the rural community. Three types of long-standing dependencies are evident in the Ethiopian context: (i) the central government is dependent on Western knowledge and economic assistance; (ii) the regional government and its developmental endeavors are dependent on the central government; and (iii) the rural society is dependent on the rural elite, namely, the representatives of the local administration and better-off model farmers, in that order.

The prevailing dependency trends suggest that regional initiatives are secondary to or overshadowed by the center's initiatives. As a result, regions remain recipients of knowledge and technologies, with diminished autonomy, unable to entirely initiate their own independent development plans. This is also true of the *woredas* and *kebeles*. This center-to-periphery

dependency has been the legacy of Ethiopia's efforts toward knowledge acquisition, technology transfer, and coordination of agricultural extension and rural development.

In agricultural extension and rural development, the rural community negotiates with the central or regional government through its representatives. These groups of representatives are the local elite, who often take their decisions, based on their own emotional reasoning. They tend to disregard the participation and contribution of the majority of rural dwellers in knowledge production and coordination, and justify their action by labeling the majority as an illiterate community that cannot demand. This clearly diminishes community participation in the coordination of agricultural extension and rural development.

9.1.2. The Evolution of Agricultural Extension: A brief Overview

Essentially, the evolution of the Ethiopian agricultural extension often assessed over regimes. Below, I briefly present an overview of the evolution and its means of coordination during the past and present administrations:

i. The Imperial Regime

During the *Imperial* regime, the main local actors (agents) were designated as *chiqa shum*. The high ranking local governor was known as the *balabat* in Amharic language – the person in charge of forming and strengthening state ties with the local community and ensuring community compliance with tax laws as well as state policies and institutions. The actors' participation/representation in coordination varied according to the needs of the community. However, the central government and the then feudal land lords only favored the actors, even if their representation of the community was slightly warped. This feudal land tenure system was the prominent impediment to the development of peasant agriculture.

Very little was done to stimulate growth of peasant agriculture or the peasants. As noted by Cohen (1987) and Ottaway (1977), peasants were denied any role in governance. Even then, the community's needs and decision making were in the hands of a few actors/individuals. The community was thus dependent on those few, who were considered the

local elites. However, the elites endorsed the prevailing landlord-tenant relationship system or according to their own interests and perceptions. Apart from this, another paradox of the past was practice of appreciating community members who did not argue or debate governance issues. Thus, community participation in coordination was constrained by the system and traditions. Further, due to widespread illiteracy, the rural masses themselves admitted to being unskilled and incapable of participating in, demanding from, or discussing governance. These circumstances allowed for the marginalization of the community, and enhanced the community's dependency on the *feudal* elites and a few local actors. Eventually, the *feudal* regime abolished and was then replaced by the *Derg* military socialist regime.

ii. The Derg Regime

The *Derg* regime made substantial efforts to liberate the community from the legacy of the preceding *feudal system*. Accordingly, they encouraged community participation in the new coordination. New institutions and actors were established and promoted at the local level through peasant associations, farmer producers cooperatives, and agricultural service cooperatives (Deininger *et al.* 2008; Stellmacher 2007b; Ottaway 1977). The role played by public agriculture in extension and rural development evolved from a few donor-driven project initiatives to area development project and then to upscaling of pilot experiences by increasing the number of participant farmers and *woredas* (Abate 2007). Farmers' participation was promoted in the communist spirit of collectivization, through farmer-producer cooperatives. However, reliance on the local elites for coordination also continued during the *Derg* regime. While advancing its rule, the *Derg*, unfortunately imposed a repressive totalitarian rule (Ottaway 1977).

The farmer producers' cooperatives and the agricultural service cooperatives, as institutions, mainly served political goals, eventually failing to serve the economic purpose for which they were established. The farming community lacked alternative actors/institutions that could lead them to progressive development, particularly in line with the forces of market liberalization. Then, the Workers Party of Ethiopia (WPE) was a strong independent political party (institution) that took charge of controlling the socio-political landscape and the economy

of the country. Eventually, the involvement and the effectiveness of the *Derg* in socio-economic development declined. In the beginning, the community had appreciated the *Derg* regime for its ground-breaking land reform, by which lands from landlords were allocated to the tenants or landless peasants (Stellmacher 2007b; Ottaway 1977), but strongly detested latter based on its inflexible or prescriptive policy. Although the *Derg* regime emancipated the farmers from the *feudal system*, it did not grant the farmers full autonomy or the rights of self-determination and self-governance. This ultimately led to the downfall and replacement of the *Derg* regime by the existing administration.

iii. The Current Administration (EPRDF)

Continuing the legacy of the previous efforts, the present-day agricultural and rural development plan also relies on the top-down approach, with a less decentralized coordination system. This shows the path dependency: a legacy from the past that determines an actor's decision making in the present. According to van Assche and Hornidge (2015), "the existing forms of coordination cannot simply be transformed, rather the evolution of governance is marked by different dependencies." However, governance paths or the evolution of agricultural extension and rural development have not yet been systematically documented and analyzed in research. In this chapter, I therefore, assess the governance paths or the evolution of the current agricultural extension particularly its strengths, limitations and reform options through the lens of the EGT, wherein governance paths are characterized by the interaction of dependencies: path dependency, interdependency, and goal dependency. In the following section, I briefly analysis the "dependencies" and "path creation" in the evolution of extension within the context of rural governance, in order to assess its transformative potential. EGT distinguishes between path dependencies, legacies of the past that predict and partly restrict the options of change (van Assche *et al.* 2011; David 2007), interdependencies (between actors, institutions, and between actors and institutions), and goal dependencies, as impacts on current governance of visions of the future, often encoded in institutions.

9.2 Dependency and Its Implication for Agricultural Extension Policy

9.2.1 Path Dependency

Since the late 1960s, the concerns of the state regarding agricultural extension and rural development have grown in scale and scope. A significant shift is evident in the state's view of agriculture over the different regimes: from "mere smallholder peasant" business, it is now seen as one of the central pillars of state affairs. The state's role in agricultural extension has intensified and extended over the last two decades. Although governance is dynamic (Beunen *et al.* 2015), in Ethiopia, basic structures and approaches prevailed since the *Derg* regime (Intr code no. 80, 2016). Technology transfer continues to follow the top-down approach, and the implementation of agricultural extension continues to be driven by the state, in general, and the *kebele* administration at the local level. These patterns of governance paths have appeared under modified names and structures (such as transition from peasant association to *kebele* administration), allowing the state to play a key role in the socio-political and economic decisions at the grassroots. Thus, the same extension system has repeatedly manifested itself over regimes with little room for plurality, practicability, and participation. The legacy from the past not only seems to shape future options but also exerts an influence on the present, on its way to the future (van Assche *et al.* 2014; van Assche *et al.* 2011).

Overall, the agricultural extension system is characterized by a strong path dependency, and this may be one of the reasons for the persistence of top-down planning and implementation, as opposed to the adoption of decentralization. According to David (2007), path dependency is a dynamic process whose evolution is governed by its own history. Van Assche *et al.* (2014) and Shtaltovna (2013) explain that path dependency describes a situation in which the destiny of the actors is dictated by the past. From my empirical research in Ethiopia, I learned that technology transfer is fashioned in a supply-push manner, and model farmers have been retained as key actors to convey or transfer technology for more than four decades now.

Over regimes, selecting, identifying, and packaging technologies and best agricultural practices for their adoption by farmers have been centrally executed by the MoANR, BoANR, and the research system. Upscaling of technologies and best practices has been widely advocated in the PES. However, despite the rhetoric, the practical application of bottom-up approaches, which directly involve the end users in process of technology development, is negligible in the study areas. As mentioned earlier, another approach that prevailed in the past and continues to this day is the reliance on state structures and model farmers. Model farmers are typically better-off, favored by the ruling party, and often have access to large areas of farmland. The concepts of state, agricultural growth, agricultural extension, and rural development are entwined and tend to complement one another. The linkage between the state and the agricultural sector has a long legacy that has been handed down from the past regimes, particularly the *Derg* military regime, where the state organized and controlled smallholder farmers through peasant associations (Stellmacher 2007a; Belay 2003). The EPRDF-led government also focused on smallholder farmers mainly because “they comprise a sizeable portion of electoral constituency, [and are a] source of human power supply for regime security and survival” (Berhanu 2012). This is why the local structures have lingered despite regime changes. Efforts to promote the appointment and nurturing of new and innovative model farmers are limited.

Path dependency not only serves as a guide but also adopted as a customary practice, in which perceptions from the past are retained and transferred to the next system. In some cases, path dependency can adversely affect efforts such as those to develop and nurture new model farmers who are less reliant on local power structures or on their popularity. Further, because of path dependency, the disadvantaged groups of farmers such as the poor, the young, and the women continue to be marginalized under the AES. A pro-poor investment and development approach is lacking in Ethiopian agriculture. As a result, some farmers in study sites continue to live under precarious conditions such as chronic poverty and food insecurity (see Figure 9.1).

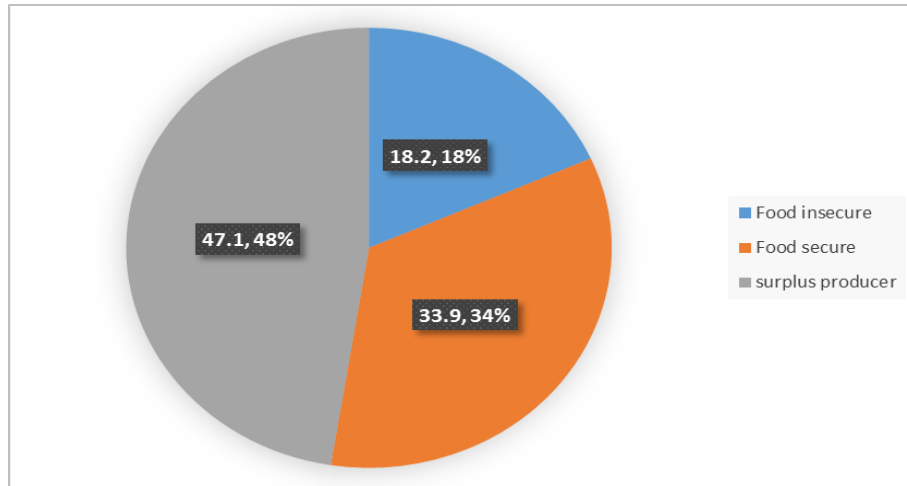


Figure 9.1: Characteristics of household food security in study sites.

Source: Household survey data collected by Gerba Leta (2015-2016).

Some legacies from the past are unintentionally nurtured and passed on to the present. Abate (2007) notes that under path dependency, traditions and practices cannot be easily changed and that some of the limitations in the current AES are linked to Ethiopia's past experiences. This strongly justifies the importance of understanding history and the practical application of the country's agricultural transformation plans. Some of the prominent dependencies in Ethiopia's agricultural extension that have been passed on to the present are as follows: (i) low farmer motivation to adopt and utilize technologies and best practices, (ii) diverse sources of commands to DAs, which is closely related to the implementation modalities which are centralized and command-driven, (iii) reliance of agricultural extension and rural development on routine success indicators, (iv) more focus on crop extension than other sectors of the agricultural economy, (v) lack of demand-driven research and extension, and dominance of technology supply-push, (vi) lack of integration between experts and local knowledge, low adaptation, and non-alignment of some technologies with the farming system and farmer interest or perception, (vii) reliance on model farmers, with the public agricultural extension system serving as the sole actor for providing extension services, and (viii) lack of staff amenities and an incentive system. I briefly discuss the different features of these dependencies below.

i. Crop production-related Path Dependency

The Bako-Tibe *woreda* is in the maize belt of the country (Leta *et al.* 2018a, 2017a), and maize technology has been widely adopted by the farmers. There is strong focus on maize production by the state and the smallholder farmers (Intr code no. 45, 2015). Mono-cropping is a legacy of agricultural intensification and specialization in the area. However, it impacts product diversity and the management of soil fertility. Maize production is a high input practice, where minimum tillage is additionally adopted and practiced by the majority of the farmers (Leta *et al.* 2018a). Minimum tillage involves the use of non-selective herbicides, such as glyphosate (roundup), every other year for weed control in stark contrast to *kebeles* in Yem (see Figure 9.2). It reduces the frequency of tillage, which is an advantage for poor farmers who do not have cattle. Unfortunately, organic soil fertility management practices, such as Farmyard Manure (FYM) and composting, are considered labor-intensive practices and adopted only by few *woreda* farmers. The increased supply of alternative inorganic fertilizers is considered the main reason for the reduced production and application of compost in Bako-Tibe *woreda*. In contrary farmers in Yem *woreda* highly use FYM and compost to grow their staple crop, the enset.

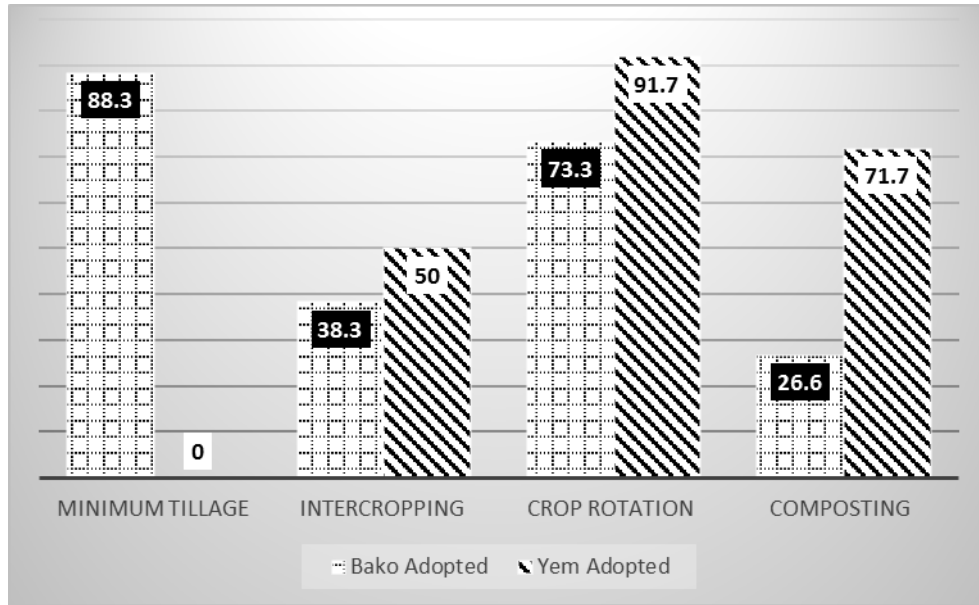


Figure 9.2: Farmers' technology adoption patterns in Bako-Tibe and Yem.
 Source: Household survey data collected by Gerba Leta (2015-2016).

Since the early 1990s, maize production packages had been promoted through demonstration and familiarization of the technology among farmers by the SG 2000. Following the introduction of combined maize extension package and skill training, SG 2000 was unable to deal with the growing demands for technologies and inputs from a large number of farmers (Intr code no. 42, 2015). Once a technology is suitable to the farming system and farmers' needs, it is promptly received and popularized. Accessibility to technology and the affordability of farmers influence its widespread adoption and use. Apart from agro-ecology, the location of the National Maize Research Center in Bako had a positive influence on farmer's access to and use of maize-related technologies. Farmer's receptivity and desire to collaborate in maize technology testing, through on-farm demonstration, has also increased its rate of adoption.

Similarly, in the wheat belt of the country, technologies/varieties that match the farming system and farmers' needs have been aggressively adopted. Thus, compatibility is another factor that assists the diffusion of technologies, including through social learning and the existing networks. For instance, the recently introduced *teff* variety, known as *Kuncho*, has been widely adopted in some marginal areas of the country because of self-driven farmer-to-farmer extension, social learning, and informal networks for activities such as borrowing seeds

and bartering of improved seeds with grain or other essentials. If a given technology matches the farmers' needs, it is easily adopted, provided it is accessible, affordable, and compatible with the farming system (i.e., offering high relative advantage compared to the land race or other varieties in use) (Rogers 1983). Compared to the past, input application for crop production has either declined significantly or remained constant, despite soil degradation and associated nutrient depletion. According to the farmers, these issues are attributable to the increase in fertilizer prices, declining output prices, and the inadequate training and awareness-building on the rate and frequency of fertilizer application.

The adoption of inorganic fertilizers has forced farmers to shift away from some conventional but beneficial cropping practices, such as intercropping and crop rotations, to a mono-cropping system. So far, the state has not complemented the introduction of new production packages with the promotion of post-harvest technology. According to the household survey, post-harvest technology, such as storage and product handling, has not been well received by the farmers, mainly because of the high costs of building modern storage structures (silos). This points to a lack of affordable storage technologies for subsistence farmers.

The core focus of Ethiopia's agricultural extension is increasing crop production and productivity. As a result, most of the available technologies are related to the development of crop varieties. Some crop-related technologies are incompatible with the existing farming system and farmers' needs. The failure to consider the alignment between a technology and the farming system or soil types is another legacy adopted from the past extension system. For example, in 2002, the Rainwater Harvesting (RWH) technology was introduced by the state for widespread application and upscaling (Awulachew *et al.* 2005). However, the non-selective introduction of the technology including to the high rainfall areas reduced its adoption. Recently, to increase production and ensure food security, the state has extensively recommended row planting of all crop types, including *teff*. This is an example of how crop production relies on technology introduced without farmers' participation; this could adversely affect technology adoption and upscaling (Hornidge *et al.* 2009). The tendency among farmers

to resist some improved technologies may attributed to such blind implementation of technologies/practices, without careful consideration of their technical complexity, relative advantage, and compatibility with the farming system and farmers' needs.

ii. Farmers' Low Technology Adoption and Utilization

The response to extension efforts is rarely uniform. Differences are bound to exist between adopters of technologies or best practices (see Appendix Table B4). According to an extension expert, in 2015, for example, 13.9 million farmers were categorized in to three wealth groups to facilitate their access to the extension services they demanded. The first two groups comprised better-off and moderately wealthy farmers, respectively, who could fully or partly adopt the technology packages, each accounting for 40% of the total population. The remaining 20% farmers belonged to very poor group of farmers who would never be able adopt or to access either technologies or agricultural inputs (Intr code no. 72, 2016). As long as such differences among the farmers persist, Ethiopia's agricultural extension services cannot be uniformly distributed and equally accessed by all.

Resistance to technology adoption is an expected challenge despite the persistent efforts made by public extension to create demand for new technologies/innovations. Demand creation and technology adoption also vary depending on farmers' academic backgrounds. The survey showed that most of the farmers in the studied *kebeles* were illiterate, while others had a very low education level (see Table 9.1). Illiteracy is thus a serious impediment to the introduction and adoption of new technology by farmers. An extension official at the MoANR shared that owing to the large number of illiterate farmers, uniformly expanding technologies within a short period of time is a challenge (Intr code no. 72, 2016). Illiteracy may limit farmers' awareness and therefore their interest in taking a decision. Further, extension actors' skill and commitment to helping farmers voice their demands is another unaddressed issue in agricultural extension.

Table 9.1: Education status of the respondents (n=120).

Respondent education	Count	Percentage (%)
Zero grade	48	40
2-6 th grade	35	29.2
≥ 6 th grade	37	30.8
Total	120	100

Source: Household survey data collected by Gerba Leta (2015-2016).

Apart from farmers' education and skills, the lack of financial capital; the size and orientation of their land parcel; and unpredictable rainfall distribution contribute to low adoption and use of agricultural inputs, particularly fertilizers and improved seeds. Another important reason for the underutilization of inputs is low output prices and shortage in the supply of technologies and inputs (von Braun and Olofinbiyi 2007). Although farmers in some parts of the country have generated surplus production, the underdeveloped market value chain limits their reach and debilitates their financial status. Low farmer interest in accessing and using technologies and inputs may also be linked to the soaring input prices, as the state does not subsidize agricultural inputs such as fertilizers. Moreover, access to technology is given in exchange for direct payments in cash. This has compelled resource-poor farmers in Bako-Tibe to replace main crops, such as maize that need high inputs, with secondary crops such as *Teff* or an oil crop known as *Nug*. Suspicions about the new technology also contributes to low farmer receptivity (Rogers 1983).

Non-availability of complete technology packages also discourages technology adoption among farmers. For instance, with row planting of crops, dearth of planters reduces the precision needed for sowing of seeds and diminishes the opportunities to optimize the yield, which is the primary objective of the technology. Other practical reasons for adoption failure include use of campaigns and enforced application, which eventually lead to fatigue among the end users.

Resistance to technology varies from *woreda* to *woreda*. In Yem, farmers widely considered resistant toward technologies. Fertilizer recommendations are widely and blindly practiced in the *woreda*. Such practices could negatively affect the state's extension goal of

boosting production and productivity, which in turn are based on the country’s development goals. For instance, in areas without running water for irrigation development, farmers are expected to plan for irrigation development and associated inputs. Farmers in the Yem *woreda* have been encouraged to dig deep wells for backyard irrigation during the dry periods (Intr code no. 49, 2015). However, farmers are resistant to the technology because of the dearth of labor and financial resources. In sharp contrast to Yem experience, farmers in the Bako-Tibe *woreda* are good technology adopters (see Fig. 9.3). Further, Bako-Tibe has more access to technologies than Yem. This has led to the growing use of inorganic fertilizers, mainly for monocrop maize production, in the Bako-Tibe *woreda*.

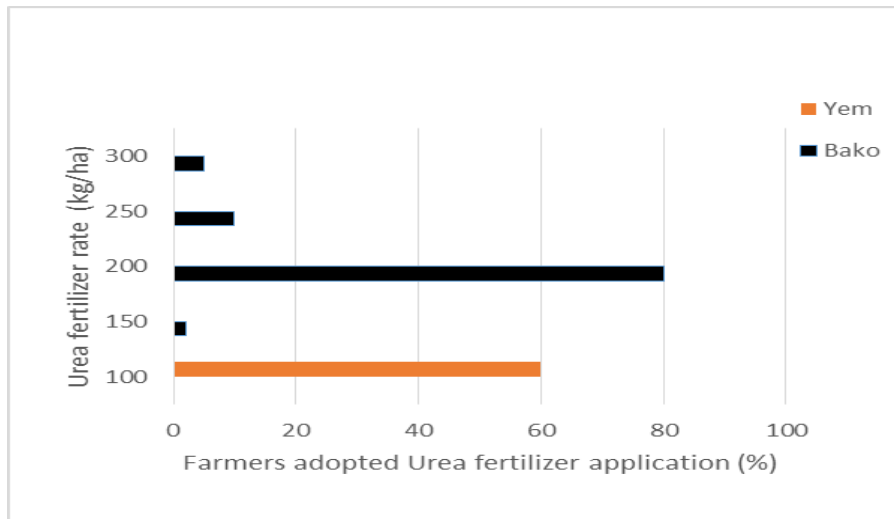


Figure 9.3: Use of urea fertilizer for maize production by *woredas*.

Source: Household survey data collected by Gerba Leta (2015-2016).

In SNNPRS, poor farmers access inputs, such as inorganic fertilizers, with aid from the regional in-kind credit service. However, despite such assistance, some farmers misuse the inputs and use less than the recommended rates of fertilizers (Inter code no 13, 2015). Others sell fertilizers at lower-than-market prices to generate temporary income for their subsistence needs. The risk aversion tendency of some farmers adversely affects not only technology adoption but also crop production. Climate change and unpredictable rainfall distribution are other natural factors that lead to low rates of fertilizer application. According to an expert, during an extended dry spell, farmers either avoid or reduce fertilizer use to mitigate the

projected risk of yield loss (Inter code no 13, 2015). Further, inconvenient technologies such as row planting of small cereal crops make farmers suspicious and resistant. Thus, the tendencies of lower technology adoption, are a legacy from the past that have been passed down over the years.

iii. Model Farmers: Key Actors in Agricultural Extension

According to a senior extension expert (Intr code no. 62, 2015), the formation of farmer groups in the PES was initially recommended by agricultural extension professionals. Further, the selection criteria for model farmers were carefully defined, so as to involve relevant farmers and inspire a generation of new model farmers. Suddenly, however, the task of model farmer selection has been entrusted to *kebele* administration and *sub-kebele* actors, and the formal selection criteria have been replaced with other locally defined factors. This perpetuates the past legacy of limiting extension actors' role in coordination and decision making. It also limits the opportunities to create new model farmers and retards the economic transformation of farmers from poor to a moderately or highly better-off status. Thus, most farmers who are labeled as model have been remained model for decades now (Leta *et al.* 2017a; Intr code no. 62, 2015).

The current agricultural extension services are centered on model farmers. Poor farmers are viewed by experts and the local administration as resistant to technology and responsible for the failure of piloted technologies/practices. Hence, the poor are largely excluded from the agricultural extension services. Another legacy from the past is the absence of a pro-poor extension system, which is inclusive of the marginalized groups of society. As in the past, agricultural extension in the present is designed to benefit the better-off farmers, whose farm plots are used pilot, and eventually transfer, new technologies. Thus, the voices of resource-poor farmers are never heard in the coordination of agricultural extension, as much of the attention is directed toward model farmers, who are expected to inspire their followers.

iv. Lack of Demand-driven Research and Extension

A focus on farmers' actual needs is missing from current research. In fact, much of the research in academia is conducted to help researchers earn their degrees than to address farmers' needs. Farmers are not practically involved in the problem identification exercise in either agricultural research or the extension system. Similarly, the extension of a given technology is driven by a top-down approach, without any acknowledgment or assessment of farmers' ground realities. Row planting of small cereal crop is among the practices that have been promoted, in a one-size-fits-all fashion, in all corners of the country. Most of the promises, based on research, communicated by the extension staff fail to deliver real results. This typically occurs because DAs, who are local actors/agents for assessing farmers' needs, are unable to satisfy farmers' requirements because of shortage of resources and supplies. Failure to deliver on the promises reduces the credibility and reputation of both the research and the development institutes.

v. Reliance on Routine Success Indicators

The implementation of agricultural extension is largely dependent on achieving quantifiable targets such as total work done, number of participants involved, and the length of community campaigns deployed. Impact and sustainability are not the immediate concerns in coordination of agricultural extension. Because of these approach, the envisaged progress, particularly in terms of impact, may be difficult to achieve during the plan period. For instance, retargeting a given micro-watershed just to meet the stipulated quota plan has been quick-fix solution used for many years—another indicator of path dependency (Leta *et al.* 2018a).

vi. Lack of Integration between Expert and Local Knowledge

In most cases, local knowledge is considered as backward and inferior (Intr code no. 13, 2015). It is rarely promoted by the existing AES and mostly used only to complement formal knowledge (van Assche and Hornidge 2015). Although Ethiopian agricultural extension is driven knowledge and technology, the efforts made to harmonize these with local perception and expertise are negligible. Apart from echoing the best practices of agricultural extension, no real attempts have been made to stimulate the development of new practices or promote the

adaption of new technology. According to van Assche *et al.* (2014) and Shtaltovna (2013), the top-down planning of technology transfer is a legacy from the past that limits actors' decision-making. Any mainstream technology recommendation that fails to acknowledge the perceptions and interests of the end users is likely to have an adverse effect on adoption and use of new knowledge.

vii. Diverse Sources of Commands for Development Agents

Agricultural extension involves multiple players who either promote or influence its implementation at the grassroots. This has led to the emergence of a characteristic feature of the system: diverse sources of commands (Leta *et al.* 2018a; 2017a). DAs receive direct orders from two main sources: the WOANR and the *woreda/kebele* administration (see Figure 9.4). Additionally, different *woreda* sector offices and the office of the ruling political party issue sporadic orders, related to socio-economic and political activities. Overworking the DAs, by asking them to comply with orders from diverse sources, is a legacy from the past that weakens the DAs' ability to effectively accomplish their main duties.

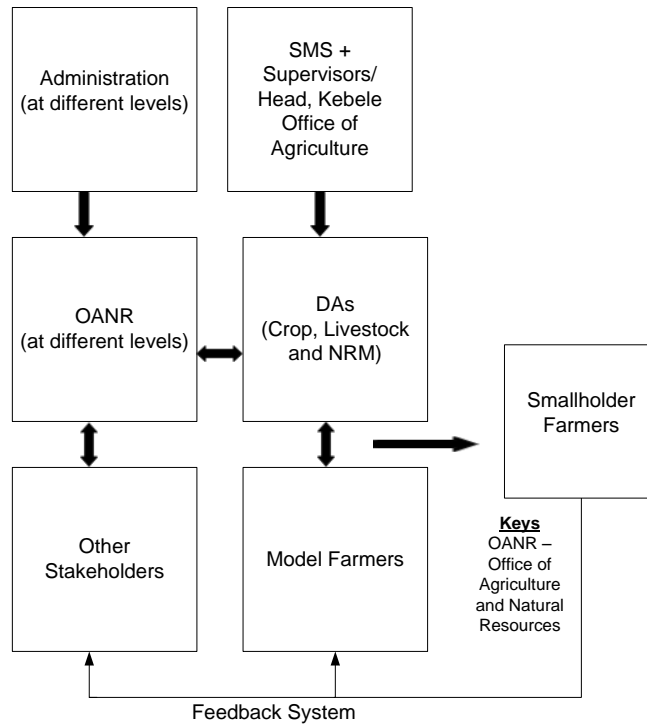


Figure 9.4: Source of commands (column I) and flow of technical supports (column II) to DAs and farmers.

Source: Author’s illustration, 2018.

viii. Lack of Staff Amenities and an Incentive System

DAs and other extension staff members strive to bring about behavioral changes in farmers and improve their livelihoods by providing skill training and technical support. However, the extension staff at different levels do not receive the motivation that they deserve. Lack of facilities is another bottleneck to the welfare of the extension staff. Staff members in their duty station have little access to logistics services (see table 9.2) and shelter. Compared to other *woreda* sector officers, extension staff members receive unattractive salaries, which reduces their commitment to provide services (Leta *et al.* 2017a). Moreover, most DAs view themselves as marginalized staff of the administration because of their workplaces, nature of work, and lack of facilities and benefits. Even *woreda* extension experts lack a defined career progression path (salary ladder unlike the DAs) or long-term training opportunities to upgrade their careers (Intr code no. 54; 55, 2015). This lack of inbuilt incentives for the agricultural staff at the grassroots reveals the continuing dependency of extension coordination on past approaches.

Table 9.2: Development agents' ratings for availability/access to logistics services.

Regions	Very adequate		Slightly adequate		Poor		Very poor	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Oromia	0	0	13	15.9	22	26.8	47	57.3
SNNPRS	0	0	5	6.2	22	27.5	53	66.2

Oromia (n = 82); SNNPRS (n = 80)

Source: Unpublished data, MoANR extension directorate (2015).

9.2.2 Interdependency

Interdependence is a prerequisite for the reproduction of governance (van Assche *et al.* 2014). It is also argued to play a role in the interaction between actors, institutions, and between actors and institutions. For several decades, DAs and model farmers have been the key local actors collaborating to transform the agriculture and rural development scenario of the country. Since 2010-2011, with the introduction of the PES, a new system of agricultural extension services has emerged, wherein development team leaders, trained by the DAs, are responsible for extending extension services to the large majority of farmers. The Ethiopian government has adopted the PES mainly to increase the extension coverage via an upscaling approach and to enhance farmers' connections with the model farmers residing close to them. According to Lefort (2012), the ratio of DAs to farmers is 1:476. Thus, it is almost impossible for three or fewer DAs of a *kebele* to reach out to all the farmers. Hence, the state has attempted to devolve the role of DAs partly to model farmers. However, my empirical research shows that model farmers have been inconsistent in fulfilling their responsibilities in the study *woredas*. While some attempts were still under way at the time of the field study in Yem, in the Bako-Tibe *woreda*, the role played by model farmers was insignificant. This is a symptomatic of weak interdependence between the actors, with model farmers contributing less than expected to the DAs' tasks (van Assche *et al.* 2014).

NGOs have played a significant role in Ethiopia's rural development and agricultural extension, though their interventions geographical domains are limited to a few pocket areas

for a finite number of years. In the Bako-Tibe *woreda*, SG 2000 was a potential partner to the agriculture and rural development office. SG 2000 provided technical knowledge to both the agricultural extension actors and the farmers through on-farm pilot projects such as the maize extension package. It also encouraged minimum tillage practices using agro-chemicals, such as glyphosate (roundup), to manage weeds and reduce soil disturbance in land preparation. The experience of SG 2000 was replicated by the agricultural extension actors and farmers. It is a reliable model for promoting technologies at a larger scale and to wider beneficiaries. The adoption and application of the SG 2000 example by agricultural extension actors can be considered a case of positive interdependency. Because of such positive influences, farmers in Bako-Tibe are more open to welcoming new technologies or practices than farmers in Yem. According to Beunen *et al.* (2015), interdependency depends on the linkage of different governance paths. Currently, the AES is replicating the program that was piloted by SG 2000, and farmers are still grateful to it as they benefited from the pilot project in the mid-1990s (Intracode no.0001, 2015).

9.2.3 Goal Dependency

As argued by van Assche *et al.* (2014), goal dependence is “the influence exerted by constructed futures.” Envisioning the future with the assistance of plans, policies, and public discourses can lead to unexpected outcomes. Following Ethiopia’s adoption of the universal millennium and SDGs, the aim to achieve certain predetermined targets has pushed country toward the formation of new actors and institutions. Development plans, aimed at meeting the state’s expectations, are centrally developed and disbursed to *woredas* by the federal and regional bodies. Thus, the proposed future has prompted actors to develop ambitious plans in the present. To implement these plans, for instance in the case of agricultural extension, group extension approaches, such as social mobilization, are simultaneously designed and adopted. Accordingly, farmers have been enlisted for the implementation of extension services via the *kebele* administration and formal and informal institutions (Leta *et al.* 2018a). Thus, efforts in

the present are motivated by the vision for the future for Ethiopia, which includes achieving the status of a middle-income country by 2025.

Such plans—to achieve certain living standards or an economic status—could impose pressure on the current actors and institutions. Further, the planned measures and strategies for its implementation tend to change in view of the long-term vision of the country. For example, institutions such as *nikinake*, which have been used to engage the community in WSM, do not feature in the conventional actor-institution configurations. Similarly, for crop extension, farmers have been motivated to adopt technologies and use inputs, but these are not in line with the demands and affordability of most farmers. Rather, they are determined by the quota assigned in the top-down system of planning and implementation. Not surprisingly, the success of an extension intervention varies according to a farmer’s income status, level of awareness, and the desire and capacity to implement.

The ambitious quota targets assigned to *woredas* and *kebeles* elicit and promote false reporting, which weakens the credibility of the information produced by agricultural actors at different levels. Since the performance evaluation and promotion of DAs depend on the achievement of quota plans, ambitious plans, rooted in future targets, lead actors to misreport data. As remarked by van Assche *et al.* (2014) and referred above, however, “goal dependence does not only include plans and policies, but any form of shared future envisioned in the governance process.”

Strategic plans based on a future vision often do not consider the resources (human, natural, and financial) needed to achieve the targets. Hence, most activities are not successfully accomplished. Failure to achieve the development goals also stems from goal dependence, which forces actors, such as the policy makers and planners, to set targets that cannot be achieved during the stipulated period. The influence of implementing ambitious long-term vision generally leads to undesirable consequences.

Therefore, in addition to path dependence, extension coordination in Ethiopia is also influenced by goal dependency. However, the currently projected future is loftier than that of

the past. While the *Derg* military regime promoted the goal of self-sufficiency in food, the EPRDF hopes to realize a market-based economy to achieve food security, sustainable growth, and reach the status of mid-income country by 2025 by pursuing its long-term goal of ADLI (BMGF 2010). To reach its goal, the state is determinedly pursuing a top-down approach. As indicated earlier, to realize the vision, new actors and institutions have been adopted. However, the configurations are likely to lead to unexpected outcomes (van Assche *et al.* 2014). Thus, the current images of the future may also influence the upscaling initiatives of the PES. However, understanding goal dependencies, using the EGT, could potentially mitigate the mismatch in the co-evolution of actors/institutions. This could eventually prevent policy makers and planners from developing and implementing imprecise policies and plans across the board (van Assche and Hornidge 2015).

9.2.4 Path Creation

Van Assche *et al.* (2014) argued that while dependencies can introduce *rigidities*, they can also “leave space for *flexibility*, for *path creation*.” They further elaborated that *path creation* is partly the result of the spaces for contingency and freedom built into the governance system. For instance, in goal dependency, the vision for the future is undoubtedly influenced by the interaction and co-evolution of actors/institutions (van Assche *et al.* 2014). This not only highlights the inseparability of the future vision from the actors and institutions but also builds on their configurations. In path dependency, however, policymakers persistently use past knowledge, expertise, actors and institutions and their interplay as benchmarks to design new policies and recruit actors for coordination. This is one of the ways in which each dependency plays a role in governance, while simultaneously paving the way for its slow modification (van Assche *et al.* 2014). As the state consistently strives toward realizing the future vision of agricultural extension and rural development, an overlap of path and goal dependencies is inevitable in governance evolution.

As argued by van Assche *et al.* (2014), in governance, positive interactions between the dependencies can create *flexibility*, which eventually leads to *path creation* or “reform

options”—a term used in this thesis. Apart from the interplay between the three dependencies, unforeseeable contingencies and the effects of external shocks could also produce paths or reform options in rural development and agricultural extension. It further unfolds that when the interplay between the three dependencies yields no effects or remains stable, each dependency can be considered as an aspect of *rigidity* in the governance path (see Figure 9.5). Therefore, unexpected consequences can emerge from the *flexibility* of interactions, possibly leading to *path creation* or reform options in the case of AES. Apart from the interplay between dependencies, interactions between actors/institutions and power/knowledge configurations could also be the potential reasons for *path creation*. In general, in the evolution of agricultural extension, the positive interplay between dependencies, contingent events, external shocks, internal influences, co-evolution of actors/institution and power/knowledge etc., could trigger *path creation* or potential reform options in agricultural extension. However, a reform option is not what the state deliberately strives for. It is an unexpected consequence of the interactions between dependencies and other external as well as internal influences in the governance path.

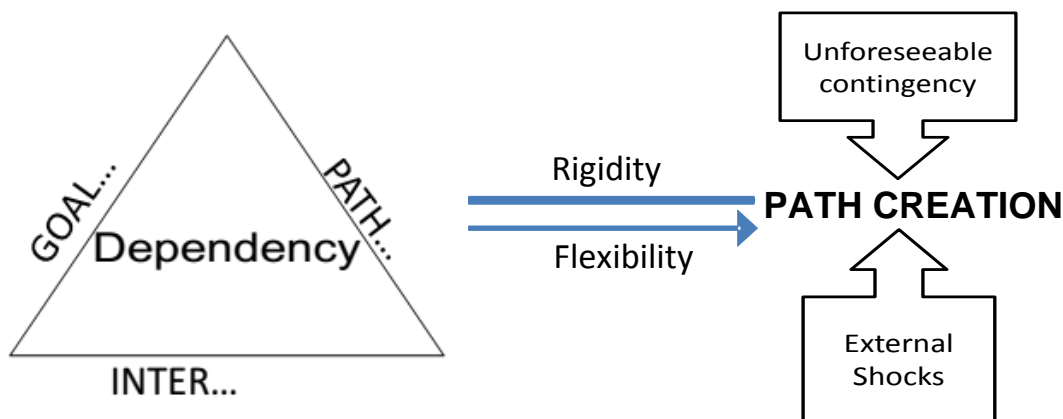


Figure 9.5: The forms of dependency constitute rigidities (resistance to change) in governance evolution as well as leave space for flexibility, an aspect of path creation.

Source: Author Illustration.

It is important to note that substantial efforts have been recently made toward promoting rural development in Ethiopia. Multiple integrated initiatives such as rural roads and rural electrification are being jointly financed by the government of Ethiopia, donors, and

international financial institutions. These initiatives are steered by the growing national interest in integrated rural development, which includes agricultural extension. They subtly contribute to alleviating some of the issues faced by the farming community. For instance, the development of rural roads has improved farmers' spatial and temporal access to agricultural inputs, such as fertilizer, as well as output markets. Similarly, efforts are underway to modernize the agricultural extension services system by introducing an information hotline (ATA, 2014) and developing network services to improve communication with and access to extension services.

Influences from adopted external institutions such as *nikinake* and internal factors can either accelerate or retard *path creation*. Some of the factors catalyzing the reform process in Ethiopian agriculture include population growth, rising urbanization, emerging relatively high incomes and standard of living. They have triggered new demands for varieties of products, of different qualities and quantities. Such unforeseeable circumstances have positively influenced and contributed to transitions such that those seen in livestock development, where the state has consciously focused on dairy development, poultry production, fishing, etc. Such growing internal influences or interests can push the state to consider the emerging needs as causes or reform options for transforming rural development and agricultural extension. Although not directly linked to my case study on agro-ecology, the growing interest in industries: beverages, food, and export crops has also influenced the course of extension, by bringing specific commodities into the spotlight as well as the related extension services. For example, the growing demand for agricultural products, such as vegetables and fruits, has prompted extension planners and farmers to pay attention to irrigation development. Such contingencies or unforeseen internal and external influences lead to new paths or reform options for diversifying extension services and the benefits accruing from them. However, not balancing the interests of actors/institutions or implementing abrupt transition measures may yield unexpected negative consequences. For the community to reap and enjoy the benefits of *path creation* in agricultural extension, well thought-out organizational reforms are needed, especially those that are targeted at changing the mainstream course and promoting new activities.

The change process should be managed such that negative consequences and the common pitfalls of AES are avoided. Despite the introduction and adoption of various new ideas or development approaches, planning and implementation in Ethiopia suffers from path dependency and continues to remain in a state of *rigidity*. *Path creation* can be influenced either positively or negatively by external or internal factors as well as unforeseeable contingencies. Understanding and avoiding the visible or prevailing irregularities of the past legacies could foster innovative reform options in rural development and agricultural extension. Robust groundwork is needed to root the initiatives in practice and reinforce the harmony within the actors/institutions on the one hand and the prevailing agricultural extension services on the other.

Although reform options are typically not aligned with the interests of the state, well-planned and well-fitted actors/institutions and power/knowledge configurations could optimize *path creation* and lead to reliable and sustainable outcomes in the sphere of rural development and agricultural extension. Apart from the main motives to reduce poverty and ensure food security, reform options for the Ethiopian agricultural extension could become effective, productive, and sustainable if the extension strategy is supported by a market-oriented intervention.

In the current scheme of rural development and agricultural extension, strengths, limitations and reform options can also be viewed in relation to the co-evolution of actors/institutions and power/knowledge configurations, as briefly discussed in the following section.

9.3 Actors/Institutions and Power/Knowledge Configurations

9.3.1 Configuration of Actors/Institutions

In the Ethiopian AES, with the evolution of governance, actors/institutions; their structure and interactions; the roles they play; and the nature of community participation have changed over time. According to van Assche and Hornidge (2015), “each governance path implies a different destination, a different model of governance and a different form and role of expertise in governance and its transformation.” As part of the recent version of the AES, the MoANR has launched and adopted the PES (Leta *et al.*, 2018, 2017a). DAs and model farmers are the key local actors supporting the implementation of PES (as institution) and transforming the agricultural extension and rural development of the country. To coordinate the activities of agricultural extension, a web of players/actors are involved from different organizations: public agriculture, state administrations at different levels, universities/colleges, research institutes, public and private enterprises, cooperative agencies, farmers’ cooperatives, NGOs, and microfinance institutes. At the *kebele* level, actors’ participation in agricultural extension and rural development is represented by DAs and model farmers. That is, model farmers represent other farmers in the coordination of agricultural extension. In fact, because of their involvement in various activities, model farmers are seen as proxies of the ruling political party as well as the main beneficiaries of the existing institutions. They receive skill training, awareness, technologies, and agricultural inputs. They are also recognized as the local elite, who serve as a link between the state and the majority farmers as well as facilitate and host on-farm technology demonstrations to promote upscaling. The DAs, on the other hand, function both facilitators and coordinators to meet the PES goals. Both the actors—DAs and model farmers—are involved in multiple agricultural and non-agricultural activities, which sometimes negatively affects their credibility among farmers (Leta *et al.* 2018a). Further, their intensive engagement in various non-extension activities weakens their effectiveness in the provision of agricultural extension services (see table 9.3). According to the findings, about 75% of the interviewed DAs spent more than 25% of their time in non-agricultural extension activities, though, more critical in Oromia.

Table 9.3: Proportion of work hours DAs spend on non-agricultural extension activities.

Regions	Up to 10%		11-25%		26-50%		51-75%		>75%	
	Count	%	Count	%	Count	%	Count	%	Count	%
Oromia	2	2.5	15	18.5	38	46.9	15	18.5	8	9.9
SNNPRS	19	25.3	19	25.53	19	25.53	6	8	3	4

Oromia (n = 81); SNNPRS (n = 75)

Source: Unpublished data, MoANR, extension directorate (2015).

According to van Assche and Hornidge (2015), actors and institutions shape each other. In the PES, the functions of formal institutions have been transferred to informal ones to compensate for formal system's weak actors/institutions configurations. This transfer was also motivated by farmers' lack of awareness, interest, or enthusiasm in putting the PES into effect. Studies also highlighted the continued importance of informal institutions in the functioning of the formal system (van Assche *et al.* 2014; van Assche and Djanibekov 2012). Ultimately, there is no formula for the roles of actors/institutions in coordination; unexpected linkages or outcomes may emerge in the process of transforming the coordination toward the envisioned destiny. Moreover, importing and adapting knowledge or the development approach to the local context can also lead to unexpected outcomes. This is because development is not limited to implementing some form of institutional structure that has evolved somewhere else (van Assche and Hornidge 2015). In Ethiopia, the current implementation of the PES is not in line with its initial objectives of fostering collective action, upscaling of technologies and promoting adaptation to the changes induced by the system. This has resulted in weak co-evolution of actors/institutions in the coordination of the adopted extension system. However, extension and rural development are always in the process of evolution, being shaped by the positive interaction of path, inter and goal dependencies.

9.3.2. Power/Knowledge Configuration

The state through its power either persuades or compels farmers to adopt and implement new technologies. Van Assche and Hornidge (2015) argue that governance cannot be conducted in a

power-free environment. They further add, in evolving governance, power is understood as the fuel of governance. Knowledge is equally vital to the transformation of agricultural extension and rural development. As Ethiopian agricultural extension relies mainly on science and technology, adoption and upscaling of technologies are expected to improve productivity and ensure food security for the growing population. In line with these key objectives, the state has created opportunities for skill development of the community, allowing practitioners and implementers to access knowledge through the appointed actors and institutions.

In agricultural extension, the model farmers are not only early adopters and risk takers but also groups highly favored by the country's agricultural policy because of the power relations. The state also trusts model farmers for two main reasons: firstly, they act as technology-demonstrating agents to the majority of the farmers, and secondly, most model farmers are economically better-off and respected within the community; as a result, they are politically resourceful to the state. Model farmers are the key allies of the *woreda* and *kebele* administrations, government organizations, and NGOs. In return, they receive skill training from different sources; access various technologies, such as trial seeds, free of charge along with other farm tools, such as water pumps for irrigation development; and enjoy better credit services than other categories of farmers. Thus, a model farmer's access to agricultural extension knowledge is economically empowered and recognized by the state as well as the community. Further, at the grassroots, model farmers are the leaders of development teams as well as the *hiwas* in a village, which are nested by the ruling political party under each *ketena* of the *kebeles*. Thus, model farmers are the leaders of the socio-political and economic spheres and therefore enjoy the power/ knowledge configurations.

Essentially, model farmers have two sources of power: (i) authoritative power that helps them enforce the implementation of agricultural extension, and (ii) the power gained through continuous exposure (knowledge) and public recognition within the community (status). Model farmers access (a) knowledge through skill training, (b) economic opportunities through new technologies or inputs, and (c) allowances during various meetings and experience-sharing opportunities. What is recognized as knowledge shapes the shifting power relations and the

privileges that allow some actors to access and use the insights derived from the knowledge (van Assche and Hornidge 2015). In summary, the benefit from power/knowledge configurations is often associated with knowledgeable individuals or the so called rural elites, which essentially excludes the direct access/participation of the majority. It would not be wrong to say that the power/knowledge configurations in the coordination of agricultural extension and the benefits from their interactions is associated with domination or favoritism. As a result, the transformation in agricultural extension and rural development has not been equally enjoyed by all the end users.

9.4 Conclusion

As seen above, dependencies should not be viewed exclusively as constraints based on the unexpected consequence they might separately poses in the governance paths. In fact, knowledge of the governance paths in AES can help planners understand the aspects relevant to the formulation of a new policy or to the modification of existing ones in line with the changing reality. Similarly, the vision of the future, triggers the state to set ambitious plan that forces the community at large to introduce prompt, tangible and measurable changes in development. However, positive interaction between dependencies may lead to unanticipated positive consequences which is a reform option such as enabling community adaptation to emerging changes, growing community needs, and environmental concerns.

However, the aspect of *rigidity* experienced in governance paths can trigger the use of one-size-fits-all approaches particularly in setting plans, issuing quotas, and imposing implementation. Such paths tend to evoke resistance or weariness among the end users. Or they discourage the desire to address the dynamics needs of the nation's agricultural and rural development sectors. Whereas, the beneficial interaction between dependencies, such as a *flexible* approach in line with the perceptions and interests of the community coupled with a practical strategy, which aligned with the needs and knowledge of the actors, could lead to *path creation* or reform option that enhance reliable future outcomes. In contrast, harnessing static actors/institutions and power/knowledge configurations, carried over from many

regimes, may perpetuate the *rigidities* that retard the evolution of governance. The influence of past actors/institutions and power/knowledge configurations may stimulate inert mobility in governance paths, leading to adverse effects, passing via the present, on to future outcomes.

Substantial efforts have been invested by the government of Ethiopia to achieve a breakthrough in agriculture extension and rural development. However, these efforts have been constrained by multiple internal and external factors. Among these are the state's development approach and the lack of human and financial resources. Similarly, despite efforts to create new paths by reforming the existing actors/institutions and power/knowledge configuration, the co-evolution of these forces has failed to meet the anticipated goals.

Thus, insignificant progress has been attained despite changes in governmental regimes and recurrent institutional reforms. While it is a common practice to use previous actors/institutions and power/knowledge configurations to build new knowledge, in Ethiopia's case, the past configurations are so strongly embedded in the current approaches that characterize AES by extensive path dependency. The narratives of unsuccessful attempts in the past are reminiscent of a path dependency, which includes coercive elements and the unnecessary formalization of informal institutions to address local administrative incompetence.

Thus, external influences and unforeseeable circumstances as change agents have not been very effective in bringing real anticipated changes. As a result, *rigidity* has become the dominant aspect influencing the reform options through dependencies. *De facto*, the introduction and adoption of such as public mobilization efforts may have an impact in mobilizing labor across the country. However, its effect and sustainability depend on the context and the application methods. A promising outcome largely depends on the state's interest and awareness, and the motivation of the public at large. Thus, the success or failure of mobilization efforts is unpredictable across various sites in the country, and this magnifies the path dependency associated with the unreliable extension services.

Moreover, farmer participation, in reality, does not enable the farming community to be involved in setting its own agenda. Similarly, the conceptually sound notion of decentralization

is limited to financial disbursement among *woredas* to facilitate administration and the provision of public services. Collective decision making and inclusiveness within extension and rural development continue to remain a part of the state's public rhetoric. In practice, community involvement is restricted to quota planning. Instead of steering their own organically formed farmer groups, farmers have to accept the grouping system thrust upon them by the top-down system of state administration, in the name of real learning and change for all farmers.

However, understanding the governance paths in agricultural extension and rural development can possibly prevent policymakers from setting unachievable targets, which necessitate the use of enforcement, and other coercive means for achieving the shared quota. Proper understanding of the available resources (such as human, natural and financial capital) can also guard policymakers/planners from developing exaggerated short and long-term plans, typically based on inadequate expertise, unreliable data, little information, or knowledge gaps. Thus, actors and the state could be saved from generating false reports, a common problem in Ethiopian agriculture that stems from the desperation to achieve the ambitious goals. For instance, the state's excessive pursuit of certain goals, particularly food security, has accelerated the use of scientific knowledge, expertise, and technologies. However, it has eventually led to excessive use of inputs, such as inorganic fertilizer and other agrochemicals, to promote minimum tillage and pest and weed management. Excessive and improper use of agrochemicals can cause environmental pollution and widespread health hazards as their use may not be backed by adequate awareness among the communities, particularly the necessary safety precautions in the present extension system.

Moreover, a shift in farming practices is also an inevitable outcome; for instance, mono-cropping has been systematically encouraged by agricultural extension in place of mixed and/or intercropping. The currently promoted *cluster*-based agricultural extension approach is expected to intensify mono-cropping practices and high-input agriculture. However, lack of crop diversity and improper land use/management resulting from the process of intensification and specialization could deplete soil chemical properties and increase the occurrence of

disease, weeds, and pests outbreak. Such practices run the risk of deepening farmers' reliance on agricultural inputs, which, in turn, are accessible only to select better-off farmers. Among other risks, one can anticipate risks of crop failure because of natural or anthropogenic factors. As smallholder farmers need diverse crops to meet the nutritional needs of their households, the goals set by national or regional actors/institutions should consider the interests and perceptions of the farmers to ensure sustainable production and a functional ecosystem.

Chapter 10:

Conclusion and Recommendations

In this thesis, I have broadly analyzed the Ethiopian AES, with a focus on the case study areas and recently adopted and currently operational PES. I have examined the general evolution of agricultural extension; governance paths and dependencies; the features, challenges, and opportunities of the PES; and its overall implications for knowledge and technology transfer to the end users. As I began my career as an extension worker, this thesis gave me the opportunity to compare the agricultural extension services system of the past with its present-day version. In fact, my experience as a research and development practitioner with several national and international research, and development organizations has allowed me to closely observe the agricultural extension services, and how they operate in Ethiopia. Today, this enables me to have a clear and up-to-date understanding of the AES. The agricultural extension service in Ethiopia is entirely operated by the public sector, with support from some small and scattered donor-supported or project-based NGOs as well as a few emerging commercial seed farmers and suppliers. Apart from the agriculture and natural resources offices, several state players also contribute in one way or another to agricultural extension and rural development.

According to me, the main goals of the AES are to increase food security, reduce rural poverty, improve farmers' livelihoods, and promote the sustainable management and use of land resources. However, the actors involved in the extension are engaged in multiple activities, some of which could discourage the farmers' interest and motivation to be involved in technology adoption and upscaling—the routine rhetoric of the state and its bodies at different levels. At the crux of my observations is the involvement of DAs and the model farmers in the socio-political and economic activities of the rural community. It seems that the moniker “development agent” is being used to describe the generic role they play, not only in agricultural extension and farming-related activities, but also in rural development and governance. I learned that the DAs' participation in multiple activities, and especially those

specified by the state, instead of working purely in an advisory capacity has damaged their reputation and trustworthiness in the community.

Further, the DAs' involvement in numerous activities could distract them from performing their key role of providing extension services, which is in sharp contrast to extension workers in the past who focused on specific activities based on their employing organization's mission and goals. As a result, DAs are playing a limited role in farming-related activities. Besides, they also seem to suffer from incompetence and have highly specialized backgrounds, which ultimately could not be able to solve the farmers' immediate concerns and their actual interests including in areas of their specialization. This tends to reduce the overall effectiveness of the extension services system. Their ineffectiveness in raising farmer awareness and prompting behavior changes necessitates the state to exercise its power in looking for an alternative approach to achieve the national strategic goals and plans that have been designed in a top-down manner. Hence, as formal coordination does not effectively address the urgent need for rural development and agricultural extension, the state employs group extension and social mobilization to allow community participation in seasonal extension activities, so as to collectively fulfill the objectives of the national plan that has trickled down from the center. Therefore, participation is considered as a core concept, particularly in the PES. Nationally, it is acknowledged as an appropriate approach to adopt and practice in agricultural extension and rural development activities. In reality, however, a classical technocratic approach, which views farmers as recipients and the extension system/actors as providers, persists as the main method of knowledge and technology transfer.

The concept of participation is essentially used as an ideological tool or catchphrase in the state's rural development strategy for the survival of the system, while the beneficiaries have never felt like they have real ownership, particularly in some communal development endeavors. This has an implication on the sustainability of the agricultural extension and rural development initiatives. From the perspective of EGT, participation and collective action in the PES are phrases from the past, left behind as a legacy of the socialist collectivization system. In reality, they underpin the rhetoric of the community's voluntary involvement through

campaigns in communal activities like NRM. The concept of participation has been technically associated with enforcement that is widely exercised by institutions under the guise of being participative. Obviously, labor-intensive and common activities like NRM certainly demand collective action, provided the necessary awareness has been raised and rapport has been built between the public actors and the community. A lack of such steps has resulted in pervasive adverse effects on the adoption of technologies and other extension activities.

Activities that are a combination of socio-political and rural development, such as tax collection, engaging in health extensions, and any seasonal agricultural extension skill development programs that mainly take place through social mobilization forums, could certainly trigger fatigue in the community. Although participation is designed to foster a bottom-up approach to development, the widespread prevalence of the top-down approach to technology and knowledge transfers, which, according to the EGT is an inheritance from the past, has halted the proper application of the new AES.

Participation and collective action are supposed to align with a proper decentralization system and the *woreda* actors' joint planning and implementation capacity with the target groups, but this is poorly executed at the local level. In most areas, therefore, forced participation is considered a constraint to rural development. The technical inefficiency of the practitioners/actors owing to a lack of pertinent knowledge about the activities they are meant to perform and a shortage of necessary inputs along with intervention technologies/practices, are considered among the reasons for these predominant limitations. These issues have had a pronounced cumulative effect on the adoption and upscaling of technologies and best practices in the PES.

The regional state and BoANR are the key drivers of the implementation of the PES in the *woredas*. As the main local actors involved in agricultural extension and rural development, apart from being responsible for providing extension services, the DAs serve as the link between "the state" and "the farmers." Model farmers, on the other hand, are key actors in the demonstration of new technologies or best practices for upscaling. Regardless of their technical responsibilities in the extension activities, both model farmers and the DAs are involved in

multiple non-agricultural extension activities as well. As highlighted earlier, their involvement in multiple activities reduces their effectiveness and trustworthiness among the farmers, eventually making them ineffective.

The demand side of agricultural extension—the input plans and delivery system—is not only based on farmers' demands but also on the previous year's achievement records and a combination of actual farmer needs and the quota plans transmitted by the regional authorities to the *woredas* and *kebeles*. Therefore, the *woredas* are less decentralized in the development of their own implementation plans and cannot make decisions, which is a critical structural problem in the AES. The *woreda*, therefore, remains dependent on top-down quota plans. As mentioned earlier, farmer participation and decision-making in agricultural extension is extremely low in practice. Thus, the decentralization of the extension system has not been well nurtured and promoted such that it can support bottom-up planning and ensure real farmer participation.

Recently, the MoANR reformed the ADPLAC to make participation inclusive to all partners involved in agricultural extension and rural development. Previously, potential partners such as NGOs were not properly engaged. The reform was therefore considered vital to promote inclusive participation and stakeholder interaction. Besides, it was intended to improve the partners' accountability, efficiency, and effectiveness in linking the research-extension-farmers with other development actors. Thus, it is believed to integrate efforts from different sources with the aim to resolve farmer problems in agriculture. However, efforts to strengthen the links between actors, and actors and institutions to promote partnership and collective action remain a serious challenge. Basically, functional advisory council and stakeholders' interaction believed to enhance the efficient utilization of expertise and resources, and reduces the duplication of efforts, which can currently be seen in agricultural extension and rural development. The lack of a sustainable budget from the core state treasury for the past several decades has been another limitation to the ineffectiveness of the ADPLAC, whose effects can be considered as a path dependency.

Under the umbrella of the MoANR, regional states and *woredas* have adapted the PES and its implementation approach to their own contexts. Accordingly, the agricultural extension staff structure, evaluation system, and implementation modalities vary from *woreda* to *woreda*. These distinctions could either be beneficial or pose a challenge to the actors at their stations of duty. Further, unclear and diverse sources of commands channeled to the DAs impact their effectiveness. Additionally, as the *kebele* administration is not institutionally strong, DAs as local public actors are compelled to engage in multiple activities, which depletes their effectiveness and credibility among the end users of the extension services. Hence, their involvement in non-extension activities such as political chores, adult education training, etc., is not uncommon, which is a legacy from the past regime. Despite their involvement in multiple activities, they are poorly incentivized, furnished with poor infrastructures, and hence less committed to providing extension services.

Alongside emerging opportunities such as human development; the state's growing emphasis on agriculture; increased investment and extension coverage; improved farmer access to skills, technologies, and inputs, there remain numerous other challenges to agricultural extension. The main constraint is the policy and implementation approach that has been sporadically reformed and issued for implementation at a larger scale. Often, the new modalities for the intervention are imprecise by virtue of being neither contextualized nor translated into practical application. New development concepts or technologies are also sporadically introduced for implementation. In the agricultural extension services system, the disadvantaged groups of society, such as the poor, the youth, and women, do not receive enough attention. In the study *woredas*, the PES and associated farmer groups formation have not been fully operational in line with the original motives of promoting collective action, joint learning, and adaptation to changes introduced by the PES. Rather, they serve mostly as a platform for political dialogue, community mobilization and deployment in campaigns, security surveillance, and local conflict resolution.

Politics and agricultural extension are also inseparably linked. The AES is therefore used as a tool to strengthen state-farmer ties. The state relies on the AES to maintain its rural

presence, secure a strong support base, and strengthen its presence among the farming community. The massive efforts and investments made by the state have not yet addressed both the short-term and long-term goals of the country. Thus, food insecurity remains a seasonal challenge among some inhabitants in the study *woredas*. From the lens of the EGT, a reliance on imported ideas and technologies with poor efforts to adapt them to local interests and perceptions, knowledge of agro-ecology, farming systems, and the needs of the end users have an impact on tracking the evolution and governance paths in agricultural extension and rural development. Agricultural extension largely emphasizes crop production, regardless of the importance of diversification as an alternative means of livelihood to smallholder farmers. Technology transfer is also fashioned and adopted as the only good approach to extension. Despite the persistence of technology transfer as an alternative extension approach, end users have limited access to technologies or inputs they need, such as improved seeds. Similarly, the farmers' growing need for product markets and customer satisfaction has still not been met.

Access to the services and the benefits from them accrue to a selected few individuals who can afford to access the technologies and inputs. Further, under the PES, a few model farmers, who serve as development team leaders, are tasked with demonstrating technologies or best practices to their own followers to promote upscaling. In practice, this strategy has proved to be ineffective in the studied *woredas* and *kebeles*. The sole beneficiaries of this strategy are very few portion of the model farmers themselves, who can access technologies and agricultural inputs without much investment. Thus, the current extension services are characterized by inequity, where a few better-off farmers enjoy privileged access to knowledge, power, and services whereas the majority are left to their fate and the market forces. Low output prices in the face of increasing agricultural input prices is another obstacle to farmer participation in extension and adoption of technologies. Public mobilization enforced through institutions also makes limited contributions to training, knowledge acquisition, and sustainability of collective actions. In fact, it promotes suspicion as path dependency, reminding farmers of the coercive and clumsy system adopted by the *Derg* military regime.

To mitigate such prevailing issues in extension services system, most farmers rely on their social networks and personal interactions for learning, access to and adoption of new technologies, and sharing of best practices. Social learning has thus served as a coping mechanism for farmers who have been side-lined by the extension services. It has also helped reduce the growing systemic inequalities between different categories of farmers in terms of access to and uses of extension knowledge and related resources. Thus, smallholder farmers' access to extension knowledge can be improved.

Based on my empirical findings, I suggest that having a systematic and inclusive national strategy for the AES and a long-term strategic vision with political commitment to achieving clearly defined goals can help provide effective and equitable extension services based on farmers' needs. The importance of opening spaces for pluralistic extension services is required to give farmers access to demand-driven services such as access to competitive and pertinent extension services. Improving the decentralization and decision-making capacity of the *woreda* could enhance staff commitment, accountability, and participation at different levels. Additionally, making the decentralization more effective by building the capacity of actors at various levels could improve their planning capacities and ensure farmer participation as well as the development of a sense of ownership of the development interventions at the local level.

The introduction of new extension systems or technologies as part of economic cooperation needs to take into account the traditions and felt needs of the end users. Therefore, it is vital to adapt them to the local context instead of directly adopting any model as it arrives. Since the Ethiopian government's capacity to independently finance its development interventions, including the agricultural extension activities, has been improved, the decision to not introduce new models for adoption as they are needs to be nurtured in favor of inspecting the sustainable benefits of newly introduced approaches and technologies. Considering all the merits of newly introduced approaches and technologies would enable the improvement of the effectiveness and sustainability of the agricultural extension services. In this way, it would be possible to build trust and develop a community's sense of ownership of the agricultural extension and rural development initiatives.

For most farmers in Ethiopia, crops and livestock interaction are extremely important in terms of both diversifying outputs and the cultural values attached to them. Therefore, strictly orienting the agricultural extension services system to the demands, knowledge, experiences, and values of the farmers may increase its acceptability. As a “public good,” agricultural extension must provide inclusive benefits to the poor and disadvantaged groups of society, particularly in rural areas, so as to actively facilitate the agricultural transformation of the country. Therefore, introducing pro-poor systems in agricultural extension and rural development along with efficient mainstreaming and capacity building at all levels would promote equitable access to agricultural extension services and foster participation in the development and application of new knowledge.

Above all, improving the efficiency and effectiveness of the public agricultural extension services by introducing the newly adopted institutional reforms well into the grassroots and familiarize with different players can improve awareness about the change and enable many farmers access its benefits. A shift in the focus of agricultural extension services from output orientation to outcomes and sustainability is vital. To enhance the coverage of the existing extension services, the state should improve the skills of DAs and model farmers and ensure that they can transfer knowledge appropriately to the end users. Further, streamlining the roles of DAs and model farmers, involve or collaborating with NGOs and private sectors can improve the reach, quality, and sustainability of the agricultural extension services.

Bibliography

- Abate H (2007) Review of extension systems applied in Ethiopia with special emphasis to the Participatory Demonstration and Training Extension System (PADETES). FAO, Addis Ababa
- Abate H (2004) The comparative influence of intervening variables in the adoption behavior of maize and dairy farmers in Shashemene and Debrezeit, Ethiopia. Dissertation, University of Pretoria.
- Adams DW (1970) Agricultural Development Strategies in Ethiopia 1950-1970. The Ohio State University, USA
- Adem TA (2012) The local politics of Ethiopia's Green Revolution in South Wollo. *Afr stud rev* 55 (3): 81-102
- Agbamu JU (2000) Agricultural research-extension linkage systems: an international perspective. ODI-agricultural research and extension network. Network paper No106a.
- Agricultural Transformation Agency (ATA) (2014) Transforming agriculture in Ethiopia. ATA Annual report 2013-2014 Addis Ababa
- Ajeh PC, Agwu AE, Anyanwu, AC (2008) Constraints to privatization and commercialization of agricultural extension services as perceived by extension professionals and farmers. *Afr J Agr. Res.* 3 (5): 343- 347.
- Anandajayasekera P, Davis K, Workneh S (2007) Farmers Field Schools: An alternative to existing extension system? Experience from Eastern and Southern Africa. *J Int Agric Ext Educ* 15 (1): 81-93. DOI: 10.5191/jiaee.2007.14107
- Aredo D (1993) The Iddir: A Study of an Indigenous Informal Financial Institution in Ethiopia. *Save Dev* 17 (1): 77-90.
- Asian Development Bank (2012) The Saemaul Undong movement in the Republic of Korea: sharing knowledge on community-driven development.
- ATLAS.ti 7 (2012) Qualitative data analysis software. Scientific Software Development, GmbH Berlin.
- Awulachew SB, Merrey D, Kamara A, van Koppen B, Penning de V, Boelee E (2005) Experience and opportunities for promoting small-scale/micro irrigation and rainwater harvesting for food security in Ethiopia. Colombo, Srilanka: IWMI working paper 98. iwmi@cgiar.org
- Ayele A, and Mandefro W (2011) Historical perspectives of technology transfer in Ethiopia: experience of the Ministry of Agriculture. In: Worku, M., Twumasi-Afriyie, S., Wolde, L., Tadesse, B., Demisie G., Bogale, G., Wegary, D. and Prasanna, B.M. (Eds.) Meeting the challenges of global climate change and food security through innovative maize research. Proceedings of the Third National Maize Workshop of Ethiopia. Mexico, DF: CIMMYT. pp. 213-217.
- Bailey A (2014) The unlevel knowledge field: An engagement with Dotson's third-order epistemic oppression. *Soc Epistemology Rev and Reply* 3 (10): 62-68.
- Bandura A (2001) Social Cognitive Theory of Mass Communication. *Media Psychol* 3: 265–299. DOI 10.1207/S1532785XMEP0303_03
- Bandura A (1971) Social learning theory. General learning press, Stanford University, New York

- Belay K (2003) Agricultural extension in Ethiopia: the case of participatory demonstration and training extension system. *J Soc Dev in Africa* 18 (1): 49-84
- Belay K, Abebaw D (2004) Challenges facing agricultural extension agents: A case study from Southwestern Ethiopia. Africa Development Bank. Blackwell publishing, UK.
- Berger PL, Luckmann T (1966) *The Construction of Reality: A Treatise in the Sociology of Knowledge*. Penguin Books, USA.
- Berhanu A (2009) The Ethiopian extension and farmer: A view from the farm. In: Svein E, Aspen H, Teferra B, Bekele S (eds.). *Proceeding of the 16th International conference of Ethiopian studies*, Trondheim, 2009
- Berhanu K (2012) The political economy of agricultural extension in Ethiopia: Economic growth and political control. Working paper 042. UK Department for International Development (DfID). *Future Agricultures*, www.future-agricultures.org
- Berhanu K, Poulton C (2014) The political economy of agricultural extension policy in Ethiopia: Economic growth and political control. *Dev Pol Rev* 32 (2): 197-213
- Bernard HR (4th eds) (2006) *Research methods in anthropology: qualitative and quantitative Approaches*. AltaMira Press, Lanham, MD
- Beunen R, van Assche K, Duineveld M (Eds.) (2015) *Evolutionary Governance Theory*. Springer International Publishing, Cham. DOI 10.1007/978-3-319-12274-8
- Bill and Melinda Gates Foundation (BMGF) (2010) *Accelerating Ethiopian agriculture development for growth, food security, and equity*. BMGF Synthesis report, Addis Ababa.
- Bingen RJ, Simpson BM (2015) *Farmer organizations and modernizing extension and extension services : A framework and reflection on cases from Sub-Saharan Africa*. MEAS, Discussion Paper
- Birner R, Davis K, Pender J et al (2006) *From best practice to best fit: A framework for designing and analyzing pluralistic agricultural extension services Worldwide*. IFPRI, Washington, DC, USA. www.ifpri.org
- Bliss, F (2008) *Participation in International Development Discourse and Practice. "State of the Art" and Challenges*. Institute for Development and peace, University of Duisburg-Essen, INEF, 92.
- Boekaerts, M and Minnaert, A (1999) Self-regulation with respect to informal learning, *International Journal of Educational Research*, 31(6): 533-544. Doi: SO883-0355(99) 00020-8.
- Bolesta A (2007) China as a 'developmental state'. *Montenegrin J Econ* 5: 105-110
- Boud D, Middleton H (2003) Learning from others at work: communities of practice and informal learning. *J. Workplace Learn* 15: 194–202. DOI 10.1108/13665620310483895
- Boud D (1999) Situating academic development in professional work: Using peer learning. *Internat J Acad Dev* 4(1): 3-10
- Braun V and Victoria C (2006) Using Thematic Analysis in Psychology. *Qualitative Research in Psychology* 3(2): 77-101. Doi: 10.1191/1478088706qp063oa.
- Breen M (2014) *Agricultural training in Ethiopia*. Consultant report, Ministry of Agriculture, Addis Ababa, Ethiopia
- Bruno K----- *The Chilalo agricultural development unit: Exporting Swedish agricultural*

- knowledge to Haileselassie's Ethiopia, 1967 – 1974, article based on PhD study. Available via <https://www.kuleuven.be/icag/files>
- Cabral L (2011) Decentralization in Africa: Scope, motivations and impact on service delivery and poverty. Working paper 020. Overseas Development Institute. www.future-agricultures.org
- Caffarella RS (1993) Self-directed learning. *New Dir Adult Cont Educ* 1993: 25–35. DOI 10.1002/ace.36719935705
- Carlsson F, Gunner K, Alemu M, Mahmud Y (2005) Are agricultural extension packages what Ethiopian farmers want? A stated preference analysis. Working papers in economics no 172. Department of economics, Goteborg University
- Chambers R (1994) *The Origin and Practice of Participatory Rural Appraisal*. Elsevier Science Ltd, Great Britain. *World Dev* 22 (7):953-969
- Chaudhry MA, Al-Haj FM (1985) A critical analysis of agricultural education and extension in developing countries. *Agric. Adm* 20: 169–186. DOI 10.1016/0309-586X (85)90021-4
- Christoplos I (2010) Mobilizing the potential of rural and agricultural extension. Food and Agriculture Organization of the United Nations (FAO) and Global Forum for Rural Extension services. FAO, Rome
- Christoplos I, Kidd A (2000) Guide for monitoring, evaluation and joint analysis of pluralistic extension support. Lindau, Switzerland: Neuchâtel group and Swiss Centre for agricultural extension and rural development. <http://www.neuchatelinitiative.net>
- Cofer, DA (2000) Informal workplace learning, Practice Application Brief No. 10, ERIC Clearing house on Adult Career, and Vocational Education, Columbus, OH.
- Cohen JM, Peterson SB (1997) Administrative decentralization: A new framework for improved governance, accountability, and performance. Development discussion paper No 582. Cambridge, MA: The Harvard Institute for International Development, Harvard University
- Cohen JM (1987) *Integrated Rural Development: The Ethiopian Experience and the Debate*. Uppsala: Scandinavian Institute of African Studies
- Cohen JM (1974) *Rural Change in Ethiopia: The Chilalo Agricultural Development Unit*. University of Colorado, USA
- Conlon TJ (2004) A review of informal learning literature, theory and implications for practice in developing global professional competence. *J Eur Ind Train* 28: 283–295. DOI 10.1108/03090590410527663
- Cornwall A and Eade, D (eds.) (2010) *Deconstructing Development Discourse: Buzzwords and Fuzzwords*. Rugby, Warwickshire, UK: Oxford: Practical Action Pub.; Oxfam.
- Creswell JW (3rd eds) (2009) *Research design: qualitative, quantitative, and mixed methods Approaches*. Sage Publications, Thousand Oaks, Calif
- Creswell JW, Plano Clark VL (2007) *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage
- Cross J (2013) Informal learning center. Informal learning Blog. www.informal.com/2013/12/27/3378. Accessed: 20 Feb, 2017.
- Danieli FD, Shtaltovna A (2016) Competition within the state, with the state and beyond the

- state: Agricultural extension in Tajikistan and the struggles of market formation. In: Hornidge A-K, Shtaltovna A, Schetter C (eds) *Agricultural knowledge and knowledge systems in post-Soviet societies. Interdisciplinary studies on central and Eastern Europe*, Vol. 15. Peter Lang publisher, pp 157-178
- David PA (2007) Path dependence: a foundational concept for historical social science. *Cliometrica* 1: 91–114. DOI 10.1007/s11698-006-0005-x
- Davis K, Swanson B, Amudavi D *et al.* (2010) In - depth Assessment of the public agricultural extension system of Ethiopia and recommendations for improvement. IFPRI discussion paper 01041. Eastern and South Africa Regional Office. Addis Ababa, Ethiopia.
- Debebe M (2012) Decentralization in Ethiopia: Concept and process. The case of Dendi District, West Shoa Zone, Oromia. Dissertation, University of Dortmund
- Debub Negarit Gazeta (2014) Article developed to organize and operationalize the “*Kebele* Agriculture Office head” position. Article number 110/2014, Awassa, Ethiopia
- Deininger K, Ayalew AD, Holden S, Zevenbergen J (2008) Rural Land Certification in Ethiopia: Process, initial impact, and implications for other African Countries. *World Dev* 36 (10): 1786–1812. DOI 10.1016/j.worlddev.2007.09.012.
- Dejene A (2003) Integrated natural resources management to Enhance food security: The case for community-based approaches in Ethiopia. *Environment and natural resources*. FAO working paper no 16, Rome
- Dercon S, Gilligan DO, Hoddinott J, Woldehanna T (2009) The impact of agricultural extension and roads on poverty and consumption growth in fifteen Ethiopian villages. *Am J Agr Econ* 91 (4): 1007–21. DOI 10.1111/j.1467-8276.2009.01325.x
- Deressa A, Seboka B (1997) Research achievements and technology transfer attempts in Southeastern Ethiopia. In: proceedings of the second technology generations, transfer and gap analysis Workshop, 9-11 July 1996, Nazret, Ethiopia
- Devereux S, Bruce G (2009) Agriculture and social protection in Ethiopia. Future agriculture working paper 008. www.futreagricultures.org
- Dickovick JT, Gebre-Egziabher T (2010) Comparative assessment of decentralization in Africa: Ethiopian desk study. Review of USAID
- Dotson K (2014) Conceptualizing Epistemic Oppression. *Soc Epistemol* 28: 115–138. DOI 10.1080/02691728.2013.782585
- Douglass M (2013) The Saemaul Undong: South Korea’s rural development miracle in historical perspective. Asia Research Institute working paper no 197. National University of Singapore, Singapore
- Ekpo AH (2008) Decentralization *and* service delivery: a framework. Paper prepared for the African Economic Research Consortium, Nairobi. <https://www.africaportal.org/publication/>.
- Elias A, Nohimi M, Yasunbou K, Ishida A (2015) Farmers’ satisfaction with agricultural extension services and its influencing factors. *J Agr Sci Tech* 17: 39-53
- Ellinger AD (2005) Contextual factors influencing informal learning in a workplace setting: The case of “reinventing itself company.” *Hum. Res. Dev. Q.* 16: 389–415. DOI 10.1002/hrdq.1145
- Environmental Economic Policy Forum for Ethiopia /Ethiopian Development Research Institute (EEPFE/ERDI) (2006) Sustainable Land Management. Proceeding of operational workshop on SLM, Addis Ababa, Ethiopia.

- Farrington J (1995) The changing public role in agricultural extension. *Food Pol* 20 (6): 537-544.
- Fey L (2016) Which Knowledge, Which Agriculture? Local Farmers and Agricultural Development in Georgia. In: Hornidge A-K, Shtaltovna A, Schetter C (eds) *Agricultural knowledge and knowledge systems in post-Soviet societies. Interdisciplinary studies on central and Eastern Europe*, Vol. 15. Peter Lang publisher, pp 93-125.
- Flaherty K, Fasil K, Kaleb K (2010) *Recent Development in Agricultural Research. Ethiopia Country note*, IFPRI, Rome. www.ifpri.org
- Food and Agriculture Organization of the United Nations (FAO) (2015) *FAO and the 17 Sustainable Development Goals*. Rome, Italy. <http://www.fao.org/publications/sofa>
- Food and Agriculture Organization of the United Nations (FAO) and United Nations Environmental Program (UNEP) (1999) *The Future of Our Land: Facing the Challenge. A guideline for integrated planning for sustainable management of land resources*. Rome, Italy
- Gebremedhin B, Hoekstra D, Tegegne A (2006) *Commercialization of Ethiopian agriculture: Extension service from input supplier to knowledge broker and facilitator*. IPMS Ethiopian farmers project, Working paper 1. ILRI, Nairobi, Kenya
- Gebretsadik, MA (2012) *The impact of Climate Change and Adaptation through Agro-ecological farming practices: A case study of the Konso area in Ethiopia*. MSc. Thesis, Swedish University of Agricultural Sciences
- German L, Mowo J, Opondo C (2012) *Integrated Natural Resource Management: From theory to practice*. In: German LA (2012) (ed) *Integrated natural resource management in the highlands of eastern Africa: from concept to practice*. Earthscan, Abington, Oxon ; New York
- Global Forum for Rural Extension services (GFRAS) (2010) *Five key areas for mobilizing the potential of rural extension services*. Brief number 1, Global Conference on Agricultural Research for Development (GCARD), Montpellier, France
- Griggs D, Stafford-Smith M, Gaffney, O et al (2013) *Policy: Sustainable development goals for people and planet*. *Nature* 495: 305–307. DOI 10.1038/495305a
- Groves RM (ed) (2004) *Survey methodology*. Wiley series in survey methodology. J. Wiley, Hoboken, NJ
- Ḥabīb M, Mohammed A (2010) *The Ethiopian federal system: The formative stage*. Friedrich-Ebert-Stiftung, Addis-Ababa, Ethiopia.
- Haile-Mariam D (2003) *Indigenous social insurance as an alternative financing mechanism for health care in Ethiopia (the Case of Eders)*. *Soc Sci Med* 56: 1719-1726
- Hanyani-Mlambo, HH (2002) *Strengthening the pluralistic agricultural extension system: A Zimbabwean case study*. Food and Agriculture Organization of the United Nations (FAO). Rome, Italy.
- Harrison, E (2002) *The problem with the locals: partnership and participation in Ethiopia*. *Development and Change* 33(4): 587–610
- Helmke G, Levitsky S (2004) *Informal institutions and comparative politics: A research agenda*. *Perspectives in Politics*, 2 (4): 725-740
- Hornidge A-K (2014a) *Wissensdiskurse: Normativ, Faktisch und Hegemonial*. *Soziale Welt*, 65:7-24

- Hornidge A-K (2014b) Discourses of Know-ledge: Normative, Factual and Hegemonic. Post-doctoral Thesis / Habilitation, Faculty of Philosophy, University of Bonn <https://www.researchgate.net/publication/283451182>
- Hornidge A-K, Antweiler C (eds) (2012) Environmental uncertainty and local knowledge: Southeast Asia as a laboratory of global ecological change. Global Studies, Transcript, Bielefeld
- Hornidge A-K, Ul Hassan MM (2010) From “plausible promises” to Transdisciplinary innovation research in Uzbekistan-process outline and lesson learnt. Rural Dev News 2/2010, UK. www.agridea-international.ch
- Hornidge A-K, Ul Hassan MM, Mollinga PP (2009) Follow the innovation. A joint experimentation and learning approach to transdisciplinary innovation research. ZEF Working paper series 39. Bonn, Germany
- Hornidge A-K (2007) Knowledge society: vision and social construction of reality in Germany and Singapore, ZEF development studies. Lit, Münster
- Hornidge A-K (2006) The construction of K-Societies: Germany and Singapore. PhD dissertation, Institute of Sociology, University of Berlin, Berlin
- Jabbar MA, Pender J, Ehui SK (eds) (2000) Policies for sustainable land management in the highlands of Ethiopia: Summary of papers and proceedings of a seminar held at ILRI, 22–23 May 2000, Addis Ababa, Ethiopia. Socio-economics and Policy Research Working Paper 30. ILRI (International Livestock Research Institute), Nairobi, Kenya
- Kassa H (2008) Agricultural extension in Ethiopia: Historical evolution, relevant policies and challenges. In: Assefa, T (ed) Digest of Ethiopia’s national policies, strategies and programs. Forum for Social Studies (FSS), Addis Ababa, pp153-175
- Keeley J, Scoones I (2000) Knowledge, Power and Politics: The environmental policy-making process in Ethiopia. J. Mod. Afr. Stud 38(1): 89–120
- Kelboro G (2013) Unraveling the Parks and People Dichotomy: Local interests and conflicts in Nech Sar National Park, Ethiopia. Margraf, Weikersheim, Germany
- Kelemework F, Kassa H (2006) Assessment of the current extension system of Ethiopia: A closer look at planning and implementation. Issue Paper 2/2006. Ethiopian Economic Association / Ethiopian Economic Policy Research Institute. Addis Ababa, Ethiopia
- Kooij H-J (2015) Object formation and subject formation: The innovation campus in the Netherlands. Plan, Theory 14: 339–359. DOI 10.1177/1473095214527278
- Kyndt, E, Vermeire, E and Cabus, S (2016) Informal workplace learning among nurses: organizational learning conditions and personal characteristics that predict learning outcomes, J. Workplace Learn., 28 (7): 435–450. Doi: 10.1108/JWL-06-2015-0052
- Saemaul Undong (SMU) Centre (2016) Saemaul Training News, South Korea. Accessed May 12, 2017 via <http://www.Saemaul.com>.
- Lauth H (2000) Informal institutions and democracy. Democratization 7: 21–50
DOI 10.1080/13510340008403683
- Le Clus M A (2011) Informal learning in the workplace: A review of the literature. Aus J Adult learning 51 (2):355-373
- Leeuwis C, van den Ban AW (3rd ed) (2003) Communication for rural innovation: rethinking agricultural extension. Blackwell Science, Iowa State Press, for CTA, Oxford : Ames, Iowa

- Lefort R (2012) Free market economy, “developmental state” and party-state hegemony in Ethiopia: the case of the “model farmers.” *J. Mod Afr Stud* 50: 681–706. DOI 10.1017/S0022278X12000389
- Lemessa D (2001) *Khat (Catha edulis): Botany, distribution, cultivation, usage and economics in Ethiopia*. UN-Emergencies Unit for Ethiopia, Addis Ababa
- Lemma M (2007) *The agricultural knowledge system in Tigray, Ethiopia: recent history and actual effectiveness*. Margraf, Weikersheim [Germany]
- Leta G, Stellmacher T, Kelboro G, van Assche K, and Hornidge A-K (2018b) Social Learning in Smallholder Agriculture: The Struggle against Systemic Inequalities. *Journal of Workplace Learning*. DOI: 10.1108/JWL-12-2017-0115 (in press).
- Leta G, Kelboro G, Stellmacher T, van Assche K, and Hornidge A-K (2018a) Nikinake: the mobilization of labor and skill development in rural Ethiopia. *Journal of Natural Resource Forum*. DOI: 10.1111/1477-8947.1215
- Leta G, Kelboro G, Stellmacher T, and Hornidge A-K (2017b) Social learning and the battle against systemic inequalities: The case of Southwestern Ethiopia. In: Tielkes, E. (ed) *Future agriculture: socio-ecological transitions and bio-cultural shifts*, Tropentag 2017, Book of Abstract, Bonn, Germany, pp. 299
- Leta G, Kelboro G, Stellmacher T, Hornidge A-K (2017a) The Agricultural Extension System in Ethiopia—operational setup, challenges and opportunities. Working paper 158, ZEF working paper series. ISSN 1864-6638
- Leta G, Kelboro G, Hornidge A-K, van Assche K, Stellmacher T (2016) *Nikinake-an agricultural extension campaign for resource management and food security: The case of Bako and Yem, Southwestern Ethiopia*. In: Freyer B, Tielkes E(ed) Tropentag 2016. Solidarity in a competing world-fair use of resources. Vienna, Austria, 18-21 September 2016
- Leta G, Duncan A, Abdena A (2013) *Desho grass (Pennisetum pedicellatum) for livestock feed, grazing land and soil and water management on small-scale farms*. IWMI/NBDC. <http://www.nilebdc.org>
- Liniger H P, Mekdaschi Studer R, Hauert C, Gurtner M (2011) *Sustainable Land Management in Practice – Guidelines and best Practices for Sub-Saharan Africa*. TerrAfrica, World Overview of Conservation Approaches and Technologies (WOCAT) and Food and Agriculture Organization of the United Nations (FAO), Rome
- Maguire CJ (2012) Education and training for technical development. In: *Agricultural innovation systems. An investment source book*, Washington D C: The World Bank, pp136-140.
- Marsick VJ, Watkins KE (2001) Informal and Incidental Learning. *New Dir. Adult Cont. Educ.* 2001, 25. DOI: 10.1002/ace.5
- Marsick VJ, Volpe M, Watkins KE (1999) Theory and practices of informal learning in the knowledge era. *SAGE Journals*, 1 (3): 1-9
- Marsick V, Watkins K (1990) *Informal and Incidental learning in the workplace*. Routledge and Kegan Paul, New York, NY
- McDermott JJ, Staal SJ, Freeman HA, Herrero M, van de Steeg JA (2010) Sustaining intensification of smallholder livestock systems in the tropics. *Livestock Science* 130: 95-109
- Mekonnen, Y (2001) *The poverty reduction strategy paper and the required participation*.

- Economic Focus, Bulletin of the Ethiopian Economic Association (EEA), 4(1): 11-19.
- Mellor JW, Dorosh P (2010) Agriculture and the economic transformation of Ethiopia. ESSP2 Working Paper 010. IFPRI, Addis Ababa, Ethiopia
- Merrey DJ, Gebreselassie T (2011) Promoting improved rainwater and land management in the Blue Nile (Abay) basin of Ethiopia. NBDC Technical Report 1. ILRI Nairobi, Kenya
- Micro-Financing Business Proclamation (2009) Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia no 626/2009. 15th year 33: 4703
- Ministry of Agriculture (MoA) (2015) Development agent tracking study report for Oromia region. Dev Stud Ass, Addis Ababa, Ethiopia
- Ministry of Agriculture (MoA) (2012) Agricultural cooperative sector development strategy (2012-2016). MoA, Addis Ababa, Ethiopia
- Ministry of Agriculture (MoA) (2010) Agricultural development information system organizational guideline. MoA, Addis Ababa, Ethiopia
- Ministry of Agriculture (MoA) (2010) Agricultural Development Partners Linkage Advisory Council (ADPLAC): A guideline (*Amharic* version). MoA, Addis Ababa, Ethiopia
- Ministry of Agriculture (MoA) (2010) Development Agents career structure guideline (*Amharic* version). MoA, Addis Ababa, Ethiopia
- Ministry of Agriculture (MoA) (2010) Participatory Agricultural Extension System (*Amharic* version). MoA, Addis Ababa, Ethiopia
- Ministry of Agriculture (MoA) (2010) Agricultural development information system organizational guideline. MoA, Addis Ababa, Ethiopia
- Ministry of Agriculture and Rural Development (MoARD) (2010) Ethiopia's Agricultural sector Policy and Investment Framework (PIF) 2010-2020, report. MoARD, Addis Ababa, Ethiopia
- Ministry of Finance and Economic Development (MoFED), (2010) Ethiopia: Country report on the implementation of the Brussels Program of Action (BPOA). MoFED, Addis Ababa, Ethiopia
- Ministry of Finance and Economic Development (MoFED) (2010) Growth and Transformation Plan (GTP) 2010/11-2014/15. MoFED, Addis Ababa, Ethiopia
- Ministry of Finance and Economic Development (MoFED) (2006) Ethiopia: Building on progress – a Plan for Accelerated and Sustained Development to End Poverty (PASDEP) 2005/06 – 2009/10. MoFED, Addis Ababa, Ethiopia
- Ministry of Finance and Economic Development (MoFED) (2002) Ethiopia: Sustainable Development and Poverty Reduction Program (SDPRP). MoFED, Addis Ababa, Ethiopia
- Mkandawire T (2001) Thinking about Developmental State in Africa. Cambridge J Econ 25 (3): 119-136
- Morgan K, Murdoch J (2000) Organic vs. conventional agriculture: knowledge, power and innovation in the food chain. Geoforum 31, 159–173. DOI: 10.1016/S0016-7185(99)00029-9
- Muche H, Yimer F, Temesgen M (2014) Effects of conservation tillage integrated with “Fanya Juus” structures on soil loss in Northern Ethiopia. Gl J Sci Front Res 14 (7): 1-12
- Mulema AA, Lema Z, Damtew, E, Adie A, Ogutu Z, Duncan JD (2007) Stakeholders' perceptions of integrated rainwater management approaches in the Blue Nile basin of the Ethiopian highlands. Nat Resrc Forum. DOI 10.1111/1477-8947.12.126.
- Murdoch J (1998) The space of actor-network theory. Geoforum 29 (4): 357-374

- National Plan Commission (NPC) (2015) Growth and Transformation Plan II (GTP-II) 2016-2020 (*Amharic* version). NPC, Addis Ababa, Ethiopia
- Negassa W, Getaneh F, Deressa A, Dinsa B (2007) Integrated use of organic and inorganic fertilizer for maize production. Tropentag, Witzzenhausen
- Neuman WL (2007) Basics of social research: qualitative and quantitative approaches, 2nd ed. Pearson/Allyn and Bacon, Boston.
- North DC (1990) Institutions, institutional change and economic performance: Political economy of institutions and decisions. Cambridge University Press, New York
- Odularu GO (2010) Utilizing South-South cooperation to unlock African rural development potentials: Lesson from the Korean new village movement. Learning publ Agr Environ Stu 1 (2):1-15
- Ogunwole JO, Sharma BR, McCartney MP, Zemadim B, **Leta G** (2014) Land use impact on soil physical quality and soil structure in three watersheds of Ethiopia. Adv Plants Agric Res 1(4): 00019. DOI 10.15406/apar.2014.01.00019
- Ostrom E (2005). Understanding institutional diversity. Princeton University Press, Princeton, NJ, USA.
- Ostrom E (1990) Governing the commons: the evolution of institutions for collective action, The Political economy of institutions and decisions. Cambridge University Press, Cambridge ; New York.
- OXFAM (2016) El Niño in Ethiopia: Program observations on the impact of the Ethiopian drought and recommendation for action. OXFAM El Niño Briefings. https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bn-el-nino-ethiopia-240216-en.pdf
- Pahl-Wostl C (2006) The importance of social learning in restoring the multifunctionality of rivers and flood plains. Ecol Soc 11(1): 10. <http://www.ecology and society.org>
- Pankhurst A, Damen HM (2000) The *Iddir* in Ethiopia: Historical Development, Social Function, and Potential Role in HIV/AIDS Prevention and Control. Northeast Afr Stud 7: 35–57. DOI 10.1353/nas.2004.0018
- Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) (2014). Technical and Vocational Education and Training (TVETs) profile assessment in pastoral areas of Ethiopia. PRIME sub-activity report, Addis Ababa, Ethiopia
- Picclotto R, Anderson JR (1997) Reconsidering Agricultural Extension. The World Bank, The World Bank Res Observer 12 (2): 249-250
- Pretty J (2003) Social Capital and the Collective Management of Resources. Sci 302: 1912–1914. DOI 10.1126/science.1090847
- Qamar MK (2005) Modernizing national agricultural extension systems: A practical guide for policy-makers of development countries. FAO, Rome, Italy
- Ragasa C, Ulimwengu J, Randriamamonjy J, Badibanga T (2016) Factors Affecting Performance of Agricultural Extension: Evidence from Democratic Republic of Congo. J Agric. Educ. Extension 22:113–143. DOI 10.1080/1389224X.2015.1026363
- Rahnema M (2010) Participation. In: Sachs W (ed) The development dictionary: a guide to knowledge as power. Zed Books, London New York, pp 127-144
- Ramachander S, Jhunjhunwala A (2006) ICT and Agricultural Diversity. In: van den Ban AW,

- Samantaeds RK (eds) *Changing Roles of Agricultural Extension in Asian Nations*. B R Pub Corp, Delhi, pp 388-408
- Ritchie J (2003). *The Application of Qualitative Methods to social Research*. In: Ritchie J, Lewis, J (eds.) *Qualitative research practice: a guide for social science students and researchers*. Sage Publications, London ; Thousand Oaks, Calif, pp 24-46
- Ritchie J, Lewis J (eds.) (2003) *Qualitative research practice: a guide for social science students and researchers*. Sage Publications, London ; Thousand Oaks, Calif.
- Rivera WM, Sulaiman VR (2009) *Extension: object of reform, engine for innovation*. *Outlook on Agriculture*. 38 (3): 267-273
- Rivera WM, Qamar MK, and Crowder LV (2001) *Agricultural and Rural Extension Worldwide: Options for Institutional Reform in the Developing Countries*. FAO, Rome
- Rogers EM (4thed) (1995) *Diffusion of innovations*. Free Press, New York
- Rogers EM (3rded) (1983) *Diffusion of innovations*. Free Press ; Collier Macmillan, New York London
- Röling NG (2011) *Foresight Project on Global Food and Farming Futures*. WP10: Africa can feed the world beyond expertise to new frontiers of transdisciplinary science. London <http://www.bis.gov.uk/Foresight>
- Röling NG (1988) *Extension science: information systems in agricultural development*, Wye studies in agricultural and rural development. Cambridge University Press, Cambridge [England]; New York
- Rondinelli DA (1987) *Administrative decentralization of agricultural and rural development programs in Asia: A comparative analysis*. In: Rivera and Schram (1987) *Agricultural Extension Worldwide: Issues, practices and emerging priorities*. Croom Helm Ltd. USA
- Scott D, McMullen T, Royal M (2012) *Retention of key talent and the role of rewards*. A report by WorldatWork, WorldatWork-The total reward association, USA
- Shaw A, Kristjanson P (2014) *A Catalyst toward Sustainability? Exploring Social Learning and Social Differentiation Approaches with the Agricultural Poor*. *Sustainability* 6: 2685–2717. DOI 10.3390/su6052685
- Shtaltovna A (2013) *Servicing Transformation: Agricultural Service Organization and Agrarian Change in Post-Soviet Uzbekistan*. PhD dissertation, ZEF Development Studies 23. Berlin: Lit.
- Sonn JW, Gimm D-W (2013) *South Korea's Saemaul (New Village) movement: an organizational technology for the production of developmentalist subjects*. *Can J Dev Stud Can Détudes Dév* 34: 22–36. DOI 10.1080/02255189.2013.755921
- Sorohan E (1993) *We do; therefore we learn, training and development*. 4 (10): 47-52
- Spielman DJ, Kelemework D, Alemu D (2012) *Seed, fertilizer and agricultural extension in Ethiopia*. In: Dorosh PA, Rashid S (eds) (2012) *Food and agriculture in Ethiopia: Progress and Policy Challenges*. IFPRI Publishing, University of Pennsylvania press USA, pp 84-122
- Spielman DJ, Davis K, Negash M, Ayele G (2011) *Rural innovation systems and networks: findings from a study of Ethiopian smallholders*. *Agric. Hum. Values* 28: 195–212. DOI 10.1007/s10460-010-9273-y
- Spielman DJ, Byerlee D, Alemu D, Kelemework D (2010) *Policies to Promote Cereal*

- Intensification in Ethiopia: The Search for Appropriate Public and Private Roles. *Food Policy* 35 (3): 185–94. DOI 10.1016/j.foodpol.2009.12.002
- Statistical Package for Social Science (SPSS) Inc. (2012) IBM SPSS Statistics 21. SPSS Inc., Chicago, IL. URL [http:// www.spss.com](http://www.spss.com)
- Stellmacher T (eds) (2015) *Socio-economic Change in Rural Ethiopia: Understanding Local Dynamics in Environmental Planning and Natural Resource Management*. Peter Lang, Frankfurt
- Stellmacher T (2013) Local forest governance in Ethiopia: Between legal pluralism and livelihood realities. ZEF Working Paper Series no 110
- Stellmacher T, (2007a) The historical development of local forest governance in Ethiopia – from imperial times to the military regime of the Derg. *Afr Spectrum* 42: 519-530
- Stellmacher T (2007b) *Governing the Ethiopian coffee forests: a local level institutional analysis in Kaffa and Bale Mountains*. Shaker Publishing, Aachen
- Straub ET (2009) *Understanding Technology Adoption: Theory and Future Directions for Informal Learning*. *Rev. Educ. Res.* 79: 625–649. DOI 10.3102/0034654308325896
- Streeten P (2002) *Empowerment, participation and the poor*. United Nations Development Program (UNDP), Human Development Report 2002.
- Swanson BE, Rajalahti R (2010) *Strengthening agricultural extension and advisory systems: Procedure for assessing, transforming, and evaluating extension systems*. Agriculture and rural development discussion Paper 44. World Bank, Washington DC
- Swanson BE, Samy MM (2002) *Developing an extension partnership among public, private and non-governmental organizations*. 9(1), Springer.
- Swanson BE, Davis K (2014) *Status of agricultural extension and rural extension services worldwide*. Global Forum for Rural Extension services (GFRAS). www.g-fras.org
- Taffesse AS, Dorosh P, Asrat S (2011) *Crop production in Ethiopia: Regional patterns and trends*. Ethiopia Strategic Support Program (ESSP- II). Working paper no 16. IFPRI, Addis Ababa, Ethiopia.
- Tariku M, Mengist S, Tolossa D, Senbeta F (2014) *Drivers of adoption for improved agricultural practices in the central highlands of Oromia, Ethiopia*. CASCAPE Working paper, Addis Ababa, Ethiopia
- Taye H (2013) *Evaluating the impact of agricultural extension programs in sub-Saharan Africa: Challenges and prospects*. *Afr. Eval. J.* 1. DOI 10.4102/aej.v1i1.19
- Ul Hassan MM (2012) *Nurturing interdisciplinarity in agricultural research through capacity-building: A case study of ZEF's Uzbekistan project*. In *augural-dissertation*. ZEF, Bonn.
- Ul Hassan MM, Hornidge A-K, Van Veldhuizen L, Kramkhanov A, Rudenko I, Djanibekov N (2011) *Follow the Innovation: Participatory Testing and Adaptation of Agricultural Innovations in Uzbekistan. Guidelines for Researchers and Practitioners*. Center for Development Research (ZEF), University of Bonn, Germany
- United Nations (UN) (2013) *A new global partnership: Eradicate poverty and transform economies through sustainable development*. UN publications, New York, NY
- Urbanika GC, Plous S (2013) *Research randomizer (Version 4.0) [computer software]*. Retrieved on June 22, 2013, from <http://www.randomizer.org>
- Van Assche K (2016) *Afterword: expertise and rural development after the soviets*. In:

- Hornidge A-K, Shtaltovna A, Schetter CJ (eds.) (2016) Agricultural knowledge and knowledge systems in post-Soviet societies, interdisciplinary studies on central and Eastern Europe. Peter Lang AG, International Academic Publishers, Bern New York, pp 381-391
- Van Assche, K., Beunen, R., Barba-Lata, I., Duineveld, M. (2015). The search for evolutionary approaches to governance. In: Evolutional Governance Theory: Theory and Applications. Springer International Publishing: Heidelberg, p. 3-17.
- Van Assche K, Hornidge A-K (2015) Rural development: Knowledge and expertise in governance. Wageningen Academic Publishers, The Netherlands. DOI 10.3920/978-90-8686-812-4
- Van Assche K, Beunen R, Duineveld M (2014) Evolutionary Governance Theory. Springer Briefs in Economics. Springer International Publishing, Cham. DOI 10.1007/978-3-319-00984-1
- Van Assche K, Beunen R, Holm J, Lo M (2013) Social learning and innovation. Ice fishing communities on Lake Mille Lacs. *Land Use Policy* 34: 233-242
- Van Assche K, Djanibekov N (2012) Spatial planning as policy integration: The need for an evolutionary perspective. Lessons from Uzbekistan. *Land Use Pol* 29: 179–186. DOI 10.1016/j.landusepol.2011.06.004
- Van Assche K, Beunen R, Jacobs J, Teampau P (2011) Crossing trails in the marshes: rigidity and flexibility in the governance of the Danube Delta. *J Environ Plan Man* 54: 997–1018. DOI 10.1080/09640568.2010.547687
- Van Crowder L, Anderson J (1997) Linkage research, extension and education: Why is the problem is persistent and pervasive? *Eur. J. Agr. Educ. Extension* 3(4): 241-250
- Van den Ban AW (2000) Different ways of financing agricultural extension. Agricultural research and extension network paper 106b.
- Van Oost K, Govers G, Desmet P (2000) Evaluating the effects of changes in landscape structure on soil erosion by water and tillage. *Landscape Ecol* 15: 577-589
- Vandercasteelen J, Dereje M, Minten B, Seyoum TA (2016) Row planting tef in Ethiopia: Impact on farm-level profitability and labour allocation. Ethiopia Strategic Support Program Working paper 92, IFPRI-Ethiopia, Addis Ababa
- Vlek P, Le, QB, Tamene L (2010) Assessment of land degradation, its possible causes and threat to food security in Sub-Saharan Africa. In: Lal R, Stewart BA (eds.) Food security and soil quality, Advances in soil sciences. CRC Press, Boca Raton, FL, pp 57-86
- Weir S, Knight J (2000) Adoption and diffusion of agricultural innovations in Ethiopia: The role of education. WPS 2000-5, Centre for the study of African economies, UK
- Wenger E (2006) Communities of practices: a brief introduction. http://www.Ewenger.com/theory/communities_of_practices_introduction.htm. Download on 18 February 2017.
- World Bank (ed) (2012) Agricultural Innovation Systems: An Investment Sourcebook. Agriculture and Rural Development. World Bank, Washington DC
- World Bank (ed) (2010) Innovation policy: a guide for developing countries. World Bank, Washington DC
- World Population Review (2016) Ethiopia Population 2016. <http://worldpopulationreview.com/countries/Ethiopia-population/>, accessed September 7, 2016

Appendices

Appendix A: Participants Information

Table A1: List of respondents in expert interviews.

Expert ID	Sex	Region	Organization/Department	Place	Date of interview
1	M	Oromia	BoANR	Addis Ababa/ Finfinnee	27. 05. 2015
2	»	»	Zone Livestock Agency	Ambo	04. 06. 2015
3	»	»	ZoANR	»	04. 06. 2015
4	»	»	Woreda Cooperative Agency	Bako	08. 06. 2015
5	»	»	Bore-Bako Farmers Union	»	07. 08. 2015
6	»	SNNPRS	Yem Tebaber Farmer Union	Fofa	21. 09. 2015
7	»	Federal	Ministry of Livestock and Fisheries	Addis Ababa	24. 07. 2015
8	»	»	Federal Cooperative Agency	»	29. 07. 2015
9	»	SNNPRS	Yem Woreda Cooperative Agency	Saja	07. 10. 2015
10	»	»	Bureau of Cooperative Agency	Awassa	22. 06. 2015
11	»	Oromia	Zone Cooperative Agency	Ambo	05. 06. 2015
12	»	»	Woreda Cooperative Agency	Bako	10. 06. 2015
13	F	SNNPRS	BoANR	Awassa	01. 06. 2015
14	M	»	FAO	»	01. 06. 2015
15	»	»	BoANR (Livestock production...)	»	01. 06. 2015
16	»	»	BoANR	»	03.06. 2015
17	»	»	Yem Woreda Livestock Department	Saja	11. 06. 2015
18	»	»	Yem Woreda Extension Department	»	12. 06. 2015
19	»	»	Southern Agricultural Research Institute	Awassa	01. 06. 2015
20	»	»	Agricultural Research Center(ARC)	»	02. 06. 2015
21	»	Oromia	Zone Livestock Agency	Ambo	04. 06. 2015

22	»	»	Kebele Administration	Gudina-Walkite	05. 08. 2015
23	»	»	Oromia Agricultural Research Institute, Bako ARC	Bako	09. 08. 2015
24	»	»	WOANR	Bako	08. 08. 2015
25	»	»	Kebele Administration	Saja	14. 09. 2015
26	»	»	Kebele Agriculture Office	Gorum-Angari	15. 09. 2015
27	»	»	WOANR (Agricultural Extension)	Bako	07. 08. 2015
28	»	»	Oromia Credit and Saving Association	»	07. 08. 2015
29	»	»	Wasasa Microfinance Institute	»	28. 08. 2015
30	»	»	Woreda Administration	»	31. 08. 2015
31	»	»	Woreda Irrigation Development Office	»	28. 08. 2015
32	»	»	CASCADE Coordination Office	Bako	31. 08. 2015
33		SNNPRS	Ethiopian Seed Enterprises	Awassa	22. 06. 2015
34	»	»	BoANR (Agricultural Input and Marketing)	»	22. 06. 2015
35	»	»	ATVET	Sodo	23. 06. 2015
36	»	Federal	MoANR (ATVET Curriculum Production)	Addis Ababa	06. 07. 2015
37	»	Oromia	ATVET	Bako	12. 08. 2015
38	»	Federal	MoANR (Agricultural Input and Marketing)	Addis Ababa	25. 06. 2015
39	»	Oromia	WOANR (Agricultural Input and Marketing)	Bako	28. 08. 2015
40	»	Federal	Oxfam America (INGO)	Addis Ababa	09. 07. 2015
41	»	»	»	»	09. 07. 2015
42	»	»	SG 2000 (INGO)	»	13. 07. 2015
43	»	Oromia	MKC-RDA (Local NGO)	Bako	21. 08. 2015
44	»	»	Rural Mechanization Research Center	»	21. 08. 2015
45	»	»	WOARD (Development Agents)	Denbi-Gobu	07. 08. 2015
46	F	»	»	Gudina-Walkite	30. 08. 2015
47	M	»	»	Dembi-Gobu	31. 08. 2015
47	F	SNNPRS	»	Gorum-Angari	22. 09. 2015
49	M	»	»	Saja-Laften	15. 10. 2015

50	F	Oromia	»	Denbi-Gobu	07. 12. 2015
51	M	»	»	Gudina-Walkite	08. 12. 2015
52	F	SNNPRS	»	Gorum-Angari	11. 12. 2015
53	»	»	»	Saja-Laften	14. 12. 2015
54	M	Oromia	WOANR (Agricultural Extension)	Bako	09. 08. 2015
55	»	SNNPRS	»	Yem	13. 10. 2015
56	»	Oromia	»	Bako	10. 08. 2015
57	»	»	»	»	10. 08. 2015
58	»	»	Local elite/veteran	»	19. 08. 2015
59	»	»	»	»	26. 08. 2015
60	»	SNNPRS	WOANR	Yem	07. 10. 2015
61	»	»	Woreda Civil Services Office	»	07. 10. 2015
62	»	Oromia	BoANR (Agricultural Extension)	Addis Ababa	02. 11. 2015
63	»	»	Regional Livestock Agency	»	09. 11. 2015
64	»	SNNPRS	BoANR (Agricultural Extension)	Awassa	12. 11. 2015
65	»	»	Omo Microfinance	»	12. 11. 2015
66	»	»	Bureau of Finance and Economic Development	»	12. 11. 2015
67	»	»	BoANR (Livestock Production and Health)	»	11. 11. 2015
68	»	»	WOANR (Input Supply and Marketing)	Saja	07. 10. 2015
69	»	»	Woreda Sector Office Head	Bako	29. 11. 2015
70	»	»	»	»	06. 12. 2015
71	»	Federal	MoANR (Training and Extension Service Directorate)	Addis Ababa	30. 12. 2015
72	»	»	MoANR (Agricultural Extension)	»	01. 01. 2016
73	»	Oromia	Oromia Irrigation Authority	»	21. 01. 2016
74	»	SNNPRS	Kebele Administration	Yem	21. 09. 2015
75	»	»	»	»	27. 02. 2016
76	»	SNNPRS	»	Yem	11. 12. 2015
77	»	»	Kebele Cabinet Member	»	05. 02. 2016

78	»	»	Local elite/veteran	»	04. 02. 2016
79	»	»	WOANR (Agricultural Extension)	»	04. 02. 2016
80	»	Federal	Agricultural Transformation Agency	Addis Ababa	21. 03. 2016

Table A 2: List of participants in the household survey (2015).

Household ID	Age	Sex	Income category	District	Kebele
0001	60	M	Better-off	Bako-Tibe	Dembi-Gobu
0002	63	M	»	»	»
0003	38	F	»	»	»
0004	70	M	»	»	»
0005	35	F	Poor	»	»
0006	50	F	Better-off	»	»
0007	45	M	Poor	»	»
0008	35	F	»	»	»
0009	53	M	»	»	»
0010	35	M	»	»	»
0011	31	M	»	»	»
0012	58	M	Medium	»	»
0013	67	M	»	»	»
0014	64	M	»	»	»
0015	28	M	Better-off	»	»
0016	26	F	Medium	»	»
0017	25	M	Poor	»	»
0018	72	M	Medium	»	»
0019	70	M	»	»	»
0020	40	M	»	»	»
0021	45	M	Poor	»	»
0022	35	M	Better-off	»	»
0023	68	M	Medium	»	»
0024	35	M	»	»	»
0025	68	M	Better-off	»	»
0026	67	M	Poor	»	»
0027	60	F	»	»	»
0028	35	M	Better-off	»	»
0029	34	M	»	»	»
0030	45	M	Medium	»	»
0031	43	M	Better-off	»	Gudina-Walkite
0032	45	M	Medium	»	»
0033	35	M	Better-off	»	»
0034	45	F	Medium	»	»
0035	45	F	Poor	»	»
0036	39	M	Medium	»	»

0037	55	M	Poor	»	»
0038	33	M	Better-off	»	»
0039	50	M	Poor	»	»
0040	40	F	Medium	»	»
0041	35	M	Better-off	»	»
0042	60	F	Medium	»	»
0043	28	M	»	»	»
0044	47	M	Poor	»	»
0045	66	M	Better-off	»	»
0046	35	M	»	»	»
0047	47	M	Poor	»	»
0048	40	M	»	»	»
0049	52	M	Medium	»	»
0050	34	M	Better-off	»	»
0051	28	M	»	»	»
0052	28	M	Medium	»	»
0053	50	F	»	»	»
0054	30	M	Poor	»	»
0055	25	M	Medium	»	»
0056	20	M	Poor	»	»
0057	60	F	»	»	»
0058	42	M	Better-off	»	»
0059	70	M	»	»	»
0060	50	M	Poor	»	»
0061	60	F	»	Yem	Gorum-Angari
0062	65	M	Medium	»	»
0063	67	M	Better-off	»	»
0064	63	M	»	»	»
0065	23	M	Poor	»	»
0066	47	M	Better-off	»	»
0067	31	M	Medium	»	»
0068	50	F	Better-off	»	»
0069	30	F	Poor	»	»
0070	30	M	Medium	»	»
0071	28	M	»	»	»
0072	56	M	Better-off	»	»
0073	25	M	»	»	»
0074	35	M	Medium	»	»
0075	22	M	»	»	»

0076	33	M	Medium	»	»
0077	60	F	Poor	»	»
0078	47	M	»	»	»
0079	59	M	»	»	»
0080	66	M	Better-off	»	»
0081	80	M	»	»	»
0082	50	F	»	»	»
0083	43	M	Poor	»	»
0084	50	F	Medium	»	»
0085	60	M	Poor	»	»
0086	55	M	Better-off	»	»
0087	60	F	Medium	»	»
0088	60	F	Poor	»	»
0089	40	M	Medium	»	»
0090	49	M	Poor	»	»
0091	35	M	Better-off	Yem	Saja-Laften
0092	35	M	»	»	»
0093	42	M	»	»	»
0094	30	M	»	»	»
0095	37	F	»	»	»
0096	40	M	»	»	»
0097	35	M	»	»	»
0098	57	M	»	»	»
0099	45	M	Poor	»	»
0100	27	M	Medium	»	»
0101	26	M	Better-off	»	»
0102	35	F	Poor	»	»
0103	47	M	»	»	»
0104	35	F	»	»	»
0105	19	M	Medium	»	»
0106	72	F	Poor	»	»
0107	52	M	Medium	»	»
0108	35	M	»	»	»
0109	25	M	»	»	»
0110	71	M	»	»	»
0111	37	M	Poor	»	»
0112	40	F	Medium	»	»
0113	28	F*	»	»	»
0114	30	M	Poor	»	»

0115	40	M	Medium	»	»
0116	78	M	Poor	»	»
0117	56	M	»	»	»
0118	32	M	Medium	»	»
0119	45	M	Better-off	»	»
0120	25	M**	Poor	»	»

*26 female; ** 94 male

Appendix B: Summary Tables of Findings

Table B1: Membership to and benefit from farmers Primary Cooperative (PC) (n=120).

Questions	Responses	No. of response	Percentage (%)
Membership to Primary Cooperatives	Yes	67	55.83
	No	53	44.17
Total		120	100
Does membership to PC affects farmer access to inputs?	Yes	24	20
	No	96*	80
Total		120	100
Does the PC provided the services for which it is established?	Yes	23	19.17
	No	97	80.83
Total	Total	120	100

*since 2014 farmers access to agricultural inputs directly in cash

Source: Household survey data collected by Gerba Leta (2015-2016).

Table B2: Respondent farmer resource possession and access to facilities (n=120).

Items	Possession	Count	Percentage (%)
House	yes	118	98.3
	no	2	1.7
Mobile phone	yes	46	38.7
	no	73	60.3
Wheel barrow	yes	6	5
	no	114	95
Radio	yes	79	65.8
	no	41	34.2
Pack animals	yes	10	8.3
	no	110	91.7
Electricity	yes	56	46.7
	no	64	53.3

Source: Household survey data collected by Gerba Leta (2015-2016).

Table B3: Respondents' reaction to the agricultural extension services system (n=120).

Response	Access to required technical support		Satisfaction by the extension services		Access to other sources of extension services		DAs prompt response to farmers need		Emphasis to the marginalized	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Yes	68	56.7	62	51.7	26	21.7	69	57.5	56	46.7
No	52	43.3	57	47.5	94	78.3	51	42.5	64	53.3
Total	120	100	120	100	120	100	120	100	120	100

Source: Household survey data collected by Gerba Leta (2015-2016).

Table B4: Farmers' adoptive traits of technologies and best practices (n = 120).

Technologies / best practices	Bako-Tibe <i>woreda</i>				Yem <i>woreda</i>			
	Adopters		Non-adopters		Adopters		Non-adopters	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Maize*	59	98.3	1	1.7	28	46.7	2	3
Wheat	1	1.7	59	98.3	36	60	24	40
Minimum tillage	53	88.3	7	11.7	0	0	60	100
Intercropping	23	38.3	37	61.7	30	50	30	50
Crop rotation	44	73.3	16	26.7	55	91.7	5	8.3
Composting	16	26.6	44	73.4	17	28.3	43	71
Storage	2	3.3	58	96.7	0	0	60	100
Fattening	16	26.7	44	73.3	32	53.3	28	46.7
Forage development	15	25	45	76.7	34	56.7	26	43.3
Poultry production	9	15	50	85	5	8.3	53	88.3
Beekeeping	1	1.7	59	98.3	4	6.7	56	93.3

*Maize grown in three *kebeles* of the four.

Source: Household survey data collected by Gerba Leta (2015-2016).

Appendix C: Data Collection Tools

Section 1: Household survey questionnaire

1. Household general data

1.1 Identification:

Region		district		Kebele/village	
place of interview	other			wealth status ¹	

¹ to be filled from registration documents

1.2 Household head: main information of the household head

a. hh head name			
b. phone no (if available)		c. hh head age	[y]
d. hh head gender	1. male 2. female	e. marital status	1. in hh 2. Absent 3. no spouse
f. education ¹ ,hh head	[y]	g. education ¹ , spouse	[y]
h. hh head period in village[y]		i. hh farming experience (y)	

¹ includes both formal/informal schooling

1.3 Household members: number by age class & gender.

age class	1.Male	2.female	age class	1.male	2.female	Age class	1. male	2.female
a. < 6 years			b. 6 – 9 years			c.10 – 17 years		
d.18 - 60 years			e.> 60 years					

1.4 Land ownership (ha): Land allocated for crop, grazing, woodlot, and homestead

owned		shared, in		rented, in		total		cultivated		grazing	
woodlot		homestead									

1.5 Livestock ownership: Type and number of animals

cattle ¹		a. cow		b. oxen		c. bull		d. heifer		e. calf	
x-breed		f. cow		g. oxen		h. bull		i. heifer		j. calf	
sheep		k. ewe		l. lamb		m. ram					
goat		n. doe		o. buck		p. kid					
equines		q. donkey		r. horse		s. mule					
chicken											

¹local breed

1.6 Crop production: main crop type and its mean productivity with and without package (during the last ten years)

Type of crops	Yield (quintal/hectare)		¹ YA A over B	Remarks (focus on types of package)
	With (A)	Without (B)		
Maize				
Teff				
Sorghum				
Wheat				
Barely				

¹Yield Advantage

2. Decisions, Assets, accessibility and food

2.1 Assets and services

hh own house	yes – no	mobile phone	yes – no	wheel barrow	yes – no
radio/tv	yes – no	horse/mule cart	yes – no	Electricity/ solar energy	yes – no

2.2 Housing material

mostly used roofing material	1. Straw 2. Grass 3. Iron 4. Bamboo 5. Others _____
mostly used wall material	1. bamboo/wood 2. Mud 3. Dried brick 4. Burnt brick 5. Stone 6. concrete
total number of units/rooms	

2.3 Market access: Agricultural input and output markets

main markets for	place name	type ¹	Distance (km)	main transport ²	trvl time	freq. of visit ³
crop inputs		vm-sh-cops		wlk-pub-own-mcart, don		d-w-m-s-y-n
crop outputs		vm-sh-cops		wlk-pub-own-mcart, don		d-w-m-s-y-n
livestock inputs		vm-sh-cops		wlk-pub-own-mcart, don		d-w-m-s-y-n
livestock outputs		vm-sh-cops		wlk-pub-own-mcart, don		d-w-m-s-y-n
livestock traders				wlk-pub-own-mcart, don		d-w-m-s-y-n

¹type: **v**illage **m**arket, **s**hop, cooperative

²main transport: **w**alk, **p**ublic transport, **o**wn transport, mule cart, donkey

³frequency of visit: **d**aily, **w**eekly, **m**onthly, **s**easonally, **y**early, **n**ever

2.3.1 Does the output market influences adoption of technologies? (yes – no). If yes, how?

2.3.2 Does the existing agricultural extension training motivates you towards production of market-oriented crops/livestock? (yes – no).

2.3.3 Do you produce cash crops? (yes – no). If yes, which crops?

2.4 Credit access and saving strategy

a. Any credit last 5 yr?			
1 st source	f-in-f+i- na ¹	recipient 1	head – leading female, wife and husband, NA
2 nd source	formal-informal	recipient 2	head – leading female, wife and husband, NA
Any savings?	yes – no	how/where	1. Coop. 2. Bank 3. MF 4. no saving 5. women assn.
b. Does access to credit affect your adoption of innovations?	Yes – no		
c. Does the interest rate of the credit is discouraging?	Yes – <u>no</u>		
d. Did you fail to pay back in time?	Yes – <u>no</u>		
e. Did the repayment subjects you to any penalty?	Yes – <u>no</u>		

¹f-formal, in-informal, f + i- formal and informal & na-not applicable

2.5 Food status

Period consuming self-produced staple food – in avg rainfall year [mo]		in drought year [mo]	
How do you obtain extra, after own is finished?	1. nevr finished 2. purchase 3. aid 4. others (specify)		
What was the reason for food shortage	1. Lack of land 2. bad weather 3. lack of techno 4. NA 5. Lack of labour and finance		
Have you received food aid during last 5 years?	Yes - no		
Does the AE services support you to address hh food security?	Yes - no		

2.5.1 How do you characterize the food security status of your family? (insecure (1), secure (2), surplus producer (3)).

2.5.2 Does your village has any history of vulnerability? (yes – no). If yes, please explain type of risks and it frequency.

3. Input utilization and access to information or extension services

3.1 Do you use agricultural inputs¹ for crop production? (yes – no) if yes, please provide details of hh input utilization for the production of main crops (during the last ten years)

Crop name	Seed rate (kg/ha)	Inorg. Fert (u, d, ud) ²	Reco. Fertilizer rate (t/ha)	Applied rate (t/ha) D-U	Difference D-U	Organic fert app. (t/ha)	Herbicide rate (l/ha)		Herbicide used (l/ha)	
							R-U	Laso	R-UP	Laso/2-4D
Maize		u – d – ud								
Teff		u – d – ud								
Sorghum		u – d – ud								
Wheat		u – d – ud								
Barley		u – d – ud								
Enset (pcs)		u – d – ud								
Others		u - d - ud								

¹inputs refers to fertilizer, improved seed, herbicides/pesticides; ²u-Urea, d-DAP, ud- Urea + DAP

3.2 Are you member of the primary cooperatives? (yes - no)

3.2.1 Does membership to cooperatives affect your access to fertilizer and improved seeds? (yes - no). If yes, how?

3.2.2 What special benefits you get as member of the primary cooperative/farmers union?

3.2.3 Does farmer cooperative provide the services for which it is intended? (yes - no). If no, why?

3.3 Access to information on crop technology, market and credit: (yes – no). If yes, please mark the right actor(s)

source of information on	family, friends, farmers,	gov., DAs, research sys., radio/tv	private / NGOs	Coops	microfinance	no access
Crop varieties/technologies						
prices of crop inputs						
Source and access to credit						

3.4 Crop extension: How often do you meet crop extensionists (DAs) during last year?

Land prep.	d–w–m–s–n ¹	Planting and weeding	d–w–m–s–n	Harvesting	d–w–m–s–n
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¹ frequency: **d**aily; **w**weekly; **m**onthly; **s**easonally; **n**ever

3.5 Source of and access to knowledge/ practices: Have you heard/practice the following?

Types of technologies/practices	knowledge & use ¹	if knowledge, from whom ²
minimum tillage (MT)	nvr hrd-only hrd-practng-stpd	fam/frd/frm-gov/das-priv/ngo-NA
crop rotation	nvr hrd-only hrd-practng-stpd	fam/frd/frm-gov/das-priv/ngo-NA
intercropping	nvr hrd-only hrd-practng-stpd	fam/frd/frm-gov/das-priv/ngo-NA
compost making	nvr hrd-only hrd-practng-stpd	fam/frd/frm-gov/das-priv/ngo-NA
Improved storage	nvr hrd-only hrd-practng-stpd	fam/frd/frm-gov/das-priv/ngo-NA
use of improved seed	nvr hrd-only hrd-practng-stpd	fam/frd/frm-gov/das-priv/ngo-NA
use of fertilizer/herbicides	nvr hrd-only hrd-practng-stpd	fam/frd/frm-gov/das-priv/ngo-NA
intensification of agroforestry	nvr hrd-only hrd-practng-stpd	fam/frd/frm-gov/das-priv/ngo-NA
others (specify)	nvr hrd-only hrd-practng-stpd	fam/frd/frm-gov/das-priv/ngo

¹knowledge & use: never heard-only heard-practicing-stopped;

²if you acquired knowledge, sources: family/friends/farmer; government/DAs; private/NGO, not applicable

3.6 Livestock extension: do you have access to livestock extensionists? (yes – no)

If yes, how often do you meet the livestock extensionists (DAs)?	d-w-m-s-y-n ¹
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¹ frequency: **daily**; **weekly**; **monthly**; **seasonally**; **yearly**; **never**

3.7 Access to information on livestock technology, management and marketing: (yes - no)

source of information on	family, friends, farmers,	gov. ¹ , DAs, research sys., radio/tv	private sect./ NGOs,	Not applicable
new livestock technologies				
Improved livestock feed				
animal health				
life animal and products market				
others (specify)				

¹ gov. represent cadres, kebele or woreda administration

3.8 Extension on irrigation development

3.8.1. Do you have access to irrigation and irrigation extension? (yes – no).

If yes, how often do you meet the irrigation extensionists?	d-w-m-s-y-n ¹
---	--------------------------

¹ frequency: **daily**; **weekly**; **monthly**; **seasonally**; **yearly**; **never**

3.8.2 Access to information on irrigation technology and agronomy

source of information	family, friends, farmers	gov., DAs, research sys., radio/tv	private sect./ NGOs	Not applicable
a. production of high value crops				
b. use of improved crop varieties				
c. planting & mng't system				
d. disease and pest management				
e. harvesting and post-harvest hand.				
Others (specify)				

3.9 Development agents and the extension services

3.9.1 What types of service do you currently get from DAs and what other more services do you expect from them?

3.9.2 How frequent do you demanded the support of DAs during the last five years and from which DAs?

3.9.3 Do the DAs instantly respond to your demands? (yes – no). If no, why?

3.9.4 Are you satisfied by the service you obtained from DAs? (yes – no). If no, why?

3.9.5 Do you access other sources of extension service or technology? (yes – no). If yes, where and what do you access?

3.9.6 How does the technology transfer takes place? (Through: extension services, social learning, others). Circle the methods you know.

3.9.7 Does the FTC give services in your *kebele*? If yes, since when and how effective is the services?

3.9.8 Do you think the existing AES is participatory? (yes- no). If yes, what is the level of participation? (1-high, 2-medium, 3-low). If no, why?

3.9.9 Does the existing AES give emphasis to the disadvantaged groups such as women, youths, landless poor? (yes - no). If no, why?

4. Adoption

4.1 Adoption of technology/best agricultural practice

Innovations/improved agricultural practices	Introduced/ Available (>10 yrs)	Adopted	Remarks
a. maize production package	yes – no	yes – no	
b. wheat production package	yes – no	yes – no	
c. minimum tillage (MT)	yes – no	yes – no	
d. intercropping	yes – no	yes – no	
e. crop rotation	yes – no	yes – no	
f. compost making	yes – no	yes – no	
g. improved silos	yes – no	yes – no	
h. improved dairy production	yes – no	yes – no	
i. fattening (small or large ruminants)	yes – no	yes – no	
j. forage development and utilization	yes – no	yes – no	
k. Improved poultry production	yes – no	yes – no	
l. Apiculture (beekeeping)	yes – no	yes – no	

- 4.1.1 What motivates you to adopt the innovations/improved agricultural practices?
 4.1.2 Does the existing AES enables you to adopt technologies? (yes - no). If no, why?
 4.1.3 Have you refused to adopt any innovation? (yes - no). If yes, what is your reason for refusal of the innovations?
 4.1.4 What other factors risk your adoption of technologies/best agricultural practices?

5. Impact of education on adoption of technology/best practices

5.1 do you think level of education matters on your technology adoption? (yes – no).

Effects of household education on adoption of technology

Household education ¹	High level	Medium level	Lower	Not affected by education
	yes – no	yes – no	yes – no	yes – no

¹level of education can be traced to the main hh basic information

6. Access to agricultural inputs

6.1 Does access to inputs affect your adoption of technology/best practice? (yes - no).

Negative effects of inaccessibility:

Inputs	Highly	Medium	Low	No effect
fertilizer				
improved seed				
herbicides/pesticides				
farm tools				
breeds				
improved fodder				
Improved silo				
Others (specify)				

7. Farmer's perception of the characteristics of technology/best practices

- 7.1 Do you think, your perception of the characteristics of technologies/best practices can affects your adoption patterns? (yes – no). If yes, please explain.
 7.2 Do you think the available technologies/best practices are satisfactory in your areas? (yes – no). If no, why?
 7.3 Which technologies are most user friendly and suitable to your farming system?
 7.4 What other issues risks adoption of the technologies/ best practices?

8. Extension delivery system

8.1 When did you first access extension services, and what extension methods were employed?

Services	Year	individual	group	mass media	not accessed
trainings					
input supply					
technical support					
on farm technology demonstration					
participatory demonstration					

others(specify)					
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9. Livelihoods and proportion of access to respective extension service

Livelihoods	Livelihood support (%)	Access to extension services (%)
crop production		
livestock production		
Tailoring		
Others (specify)		

10. Farmer access and participation in agricultural extension services

- 10.1 Do you access extension services in areas of your interest? (yes- no). If no, why?
- 10.2 Does the training and extension services offered by DAs' orient you to diversify your production system? (yes- no)
- 10.3 How do you assess the level of your participation in the DA facilitated extension service? (high, medium, low), explain why.
- 10.4 How do you evaluate the success achieved through DA steering of the extension?
- 10.5 What problems were not solved by the DAs that you were expecting?
- 10.6 Is there suitable situation to combine local and expert's knowledge? (yes – no). If no, why?
- 10.7 How do you analysis your participation in agricultural extension?
- 10.8 How do you assess the role of DAs and the public agricultural extension?

11. Improvement of agricultural extension services delivery

Perception on changes triggered by the agricultural extension services (during the last 20 years)

Access to credit	++	+	0	-	--
Access to input	++	+	0	-	--
Access to market	++	+	0	-	--
Farmers participation	++	+	0	-	--
Farmers decision making	++	+	0	-	--
Access to DAs and extension education	++	+	0	-	--
Access to and adoption of innovations	++	+	0	-	--
Farmers capacity to innovate	++	+	0	-	--
Change of practices	++	+	0	-	--
Social learning	++	+	0	-	--
Collective action	++	+	0	-	--
Extension coverage	++	+	0	-	--
Others (specify)	++	+	0	-	--

++highly increased; +increased; 0no change; -decreased; --highly decreased

12. Social Learning

- 12.1 Have you been exercised social learning in agricultural extension system? (yes – no). If yes, what methods are used for social learning?
- 12.2 How do you assess your social learning skills? (high, medium, low) circle one and explain the reason.
- 12.3 Does the social learning enables farmers to innovated and transform the agricultural extension system? (yes– no). If yes, how?

12.4 Do you prefer social learning for technology transfer to the public extension? (yes – no). If yes, please explain the reason.

12.5 What is your judgement of “social learning” on speed of technology transfer and adoption? (fast, slow), explain.

13. Planning of extension activities

13.1 As a farmer, do you participate in the agricultural activity planning? (yes-no). If yes, explain how you would participate?

13.2 Do you fully achieve/meet your annual plan? (yes– no). If no, why?

14. Comparison of agricultural extension services over regimes

14.1 How do you compare the past with current AES?

Regime	Extension methods used, effectiveness and overall agricultural extension coverage
a) Derg	
b) EPRDF	

14.2 Do you see any interdependence between the regimes? (yes – no). If yes, how do you describe?

15. Challenges and opportunities in the PES

15.1 What are the potential opportunities and challenges in implementing agricultural extension?

Opportunities	Challenges

15.2 How do you explain the operation and effectiveness of the farmer groups in PES?

Section 2: Semi Structured Interview Guideline for Extension Actors.

1. How the agricultural extension system is structured and operating?
2. What do you think are the main objectives of agricultural extension?
3. Are there networks between public extension actors, from federal to *kebele* level?
4. What are the roles of different actors from the Ministry to the *Kebele* level?
5. Is training is one of the pillars of services offered by the public agricultural extension? If yes, how the extension training is offered to experts, DAs and farmers?
6. What other means of learning new practice or technology is available?
7. Who else in your area has been involved in the implementation of agricultural extension?
8. Who among farmers do access well to agricultural inputs, technologies and extension services?
9. Does the existing AES engage farmers in planning and implementation?
10. Is the technology transfer is in supply-push manner? If yes, why it lingers on in the AES?
11. How the public agricultural extension actors do look at themselves and the farmers?
12. How do the public extension actors and other state bodies exercise their power in agricultural extension?
13. What are the major challenges to and the potential opportunities for AES?
14. What agricultural extension system is currently in action?
15. Do you see any difference between the past and present approaches? If yes, please give your account.
16. How do you describe the condition of research-extension-farmers linkage?
17. How do you explain the collaboration between various development actors?
18. What are the main roles of extension experts in the AES?
19. What are the ideal stories of the role of public agricultural extension and how do you want to see it would have been?

Section 3: Semi Structured Interview Guideline for Development Agent's.

I. General questions:

1. What is your interest and motives to become a development agent?
2. What are your role as development agent?
3. Do you involve in non-extension (non-professional) activities apart from implementing agricultural extension? If yes, list and describe?
4. Does the involvement in non-extension activities have any impacts on your regular activities? If yes, how?
5. Where did you get from the work order (instruction) to play your roles?
6. What are the common agricultural technologies that are implemented in your area?
7. How the AES is structured and operating at *kebele* level?
8. How the agricultural technologies are diffused (individual, group or mass methods)?
9. Who are your target farmers for technology transfer? (Model farmer, follower, others), explain why?
10. Who are the most beneficiary of the agricultural extension services among farmer categories? Why?
11. Is the role of extension is more to transfer technology and less to help farmers adapt technologies? If yes, why?
12. Do you think the existing extension approach motivate farmers to adopt and upscale technology or affect its transfer for wider use? Explain, why?
13. Do you think the agricultural extension is implemented in line with the state development strategy? If no, why?
14. Do you think farmers have more choices of technologies to adopt? If no, why?
15. What are the reasons for lower adoption of agricultural technologies?
16. How possible to optimize the adoptions of technologies and increase the extension coverage?
17. What is/are the focus of public agricultural extension (Crop, Livestock, NRM, Irrigation, others)? Why?

II. Development agent's self-assessment

18. How would you rate your technical knowledge as a DA to discharge your responsibilities in implementing agricultural extension?
19. How would you evaluate your extension methodological skills?
20. How confidence are you in translating your knowledge/training in to practices?
21. How would you rate your communication and process facilitation skills?
22. Do you think you perform well enough in achieving government goals of poverty reduction, ensuring food security and natural resource management? If no, why?

III. Monitoring and Evaluation

23. Is the agricultural extension work in progress is monitored? If yes, by whom and how often? If no, why?

24. Do you monitor the implementation of the technologies?

If yes, how do you monitor (e.g. by asking farmers, measuring or observing results, learn from the impacts of the interventions you made, others)? How does this influence future activities?

25. Do you think the monitoring and evaluation has any implication on improving the service delivery? If yes, how?

26. What do you think need to be changed in the monitoring of agricultural extension?

IV. Planning, Training and Technologies

27. How the agricultural extension activities do planned in your *kebele*?

28. What information are used to draw up plans?

29. Who else is involved in the planning and what are their roles?

30. Did you trained in an ATVET? If yes, how would you evaluate the training you obtained in terms of its relevance to your DA's work?

31. What kind of on job training would you receive in agricultural extension? And how often?

32. How would you rate the usefulness of this training in terms of enabling you to do your job effectively and with confidence? Rate as follow: very useful, fairly useful or not really useful.

33. What do you think are the reasons for your rating?

34. If not useful, what do you suggest the training should be look like?

35. Which of the following technologies or agricultural practices are you familiar with and feel comfortable to assist farmers implement it?

Technology/practice	Implement (yes/no)	If no, why not?
a) Crop production		
Maize package		
Wheat package		
Intercropping		
Crop rotation		
Minimum tillage		
Agro-forestry		
Compost making		
Others		

b) Livestock production		
Dairy production		
Improved forage development		
Fattening		
Modern beehives		
Poultry production		
Others		
c) NRM		
Cutoff drain		
Soil bunds		
Fanya juus		
RWH ponds		
Area closure		
Others		

36. Which technologies are implemented by the farmers?
37. Have you ever experimented new ideas as DA? If yes, what did you try so far?
38. Are there any technologies or practices you would like to try out?
39. Do you support farmers who want to try out new practices? If yes, how? (e.g. provide inputs, technical advice, others?) If no, why?
40. How often do you provide agricultural extension services to farmer?
41. Do you think the service you provide is adequate to help farmers improves their knowledge and skills? If no, why?
42. What allows you to become more innovative and try more new things as a DA?

V. Assessment of inter-actors collaboration

43. Who supports you in implementing extension and what kind of support do they provide?
44. How would you rate the support you receive from actors?

Organization/actors	Good	Medium	poor
Supervisor			
Woreda experts			
NGOs			
Private sectors			
Others (specify if any)			

45. Do you get adequate technical support from WOANR or other development partners? If

no, why?

46. How many DAs are assigned with you and how do the different DAs (NRM, Crops, and Livestock production) are working?

47. How would you rate the level of collaboration with your fellow DAs?

High- Medium- Low or no collaboration (circle one and justify).

VI. Actors/Institutions, Power/Knowledge

48. Who are the main actors in the agricultural extension at your *kebele*?

49. Which local institution involve in facilitating extension service?

50. What are the main sources of knowledge and how knowledge transfer is effected?

51. How power is employed in agricultural extension and who are the beneficiaries of power relations?

VII. Incentives and Amenities

52. Do you have necessary facilities at your duty station (shelter, office, transport, etc.?) If no, explain.

53. Is there any incentive structure that motivates you to play your role? If no, why?

54. How would you assess the existing DA's *career structure* or development schemes?

55. As a DA are you satisfied by your job? If no, why?

VIII. Challenges and opportunities

56. What are the potential opportunities for and challenges to the AES?

Section 4: Semi Structured Interview Guideline for Researcher

1. How the technology generation and diffusion is planned and implemented by the research systems?
2. What does the current research –extension-farmers’ linkage looks like?
3. What are the role of the research systems to promote implementation of AES?
4. Who are the target groups among farmers to access to the agricultural technologies? Why?
5. How the public agricultural research does look at itself as well as to the public extension and the farmers?
6. Is there collaboration between the federal and regional research? If yes, how?
7. What are the challenges to and opportunities for the integration of research and extension?
8. What are the policy and strategy that guide the research system to integrate its effort with other actors in the AES?
9. Is there any differences between the past and present in operationalizing agricultural research?
10. What do you think are the main objectives of the AES?
11. What are the main focus commodities or technologies under your command areas and how important are they to improve the livelihood of the residents?
12. What are the main challenges to the proper implementation of agricultural research?

Section 5: Semi Structured Interview Guideline for ATVET Staff

1. How the ATVET is structured and operating?
2. What are the roles of ATEVTs?
3. What are the contribution of ATVET to the AES?
4. Do you think the current ATVET curriculum is relevant to the extension services need of the farmer?
5. Do the trained DAs are skillful to delivery generalistic extension services to farmer that single-handedly manage diverse agricultural activities?
6. What are the main challenges to and potential opportunities for the operation of ATVET

Section 6: Semi Structured Interview Guideline for Focus Group Discussion

Woreda/kebele.....Date.....Group (F/M).....

Number of participants.....starting time.....finishing time.....

1. Historical and Evolutionary Trend Analysis of Agricultural Extension

Activities	Year		
	<i>Imperial</i> 1960s-1974	<i>Derg</i> 1975-1991	EPRDF 1992-2015
Methods used to deliver extension services			
Types of introduced technologies			
Applied cropping system			
Types of input, rate and methods of applications			
Main crop type and productivity (ton/ha)			
Actors involved in service delivery			
Agricultural extension coverage			

2. SWOT Analysis of Agricultural Extension System

Strength:	Weakness:
Opportunity:	Threats:

3. State Focus on Agricultural Extension

Type of extension	Ranking*			Total
	High	Medium	Low	
Crop				
Livestock				
NRM				
Combination				

*High-3, medium-2 and low-1

Rationale for the highest score.....

4. Types of crop and livestock technologies/best practices and adoption status

Technologies /best practices	Year of introduction	Description of farmers adoption behavior		
		Fully adopted	Partially adopted	Not adopted
Maize production package				
Wheat packages				
Minimum tillage practice				
Tef threshing/ Maize shelling				
Artificial insemination (AI)				
Fattening				
Modern poultry production				
Modern beekeeping				

5. Assessment of farmers satisfaction by extension services provided by DAs

Types of services	Level of satisfaction*		
	High	Medium	Low
Skills training			
Technical support on planning & implementation			
Monitoring and evaluation			
Facilitation of access to inputs			
Ensuring access to problem solving services			
Responsiveness of DAs to farmers demand			
Sum total			

*indicate relative values: 3 - high, 2 - medium and 1 - low

6. Assessment of farmers behavior based on their reaction to use or benefit from the services

Activities	Farmers by income category/typology		
	Poor	Medium	Better-off
Participation in skill training			
Demand for extension services			
Technology adoption			
Input utilization			
Access to credit			
Sum total			

7. Farmers best reasons for variance in technology adoption and input utilization

Higher adoption and input uses	Lower adoption and input uses

8. Sources of credit services and reasons for steady vs sporadic use

Source of credit	Continuous use	Underuses
Bank		
Microfinance institute		
<i>Arata</i> (informal credit services)		
<i>Iddir</i>		

9. Group's opinion on the operational activities of the current extension system

Categories	Formation	Main roles	Effectiveness
1:5 farmer groups			
Development team leaders			
<i>Ketena</i> leaders			
Extension units			

10. Introduction of technology and adoption status

Practices	Adopted (%)	Non-adopted, the consequences for non-compliance
Row planting of small cereal crops		
Compost making		
Deep well for backyard irrigation development		
Crop rotation		
Intercropping		
Others (describe)		

11. Sources of knowledge and means of its transfer to the farmers

Sources	Methods

Biographical Sketch

The author was born on May 30, 1969, in Horro *woreda*, in the current Horro-Guduru Wollega Zone, Ethiopia, where he completed his elementary and junior secondary education at Sekela. In 1986, he completed senior secondary school at Shambu, after which he joined the then Addis Ababa University, Awassa College of Agriculture in 1986/87, and he graduated with distinction in a diploma course of general agriculture in July 1988. In September 1988, the author joined the former Ministry of Coffee and Tea, where he was employed as a coffee extension worker. He went on to work in various departments at the ministry in different capacities until 1996. In September 1997, he joined the then Debu University, currently known as Hawassa University, and received a BSc in Plant Sciences in 2001. Soon after graduating, the author joined the Oromia Irrigation Authority, where he worked until early December 2001, after which he joined the Ethiopian Agricultural Research Organization, Debre Zeit Agricultural Research Center. After working as a researcher for two years, he joined the Graduate School of Debu University, Faculty of Agriculture, in 2004, where he received an MSc in Plant Sciences (Agronomy) in 2006. The author then worked for the FAO-Sustainable Land Management project in Kafa, Ethiopia, from 2006 to 2009. Before embarking on his PhD research at the Center for Development Research (ZEF), University of Bonn, in 2014, he worked for the International Livestock Research Institute (ILRI) and the International Water Management Institute (IWMI) based in Addis Ababa, from 2010 to 2014. Over the course of his career, the author has worked for various national and international research and development organizations.