CHALLENGES AND OPPORTUNITIES OF DEVELOPMENT IN ETHIOPIA THROUGH URBAN-RURAL ECONOMIC LINKAGES (URELs)

by

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submitted in accordance with the requirements
for the degree of

DOCTOR OF LITERATURE AND PHILOSOPHY

in the subject

DEVELOPMENT STUDIES

at the

UNIVERSITY OF SOUTH AFRICA

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July 2016

Declaration

I, Berhanu Zeleke Gobaw, declare that **Challenges and opportunities of development in Ethiopia through urban-rural economic linkages (URELs)** is my own original work and this work has not submitted before for any other degree at any UNISA for another qualification or at any other higher education institution.

All the sources that I have used or quated have indicated and acknowledged by means of complete references. I hereby give notice that I intend to submit my thesis for examination with all the requirements and have completed the study in terms of the approved application of UNISA.

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Acknowledgement

I would like to praise and glorify the Almighty God for providing me with people who have supported and contributed their knowledge to my success. I would like to express my warmest gratitude to my supervisor Dr.Yirgalem Mahiteme Habtemariam for all his patience, constructive comments and suggestions for the whole success of this paper. I would also like to extend my deep gratitude to Professor Linda Cornwell for her invaluable contributions and comments as a roadmap for the success of this study. My appreciation goes to acknowledge UNISA for providing me an opportunity to study this PhD program and for giving me a lot of the necessary support, including training under SAN-Trusts project scholars for about a year. Some of whom are Professor France and Professor Sara Hawai who gave me a one year in-depth methodological training and certified for having philosophical and methodological assets to do this study. I would again like to thank UNISA scholars who gave me different training, consultancy and support for the successful of this research.

I would provide my deep thanks to Dr Yenetila Alamneh who gave me short training on econometric model and its software application with his valuable comments and support during the whole process of the paper. It is my pleasure to thank for Yewesef Zewdu Kitaw, Dr Abathun Alehegn, Dr Kefalew Binalf, Mr Zelalem Yekoye and Mr Direslign Addis who devoted their time and knowledge for technical and format corrections. I would also like to appreciate all DMU staff, SHFs in Genet and Girakidamin, farmers' associations (PACs and GAU) as well as agro-industrialists at DMT for their active participation for my thesis. I would like to acknowledge the different government offices and institutions for their cooperation and active participation in the study.

Finally but most importantly, I would like to thank my family: beloved wife Amelework Yenealem, my two sons (Tewodros Berhanu and Musie Berhanu) and Tigist Getaneh for their everyday motivation and encouragement to this success. I would not have completed my research without the support of all these wonderful people.

Abstract

The transformation of rural people and land to urban land and culture is a natural discourse and inevitable process. In the process, more than half of the current world population are living in urban centres. The number of urban centres and their population is rapidly increasing while the situation of integrated development of urban centres and rural areas such URELs for sustainable development have given less attention in agricultural based countries (ABCs). Multi-disciplinary (agriculture and agro-industries) integration, multi-spatial (urban centre and its hinterlands) linkages, multiscalar (micro-meso and macro) levels, multi-actors and stakeholders involvement are the noteworthy innovations in the field of development studies. This study mainly focused on URELs for agribusiness and value chains under the development themes of governance and development as well as contemporary debates. Policies, institutional settings and practical implementation strategies of integrated and balanced development discourse of basic sectoral and urban-rural economic linkages (URELs) missed in ABCs such as Ethiopia's comprehensive development policy ADLI neglecting the rapidly growing urban centres. Owing to this, this study is designed to examine the challenges and problems, status and agribusiness and efficiencies of URELs for exploring theoretical empirical model for virtuous circle URELs. Methodologically, the study used sequential explanatory mixed methods research and cross-sectional survey design. The sequential approach was quantitative method, qualitative method and integrating the two findings on interpretation and discussion. The findings present truncated BPLs and FPLs of agriculture and agro-industries. It was was mainly due to poor and greater ranges of efficiency from TE, AE and EE for both agriculture and agro-industries, form of government as ethnic-federalism and regionalism, violation of the existing institutional frameworks, dejure-defacto discrminatin, government businesses, policy and institutional settings, lack of R&D, many paradoxical acts and poor resources mobilization and utilization. These problems and challenges are taken as potential opportunities for improvement and new lens of developing empirical model. The overall recommendation lies on creating enabling environment for virtuous circle URELs and integrated regional development using regional development approach, avoiding illegal interventions, import-export balance, proper resource mobilization and utilization.

Key words: agriculture, agribusiness, agro-industries, nigerseed, nigerseed oil industries (NOIs), Selam flour industry (SFI), smallholding farmers (SHFs), urban-rural economic linkages (URELs), vicious circle urban-rural linkages, virtuous circle urban-rural linkages and wheat.

Contents

List of tables

List of figures

Acronyms and abbreviations

ABCs-Agriculture-Based Countries
ACSI-Amhara credit and saving institution
ADLI-Agricultural development led to industrialization
AISE-Agricultural input supply enterprise
BPLs- Backward production linkages
DAP-Di-Ammonium Phosphate fertilizer
DMT- Debre Markos town
DMU-Debre Markos University
FPLs-Forward production linkages
FSCC- Farmers saving and credit cooperative
FGCRA-Federal government custom and revenue authority
GAU-Gozamin agricultural union
IAP-industry-Agriculture partnership
IIED-international institute for environment and development
LDCs-least developed or third world countries
MDCs-more developed countries
LED-local economic development
NICs-newly developing countries
NOIs-Nigerseed oil industries
OPHI-Oxford poverty and human development institute
PACs-Primary agricultural cooperatives
PPT-public-private and partnership
R&D-research and development
SFI-Selam flour industry
SHFs- smallholding farmers
SSACs-Sub Sahara African countries
TPLF-Tigray people liberation front
UN- United Nations
UN-Habitate- United Nations human settlements programme
URELs-Urban-rural economic linkages
URLs-Urban rural linkages
URPLs-Urban-rural production linkages

Chapter One: Introduction and background

1.1 Introduction

The economic linkages has focused on agriculture, agro-industries and overall agribusinesses based on two industrial crops (wheat and nigerseed) and corresponding agro-industries' (SFI and NOIs). The thesis also dealt SHFs and industrialists, organizational advantages of scale economies for multiplier effects in the overall regional and national development. This chapter is an introductory part of the thesis and it discusses about the background, problem statement, rationale, research questions, and objectives of the study, the significance of the study, scope and limitation of the research. The chapter has also the brief outlines and organization of the different chapters of the thesis.The following section deals the background of URELs.

1.2 Background of the study

The concept of URLs in general and URELs in particular is complex, multi-spatial and multidisciplinary with a number of interrelated intrinsic and extrinsic factors (Demese 2007:81). Rural settlements and urban centres are a continuum of one another and have no clearly accepted criteria of demarcation (Tacoli 2006:35). However, different scholars (Douglas 2006:151; Mushi 2003:15 and Tacoli 2004:2) generally define URLs as two ways interaction and connection between urban centre and its hinterlands in economic, social, infrastructure and environmental, population movement, institutional and governance, information and cultural transfers.

The choice of development paradigm and strategy for LDCs is one of the controversial issues in the academic community. Despite the fact that urban and rural areas are interdependent and reinforcing continuum, development debates and policies have been contested on either rural or urban priority in LDCs (Asefa 2007:186). Scholars and development planners (Douglas 2006:126 and Tacoli 1998:149) see these development dichotomy and bias in development debates into the following broad categories:

1.2.1 Rural-oriented model (Agricultural fundamentalism) of development

Scholars, organizations and most LDCs governments support the rural and agricultural-oriented development policies and plans, mainly in ABCs for their majority agrarian population. For example, World Bank (2003:105) argues that agricultural led development is an important strategy for mass poverty reduction in LDCs. Similarly, Hess and Ross (1997:122) argue that agriculture is the key to the overall development and a precondition for boosting non-agricultural activities. Hence, it provides food and raw material to the urban sector and stimulates demand for industrial and urban services. They conclude that LDCs need to follow policy-strategy of agricultural demand-led industrialization (Hess and Ross 1997: 123). In the same way, rural professionals consider rural development, rural industrialization and non-agricultural employments without considering urban economies and people (Douglass 2006: 126 and Tacoli 2006:1).

1.2.2 Urban-biased development model (like Growth pole theory)

Urban biased model is derived from Perroux's growth pole theory that advocates an urban industrial development in selected few growth urban centres poles. Then development is expected to spill over and trickle down for rural hinterlands (Tacoli 2007:49). In the same way, Handelman (2011:186) holds that some third world governments are urban-biased and influenced by modernization theorists who promotes the spread of urbanization and industrialization of urban and rural development. Consequently, urban based manufacturing has got a leading position for regional and national development while rural areas considered as parasites for multiplier effects of urban centres (Handelman 2011:186). Similarly, Professional bias aggravates the dichotomy of development in LDCs and urban specialists consider urban development and industrialization without rural agriculture and people (Douglass 2006: 126 and Tacoli 2006:35).

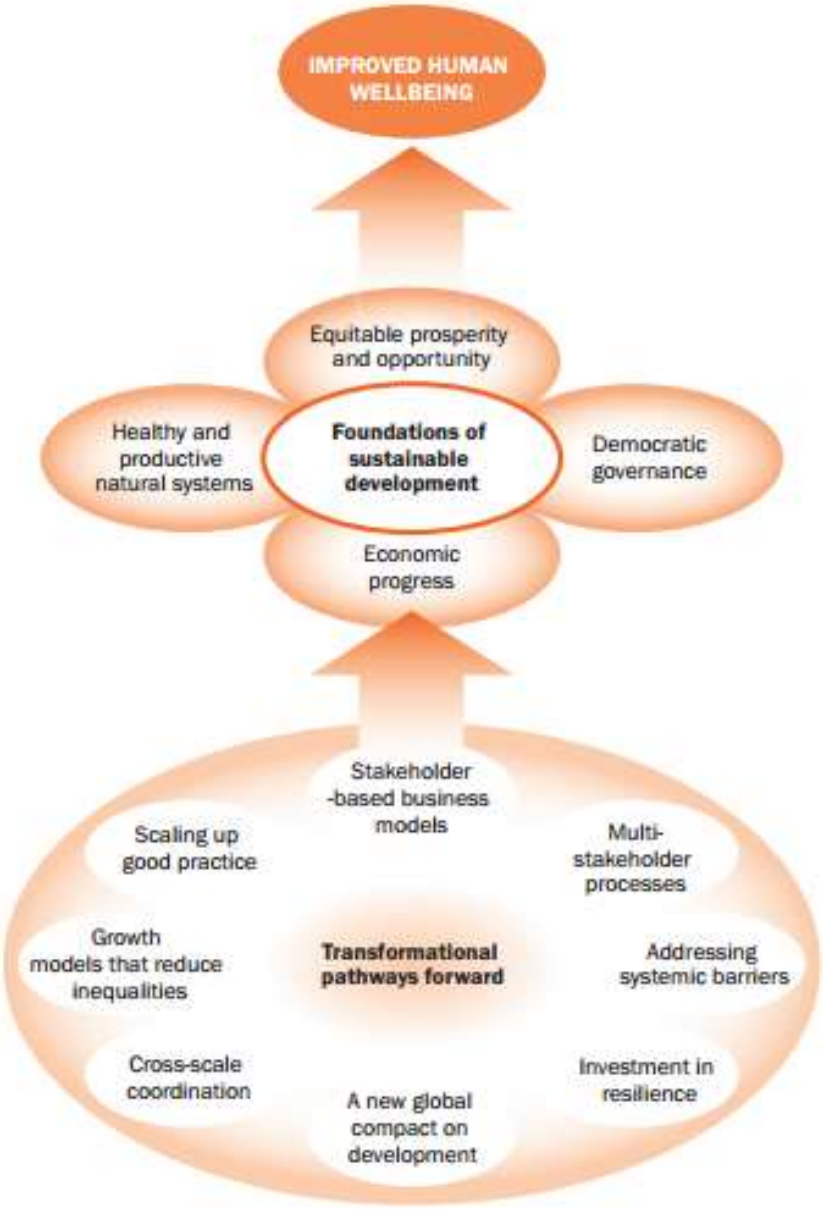
1.2.3 Recent integrated development and academic perspectives

Different scholars (Akkoyunlu 2015:32; Douglass 2006:126; Owusu 2005: 169) argue against either of the sectoral development approaches that the rural-oriented development could not bring change without urban development and progress as well as the growth pole model has backwash effects on its hinterlands rather than multiplier (spill over and trickle down) effects in current LDCs. Hence, the debate between the growth pole and rural-oriented development underlies the need for URLs development approach (Tegegne 2005:145). Many other scholars (Baker 2006:54; Gantsho 2008:358; Momen 2006:7 and Tacoli 2006:15) also criticise the development policy and governance divisions between urban and rural areas and they contend that the division of urban and rural development is without ground. They further suggest that URLs need to be taken as an essential precondition for sustainable regional development in Africa and other third world countries. These scholars also criticise that the sectoral division in development is against the reality of households who are straddling at multi-sectoral (agriculture and non-agriculture) and multi-spatial (urban and rural) areas for production intensification, income and employment diversification of survival mechanism for the poor, consolidation of wealth for middle class and/or accumulation of wealth for the rich.

Higher rate of urbanization and its inevitable expansion in LDCs presumably call integrated development in spatial dimension and functions with its partner hinterlands. Handelman (2011:191) and Eppler, Fritsche and Laanks (2015:ii) substantiate that the world urban population exceeded rural population (since 2008). The changes of LDCs urban population is more rapid and it has been changed from 44% in 2007 to 67% in 2050; Sub-Sahara Africa has been changed from 36% in 2007 to 61% in 2050 and Ethiopia has been changed from 17% in 2007 to 42% in 2050 (Handelman 2011:191). In the same way, the number of urban centres is rapidly increasing in LDCs more than MDCs in the present situation. For example, in Ethiopia the number of urban centres was 648 in 1984 while their number reached 925 in 2004 (CSA 2007:85). According to World Bank (2003:108), urban population of LDCs is rapidly increasing and hence, urban centres need to facilitate socio-economic and institutional transformations by improving access to ideas, knowledge or innovation, technology, employment and services at a scale sufficient for residents and new arrivals. Some other scholars (Douglas 2006:149 and

Satterthwaite and Tacoli 2006:170) claim that urbanization is an opportunity for using as engines of development if they are properly linked by policy, institutional settings and other infrastructures with their hinterlands. It is suggested that urbanization trends of Asia and SSACs will be the bulk of extreme poverty due to mismanagement and inappropriate planning approaches. This situation demands transformation of natural resources such as land use, human capital, binding and spatial coupling of urban centres with their rural hinterlands in policies, planning, governance, institutional settings, infrastructures and production for regional and national development (Eppler, Fritsche and Laanks 2015: ii).

The ongoing consensus of development has focused on the advantages of complementarities and mutual reinforcement in URLs for regional development approach. However, many LDCs' governments have still been following the dichotomy development policies, institutional and administrative structures in their development endeavour (Baker 2006:41; Douglas 2006:124-5; Fan et al, 2005:4; Tacoli 1998: 149). Geoghegan complains lack of the integration of development issues such as water, energy, agriculture, urbanization and food security with the three pillars environmental, economic and social of sustainable development. The author argues that the ultimate purpose of all development efforts is to achieve improved humanwellbeing (Figure 1.1).



Source: Geoghegan (2013:4)

Figure 0.1: Framework for integrated and sustainable development

For achieving improved humanwellbeing, Geoghegan asserts that the main dimensions of sustainable development should have balanced weight. These dimensions are economic progress, social equity, healhy ecosystem and productive environment and democratic governance shoud be balanced weight to (Figure 1.1). Handelman (2011:167) claims that Africa and Latin America countries have still suffered from sharp URLs gaps, political and socio-economic tensions between urban and rural areas and this urban-rural gap

would remain among the most difficult challenges facing most LDCs, mainly SSACs. Poverty and underdevelopment is a common feature for Africa due to mainly human related problems such as poor enabling environment and governance. Similarly, Dennis, Aguilera and Satin (2009:94) confirm that SSACs are characterized by the most extreme poverty, drought, malnutrition, war and political instability. The next section states the problems of URELs in specific focus and context based with the rationale of the problem.

1.3 Statement of the problem

Agriculture is the backbone economy of Ethiopia and ABCs. Ethiopia is generally endowed with a great deal of resources (natural and human resources). Among these resources is availability of unlimited arable land (about 55 million ha) with variety of agro-ecological zones. Although these most arable lands are located in the lowlands of arid and semiarid areas, many potentially irrigable rivers cross the arid and semiarid parts of Ethiopia creating the great opportunity of irrigation agriculture for the country (Coates et al 2011:8 and Getnet and Mehrab 2010:11). Ethiopia is the second populous country in Africa next to Nigeria with larger area of the arable land. The country has also huge mineral resources of various types, the most important of which are mineral stones, raw gold and many others for light and heavy industrial development (Coates et al 2011:8 and Getnet and Mehrab 2010:11).

Ethiopia has one of higher rate of urbanization (4.3%) as well as rapidly increasing urban centres (Demese, 2007:85). However, the different regimes of the country could not use these available natural and human resources in an integrated development approach by formulating appropriate policies and strategies for the rapid rate and inevitable process of urbanization. They have lacked good will and commitment to identify coordination failures among complementarity of key economic sectors and reinforcing spatial units of urban-rural areas (Altenburg 2010:3). The series of development plans of the Imperial era (1920-1974) was urban biased and then shifted to rural biased. In the same way, Ethiopian Peoples' Democratic Republic Government (EDRG) (1974-1991) had socialist command economic policy and institutional settings based on rural-oriented development of state and cooperative farms. With little change, the current government (since 1991) has the same rural and agricultural-oriented development policy (ADLI) and institutional

settings (See section 2.5). This implies that the current regime has not learned from experiences and lessons. The policy and institutional failures have sustained for long time in the country, which make Ethiopia the poorest countries in the world (OPHI 2015:5)

Different scholars assert that lack of spatial and functional integration of places and economic sectors have negative consequence on both urban centres and rural hinterlands. Akkoyunlu (2015:20) confirms that the importance of urban-rural linkages is not recognized and ignored in development policies though they are crucial for income, employment, wealth and overall poverty reduction. Similarly, Eppler, Fritsche and Laanks (2015: ii) argue that the spatial and functional decoupling of urban centres and their hinterlands have challenge for governance and development. Ethiopia is unable to shift from agricultural activities towards value adding agro-allied industries by organizing the economy in a way that can tap the potentials of URELs. The country is also unable to design and pursue policies that could benefit the millions in rural and urban areas due to policy and governance failure (World Bank, 2007:25).

Tegegne contends that extremely compartmentalized development policy-plan and institutional settings in Ethiopia are caused by lack of knowledge to formulate and implement integrated development interventions in the current government (Tegegne 2005:157; 2007:63). The development policy 'agricultural development-led to industrialization (ADLI) of the current government follows the classic and linear Rostow's economic development model that is not appropriate in the contemporary world (Demese 2007:147 and Tegegne 2007:73). Moreover, Rigg (2006:82) claims that agricultural policy which assumes rural households as 'labour-rich and labour-intensive' for agricultural production and productivity could misguide rural development and can exclude non-agricultural activities around and beyond the villages. Rutten and Leliveld stated that failures of policies and development in African states could mainly be due to the adoption of their development policies and institutional settings from past economic theories and development discourses of MDCs (Rutten and Leliveld 2004:12). This implies that governments have not had lessons from one to other and the policy and institutional failures have travelled long journey to the present.

The paradox of development policies and plans in Ethiopia is neither incremental nor with different development paradigms or approaches. The different governments (Imperial, Derg and the current EPRDF) have followed almost similar rural and agricultural-biased development policies and strategies. However, their policies have not incremental development and they have deconstructed their previous development projects and schemes and started from the scratch (Ayele 2006:9). It is confirmed that poverty and underdevelopment in Ethiopia are caused by the forms of political and institutional settings and policies such as wrong policies, traditional centralized and top-down approach; high level of official corruption, lack of democratic system, prolonged dictator governments (Demse 2007:81).

Ethiopia development is dedevelopment that drives the country towards the poorest country in the world next to Niger (OPHI 2015:2). It is also confirmed that Ethiopia and other African countries remain one of the poorest and sluggish or stagnant development without structural transformation towards urban and industrial market-based economy (World Bank 2007:7). That is why many scholars (Assefa 2007:189; Ayele 2006:2; Leeuwen 2010:3 and Tegegne 2005:158) claim that failed development policies and their institutional settings have resulted in: counter-productive and perpetuating poverty; serious damage and degradation to the natural environment with declining agricultural production and productivity; lack of alternative and diversified income sources, unemployment and migration in different form in Ethiopia. Furthermore, Alemayehu (2007:147) and Tegegne (2007:63) explain that like 'adding fuel on fire', agro-processing industries are disintegrated from their complementary partner rural agriculture. Hence, they have been importing most of their raw materials (inputs) rather than linking and reinforcing with domestic agricultural production. They have not competitively produced enough manufactured goods for their hinterlands and the country. In the same way, the hinterlands have negligible use of modern agricultural inputs (pumps, sprays, repair service, fertilizers, pesticides, irrigation, and selected seeds) and they have not produced enough for urban economic activities in Ethiopia (Alemayehu 2007:147 and Tegegne 2007:63).

The other paradox in Ethiopia is that rural poverty is more than urban poverty against rural and agricultural-oriented development policy (ADLI), strategies and institutional settings. According to Kidre (2006:27), poverty is widespread and multi-faceted with rural poverty (56%) and urban poverty (35%). In paradox of rural-biased development policy ADLI, urban economy has contributed 66% while the rural economy provided 40% of GDP in Ethiopia. In the same way, OPHI (2015:5) confirms that Ethiopia has poverty of 45.4% urban and 95.3% rural people. Demese (2007:95) argued that Ethiopia economy has immersed in a continuous and persistent underdevelopment and poverty, especially in the rural areas with declining agriculture by clearly unknown and systemic factors. On the contrary, the empirical development policy and practice of other countries were not in such paradoxical situation. Historically, china and India followed urban-oriented development strategies and the consequence of their biased development policy created higher poverty rate and lower per capita in rural areas than target urban centres (Fan et al 2005:15). The better performance of urban economy in Ethiopia against rural-biased development policy and institutional settings can be an evidence for the need to coordinated and reinforced urban-rural linkages development approach in agriculture-based countries (ABCs). The lack of integrated development policy and its multiplier effects has affected the socio-economic conditions and the overall environmental status of both urban and rural areas.

1.4 Rationale for the study

URELs has been designed for the study based on the themes of governance and contemporary debates in development Studies to reciprocal and reinforcing virtuous circle regional development model in ABCs. The field of development Studies is multi-disciplinary that can study integrated development through urban-rural economic linkages (URELs). The study problem has multi-disciplinary fields (agriculture and agro-industries), multi-stackholders and actors, multi-spatial (urban centre and rural areas), multiscalar (micro to macro policy and institutional settings). It has mainly focused agribusiness governance and institutional settings as well as contemporary issues and debates of development in value chain. The researcher's academic background (MA in Urban and regional planning) as well as prior research experience on DMT and its hinterlands linkages motivated me for conducting research on the issue of URELs in this

region. This is an advantage to know better DMT and its hinterland as well as to crosscheck contradictory results in sequential mixed method within limited time and finance. Similarly, Staantz (2011:78) argues that multi-disciplinary and multi-spatial linkages with the participation of multi-stakeholders and actors are the noteworthy innovations in the field of development studies.

There is little empirical academic study on URELs and agribusiness value chain in ABCs. It is asserted that ABCs have lacked studies on integrated and coordinated development approaches between key and complementary economic sectors (Janvry 2009:253). Eppler, Fritsche and Laanks (2015: ii) asserts that integrated landscape approach and URLs development are key issue for future research in order to have sustainable land use and synergy. Many scholars (Assefa 2007:196; Bezabih 2007:208; Douglas 2006:148; Janvry 2009:253; Demese 2007:81 and Satterthwaite and Tacoli 2006:170) recommend URELs for further research at regional and local levels for uncovering new opportunities and new challenges. It is confirmed that URLs need new further study for trans-local nature and international competition (Eppler, Fritsche and Laanks 2015: ii). There is scarcity of study on URELs and integrated regional development approach. Douglass (2006:142) confirms that there is a scarcity of researches on URLs.

The disintegrated study nature of most previous researches encouraged the researcher for conducting a study on URELs. Some working papers in agricultural economics (Sharma, Pathania and Lal 2010,) study efficiency of agro-processing industries and Yenetila (2013) on SHFs livestock project without integrated development and value chain approach. Several researchers (Baker 2006; Demese 2007; Douglas 2006; Mittal 2007; Tacoli 2007 and Tegegne 2005; 2007) and some international research organizations such as World Bank, UNIDO, International institute for environment and development (IIED), UN and UN-Habitat have studied URLs in holistic approach for investigating integrated development in LDCs. They generally conclude that weak and poor URLs in LDCs, mainly SSACs are the main driving causes for poverty and underdevelopment in both urban and rural areas.

Getnet and Mehrab (2010:4) argue that ural-urban linkages are the stepping-stones towards rural transformation, leading to industrial growth. URELs and integrated regional

development approaches are recent development approaches for integrating and reinforcing sectors in LDCs (Tacoli 2007:176). The coordination failure of using the advantages of integrated development for key economic sectors with strong backward and forward linkages is empirical problem and challenge in ABCs. With the lowest level of urbanization (16%) in Ethiopia, both urban centres and their hinterlands are found underdevelopment and poverty. For example, 70% urban dwellers are slum dwellers with poor basic infrastructures and housing facilities as well as areas of extreme poverty in this country (MoFED 2006:16). Alemayehu (2007:188) confirms that without well-managed urban economy and network system, sustainable agricultural development is almost impossible in Ethiopia and other similar ABCs. Furthermore, Demese (2007:81) argues that several studies dealt with policies in isolation to political systems that have missed the systemic and integrated effects on URLs. He further states that the poor performance of agriculture and industry is because of mainly deliberate negligence of political systems at different tiers that are based on the dichotomy national and regional development policies and strategies in Ethiopia. Continuous spatial and sectoral biased development policy as ADLI and its institutional settings with coordination failure of the two key economic sectors of agriculture and agro-industries in Ethiopia call empirical study on integrated development approach. Empirically, the trend of development policies and institutional settings in Ethiopia and the prevailing development policy ADLI of Ethiopia since 1991 has been increasing both urban and rural unemployment, poverty and environmental degradation (Berhanu 2004:147; Demese 2007:147; Gete 2007:31 and Woldeamlak 2004:92). Ethiopia has one of the highest rates of urbanization (4.4%) within the lowest level of urbanization (16%) in Ethiopia. However, urban centres have 70% slum dwellers with extreme urban poverty (MoFED 2006:16). Moreover, developing empirical regional development model will help to alleviate unemployment, poverty and associated environmental degradation in both urban and rural areas (Berhanu, 2004:147; Demese, 2007:147; Douglas 2006:148; Gete 2007:31 and Woldeamlak 2004:92). Based on these driving forces, this study is designed to respond the following research questions on URELs at DMT and its hinterlands for theoretical (knowledge) and empirical implications.

1.5 Research questions

The central research question of the study is 'why do URELs have a truncated cycle in the regional development?' The specific questions are:

1. What is the status of URELs?
2. What are the efficiencies of agriculture and agro-industries?
3. Why is URELs under vicious circle in the study region?
4. What is the appropriate URELs model in ABCs?

1.6 Research Objectives

The aim of this research is to understand URELs in order to develop appropriate model for reciprocal and reinforcing virtuous circle development in ABCs. Based on this aim, the specific objectives are to:

1. Examine the status and magnitude of agricultural and agro-industrial linkages.
2. Assess the efficiencies of SHFs and agro-industrialists.
3. Investigate the challenges and problems of URELs
4. Explore empirical URELs model for virtuous circle regional development.

1.7 The scope and delimitation of the study

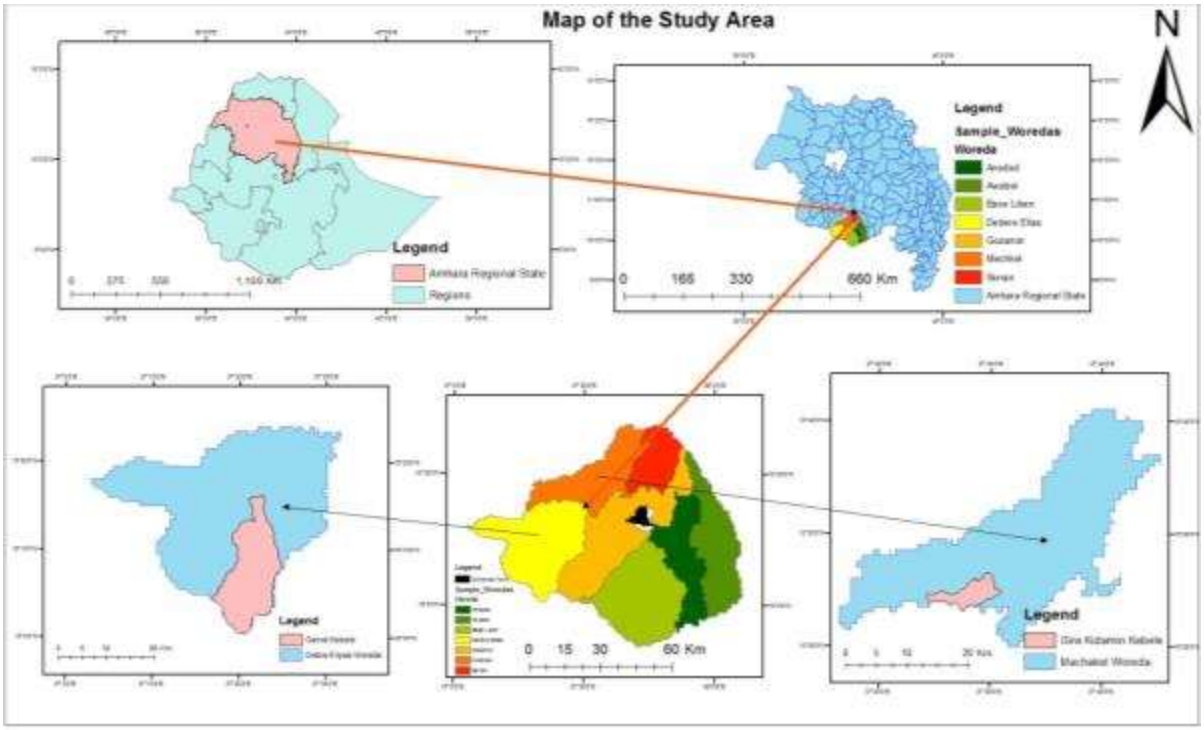
Many LDCs' governments have still followed the dichotomy development policies, institutional and administrative structures in their development endeavour (Baker 2006:41; Douglas 2006:124-5; Fan et al, 2005:40 and Tacoli 1998: 149). Africa and Latin America countries have still suffered from sharp URLs gaps, political and socio-economic tensions between urban and rural areas (Handelman 2011:167).

Ethiopia is purposively selected by its different form of government as ethnic-federalism and regionalism against regional development approach. The country has also rural-biased dichotomy development policy ADLI and institutional setting against integrated development. The purposive selection was also supported by personal factors such as accessibility, finance and time constraints of the researcher. Hinterland higher agricultural potential, empirical experience and previous research knowledge (Berhanu 2012) with other non-academic reasons (the researcher's finance and time as well as

accessibility constraints) were other factors for purposive selection. Douglas's (2006:136) suggests that rural development could be best pursed by linking rural areas with urban centre at provincial level to coordinate and integrate a large number of reciprocal, horizontal and complementary functional linkages within that region. He argues that smaller scale URLs can miss numerous opportunities of diversified regional networks (administrative, cultural, marketing and industrial centre) and complementarities among a small urban centre and its immediate hinterlands (Douglass 2006:136). Akkoyunlu (2015:20) confirms that clustering urban-rural areas into regional unit can create enabling environment for extended network and transaction (growth and development) between an urban centre and its rural hinterlands.

The delimitation of scope of the spatial location and the study region has passed multi-stage sampling to determine DMT and its hinterlands in Ethiopia. Though holistic and comprehensive approach is preferred for policy-makers and development actors, the knowledge scope of this study is limited only the economic linkages, mainly the two key economic sectors (agriculture and agro-industries) which are complementary and reinforcing in urban-rural production linkages (URELs) in ABCs. The study has again selected two agricultural crops (wheat and nigerseed) and their corresponding urban agro-industries (SFI and NOIs) at DMT for the purpose of URELs study.

Furthermore, the delimited geographical scope of study region is one currently functioning Gozamin agricultural union (GAU) that has seven districts with adjacent and accessibility to each other and to DMT (Figure 1.2).



Source: Adapted from Ethiopian political map of 2013 by GIS

Figure 0.2: Multi-stage sampling of the study region

The study region for this research is a system of functionally diversified settlements clustered at DMT and its hinterlands (seven districts Gozamine, Debre Elias, Machekel, Sinan, Awabel, Anneded and Basoliben) for enhancing a more realistic reinforcement, complementarities and horizontal regional network development through discourses of BPLs and FPLs in URELs and agribusinesses. Though policy and development research at regional and local level is very difficult due to mainly lack of reliable data (Van Dijk 2012:8), this regional development study through URELs has relative availability of survey data from agriculturally productive rural hinterlands and corresponding urban centre agro-industries. It is argued that the failure of key inter-sectoral economies in UREL is one of the main causes for the failure of agriculture (subsistence) and urban agro-industries in ABCs for value-chain regional development. The other reason for selecting DMT and its hinterlands is the small towns' (district capitals) had no infrastructures and agro-industries for studying URELs at this local level in the study region. Ascani, Crescenzi and Iammarino (2012:19) explain that region has no clear meaning and jurisdiction and it can be stated as micro, meso, sub-national, macro

(national, sub-continental or sub-international) and global based on its context, purpose and application. The rational for regional development approach in the context of growing globalization is for using favourable conditions of highly context specific or indigeneous situations and balanced (bottom-up and top-down) approaches in participatory system closer to concerned multi-actors and key stakeholders at grassroots level in good governance (decentralized system) and democratic institutions (Ascani, Crescenzi and Iammarino 2012:19). Indigenous networking structure is a prerequisite for the emergence of innovations and sustainable regional development. It has many advantages such as multitude of actors with diversified sources of knowledge and information; technology and new markets; interactions in the forms of cooperation and competition based on innovation and adopting and/or adapting solutions to own regional structures (Gust-Bardon 2012:17).

Finally, this study has delimited to urban centre and its hinterlands for the study of regional development through URELs. The significance of integrated regional development approach is presented in the next section.

1.8 The significance of the study

This study is significant for agriculture-based Ethiopia (about 85% employments) in particular and other similar countries in general for agricultural industrialization. Tracing the value added and value chain of farm commodity from conception of farm to processing, distribution and consumption is an important factor for indentifying main actors, stakeholders, value added and gross returns in URELs. Furthermore, the studies of URELs in spatial and sectoral dimensions reveal policy options for action in socio-economic relations, production institutional settings and capacities and environmental spheres (Douglas 2006:152).

As far as I know, this research is the first integrated analysis of URELs on the key sectors of agriculture (wheat and nigerseed) and their corresponding agro-industries (SFI and NOIs) in ABCs. Governments in ABCs are often dichotomy and biased to either rural areas or urban centres in their development policies and institutional settings. As result,

coordination failure of complementary and reciprocal basic sectors has led for perpetuating poverty, environmental and ecological degradations in both urban and rural areas (Fan et al 2005:4; Douglas 2006:147 and Handelman 2011:186). Furthermore, LDCs governments will be flexible for transforming their coordination failure bad equilibrium to virtuous circle model good equilibrium between urban and rural areas and their economies for multiplier effects of diversifying employment opportunities and income sources. In the same argument, Fan et al (2005:23) confirm that better URLs can result in higher agricultural and urban industrial diversification for poverty reduction and employment opportunities in both urban and rural areas. Moreover, this study could put some new insights for rural and urban development debates for the scientific community since the study of URLs in development paradigm and theory is at its infancy stage (Aynalem and Assefa 2011:173). Most studies focus mainly on the general URLs at the macro level by using input-output table of social counting matrix (SAM) from an economic prospective (UNIDO 2009a: 27).

How to transform the vicious circle to virtuous circle urban-based agro-industries and rural agriculture in LDCs is the gap of knowledge and practice that needs further research. There is little research that shows ways of URELs for integrating agriculture and corresponding agro-industries. It is also new to explore reversing theoretical empirical model from bad equilibrium to good equilibruim in ABCs. Moreover, awareness of virtuous circle URELs and value chain can enhance greenery technology for environmental and socio-economic synergy to sustainable development. The study would help reduce the negative impacts and externalities of urban and rural economic development and environmental chains. Hence, the study of URELs in the poorest SSACs in Ethiopia will benefit for uncovering the problems and filling practical and theoretical gaps in the academic community and policy-makers. It can unfold how to break and reverse the existing vicious circle of poverty to virtuous circle of prosperity through integrated development approaches such as URELs and a cluster-based regional development.

1.9 Clarification of terms

- *Actors* are people who are directly involving in URELs such as SHFs, Traders, inputs suppliers, agro-industrialists and bakeries.
- *Agribusiness* refers series of activities starting from pre-farming conception and input supply to farm, processing and management, harvesting and post-harvesting, marketing, industrial processing and value adding, distribution and consumption and/or multiplier effects of development (Douglas 2006:148).
- *Agriculture* generally refers the production of crops including fruits and vegetables, livestock, fishery and forestry.
- *Agro-industries* are sub-sector of the manufacturing sector that has processed agricultural raw materials and intermediate products derived from agriculture within the broad agribusiness and value chain. They refer *nigerseed oil industries* (NOIs) and *Selam flour industry* in this study. NOIs are agro-industries that are processing nigerseed to edible nigerseed oil. On the other hand, SFI is the sub-sector of agro-industry that has been processing and transforming wheat in to flour (form utility value added).
- *Agro-industrialists/industrialists* are people whose livelihoods depend on processing wheat and nigerseed in this study.
- *Backward production linkages (BPLs)* refers the supply of inputs (such as fertilizers, selected seed, chemicals, infrastructures and services) for agriculture (referred as BPLs of agriculture) and agro-industries (referred as BPLs of agro-industries) in the value chain.
- *Contract farming* is the contractual arrangement between processors/buyers and SHFs such as outgrower of wheat between SHFs and Ethiopian Seed Enterprise (ESE).
- *Efficiency* measures technical efficiency (TE), allocative efficiency (AE) and economic efficiency (EE) of SHFs in agriculture and industrialists in agro-processing in this research.
- *Forward production linkages (FPLs)* refer downstream post-harvest supply of agricultural produces (referred as agricultural FPLs) for agro-processing and marketing of industrial (in this study SFI and NOIs) outputs to SHFs and other processors (referred as industrial FPLs).

- *Hinterlands* refer rural areas (seven districts in this study) that are adjacent or close enough to main urban centre (DMT in this study).
- *Horizontal linkages* refer the organizational arrangement and social capital between individual SHFs, industrialists as well as among SHFs and industrialists at the same level linkages such as SHFs' cooperatives and industrial association.
- *Institutions* refer formal and informal societal laws and rules for guiding, governing and managing the socio-economic and ecological relationships of people.
- *Opportunity of development* refers to any potential areas, problems and challenges that can be transformed for agricultural and industrial virtuous circle effects.
- *Participation* is the active and genuine involvement of people on their lives and concerns starting from planning and decision making to its implementation.
- *Partnership* is any joint relationships like public-private partnership (PPP), joint ventures of SHFs and agro-industrialist in agricultural and agro-industrial production linkages.
- *Sectoral linkage* is the production linkages of key economic sectors (as industry and agriculture in this study).
- *Social capital* refers trustworthiness and cooperation network of people in collective (SHFs' association) and individual (SHF or agro-industrialist) support system and wellbeing.
- *Transformation* refers to the dynamic process of shifting from the vicious circle to virtuous circle URELs in agriculture and agro-industries.
- *Urban-rural linkages* (URLs) are the general linkages and interaction of urban and rural areas in economic and finance, social, infrastructure, population, services and environment.
- *Urban-rural economic linkages (URELs)* are sub-sector of URLs which are regional economic development strategies in production, finance and market.
- *Urban-rural production linkages* (URELs) are one of the (vertical and horizontal) economic linkages of an urban centre and its hinterlands.
- *Value adding* is transforming raw materials in form, place or time for better prices.
- *Vertical linkages* refer the system of value chain mainly forward production linkages (FPLs) and backward production linkages (BPL) in UREL in this study.

❖ *Virtuous circle* URELs is the favourable international, national and local conditions with a regional investment in leading and basic sectors for internalization of three multiplier effects: employment generation, regional virtuous circle basic sectors in BPLs and FPLs, increasing income for local purchasing power within sustainable environment) (Douglas 2006:148).

1.10 Organization of the study

This thesis has nine chapters. Chapter one is an introduction part that presents a brief explanation of the study background, the problem statement, objectives, significance and scope of the study, clarification of main concepts and terms and organization of the study.

Chapter two presents the general literature, theoretical and analytical frameworks with debates on URELs from the development perspective in the macro-micro structures. The empirical literature shows theoretical and practical gaps of knowledge where this study filled in the study. It also discusses on the challenges, efficiencies and their opportunities of URELs and URLs mainlyin ABCs.

Chapter three discusses about the social, political economy and empirical literatures on URELs in Ethiopia. It has empirical studies showing the gap of knowledge in URLs, agricultural and industrial efficiencies, development policy, institutional trends and challenges in Ethiopia. It also discusses on the status and magnitude of URELs and URLs in Ethiopia.

Chapter four discusses research design for the study of URELs. The chapter presents the research paradigm, research design and methods, ways of addressing research questions, multi-stage sampling of the study area, primary and secondary data sources, population and processes of data collection and its final analysis-discussion. Furthermore, validity reliability and ethical issues are explained in this chapter.

Chapter five investigates the status and magnitude of URELs based on the challenges and problems. It presents cost of production and processing, status of BPLs and FPLs of agriculture and agro-industries for actors and their value added in agribusinesses, non-agricultural economic activities of SHFs and their impacts on URELs.

Chapter six examines three types of efficiencies: technical efficiency (TE), allocative efficiency (AE) and economic efficiency (EE) of SHFs in wheat and nigerseed agriculture and corresponding agro-industrialists in SFI and NOIs. It has both descriptive analyses and econometric model stochastic frontier analysis (SFA) for inferring the potential opportunity of development.

Chapter seven examines the relationship and association of URELs within the prevailing government focusing the debates on ethnic-regionalism and regional development approach, the form of government, URELs governance. It also discusses theory and practice of policy, set institution and resources mobilization, government businesses and SHFs and private industrialists, macro-micro policy conflicts, R&D and production-processing, public ownership of assets and socio-cultural capitals in synergy of sustainable regional development.

Chapter eight presents the theoretical empirical model for URELs. It gives rational for developing, the process of development, applicability, opportunities and threats, scope and limitations of the empirical model in ABCs.

Chapter nine explains the general summary, conclusions and recommendations. General summary presents the main findings related to status, efficiencies, and factors for poor URELs and theoretical model. Furthermore, it presents the conclusions of the overall realization and recommendations based on the findings, scientific arguments, theoretical and analytical frameworks. Based on these organization of the thesis, the next chapter discusses about the general theoretical, empirical and analytical issues on URLs and URELs.

1.11 Summary and concluding remarks of the chapter

The concept of urban-rural linkages (URLs) in general and urban-rural economic linkages (URELs) in particular has multi-spatial (urban-rural areas), multi-scalar (micro-macro) and multidisciplinary relationships and links with complex and interrelated intrinsic and extrinsic issues. URLs is simply the two ways interaction and connection between an urban centre and its hinterlands in economic, social, infrastructure and environmental, population flow, institutional and governance, information and cultural transfer. While URELs is a sub-sector of URLs that refer the production, consumption or

market and financial linkages of an urban centre and its adjacent rural areas as DMT and its hinterland seven districts in this study.

Development policies and institutional settings of most LDCs are biased to either agricultural fundamentalism or urban-biased development model. Consequently, the natural complementary and continuum of urban and rural areas has coordination failure for bad equilibrium. The recent development approach such as sustainable development and ecological conservation has based on the integrated and coordinated development approaches for using their advantages of urban and rural complementarity, synergy and the natural continuum within inevitable process of urbanization in regional, national, sub-continetal and continental development. The absence of integrated development approach in policies, institutional settings and governance can result in vicious circle URELs though Ethiopia has high potential natural and human resources within much temprate climate in the tropices. Agriculture and agro-industries are at subsistence and local market level that again has made Ethiopia one of the poorest countries in the world next to Niger in 2015.

The rationales for conducting this study: little academic studies and scarcity on the area, many recommendations as a gap for further research since government's lack of formulating enabling environment for URELs for regional and national development, higher poverty in both urban centres and their hinterlands, my previous empirical working papers and long exposure in the study region. Based on the rationale, this study is designed to address the following objectives: to examine the status and magnitude of agribusiness and value chain, assess the efficiencies of agriculture and corresponding agro-industries; investigate challenges and problems for URELs and explore theoretical empirical model. The study has sequential mixed methods research for responding the reseach questions. The study region is delimited by multi-stage spatial sampling to DMT (zonal capital) and its hinterlands (seven districts) based on regional development approach. The significance of the research is mainly to inform policy makers, actors and stakeholders by exploring the theoretical empirical model of virtuous circle URELs and sustainable regional development. The empirical model will also persuade all stakeholders to have active participation through integrated system approach in the transformation of vicious circle to virtuous circle URELs. The study can use for the

multiplier effects, scale economy, agricultural industrialization in regional development. However, the study has some limitations due the complex and systemic nature of multi-spatial, multi-scalar, multi-disciplinary and multi-stakeholders in URELs and agribusiness. Hence, some interdependent issues with URELs and agri-business have not well addressed and recommended for further research. It has also brief organization of the study to give general overview of the thesis. In short, lack of enabling environment for integrated and coordinated development on the key economic sectors in ABCs is the main driving factor for conducting this research and the research had new empirical theoretical model for integrated regional development. The next chapter presents the general empirical studies, theoretical frameworks and analytical models of URELs.

2 Chapter Two: General literature and theoretical frameworks

2.1 Introduction

The wrld has inevitably been transforming from rural and agrarian into urban, industrial and service economies. More people live in urban areas than in rural areas and the world population has been adding 800 million per year reaching 7 billion in 2011 and 9.2 billion in 2025 (Turzi 2012:3 and UN 2008:166). URLs are one of the strategies in LED and it is a recent phenomenon getting increased attention in both development policies and governments for promoting sustainable regional (and/or local) development (Pieterse 2010:37 and Tacoli 2006: 35). This chapter presents reviews of articles, books, documents and proceedings or other related data basis materials on URELs in the world, mainly Africa and LDCs for showing the magnitude of the challenge and gaps of knowledge. The main discussion points about URELs are empirical researches, politico-governance, challenges and opportunities, agriculture and its efficiencies, agro-industry and its efficiencies, sustainable regional development, main actors in regional development, theoretical framework, model, analytical framework and finally summary and concluding remarks.

Agro-industrial production and value chain analysis is an indispensable task prior to any intervention for providing a deeper understanding of URLs (UNIDO 2009b: VII). Complimentary-induced agro-industrial development could significantly enhance the rate and scope of both agricultural and industrial development in ABCs (UNIDO 2009a:5). The following section discusses about empirical researches on URELs.

2.2 Empirical researches on URELs

The issue of URELs is sub-system of the broader urban-rural linkages (URLs) and it is a complex system with multidisciplinary nature such as agriculture, agro-industry, multi-scalar such as macro-micro, multi-actors (such as farmers, industrialists, the local governments and traders). Hence, different scholars conducted research under the broad URLs in the different dimensions and perspectives and/or approaches. Processing and functioning of URELs has started from pre-harvest, harvesting, post-harvest processing:

storage and value adding, preservation, packaging and re-distribution to marketing for intermediaries such as to bakeries for final consumption. Agro-food processing has even heterogeneous and diversified dimensions such as root crops, cereals, vegetables and fruits, pulses and oilseeds.

African development is in a dilemma of development directives that need new and innovative types of development paradigm (Nkurayija 2011:16). **T**he government of Uganda lack focus on addressing declining soil fertility and farmer training, development of product standards and promoting direct commercial relations between SHFs and private-sector firms. This is because it has no enabling institutional and knowledge management framework to promote the long-term sustainability of oilseeds and edible oil production (IFAD 2011:32).

URLs and value chain have preconditions for successful iterative and sustainable processes and development. Mittal (2007) studies on mechanisms of establishing an efficient BPLs and FPLs in horticulture production and processing in India. He pointed out that lack of good quality seeds; inadequate irrigation; lack of soil tests and professional extension staffs; inefficiency in pest management; low/non-availability of credit; high cost of production and low share in final price; poor access to market information; huge post-harvest losses; poor public investment; lack of infrastructures and marketing power of SHFs; high transportation costs; problems of timely delivery of outputs; low and declining productivity are some of the variables directly or indirectly related to problems and challenges in horticulture development (Mittal 2007:462). Douglass (2006:127) in his study of regional network strategy claims that identifying potentials and opportunities of a region need to be main emphasis for using URLs as engines of development. Moreover, agro-politan approach[1] can serve for demarcating URLs development region. However, the local region requires at least three critical issues for virtuous circle URLs development: agricultural land and water, decentralized governance and national development policies in support of URLs at local level (Douglass 2006:156). It is stated that analyses of the production value chain usually start from mapping the structure of specific value chains at the level of industries, sub-sectors

[1] Urban-rural regional development approach at province or larger district level appropriate for URLs (Douglas, 2006:136).

and macro-production complexes. These scholars suggest that URELs and analysis need the following preconditions: understanding the technical characteristics of a chain and identifying all the major links in the chain and final markets. They further discuss for distinguishing links performed domestically from those performed abroad and understanding stages of value chain and value added, the role of the key firms in the chain are other important determinants (Memedovic and Shepherd 2009: 4 and UNIDO 2009a:5). LDCs governments need to change their policies and institutional settings for appropriate resources mobilization through participatory political system at local levels for the active participation of all key actors and stakeholders such as local governments, NGOs, civic society, CBOs and the private sectors (Swanepoel and Beer 2006:18 and Tacoli 2007:50). The four important points need to be considered for local development dynamics in LDCs politico-governance: levels and types of power dynamics and dynamics of policy implementation and processes; categories of issues and trade-offs; layered institutional settings and the different political engagement and power relations and the reality of everyday formal politics (Peiterse and Donk 2008:66). The main types of market-supporting and value-chain development institutions for rapid economic progress are property rights and legally binding contracts, regulatory and social insurance institutions and macroeconomic stability (MAC 2012:127). LDCs of land locked countries as well as small islands could more rapidly reduce impediments to the development of productive capacities by forming regional cooperation (untapped potential) and institutions for FDI attraction, technology transfer and cooperation, exchange of policy experience and new market opportunities (UN 2011c:9).

Dick argues that an integrated urban and rural development needs functional region constituting the urban centre and rural hinterlands; actors-oriented development and decentralized regional governance (Dick 2011:6). Farm productivity critically depends on the agribusiness efficiency of providing inputs and processing outputs for overall economic growth and regional development (Haggblade 2011: 10, 13). Agricultural produce and productivity has interrelated structural transformation with non-agricultural growth of urbanization and industrialization starting from pre-farm production services (inputs), on-farm production processes, post-harvest functions to final consumers (Memedovic and Shepherd 2009:6 and UNIDO 2009a:6). Different from LED of urban

centre and its hinterlands, Meeijerink and Roza (2007:16, 17) confirm that spatial proximity to urban centres does not necessarily improve SHFs' access to inputs and services for agricultural production and production intensity in a territory. However, URLs and spatial network with households' endowments such as labour, land and capital play an important role in SHFs' access to inputs and services for increasing their production and productivity. Developing agriculture and agro-industries require radical change and innovation from existing software (such as policies and institutional settings, knowledge, governance), hardware (physical infrastructures such as warehouses, marketing facilities, roads) and orgware (organizational structure in demand and supply, partnerships, cooperation with participation of all actors) in Africa. This is because the current agricultural and ecological disorder such as climate change and shortage of fresh water and many undernourished populations (such as SSACs 239 million, Asia-pacific 578 million in 2010) are some of the challenge of agriculture (UN 2011a:67,83).

Douglas states that agro-industrial and value-chain development through URLs need productive potential or underutilized region of urban centre and its hinterlands for developing reinforcing virtuous circle regional development. However, identifying higher potentials of key sectors and spatial areas for URLs development also need multidisciplinary experts (Douglass 2006:128). Development through URLs and URELs also needs considerable capital and significant public and community involvements with building commercially viable rural and urban systems (Haggblade 2011: 10, 24).

Most challenges and problems of agricultural industrialization are mainly due to lack of enabling environment with weak political will and commitment in many LDCs (Nkurayija 2011:16). Different authors (Assefa 2007; Okorley and Ayekepa 2010; Kula 2008; Tacoli 2007 and Wang, Powers and Wei 2009) agree that the main problems and challenges for URLs are related to problems of enabling environment and politico-governance in Africa and many LDCs coupled with professional bias in policy formulation. Tacoli (2006:34) argue that rural specialists concerned only about rural development while urban specialists totally forget the importance of rural development and prosperous agriculture. Therefore, URELs for reinforcing agriculture and manufacturing are found in challenges and problems from most government departmental

structures, professional biases, multi-spatial and multi-actors in many LDCs (Dethier and Effenberger 2011:4).

Tiffen (2006: 94) studies about agro-processing in SSACs and she has used three scales of industrial development transition models (Phase-A, Phase-B and Phase-C). The author's findings claim that import-reliant industries suffered from shortages of raw materials leading to reduction of workers, underutilization of capacity and closures. While local raw material-oriented industries also faced many other problems such as rent seeking, deteriorating services, runaway inflation, over-valued exchange rates, stiff competition with cheap imported commodities and state-owned enterprises. APP (2011:27,28) and UN (2011a:48) claim that human-induced problems of: unfavourable business environment for private investors; lack of good governance such as corruption; limited (private) entrepreneurship and skilled human resources; poor institutions as lack of the rule of law are major retarding factors and challenges of URELs and agricultural industrialization in Africa. Mushi (2003:181) argues that local authorities had been administratively and functionally weak for regional economic planning and development in Tanzania. This author concludes that local governments could not prepare their own district development Plan by assessing the available resources or assets in their areas of jurisdiction. Many third world countries neglect their food staples and rely more on producing high value products (horticulture) for better export income (Meeijerink and Roza 2007:7). Sherma, Pathania and Lal (2010:517) assert that the main reasons for under capacity of agro-industrial production are lack of adequate raw material supply, bottlenecks from government institutions and market structure.

Owusu (2005: 127) studies the impacts of decentralization on the growth of district towns and their URLs in Ghana. The author generalizes that policies and institutional settings in Africa were challenges rather than opportunities for URLs. It is also argued that poverty and vicious circle production-resources nexus were common obstacles for the development of agro-industrial and URLs in LDCs (Pieterse 2010:16). Agriculture that has about 60% of economically active population has been declining in value added to GDP and average yield per ha in SSACs without other industrial transformation (Meeijerink and Roza 2007:14). Regional and local development through URLs depends

on the local, regional, national and international systems (Tacoli 2004:15 and Satterthwaite and Tacoli 2006:176-7). Okorley and Ayekepa (2010) study factors affecting effective partnership between SHFs and agro-processing industries without partnership agreement (contract document) that has binding grounds (such as organic farming and cultivation practice, production quotas, pricing with payment procedure and others). Their findings confirm that lack of legal binding partnership has constrained the two party's contractual agreement compliance, trust, reliability and security of benefits. In addition, increasing URLs have bypass effect outside the region to other regions or export from destination urban centres (Dick 2011:3). Infrastructure and agro-industrial development have an inverse relationship in Africa and many LDCs. Dethier and Effenberger (2011:4); NPC 2011:8; UN 2008:142 and UNIDO 2009b: 26) explain that the challenges and problems of URLs and agro-industrial development can be into internally-induced (such as poor capacity and poor management, ill-adapted technology, weak social capital) and externally-induced natural problems.

Energy utilization has advantages of saving or destracting the natural environment. The proper and efficient utilization of energy can be done friendly with the natural ecological system. On the other hand, inefficient and underutilization of energy can destract the overall ecology. Traditional biomass fuels such as wood, charcoal, animal dung, crop residue, tree leaves and old materials of tyres and plastics are common sources of energy in ABCs. 80% of people in SSACs, 94% in democratic republic of Congo and Tanzania, 93% in Ethiopia are based on such biomass fuel (Behrens et al 2012:27; Swanepoel and Beer 2006:15 and UNCTAD 2012:97). Hence, it is claimed that backward countries are poor mainly because of extrinsic challenges and problems such as lack of appropriate institutions, mismanagement of human and material resources, state malfunctioning and corruption and hazard to investment and development (Pieterse 2010:43). African countries have empirically been suffering from critical challenges and barriers of energy infrastructure. The challenges and problems of energy include unreliable power supply, managerial problems of energy supply; lack of alternative energy sources, higher price for agriculture industrialization and agri-business development (Nkurayija 2011:12 and Rodgers 2012:30). As a result, about 40% of people still rely on traditional biomass (wood, dung, agricultural residue) for cooking and heating in SSACs. Households, small

producers and firms in LDCs spend a significant fraction on energy in production; processing, marketing and potential clients service (Straub 2011:685). UN argues that higher energy price means obstacle to build sustainable industry, higher food prices, increasing poverty, increasing deforestation and environmental degradation in LDCs. The share of manufacturing in GDP has a slight increase in the last decades (11% in 1980, 10.4% in 2000, and 12.5% in 2009) in LDCs due to its numerous bottlenecks and challenges including energy supply in these countries However, sustainable energy supply is a prerequisite for all energy-driven type of industrial development and environmental conservation (UN 2011a:2,28). Energy supply is the crucial factor for sustainable development in socio-economic and environmental aspects of both urban and rural areas (Behrens et al 2012: 28, 30).

Agro-industries in most LDCs are generally characterized by: early stage of development employing simple technologies of drying and milling; dominated by small and micro enterprises (SMEs); less developed downstream and upstream linkages in the value chain (UNIDO 2009a:6 and Memedovic and Shepherd 2009:6). This is because agri-business and agricultural industry in LDCs have given little attention while food aid and imports of inputs (seeds, fertilizers and irrigation systems) have greater focus (UN 2008:208). Though Africa and most LDCs are very far from MDCs' agro-processing, comparing the situation would have lessons for ABCs. In MDCs, about 98% of agricultural production underwent industrial processing (by value adding nearly US$185 per ton) while about 38% of agricultural production was processed in LDCs (with value adding approximately US$40 per ton) (Table 2.1).

Table 2.1: comparision of agro-processing in MDCs and LDCs

Activities	MDCs	LDCs
Agricultural products processed (%)	98	38
Value-added (US$ per tonne)	185	40
Post-harvest losses (%)	Min	40

Source: UNIDO (2009b:6)

The problems of many LDCs and Africa are not only low value adding but also tremendous pre-harvest to post-harvest losses. The value added per ton of agricultural produce in MDCs is about five times that of the LDCs, and they have minimal post-harvest losses (Table 2.1). The possible failure of LDCs could be the technological and

efficiency difference. However, Kiaya argues that pre-harvest and post-harvest losses in ABCs could be more than half of the total output and in Africa, post-harvest losses of food cereals are 25% of the total crop harvested due to many human and natural reasons (Kiaya 2014:8).

The problems and challenges of URLs and LED have different suggestions and possible solutions. Mulongo, Erute and kerre (2010:12) study URLs and sustainability in Kenya and their findings indicate that both urban centres and rural areas played decisive roles in the development of each other. They confirm that urban centres are instrumental in providing basic rural necessities as engines of agricultural development. In the same way, rural areas produce and supply food, agro-industrial raw materials and commercial functions for urban development. This analysis implies that urban centres and rural areas are complementary, interdependent in their development and they conclude that urban centres could not develop without rural area and vice versa. The central role of inter-sectoral linkages between agriculture and agro-industry is to bring about the virtuous circle and good equilibrium URELs to agricultural industrialization (Getnet and Mirab 2010:2). Moreover, agriculture-industry synergies and partnership are important for unlocking development potentials in the upstream and downstream value-chains, extended job opportunities (in the value chain) and multiplier effects on both labour-intensive framings (such vegetables and fruits) and non-labour-intensive farming (such as grains/cereals, oil seeds, livestock and poultry) (NPC 2011:201, 203).

The empirical experience of many newly industrialized countries (NICs) shows that development in LDCs is possible in the 21stcentury. The Chinese government has encouraged URLs and urbanization through town-village enterprises (TVEs) approach in development. The TVEs development approach has created higher local, regional and international development potential and success for competitiveness and agglomeration of scale economy; localization economies and entrepreneurs or FDI for moving from import-substitution industrialization (ISI) to an export-oriented progress with employment and wealth in Chinese development since 1978 (Van Dijk 2012:8, 17). URLs have many advantages in development and some of these advantages are giving new opportunities for product specialization and/or diversification; value-added along

value chains; multi-stakeholders participation and employment diversification and access to domestic and global value-chains (GVCs). They also include strong BPLs and FPLs; good transaction costs (marketing interfaces); extending shelf life of agricultural outputs (reducing post-harvest losses by about 50%) for food security and poverty reduction; a means for transition from labour-intensive to knowledge economy and multiplier effects (Memedovic and Shepherd 2009:6; UN 2008:141 and UNIDO 2009b:5). Empirically, it is confirmed that Kenya has brought impressive agribusiness development in dairy industry and the author puts as follow.

> Kenya's dairy industry, the second largest in Africa, has emerged and prospered because of closely inter-related technology improvements on and off farm. The growth of African dairy industries, of which Kenya offers the most impressive example, requires the development of feed industries, veterinary and artificial insemination services, refrigerated collection systems and scaled up processing, packaging and retail distribution systems (Haggblade, 2011:17).

IFAD (2011:32) made a study on oil seed crops from vegetable oil, traditional oil seeds and essential oil seeds in Uganda. The important determinants in its study are: project performance (relevance, effectiveness and efficiency), rural poverty (by the domains of household income and assets, human development and social capital with human empowerment, agricultural productivity and food security, natural resources and the environment, institutions and policies) with implementing partner (Figure 2.1).

Source: adapted from IFAD (2011:4, 34, 41)

Figure 2.1: Different farming styles for oilseeds and edible oil marketing in Uganda

IFAD claim that the edible oil development project induced replication and scaling up the beneficiary families of substantial traditional (pro-poor of 78%) SHFs in organizational development, employment, income and living standards by high levels of government commitment at all levels for increasing public-private partnership (PPP), commercial marketing of edible oils and sustainability of oil seed production by partners of SHFs and processor associations (IFAD 2011:49, 64). Sherma, Pathania and Lal (2010) agro-analysis study indicates that non-agricultural employments in urban centres have contributed various rural income growths (as high as 42% in Africa, 40% in Latin America and 32% in Asia). They argue that total capital investment is the highest for flourmills but the extent of value addition was highest for vegetables and fruit-based processing industries (133%) followed by bakeries (99%). Flour mills and vegetable processing need large and wider procurement and sale networks within and outside their region though none of their sampled agro-processing industries has linkages with

exporters (Sherma, Pathania and Lal 2010:519-20). The empirical experiences of URLs and value chain have important lessons. Local and regional value chains as in south-western Ghana; Kenyan horticulture multi-layered local market for benefiting SHFs and Vietnam's established trust and collaborative trading relationships (among producers, assemblers and wholesalers) are some productions and processing for making competitive local products (UNIDO 2009a:52).

Tostensen (2004) studies urban manufacturing workers for URLs in Kenya and his findings confirm that oscillatory migration system and commuting are increasing due to landlessness, near landlessness and land fragmentation without other options in the hinterlands. He suggests that a new policy framework in the country need to upgrade Kenyan manufacturers' production capacity and human capital development (Tostensen 2004:9). Baker (2006:54) claims that many village households, especially the poor and vulnerable groups are those households with small area of farmland or crop without non-agricultural income generating sources. While, he asserts that the urban poor is those households with only urban employment or underemployment. Rigg (2006:73) and Baker (2006:52) claim that URLs for livelihood diversification could differently use for different economic classes such as survival for the poor, consolidation for medium and accumulation for the rich households in both urban and rural areas. Similarly, Tacoli (2006:34-5) also argues that many rural settlements and many urban households have relied on both rural and urban economies for income diversification with variation in socio-economic and demographic variables such as family size, age and education.

The historical trend of transformation from an agrarian society to industrial society and commercial agriculture has the following featurs (Emigh 2008:30-31):

- large land owners who rent out their estates to capitalist tenant SHFs and in turn the tenants hire wage labourers to work the land as in Britain case;
- transformation of large landlords into capitalist entrepreneurs and employers or wage labourers as Prussia;
- owner-operated family commercial agriculture like the early transition of USA;

- ❖ peasant model through sub-dividing holdings and intensifying labour to the extent of diminishing returns to any inputs and labour force that enforced rural inhabitants to sell land to large land owners or urban capitalists to work as landless wage labourers;
- ❖ Specialization model of transitional path that some rural cultivators specialize in the production of agricultural products for market while most are forced to sell their wage labour and buy commodities like early Dutch transition.

There are different possible approaches for transformation of ABCs to agricultural industrialization and sustainable development. Peiterse (2010:17) and UN (2011b: xvii) argue that comprehensive and holistic development policy is a contemporary development approach for conceptualizing and realizing development. These authors' justification is that sectoral agendas and approaches as well as disciplinary boundaries have been losing their relevance. Development needs eclectic approach to the context in new combinations of different perspectives: state-led, market forces (liberalism) and society-led (alternative development) with the involvement of many stakeholders for changing and avoiding 'one size fits for all.' Brynard and Stone (2004:41-2) and Tacoli (2007:51) elaborate that effective policy and its implementation need to integrate the five interconnected variables: content, context, commitment, client and coalition of stakeholders. National policies for URLs need to match and integrate with international, national, regional and local contexts. The improvement of governance and institutional settings is main part of the proper function of all actors (community, local governments, private sectors, civil societies and CBOs) for URLs and integrated LED (UN 2011b:4).

In developmental states, policies and institutions are recently considered as enabling environment for all production and productivity development of both urban and rural communities (Tiffen 2006: 94). China's miracle development is the result of its new and innovative policy and institutional arrangement in its context in transition rather than adopting straight forward copy of best-practices (as advanced western countries free market) (OECD 2010:19 and Todaro and Smith 2012:197). The empirical lesson in political and socio-economic transformation of Georgia can be role model for many LDCs and African countries (Rinnert 2012:1). The author continue its argument that after 2003 rose revolution for political change in Georgia (with 4.4 million people) has brought numerous remarkable changes and development in socio-economic and political

institutions as world champion. The author further explain that the previous devastating economic downturn and systems are turned to some democratic institutional systems and enabling environment for different development actors (Rinnert 2012:1). The empirical lesson in Africa from Botswana's development that has poor geographical neighbours and endowment of natural resources is due to its good governance and institutional settings with human capital and leaders' commitment (Todaro and Smith 2012:740). Low institutional and governance quality of SSACs is an important factor for the inability of the governments to achieve desired policy-plan development. Dethier and Effenberger (2011:3) claim that developing fundamental institutional rights is a prerequisite for SSACs development since SHFs and small-scale industrialists who have low educational level and insecure property need strong policy and institutional support and grantee for their development. Empirically, East Asian countries have successfully broken the low equilibrium trap through developing productive capacities of producers and processors in the improved policy and institutional setting (UN 2011c:4). Therefore, socio-economic development and poverty reduction in poor countries requires structural transformation from low productivity to high productivity based on a country's comparative advantage (UN 2011c:18). Malfunctioning and corruption are unquestionable critical problems for institutional functions and development in poor countries. NPC (2011:402) singles out four areas of focus for developing accountable state and zero-tolerance of corruption in LDCs: building a resilient anti-corruption system free from political interference; creating transparent, responsive and accountable public servant; strengthening accountable judicial governance and following the rule of law.

In the form of governance, real decentralized local governments are an important condition for regional development. This is because local governments are at best position for identifying and acting on local opportunities, constraints, horizontal and vertical linkages with key stockholders' participation for sustainable local and regional development. It is also suggested that real decentralization need to be deep rooted at grassroots and local decision-making for combining indigenous bottom-up and scientific knowledge of top-down balance for sustainable local development (Adarkwa 2006:10; Hesse and Wissink 2004:53 and Tacoli 2007:178). Local governments (wards, districts and province) have key positions for implementation and direct contact with the

community, they have faced many challenges such as top-down directives, political (upward) accountability, lack of experimenting for solving unforeseen and unexpected problems, poor integration of development plans and institutions as well as political and economic corruption (Peiterse and Donk 2008:62 and Tacoli 2007:53).

Partnership is a recent knowledge in bringing different development actors in the same systemfor sustainable socio-economic transformation, reducing numbers of intermediaries and advantages of scale economy. It is also suggested that partnership in different forms is important for individual SHFs in Africa to proper production management, scale economy and full URELs (APP 2011:58). Some donors invested on producer organizations (such as cooperatives and unions) for social capital and horizontal linkages development for advantages of scale economies. While it is also argued that SHFs organizations had disadvantages such as market failure, information asymmetries and political influence (UNIDO 2009a:64, 65). Moreover, the empirical experience of the green revolution in agriculture indicates that R&D, ICT, enabling environment and partnerships are important determinants for the transformation of vicious to virtuous circle URELs in LDCs (UN 2011c:88, 90). Regional development approaches through URLs need to have good understandings on different socio-cultural, economical, ecological and regional differences of urban and rural conditions for URLs and regional development. This is because developing virtuous circle URLs is almost impossible in disintegrated and poverty stricken region (Tacoli 2007:46, 51). Nkurayija states that an economic structure has important reflection for the relative contribution of the different stakeholders in terms of production, employment and land reform in subsistence agricultural regions. The state can also promote individual and organizational working for training in developing skills, financing system of saving and credit, marketing, technological adaptation, business knowledge and FDI partnership (Nkurayija 2011:9, 11). Development and transfer of green production and consumption technologies is important to have sustainable and environmental-friendly as renewable energy system in regional development (UN 2011c:167).

Spatial and socio-cultural factors can affect URLs and LED. Meeijerink and Roza (2007:13) also assert that the headcount poverty rate declined roughly by equal amounts on both urban centres and rural areas with variation for social conditions in LDCs. The

poverty reduction varies in gender (more effective for male-headed households) and educational level. NPC (2011:21,419) claims that discrimination in ethnicity and gender (sexism) remains a major problem in LDCs' socio-economic settings including the workplace, in the family and educational institutions. Consequently, the ability of agricultural and industrial production as well as synergy to keep pace with population growth has been impressive defying to some neo-Malthusian predictions in LDCs.

2.3 Politico-governance and URELs

Different studies in different parts of the world showed that political economy and politico-governance in LDCS are decisive for URELs and development at local, national and global levels. The debate on which political paradigm and economy could be important for Africa and other many LDCs' development does not have consensus. The views of Marxism and liberalism in LDCs' development have no clear consensus, especially in backward and transition countries. It is claimed that free market policy in more traditional sectors is exposing existing producers to unprecedented degree of global competition without advancing to various thresholds in human capital, research and development (R&D) and management practice. Many countries in transition from Marxist philosophy to welfare economy have faced many problems and challenges (UN 2011a:24, 25 and 2011b:13).

Some post-communist developing countries are in transition to privatization and market economy as an integral part of a major socio-economic and political transformation. Consequently, they have privatized in different forms such as voucher scheme that entitled citizens to bid on shares of companies (Czech republic and Poland) and/or employees' ownership (10%-100% as in Poland) and liquidated ownership such as lease/contract form or returning to previous owners like in Chile (Todaro and Smith 2012:784-788). Pieterse argues that different from westernization capitalism and free market, easternization as 'state-regulated capitalism' and socialism have generated miracle development in many Asian countries (Taiwan, Hong Kong, Korea, Singapore, China and India). These countries have focused equitable assets development policy (equity based on socialist principles and growth) with efficient government intervention through many factors in institutional arrangements and political settlements (Pieterse

2010:44,131). Hence, with the current financial crisis and decline in liberalism, the pendulum shifts from market to state-regulated development as developmental states in LDCs such as the great victories of China (since in time of Mao) and India (since in time of Nehru) (Pieterse 2010: 211,212). Suggestions indicate that the African countries can have innovative political economic and institutional systems for their own development. Committed governments have greater development effects than free market in the LDCs. In a new global and regional context, the development approaches pursued in LDCs need structural transformation for innovative policy space in pragmatic basis and uniquely designed African green revolution. Therefore, challenge for LDCs would be exploring innovative and context specific development paradigm, policy and institutional structures with transforming governments' commitment and accountability at all levels (OECD 2010:19 and Todaro and Smith 2009:197).

Despite many roles in formulating various development policies and institutional settings, many LDCs are commonly found in subsistence production and underdevelopment both in agriculture and industry due to their biased or misguided policies (NPC 2011:246). This is because the governance, institutional settings and implementation are challenges rather than incentives in these countries (Harris, kooy and Jones 2011:20; MAC 2012: 118,125 and Rodgers 2012:36). Africa has empirically 34 poorest countries from 48 poorest countries of the world and more than 40% of SSACs lives in absolute poverty with 54% unemployed productive forces (NPC 2011:60,65). Many scholars (Gantsho 2008:127 and Hess and Wissink 2004:167) claim that most African governments have lacked the opportunities of using urban centres as engines and synergy of development. They have failed both agriculture and industrial production and productivity. Mushi (2003:180) argues that the administrative boundaries between urban and rural areas are critical challenge to promote and coordinate URLs and URELs as well as the municipalities and local authorities. He also further argues that low-level technology for production and productivity, high illiteracy, inadequate infrastructure, gender disparities in accessing assets, ineffective and corrupt governments and institutions are among the main causes of poverty in Tanzania. The close nexus between agriculture and natural environment for the future sustainable production of agro-processing depends on ensuring an environmentally friendly production with cross-sectoral policy and

investment (Rogers 2012:7). The theoretical debate for the long-term agricultural and industrial development in LDCs can be realized if better opportunities of SHFs inclusiveness and small and micro-enterprises (SMEs) linkages and partnerships are given appropriate policy and institutional values (Memedovic and Shepherd 2009:6 and UNIDO 2009a:1). Mufamadi, Rutten and Leliveld argue that though local governments have a key roles in the implementation of national policies and LED on the ground against poverty and unemployment, they have usually lacked: finance, decentralized authority, human capacity and infrastructures for socio-economic development in LDCs (Mufamadi 2008: VI and Rutten and Leliveld 2004:18).

Differences in level of development across countries in the world today are mainly caused by differences in enabling environment (policy, institutional settings, governance and ownership and access for assest) and wise adaptation and application of dynamic policies in their context of development (MAC, 2012: 124 and Newland and Tanka 2010:8). Empirical study of World Bank (2011:101,104) on simple-cross 280 countries survey confirms that people's expectation about future development is often wrong (fragile and mistrust) about the future in LDCs while people's expectations have a significant correlation with actual outcomes of future development in MDCs. This organization explains the implications of their findings that well-developed social capital is an important asset for rationale progress and development in confidence of key stakeholders, government and entrepreneurs. LDCs' poverty and underdevelopment are fundamentally associated with government-induced problems. The main problems could be maladministration and mismanagement of resources as well as inability to modify, manage or develop socio-economic, resources and the environment (NPC 2011:246).

Poverty and vicious circle production-resources nexus are common obstacles for the development of agribusiness in poor countries (Pieterse 2010:16). Africa' underdevelopment, counter-productive activities and poverty can be a serious challenge for global development because governments in Africa are often irresponsible, autocratic and corrupt following the poor governance of their predecessor colonial style. The maladministration includes divide and rule, oppression, ruling without the consent and will of people for life long (Alemazung 2010:62, 78 and Kingsbury 2004:10). Therefore,

wrong development policies in production and development are the effects of poor political economy and governance. African governments for example have focused production of cash crops for export rather than food crops for their citizens who are under poverty and food aid. Moreover, weak and superficial institutional settings, centralized and dictatorship politico-governance in Africa put citizens trapped in poverty of vicious circle and deprivation under bad equilibrium (Hesse and Wissink 2004:50 and Swanepoel and Beer 2006:10). Societies can be in poverty traps in which government behaviour itself is part of the vicious circle of underdevelopment and poverty (Todaro and Smith 2012:741).

According to Rogers (2012:10), identifying appropriate investment roles of different stakeholders (public, private, NGOs and CBOs) as well as the differentiation of SHFs and processors with appropriate institutional settings are critical points requiring enabling environment. Important mechanisms to restore the confidence and participation of key stakeholders in fragile and undemocratic countries are (World Bank 2011:106): collaborative and inclusive enough coalitions; early attention to the reform and effectiveness of institutions; citizen security, justice, and employment and finally, stresses reduction. Identifying key complementary sectors and coordinating or integrating them in development becomes a function of peace, security and good governance in LDCs (Nkurayija 2011:3).

Policy and institutions are among the elements of basic enabling environment. According to Harris, Kooy and Jones (2011:17), (informal and formal) institutions are the rules of the game and Africa lacks free and democratic institutional settings for private and FDI attraction and development. Therefore, investment attraction in ABCs needs to focus on building enabling environment for development. Newland and Tanka argue that though FDI and Diaspora entrepreneurs can contribute development by creating (transnational) businesses and knowledge-based industries with financial and political capitals, most African countries have little success in attracting FDI investors and Diasporas. This is mainly because of their poor political climate for nurturing entrepreneurship and attracting investors on the key sectors of their development (Newland and Tanka 2010:8).

Agro-industries and agri-business with a particular focus on food crops production and food processing need to be a key priority in LDCs for reinforcement production and integrated development (UN 2011b:7). A strategic option for rural poor is to make their products value-added and value chain for more attractive to market demand by domestic and foreign consumers as well as access niche markets and/or global value chain (GVCs) (UNIDO 2009b:16). Nkurayija asserts that governments' intervention in LDCs have central roles of building good governance and leadership capacity at various levels. Thus, it needs competent and professional bureaucracy based on merit recruitment and promotion (rather than political patronage, ethnic or religious considerations) for leadership capacity and democratic developmental state for overcoming market failure (Nkurayija 2011:6). Therefore, Africa and other poor regions need conscientious, capable and responsible governments for researching and safeguarding the new African personality and development culture (Pieterse 2010:65).

2.4 Agriculture and its efficiencies

The nature of agriculture in LDCs and its efficiencies are poor and underutilization of resources. Emigh (2008:51) claims that URELs have mutual increasing efficiency and development of agriculture and industry. As a result, increasing agricultural efficiency can lead to agriculture industrialization.

2.4.1 Agriculture and smallholding farmers' (SHFs') livelihoods

SHFs have not the capacity to address the current challenges and problems of agriculture in in SSACs. This is mainly because they have poor support and physical settings, policy, political system, institutional and information system. They have also limited access to assets, infrastructures, new technologies and agricultural inputs (Meeijerink and Roza 2007:17). LDCs SHFs are often one-third of world population and they are 75% of the world’s poor livelihoods. They have often unable to feed their families and respond food crisis against extreme weather events. It is contended that they have poor and weak software (policy, institutions, governance, information and transaction), hardware (agricultural infrastructures as irrigation dams, canals and inputs) and orgware (horizontal linkages as organizational structures as individual or cooperative) (Dercon 2009:21; Meijerink and Roza 2007:17 and UN 2008:130, 207). Regionally, SSACs, Asia and the

pacific have the most severely affected nature-dependent agriculture that has prevalence of hunger and undernourishment (UNIDO 2009a:33).

Different authors argue that Africa has some type of paradoxes. The continent has vast and immense untapped resources for tropical agriculture such as one-quarter of world's arable land and over 60% of world's unexploited cropland. However, agricultural production in this continent has failed to feed its people. The main reasons for the failure of agriculture in Africa are poor agricultural financial system, lack of insurance services for risk and uncertainty of yields for nature-related shocks and vulnerability, high cost of inputs, poor value chain and market network, lack of storage facilities for surplus production, poor social services (health and education), lack of land tenure and administration, absence of research and development (R&D) (Dethier and Effenberger 2011:20,40; NPC 2011:67; Todaro and Smith 2012:433; UN 2011c:2 and UNIDO 2009b: 44). The poor financial system is also barriers for SHFs investment in LDCs since farming is considered highly risky by the formal financial institutions and banking system (Rodgers 2012:29). Subsistence level peasant agriculture in SSACs is the least in modern agricultural inputs utility, land and labour productivity in LDCs (Table 2.2).

Table 2.2: Comparing agricultural inputs use in developing regions in 2002

Region	Irrigated land%	Improved varieties%*	Fertilizer %
Sub-Sahara Africa	4	22	13
South Asia	39	78	98
East Asia and Pacific	29	84	190
Middle east and North Africa	33	-	73
Eastern Europe and central Asia	11	61	34
Latin America and Caribbean	11	81	81

Source: Todaro and Smith (2012:449) * in 2000

SSACs has the least irrigated land, improved varieties of crops and fertilizer input (improved seed and fertilizer) from all the regions (Table 2.2). This implies that there is higher problem in agriculture infrastructure, improved seed varieties and fertilizer application for better productivity and efficiencies. Most of farm outputs have lost pre-harvest (by pests, animals), threshing and processing (usually incomplete), transport and

storage, post-harvest (such as pests and mould decay), distribution, marketing and end-users (Kiaya 2014:8). Agriculture has been declining in production and productivity in (Sub-Sahara) Africa where about 60% of economically active population in this continent has engaged (Meeijerink and Roza 2007:14).

The other challenge for Africa agriculture industrialization is lack of its context-based technological progress. Dethier and Effenberger (2011:15) argue that technology transfer and adaption from MDCs to African agricultural development is unlikely to bring development due to heterogeneity of African countries themselves and high variation between LDCs and MDCs. The argument on empirical evidence of historical agricultural development variation of Japan that demanded labour-intensive and high productivity per land technology while USA demanded labour saving and capital-intensive agricultural technology allowing rapid increase in the productivity of scarce labour.

The question is what needs to be done for agricultural industrialization in Africa and poor countries. Agricultural products need modern storage system for: preventing the perishable nature, providing food material all year round, obtaining large scale processing, preserving of nutritional quality, controlling price and optimizing financial gains of SHFs (Kiaya 2014:8). Dercon (2009:2, 20) argues that the transformation of SHFs' vicious circle into the virtuous circle model can be done by allowing people to have advantages of entrepreneurial opportunities in agriculture and non-agriculture. Furthermore, the author argues that SHFs in many LDCs need risk management strategies such as petty trading, seasonal migration, growing drought resistant crops and risk copping strategies and self-insurance savings (often in the form of cattle or small ruminants) and informal mutual support mechanisms (strong social capital). Brazil has relatively succeeded in agrarian reform (as cooperative farming) and land reform (land tenure and redistribution) for good production and productivity (Davis 2011:45). In the same way, East Asian countries have successfully broken the low equilibrium trap of agriculture and agri-businesses through developing their productive capacities (UN 2011b:2, 7). Agricultural industrialization such as developing rural cottage industries has the effects of farmer’s increasing skills and prospects to migrate urban labour market in India (Pacione 2009:496). The principal sources and the basic conditions of agricultural

progress in Africa and other ABCs can be associated with profound changes of entire structures and rising domestic demand to agricultural industrialization through URELs and value chain (UN 2011a:9). It is suggested that vertical coordination of SHFs in contract and outgrowing farming and supply chains need the support of government policy and institutional settings for ensuring mutual beneficial relationships and linkages between SHFs and organized sectors, agro-processing industries (Mittal 2007:468). It is also important to expand non-agricultural labour-intensive rural development activities such as small irrigation and canals, land rehabilitation and rural roads development for agricultural reinvestment and development (Todaro and Smith 2012:432, 453, 467 and NPC 2011:200). Land tenure security can also allow SHFs to many advantages and alternatives such as land-leasing, land management agreements, rent out or contract farming, out-grower schemes as in Australia and Brazil for large scale producers and using joint equity models (like in Malaysia of smaller proportion (30%) of shares as for scale advantages (UN 2008:171).

2.4.2 Agricultural efficiencies

Productivity and efficiency of agriculture are the important measures and options for SHFs and policy-makers. Imposed by professional bias similar to policy and institutional dichotomy for urban centre and rural area, agricultural economists usually concerned with gricultural efficiency while agro-industrialists do have a concern for agro-industrial efficiencies. Ali and Yousif (2012: 220) conducted a comparative study on the efficiencies of small-scale SHFs of wheat and faba bean at Dongola and Ed-Abba in Sudan using stochastic frontier production and cost functions. Their findings indicate that wheat production has average TE of 75% at Dongola, 66% at Ed-Abba while its AE has 72% at Dongola and 68% at Ed-abba. The overall EE of wheat has been 41% at Dongola and 45% at Ed-Abba. The efficiencies of SHFs of faba bean are average TE of 65% at Dongola and 71% at Ed-Abba and average AE of 86% at Dongola and 84% at Ed-Abba. Thus, SHFs faba bean has average EE of 57% at Dongola and 62% at Ed-Abba. His findings indicate that SHFs who cultivated faba bean are more economically efficient than SHFs who have cultivated wheat in the two localities. Mahjoor (2013:1430) studied Broiler production in Iran through Data Envelopment Analysis (DEA) approach. Under

constant return to scale (CRS), his results are 82%, 70% and 57% of TE, AE, and EE respectively. Under variable return to scale (VRS), the results are 82%, 73% and 64% TE, AE and EE respectively. These SHFs have a better TE than AE and EE. Furthermore, about 59 farms have increasing return to scale while 16 farms have decreasing return to scale. Mburu, Ackello-Ogutu and Mulwa (2014:8) carried out a comparative analysis of efficiency and farm size of farmers in Kenya using MLE. Their results show that the mean TE, AE and EE of SHFs have been 85%, 96% and 84% respectively. On the other hand, the corresponding values for large scale SHFs have 91%, 394% and 88% TE, AE and EE respectively. The overall TE, AE and EE have 88%, 95% and 86% respectively. Their results imply that wheat can be better produced by large scale SHFs than SHFs regardless of better AE for SHFs. The overall efficiency of agriculture in LDCs has a high potential opportunity for development.

2.5 Agro-industries and their efficiencies

This section presents the scenarios and efficiencies (TE, AE and EE or scale) of manufacturing in general and agro-industries in particular.

2.5.1 The scenarios of manufacturing industries

Industrial and service economies are the main basis of urban economy. Industrial development is, thus, the core economic activity of most urban centres. There are different perspectives and debates on trade, industrialization and development in Africa related to the philosophy of neo-liberalism (open economy) and dependency theory (closed economy). Key external challenges of African economy are marginalization and trade deficit with huge debts in world economy (Dercon 2009:10, 19). MDCs protect their own industries while they make an open market in poor countries for selling their hi-tech cheaper commodities against local producers and processors with promising of more aid to LDCs (Alemazung 2010:78, 79). Todaro and Smith (2012) argue that inward-looking (closed economy) development policies in favour of trade pessimist encourage import-substitution industrialization (ISI) for protecting and developing indigenous manufacturing. Trade pessimists puts protectionist policy techniques (tariff and non-tariff barriers, quotas) for preventing their infant ISI to get enough time for achieving enough

maturation and the advantages of scale economies. According to pessimists' view, protectionism of ISI need phases of industrialization from initial stage (first stage import-substitution for domestic market satisfaction) to a wider range of more sophisticated and diversified manufactured production (second stage of import-substitution) and the final maturation stage for the world market competition. South Korea and Taiwan had passed the pesmistic industrial strategy of protecting their ISI. Consequently, they have the capacity and maturation to compete in a free market (Todaro and Smith 2012: 640). Designing and applying trade policy instruments need safeguarde and shield domestic industries against external anticompetitive practices (Rogers 2012:19,21). For example, European's policy of selling subsidized beef to the nations of West Africa has devastated cattle marketing in those countries with increasing protectionist policy of MDCs on LDCs products (Todaro and Smith 2012: 621,626).

The development strategy of ISI has also disadvantages such as inefficient and uncompetitive domestic industries, more benefit to foreign firms (FDI) in the form of remittance; chronic imbalance of payments and foreign exchange crises; favouring urban economy and higher income groups against rural economy and income groups (Todaro and Smith 2012:636). Thus, trade optimists argue that export-promotion industrialization (EPI) policy and strategies are important for LDCs rapid development with active government involvement in the 21st century (Pieterse 2010:42 and Todaro and Smith 2012: 636). Many African countries have continued to rely on export-led growth policies focusing on the extraction of raw materials (more than 80%) in the form of unprocessed natural resources. However, non-extractive sectors and competitive industries remained heavily underdeveloped in most African countries (APP 2011:11).

Philosophically, Todaro and Smith explain the dilemma of decision and area of important debate that neither trade pessimists nor optimists is correct at all times since both depend on many intrinsic and extrinsic factors as well as dynamic shocks and fluctuations. Therefore, the current consensus leans towards an eclectic approach of combining any of the possibilities such as free and closed trade, protectionist and strategic exporting models in the context of a nation (Todaro and Smith 2012: 640). LDCs have made slow transformation and progress in their productive capacities and structural transformation in

a rapidly dynamic world and they need to design their own system in their context for benefiting from globalization (UN 2011c:2).

The multi-dimensional philosophical and empirical solutions are suggested for the problems of industrial development in ABCs. South Korea is one of the developing countries that have recorded remarkable industrial achievements and high quality manufactured export at reasonable prices in using advantages of scale economy. Its development is the result of enabling environment with government commitments to the country's industrial and overall development (UN 2011:7 and Todaro and Smith 2012:693). ICT has given special emphasis for knowledge transfer, e-business and marketing, information sharing the current globalization (Rodgers 2012: 32).

2.5.2 Agro-industrial efficiencies

Industrial efficiency has not well researched compared to agricultural efficiency. Some of the empirical studies of industrial efficiencies are the following. Tingum (2014:127) studies the TE of firm level analysis in Cameroon by using stochastic frontier analysis (SFA). His results indicated that the most efficient firm is from the food processing sector followed by wood and furniture. The mean technical inefficiency of domestic firms is 31% while foreign firms are 29%. This implies the presence of gap for TE improvement within both existing firm technologies and/or new technologies for sustaining high efficiencies.

Mittal (2007) studies mechanisms of establishing an efficient BPLs and FPLs of horticulture-processing in India. The important problems affecting agriculture and agribusiness efficiency in its finding are mainly related to the government. They are lack of good quality seeds, inadequate irrigation, lack of soil tests and poor extension staffs, inefficiency in pest management, poor access to credit, huge post-harvest losses, poor public investment and lack of infrastructures, high transportation cost, lack of proper pricing, problems of timely delivery of outputs, low and declining productivity and poor SHFs marketing power (Mittal, 2007:462). Latifat, Ogbajiand and Ocholi (2013:160) study the TE and AE of palm oil processors in Nigeria using SFA. Their research reveals that capital, labour and quantity of palm fruit have significant effects on the quantity of palm oil processed and producers are producing at an increasing return to scale (1.98).

The average TE of palm oil processors is 91% with costs of palm fruit (0.33) and labour (0.51) significantly affect total cost of palm oil production. The mean AE of processors is 70%, implying 30% cost inefficiency level of processors.

Mruthyunjaya et al (2006:1, 9) study the efficiency of the edible oilseeds (groundnut, rapeseed and mustard, soybean and sunflower) processing of edible oil based on primary and secondary data. The main determinants for oilseeds farm production are soil quality, seed replacement and education. On the other hand, the main determinants are availability of adequate raw materials, market and higher oil recovery for the poor TE of oilseeds industry. These authors listed the efficiencies of each oilseed crop farmers and processors. The TE of groundnut, rapeseed and mustard, soybean and sunflower are found in the range of 64-75%, 65-67%, 59-73% and 69-76% respectively. The critical inputs of oilseeds (seed, fertilizer and irrigation) are underutilized and the underutilization of inputs (AE) generally reflects poor resource-base of SHFs. The oilseeds processors have mean TE of 64-74% with minimum value of 17% and maximum of 87%. Human labour was over-utilized (19-34%) in the processing of oilseeds (Mruthyunjaya et al 2006:1, 9). This implies the inefficiencies of oilseeds production have considerable effects on efficiencies (TE, AE and EE) of oil industries.

Dong and PutterMman (1997:96) studies about productivity and organization of township and village enterprises (TVEs) in China using SFA based on panel data. The determinants in their study are ownership, location, industry, access to capital and ownership effect. The authors are based on different assumptions: under changes, overtime independently in half-normal distribution, the average TE is 63.7%; under exponential distribution, TE is 74% and under constant overtime in half normal distribution, the mean TE is 74.4%. Their conclusion is the enterprises owned by township and village governments (TVEs) are more efficient with substantial scale economies than private owned enterprises. Either township or village governments own the most efficient enterprises across all the provinces. On the other hand, private owned enterprises are the least efficienct (Dong and Putterman 1997:96). The next section presents the theoretical frameworks of URELs.

2.6 Conceptualizing region and regional development

This study is a regional level study based on URELs. Thus, region and regional development is a fundamental concept that needs clear understanding and explanation. Ascani, Crescenzi and Iammarino (2012:19) stated that a region has no clear meaning and jurisdiction and it is stated as micro, meso, sub-national, macro (sub-continental or sub-international) based on its purpose and application. Douglass explains that there are key dimensions to be considered for regional development through URLs depending on regional variations. These key dimensions in URLs are livelihood assets with capacity and organization of BPLs and FPLs for multiplier effects in both urban centres and rural areas (Douglass 2006:139). Indigenous networking structure is a prerequisite for innovations and sustainable development in a region since it has the advantages of meeting multitude of actors for diversified sources of knowledge and information, external and internal changes, technology and new markets, cooperative and competitive interactions for innovation adopting and adapting or creating solutions to their own region (Gust-Bardon, 2012:17).

In post-development, alternative development paradigm has given environmental concerns, sustainable and people-centred approach (democratization by participatory, self-reliant, indigenous-induced) for achieving sustainable local and regional socio-economic development (Pieterse 2010: 90,101 and UN 2011b:xi). This implies that regional development approach at the grassroots level is appropriate for transformation and sustainable (greenery) development. Moreover, in LDCs there are alternative models of local and regional value-chain linkages for SHFs' agriculture commercialization and industrialization: farmer-to-market linkage, farmer-to-enterprise contract or rent for inclusive value-chain development, large private enterprise and small-medium enterprises-to-market linkage, large firms and supermarket supply chain (UNIDO 2009a:52). Empowering local actors for coordination and collaboration are key assets in URELs and regional development to leverage agribusiness (Turzi 2012:7).

2.7 Theoretical framework for URELs

A scientific theory is defined in different ways. Bhattacherje (2012:14) defines that a theory is a set of simplified and often partial explanations of the complex natural and/or social observations of reality/facts in a systematic, concise, predictive (future processes), coherent (interrelated key concepts or variables), logic (scientific reasons for relationships of concepts) and boundary conditions (working circumstance). Pieterse (2010:2, 3) also define that a theory is also a general framework of explanation and a distillation of reflections in conceptual language and practice for all one's perspective and interpretation of the world so as to connect with knowledge to complex reality. Thus, a theory is repeatedly approved hypothesis that can be scientifically tested and improved for increasing accuracy of prediction about complex reality.

Detail relationship and differences between theory and model are beyond this study. However, a theory explains a phenomenon of relationships in theoretical statements for theoretical understanding while a model tries to simplify and structure the theoretical relationships of constructs or variables in simplified (pictorial or equestion) form (Bhattacherje 2012:14). A model can represent a theory and a model can be adapted to simulation (computer-based visualization) for possible representation in the system and/or the real world's complex interactions (Robinson et al 2007:32).

A researcher is advised to understand and consider the general advantages and limitations of its study theoretical framework. A theory can providing the underlying logic and occurrence of the complex natural and/or social reality explaining the key drivers of underlying processes and key outcomes of the target phenomenon. It has also facilitated changes of socio-cultural, economic, political and environmental outcomes as well as researchers' systematical thinking to analyze and synthesize empirical findings within a theoretical framework. It reconcils contradictory findings by having contingent or independent factors and provides guidance for gaps (in knowledge, constructs, relationships and limitations) for future research and cumulative (tacit) knowledge building or theory development. On the other hand, Bhattacherje (2012:26) and Harris, Kooy and Jones (2011:35) argue that a theory is simplified and parsimonious explanations of complex reality and limits researchers' range of vision. Pieterse (2010:5)

argues that many (regional) development theories are derived from other social sciences such as economic theories for development perspectives. This indicates that a theory is not the only binding framework for researcher's scope of the study but it need to serve for guiding frame for variables and constructs in the field of study.

There are three approaches to improve or develop a theory (Bhattacherje 2012: 24, 28):
1. Grounded theory building approach, which is based on empirical data from context (bottom-up) inductively in the context of locality to general truth;
2. Extending or modifying existing or prior grand theory to fit a new context (deductive approach);
3. applying existing theories in entirely new context by drawing upon the structural similarities between the two contexts, like analogical similarities between a nuclear explosion that requires a critical mass of radioactive material and uncontrolled growth of network-based businesses that requires a critical mass of users for critical mass theory of network growth.

The grand theory frame for this study is contemporary theory of development and underdevelopment for both objectivism and interpretivism views. It claims that development is in the paradox of possible as witnessed in Southeast Asia NICs and almost impossible in LDCs as witnessed in SSACs (Todaro and Smith 2012:158). In development studies, it is advised to use a combination of theories and paradigms for development in the period of contemporary post-development and postmodernism that emphasises indigenous resources and knowledge with diminishing sectoral and disciplinary boundaries (Pieterse 2010:17,29). The rational for choosing the general contemporary theory of development-underdevelopment is its better appropriateness and suitability for the problem URELs for macro and micro levels studies through its sub-theories of coordination failure and O-ring theories for any integrated development approaches and URELs. The study of regional development through URELs is multi-dimensional and multi-scalar and multi-spatial that demand eclectic approach. The grand theory has many sub-theories. The coordination failure and O-ring theories are better fit for URELs study and considering the macro-micro levels of problems in ABCs. These

sub-theories have concerned about coordination and linkages of complementary sectors for optimal equilibrium otherwise bad equilibrium in the economic development.

Different from Lewis structural change model from agriculture to industrial sector, URELs aim at using the opportunities of synergy for complementary sectors of agriculture and agro-industries inorder to bring agricultural industrialization and virtuous circle model. The advantages and effectiveness of these sub-theories for internal and external linkages of URELs in the study region is presented in the following.

2.7.1 Coordination failure theory

Coordination failure theory is one major sub-theory of contemporary development and underdevelopment theory. It claims that poverty trap and bad equilibrium occurs when complementary economic sectors and/or actors fail to coordinate their complementary activities as 'where-to-meet dilemma' in many LDCs. It is defined as follow.

> "…a coordination failure is a state of affairs in which agents' inability to coordinate their behaviour (choices) leads to an outcome (equilibrium) that leaves all agents worse off than in an alternative situation that is also an equilibrium" (Todaro and Smith 2012:159).

The theory argues that market failure is the result of lack of coordination between complementary sectors or practices. It argues on the existence of at least two scenarios as agriculture and agro-industries, one sector has interwined and depended on the development or failure of other complementary sector (Dang and Pheng 2015:20 and Glavan 2008:47).The formation of bad equilibrium as coordination failure can develop multiple equilibria as underdevelopment trap of subsistence agriculture and its complementary agro-industries. Coordination failure is also the result of pessimistic expectations such as poor social capital and reluctance of other complementary firm in a similar situation. On the other hand, optimistic expectations and coordinated management of complementary firms have mutually reinforcing synergy in backwards and forwards linkages for developing good equilibrium (Dang and Pheng 2015:20, Glavan 2008:47 and Todaro and Smith 2012:164). Furthermore, coordination externality argues that many investment sectors or firms require simultaneous investments on infrastructures and other facilities for improving performance and success of the complementary sectors (Glavan 2008:44). The transformation of bad equilibrium to good equilibrium and

complementarity to the rest of the economy needs simultaneous investment as big push strategy by public led massive investment within enabling environment. This is because the sector productivity depends on not only its own efforts and performance but also the other complementary sectors in the integrated system (Dang and Pheng 2015:21).

2.7.2 O-ring theory

This theory is a production function model that is simply defined as "...an entire product or task will not function properly if one of its components malfunction" (Ayadi, Chatterjee and Ademiluyi 2011:65). This implies that a mistake in any of the several components has implicit and/or explicit effects subjected to failure of processes and overall system. It explains the existence of poverty traps and the reasons and impacts of the traps complementary sectors of the economy. In this theory, it is argued that low production traps of agriculture and agro-industries is the O-ring effects across sectors as well as within sectors malfunction of a component. The theory focuses local production bottlenecks that have multiple equilibria and reducing returns. It also explains the advantages of strong complementarities in economic development as well as the roles of trade for industrial development strategy (Todaro and Smith 2012:179, 183).

The government is required in such coordination failure and O-ring poverty trap for simultaneous development of sectors such as agriculture in rural hinterlands and its corresponding agro-industries as big-push strategy in ABCs. Though big push approach in LDCs is controversial in the academic community, selective integrated development approach for complementary key sectors are made effective path of development by government regulatory and institutional frameworks such as clearly defined property rights and usages, partnerships, contractual agreements (Dejene 2011:19,25). Coordination failure theory for government intervention and some renewed sustainable development path become important issue for integrating socio-economic and environmental dimensions in decision making (Drexhage and Murphy 2010:3).

The following discussion shows the claim of coordination failure and O-Ring theories that appropriate government intervention can bring sustainable development. Todaro and Smith (2012) and Marrison (2013) argue that the difference between the miracle developmental states of China's and Taiwan versus extreme developmental challenges of

SSACs shows how government can be part of development or part of challenges and problems. These authors further argue that the communist political decisions and closed economy during Mao Zedong caused the death of 30 million people in a late 1950^{s} famine and Cultural Revolution in China. However, different from Russia, China's reforms in policy and (new and unique) transitional institutions (such as two-edged sword of free market policies and strong government interventions) have resulted in among the world's fastest growing economies, second largest economy, largest merchandise exporter, second largest destination of FDI, largest manufacturer, largest holder of foreign exchange reserves in current world. However, it has also faced many development problems and challenges such as: growing pollution, relative lack of the rule of law, public unrest, widespread government corruption, financial speculation, mismanagement of investment funds, growing income disparities and underdeveloped social capital (Marrison 2013:30).

Coordination failure theory supports active government intervention for correction of coordination failure among complementary key economic sectors. The big-push approach is important for massive investments on agriculture and agro-industries with their key infrastructures to overcome the failure. Hence, active government reshape for providing enabling environment (policy, fundamental institutional settings, decentralized governance, organizational development and privatization) for coordinating sectors to good equilibrium (Todaro and Smith 2012:177,178).

The empirical evidence of Botswana gave the possibility of development in Africa that was explained as extremely difficult to development. Thus, governments have pivotal roles for designing enabling environment using their key positions and authorities to address development problems and challenges of Africa. The eclectic theory used in this study for URELs need the development of empirical model and the next section deals about model of regional development.

2.8 Models for regional development

A model is the simplified (and/or pictorial) and general representation of the complex reality for guiding and/or simulating the understanding of complex reality. There are different kinds and types of models depending on the concern of issues such as

mathematical model, theoretical model, network model and spatial development model, descriptive model, predictive (as weather forecasting model) or normative (guiding along commonly accepted norms or practices) model (Bhattacherje 2012:15). Other classification of a model is based on innovation process that can be linear models (the science-push model and the need-pull model) and interactive models (of the coupling model, the chain-linked model, systemic model, the triple helix model and the open innovation model) (Gust-Bardon, 2012:2). The other development models include linear development model (as Lewis model and structural adjustment) and structural development model are some of empirically tested development models (Mulongo, Erute and Kerre 2010:2-8). Local economic development (LED) model has diversified sub-divisions and approaches such as the growth pole model (urban system based development approach), URLs approach, URELs, integrated rural development programs (IRDP) and rural industrialization programs model (Mulongo, Erute and Kerre 2010:2-8). Many theorists and practitioners specialize in either urban centres or rural areas. As a result, professional bias has caused coordination failure of sectoral and spatial models in LDCs. Regional development models can broadly be seen in the following categories of sectoral approach (Dethier and Effenberger 2011:7-8; Douglas 2006:126; Tacoli 1998:149 and 2006:34):

2.8.1 Rural and agricultural-based development model

Agro-optimists have agriculture-first approach in LDCs' development. It is argued that a country's development strategy, especially at early stages of development within closed economy should be agriculture-driven. This is because agriculture can serve for linking agriculture and other sectors for agricultural demand led industrialization rather than export-driven development in LDCs (Dethier and Effenberger 2011:7). Agro-optimism model supports linear stages of growth model approach such as Walt. W Rostow (in 1960[s]) that shows the transition from underdevelopment to development of all countries through five linear stages: traditional society (Ethiopia), precondition for take-off, take-off, the drive to maturity and high mass consumption (UK, USA, Japan). However, Rostow's model suffers out datedness, over simplification, assuming incorrectly that all countries start at the same level of development, lacking the effect of globalization and more affected by Eurocentric views and models (Waugh 2000: 639). World Bank

(2003:105) argues in favour of agricultural-based development model that agricultural demand led development is important strategy for reduction of mass poverty in LDCs. Similarly, agriculture is the key to overall development and multiplier effects as well as a precondition for rural welfare and boosting non-agricultural activities by providing food and raw material to the urban economy and demand at early and intermediate development stages of countries (Bezemer and Headey 2007:3-4 and Hess and Ross 1997: 123).

Under certain circumstances such as landlocked and closed economy, the agriculture-first approach can be the main driver behind overall economic growth (Dethier and effenbeger, 2011:8). Rural professionals focus on rural development, rural industrialization and rural non-agricultural employments without integrating and considering urban economies in LDCs (Douglass 2006; 126 and Tacoli 2006:1). This shows that professional-bias has affected integrative development approaches.

2.8.2 Urban-based development model

Perroux's growth pole theory or centre model has the assumption that modernization and development occurs ultimately at urban centre for the advantages of agglomeration and scale economy for multiplier, spill over and trickledown development effects to hinterlands (Adell 1999:9). Though urban bias remains a persistent and paramount obstacle to sustained development in LDCs, governments in predominant agricultural regions of SSACs and poorer south and south-east Asian countries have remained urban-biased for spreading urbanization and industrialization by the influence of modernization theorists (Bezemer and Headey 2007:6 and Handelman 2011:186).

The empirical study of Van Dijk (2012) on regional growth patterns and causes of bipolar development between eastern and western Chinese provincial capitals confirms that government interventions in expenditure, investments and environmental laws with development of physical infrastructures, capital and FDI flows are found the causes for unbalanced growth between these regions. As a result 1978 to 2008, Chinese economy had grown very fast fuelled by special economic zones (labour and industrialization centre), mainly in the eastern part of the country that has transformed to a more capital

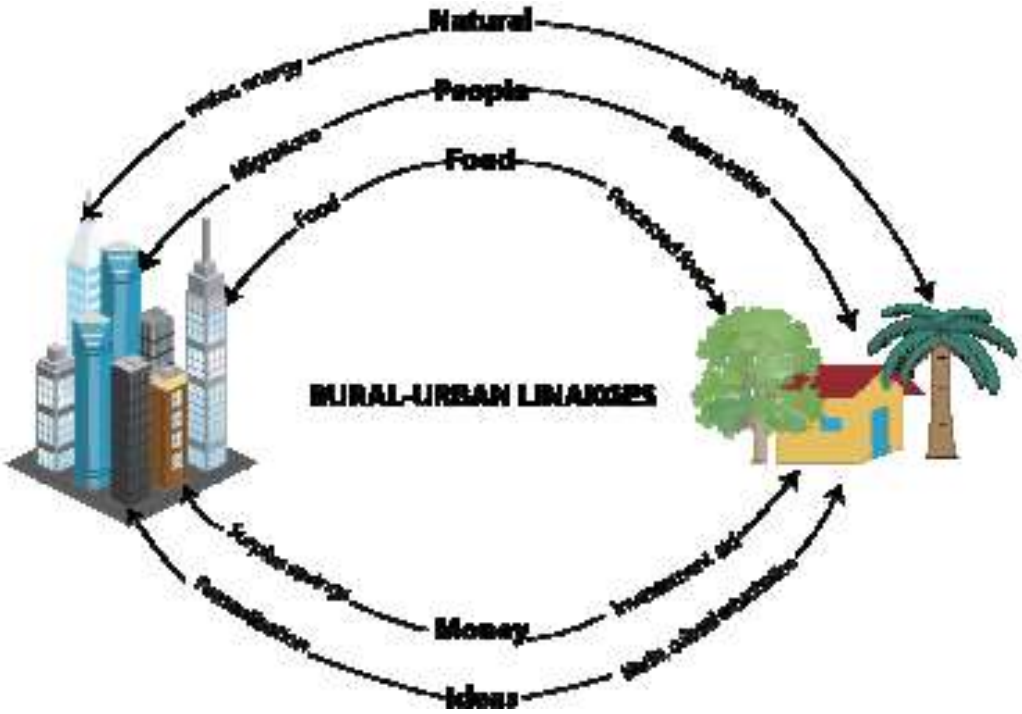
technology-driven export-oriented manufacturing sector (capital-intensive industrial development for agglomeration economies) (Van Dijk 2012:10).

Similar to rural professionals, some LDCs governments and donors consider urban-biased development and industrialization as the sole means of development and modernization, albiet it aggravates underdevelopment and poverty in LDCs (Douglass 2006:126 and Mulongo, Erute and Kerre 2010:12 and Tacoli 2006:34). Neither rural-oriented nor urban-biased development approaches (theories and models) could bring theoretical and/or practical development for multi-disciplinary (agriculture in biophysical and environmental, political and socio-economic or poverty situation) and multi-scalar (global, continental, national, sub-national, regional and local) problems in SSACs and other LDCs (Douglass 2006:151).

2.8.3 Integrated and holistic development model

Integrated development model is a model that has systemic approach for coordinating different sectors and multi-stakeholders to work together for achieving a goal. The integrated development model need to have some important determinants such as coordinated investment at most productive and priority sectors; extensive and high-tech infrastructure development and land tenure and redistribution reform. Furthermore, the government's industrialization policy was effective and flexible focusing on import-substitution industrialization (1949-58) and then switched to export promotion and export-led growth strategy. Incentives for higher rate saving; constructive foreign influences as diffusion of entrepreneurial and innovative ideas from Japan and USA; effectively using the inevitable free market and globalization advantages and incentives; proper use of aids for investment (rather than consumption like Egypt) and indirect and direct incentives for local firms development with human capital development were other important determinants in URLs and integrated development for South Korea (Todaro and Smith 2012: 790).

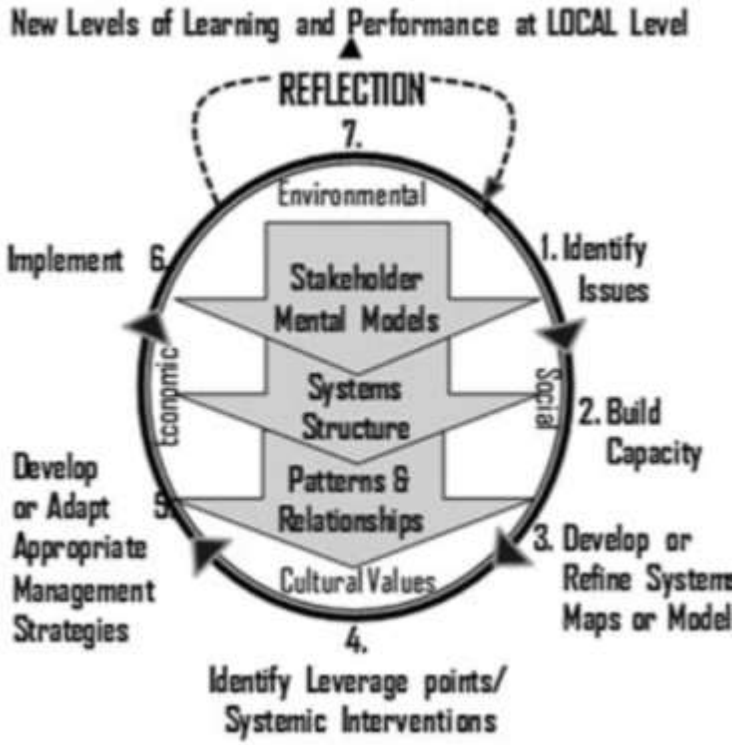
An integrated system approach has good integration, coordination and reinforcement of the multi-complementary and interdependent isuues and phenomena (sectors, stakeholders and actors) in a network chain for synergy (Figure 2.2).



Source: Tue, Nhuan and Lieu (2015:47)

Figure 2.2: Integrated URLs development approach

The other important integrated development approach in the multidisciplinary, multiscalar, multispasial, multi-actors/stakeholders and dynamism is the system model. The integrated system model has coordinated divergent views for co-learning, collaborative decision and implementation in participatory approach for integrated regional development model. In the system model, the effectiveness of government departments or sectoral ministries and different businesses need support and development. Some of the systemic development approach need to have cross-sectoral collaboration; moving away from traditional linear thinking to systemic interventions in participatory and collaborative proaches; identifying leverage points rather than immediate causes for a problem; understanding the interconnectedness of actions and sectors; identifying unintended consequences for knowledge of cutting-edge system tools; having knowledge and back-casting where, when, what, who, whom and how (5W and H) to adapt and practice in policy and plans within iterative participatory approach for co-learning, experience and new levels of capacity and performance (Figure 2.3).



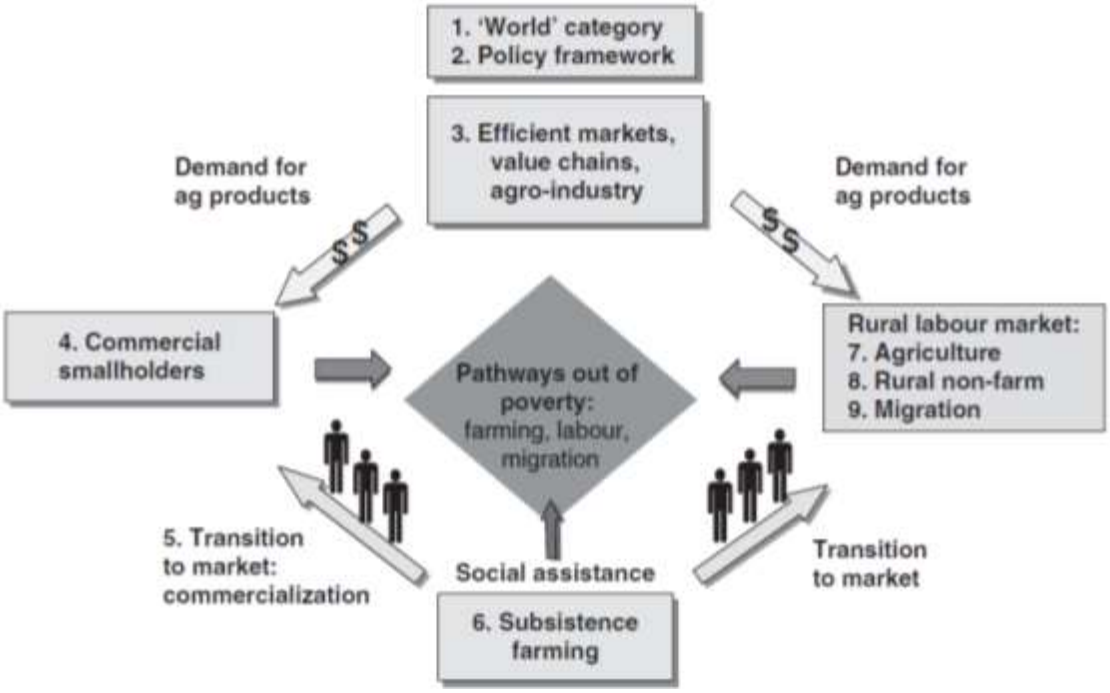
Source: Bosch et al 2013:3

Figure 2.3: Integrated system model

Integrated system approach has different challenges and problems in application. It can take long period for achieving tangible outcomes for identifying and solving the root causes of problems. As a result, donors have lacked interest for this development approach and they prefer iceberg and simple symptoms with quick fixes for immediate results (such as bridge, school or road). The other challenge for integrated system approach is departmental structure of ministries and organizations in every country that demand paradigm shift (Bosch et al 2013:17). In post-development as alternative development paradigm has given environmental concerns, sustainability and people-centred approach (democratization by participatory, self-reliant and indigenous-induced ways) for achieving sustainable local and regional socio-economic development (Pieterse 2010: 90,101 and UN 2011c: Xi). This implies that regional development approach at grassroots level is an important option for integrative and sustainable transformation and development if it has appropriate enabling environment and commitment.

Empowering local actors for coordination and collaboration are key assets in URELs and regional development to leverage agribusiness (Turzi 2012:7). Janvry (2009:259) divided the world into three groups each with different development model and policy agenda:

- ABCs that have agriculture is the main source of growth and GDP. These countries have main policy problem of accelerating the growth of agriculture.
- Transforming countries (such as India, China, Morocco and Indonesia) have agriculture no longer a major source of GDP growth. The main policy problem of the countries is raising income disparities between rural and urban areas with persistent rural poverty.
- Urbanized countries where agriculture has low contribution to GDP though the share of agribusiness is typically larger. The policy problem for these countries is social inclusion of SHFs into a set of competitive farms. The complex network of poverty and subsistence agriculture in ABCs can have different models to overcome and way out (Figure 2.4).



Source: Janvry 2009:257

Figure 2.4: Model for multiple pathways out of poverty in ABCs

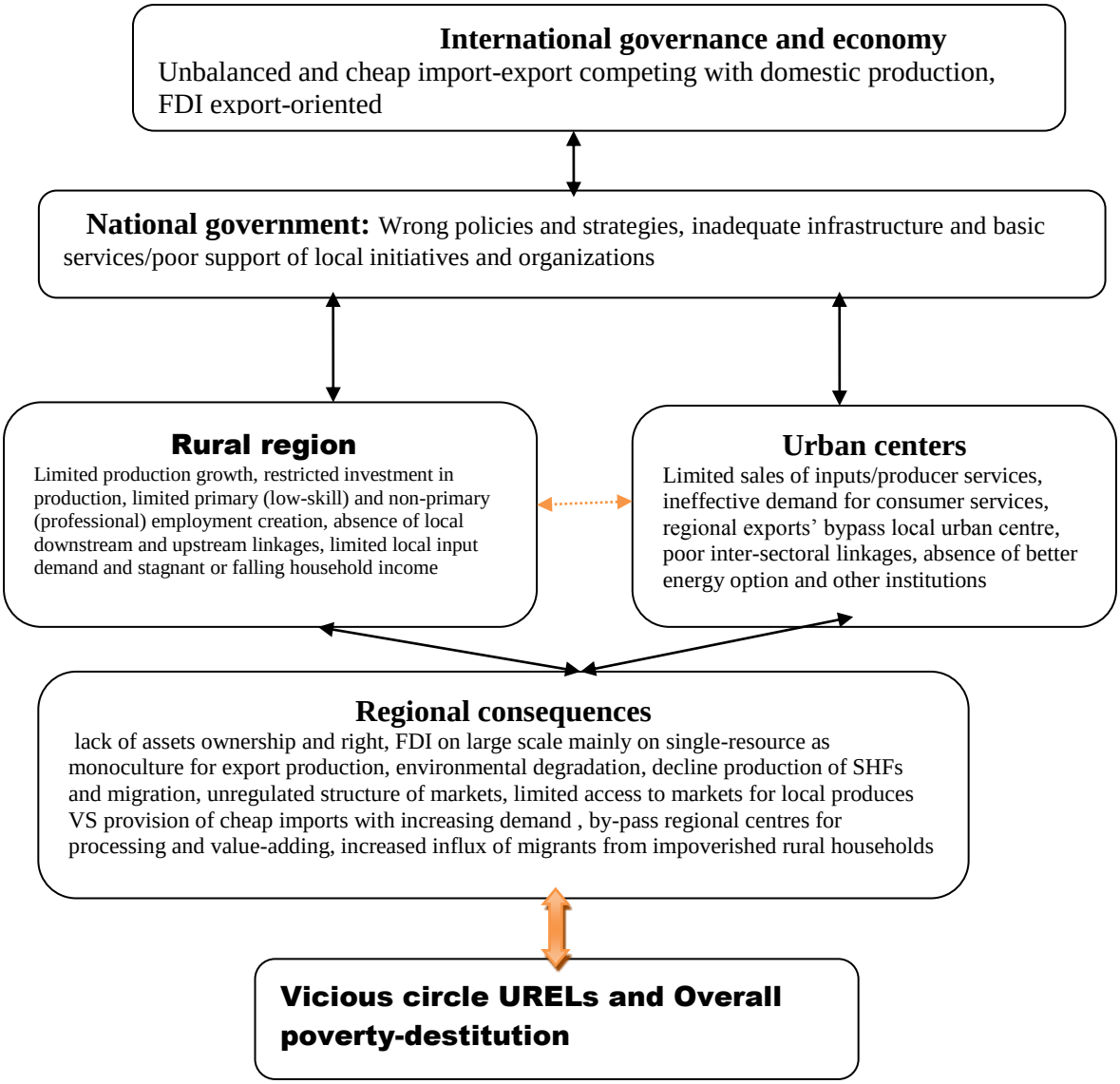
In the model, there are three pathways out of poverty in LDCs, mainly ABCs: self-employment in farming for SHFs' competitiveness by increasing access to assets,

increasing capacities and commercialization; creating rural labour market in agriculture and non-agriculture, mainly agro-industries; migration pathway with awareness and preparedness for rural labour market (Figure 2.4).

The O-ring theory gives lesson for the circular poverty trap that has integrated system model. Breaking this vicious circle model needs capacity of actors and investment. The rural-biased models, urban-biased model and professional biases can affect system approach for poverty trap of O-ring. The integrated system model has significant role for URELs of this study that have divergent stakeholders (SHFs, agro-industrialists, the government, intermediaries, financial system) in the agribusiness. Furthermore, enabling environment for all policy makers, SHFs, agro-industrialists and divergent stakeholders need system model to come together the different departments and actors (Figure 2.4). The following analytical framework of this study is mainly based on the system model.

2.9 Analytical framework

The recent integrated development approach of URELs and URELs in this study is one of the recent local economic development (LED) models. The analytical framework has both the existing situation of URELs and the potential opportunity model (Figure 2.5 and Figure 2.6).

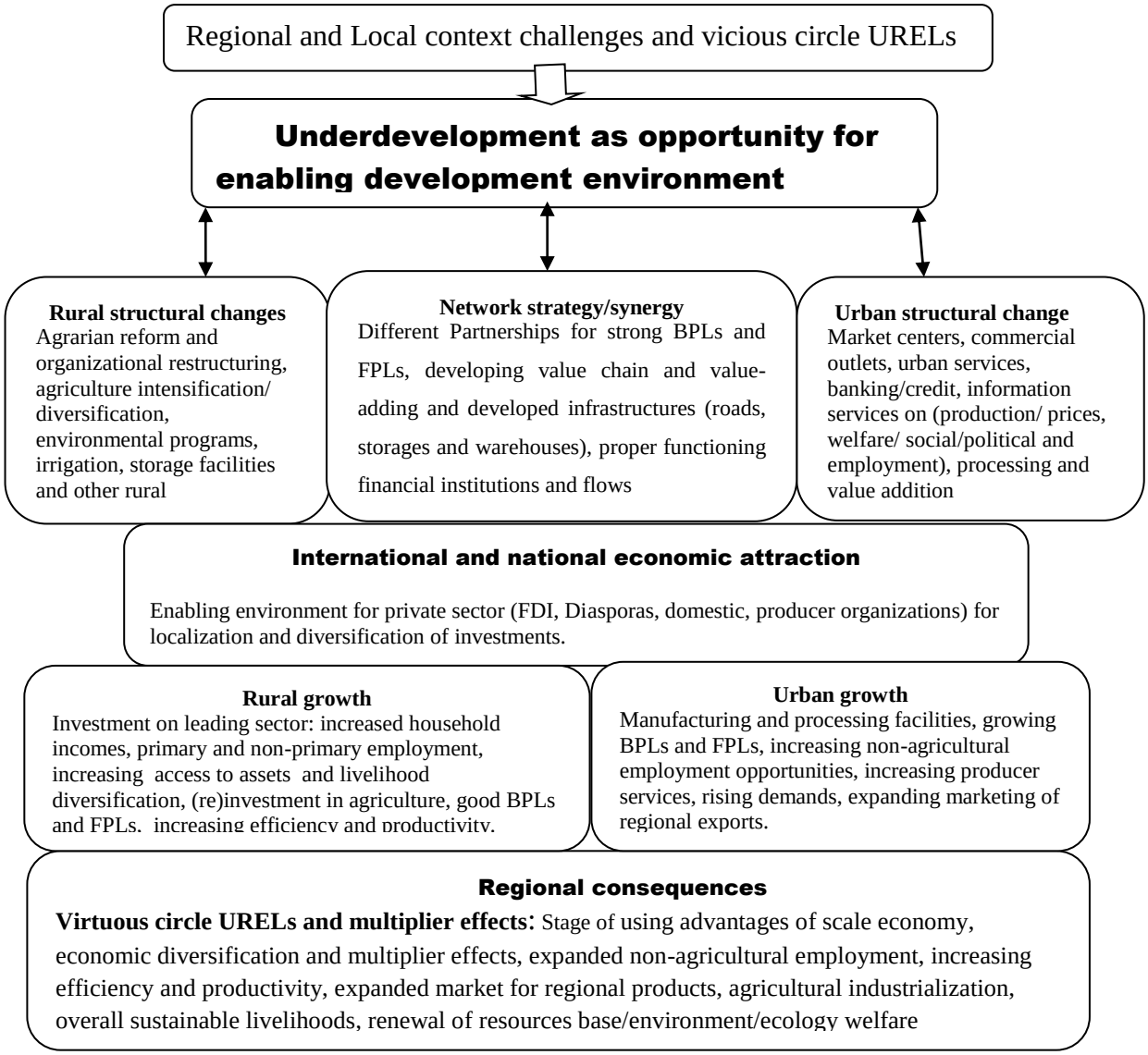


Source: Adapted from Douglas (2006:150) and Tacoli (2007:53)

Figure 2.5: Existing truncated URELs in Ethiopia

Copestake and Williams (2012) assert that one of the reasons of development failure in many LDCs is the wholly rationale and technocratic process of policies and institutional settings relying on universal, dependable and best practices of MDCs as 'one size fits for all'. However, the path to successful development is not often linear structure but a complex business and wicked situation which requires collaboration of all key stakeholders, good interaction of political and economic processes in a society with transparency and accountability (Copestake and Williams 2012:1,7). Taiwan's development success is the result of integrated system model. This imply that the

transformation of vicious circle to virtuous circle URELs needs new external factors of enabling environment for integrated development model for all key stakeholders in order to break coordination failure and bad equilibrium. Moreover, the fragmented SHFs and individual agro-processors need to have organizational arrangement and capacity building for higher efficiency to the advantages of scale economy. The fragmented farm plots need some organizing mechanisms like outgrower cluster that need other further research. The outside factors such as technological acquisition and innovation as well as application could lead improvements as well as increasing aggregate outputs of scale economy to new cycle starts. Thus, the better situation of URLs can move to more virtuous circle URLs model with some preconditions in the study region in particular and ABCs in general (Figure 2.6).



Source: Adapted from Douglas (2006:149) and Tacoli (2007:53)

Figure 2.6: Potential reversing model from vicious circle to virtuous circle URELs

In this study, enabling environment has assets that can use the technological terms of software (policy, institution, political and decentralized governance, ICT and market), orgware (partnerships and producer cooperatives or associations for scale economy) and hardware (manufactured infrastructures such s irrigation, warehouses, road, port, land) in agribusiness. This shows that they are explicitly prerequisite and basis of all development attempts, including virtuous circle URELs in the analytical framework. UN (2011b:1) claims that the potential for virtuous circle can be developed by further investment

innovation and developing productive capacities. Virtuous circle has core elements such as growth and development, reducing poverty and inequality with strong leadership and social capital (NPC 2011:2).

2.10 Summary and concluding remarks of the chapter

URELs need enabling environment in all orgware, software and hardware. Agriculture is the main economic activity in employment, GDP and source of raw material for industrial and export economy in ABCs though it is subsistence production due to poor efficiency and synergy. Urban economies have disarticulated with its basis of rural economy in these countries. The possible theoretical framework for studying such disarticulated production system in LDCs is the contemporary theory of development and underdevelopment. Under the grand theory of development and underdevelopment, two sub-theories coordination failure and O-ring theories are used as framework for using eclectic approach. These theories have direct touch with the dichotomy development of urban industry and rural agriculture in ABCs. Coordination failure theory argues that the low equilibrium of one complementary agent or a sector of the economy makes all other complementary sectors or firms at the same level of bad equilibrium. Moreover, coordination failure theory confirms that the dichotomy development models (rural-oriented development model and urban-biased model) have potentially bad equilibrium and O-ring theory of sectors in these ABCs. Regional development study can be delimited to local, regional, sub-national and macro-regional or continental level based on the purpose of study. URLs and local economic development (LED) model as URELs are parts of regional development models. LED and URELs regional development approaches are important integrated development model for exploiting the local resources, potentials (such as partnership, cooperatives, easy access), community participation and mixing indigenous and scientific knowledge as bottom-up and top-down. Identifying key sectors that have greatest linkages and impacts of other sectors of the economy need committed, accountable and good politico-governance in these countries. Hence, the study of URELs is one of the regional economic development studies (LED) dealing with the synergies of urban economies and its hinterlands in order to develop and sustain inevitable urbanization and hinterland agriculture.

Different literature has recommended the precondition of governments' enabling environment (policy, institutions, governance, macro-economic landscape, financial access and laws), organizational arrangements for producers and small-scale processors to scale. The politico-governance of URELs has serious problems in many LDCs and hence URLs have dichotomy of development. Thus, due to challenges and problems of enabling environment and government commitments, African development is found as a challenge and very complex difficulty. Therefore, this research is expected to fill gap of knowledge and practice in ABCs by responding the research questions. The conclusion is that underdevelopment and poverty are mainly human related challenges and problems in utilizating resources and lack of following integrated and reinforcing development in ABCs. The next chapter reviews the extension of the global issues as macro URLs to national level (Ethiopia) as micro URELs on the main issues of politico-economy, governance and institutional settings.

3 Chapter Three: Socio-economic and politico-governance in Ethiopia for URELs

3.1 Introduction

This chapter presents theoretical and empirical perspectives of urban-rural linkages (URLs) and urban-rural production linkages (URELs) of Ethiopia, mainly in the current government (since 1991). The main points of the chapter are reviewed empirical researches on URLs and URELs in Ethiopia, agriculture and its efficiency, agro-industries and their efficiencies, trends of development policies and plans since 1957, political economy and development, urbanization and development and trade and development. The discussion and argument have based on secondary data sources from different journal articles, proceedings, books, documents, magazines and other relevant published and unpublished materials that can be contextualized to the Ethiopian situation in a dynamic world.

Befekadu (2004) argues that Ethiopia is one of the oldest independent African nations and origin of humankind (such as the fossils of Lucy and Ardipithecus of about 4.4 million years ago). It is one of the founders and sit of African Unity (AU) for Pan-Africanism. He notes that the country was the origin and used to be pioneers of progresses and indigenous technological revolutions far ahead of many countries in development. During the agricultural revolution from gatherers and hunters into purposeful production of crops, it had made its own contributions in the domestication and purposeful production of different food crops (such as *Teff*, inset, nigerseed and barley) 10,000 years ago. The author argues that the Great Ethiopia had had wider empire territory of part of Yemen, Somalia with its Zeyla-Berbera ports, northern Kenya and part of Sudan and Egypt including all Red Sea to Gulf of Aden in 4thBefore Christ (B.C). He adds that the knowledge and firm initiatives capable of engineering the astonishing architectural application of Axum obelisk, Fassil castles, the rock-hewn churches of Lalibela (in the 11thcentury) and modernization works and attempts of emperor

Tewodros-II[2] (1885-1890) are the footprints and empirical evidences for some of the development contributions of the country. However, the author complains that why and how have people lost all these civilizations and developments in Ethiopia? Ethiopia is currently one of the poorest countries in world (Befekadu 2004:20). It is confirmed that Ethiopia is the poorest country next to Niger in the World by the parameters of three dimensions (OPHI 2015:5).

The current government (since 1991) has restructured Ethiopia in a new geo-political and administrative boundary and ethnic regions. In 1993, Eritrea became an independent country that led Ethiopia to become the largest East African landlocked country. The country is surrounded by fragile and volatile states (Somalia, Yemen, Sudan and Eritrea) which have threats for its cooperative and partnership in development (Figure 3.1).

Tewodros-II[2] was emperor of Ethiopia unifying the regional lords (Zemene Mesafints) and made much spiritual and secular progresses, modernization plans and development in the country. Hence, he is the bench mark for modern history of Ethiopia.

Source: Adapted from Google earth map 2012

Figure 3.1: Landlocked Ethiopia in east Africa

The UN (2011b) report argues that landlocked LDCs have greater transaction costs (about 50%) higher than coastal countries due to long distance, even the nearest maritime port and transit of overseas goods through a territory of at least one other country.

The problems of landlocked LDCs can use different options to increase their import-export competitive advantages. Some of the options are creating industries which are not sensitive to transport and distance but high knowledge and information industries; encouraging investments that use local contents of inputs and materials like beer brewing and expanding regional socio-economic integration and regional trading cooperation with neighboring countries (UN 2011b:34, 35; Todaro and Smith 2012:643).

International trade of Ethiopia has not been changing for many years. Coffee was the main export commodity before 50 years ago and it is currently the main cash crop for export in the country (Eshetu and Mamo 2009:8). This could imply that the absence of change and development in agriculture and agro-industries in import-export trade. The following section discusses on empirical studies and knowledge gapss on URLs and URELs.

3.2 Empirical studies on URELs in Ethiopia

Integrated development approach is recent phenomena and agriculture-industry production linkages have little attention from policy and institutional settings in most ABCs. However, recent development paradigm in integrating and reinforcing the different complementary economic sectors and spatial areas are recommended for using many advantages of regional and global development (Altenburg 2011:2; Assefa 2007:185; Dercon 2009:5 and Douglas 2006:140).

Different studies (most of macro level) were conducted on URLs in Ethiopia and all generally showed the presence of poor and distorted inter-sectoral linkages in URLs due to mainly policies and institutional failure (Alemayehu 2007:148; Aynalem and Assefa 2011:181; CSA 2011:27 and Tegegne 2005:157-158). Almost all the macro level research on URLs are working papers (Alemayehu 2007; Demese 2007; Gete 2007 and Tegegne 2007) which are either review research or very general policy implications for multidimensional URLs. However, macro level URLs researches are more general multi-dimensional and multidisciplinary such as economic (financial, production and consumption) linkages, socio-cultural (basic social services and gender) networks and linkages, population flow and migration, manufactured infrastructures (physical assets) and environmental (natural resources) linkages, spatial system linkages (Douglas 2006:139). The following empirical studies could make some clarity on the problems and gaps on URELs.

Bezabih (2007:140-149) studies URLs of Bonga town and its hinterland districts in Ethiopia, his findings indicate that there is poor and weak linkages between Bonga town and its rural hinterlands (districts) resulting in limited livelihood diversification of both urban and rural households. The hinterland districts have trade relations with many other

urban centres including the capital Addis Ababa. In his study, the non-farm income and SHFs' total income have a highly significant positive correlation while SHFs' non-farm income and farm income have negative correlation. This implies that non-farm income sources have not used in farm investment and they are supplementing the subsistence livelihood of SHFs. His findings also show that there are dominant mixed agriculture in the hinterland and a few (8%) SHFs rely solely on non-farm activities. Some of the problems of URLs are: market failure, absence of financial institutions for credit, low administrative capacity, poor urban business operation; monopoly on some agriculture outputs and industrial goods and lack of processing plants. He adds that Bonga town that is dependent on micro and small-scale businesses has deep-rooted urban poverty (40%). Such economy has less contribution to improve the subsistence livelihood and higher urban unemployment. It has also served urban market for firewood and charcoal that depleted the environment. He concludes that URLs are dominantly negative with unfair trade system. He suggests that potential growth linkages of cross-sectors towards poverty reduction and structural transformation require a balanced growth strategy of agriculture and non-agricultural sectors.

The URLs study of Bezabih has some theoretical and methodological issues, which questions the validity and reliability of his findings. The main arguments are: first, the study was conducted on all multi-dimensional, multi-spatial and multi-stakeholders nature of URLs without any theme of focus such as population movements, flow of goods and commodities, infrastructure linkages, financial linkages, information and communication flows, service linkages, environment linkages and economic linkages. Secondly, the study lacks clear methodological application in that his mixed methods research lack clear process of data collection and proper integration or mixing of the qualitative and quantitative data. Therefore, this study will fill all these gaps of methodology and knowledge. This study has conducted on production linkages of agriculture and agro-industries by using sequential mixed methods research with integration in the discussion.

Tegegne has series of studies (2005, 2007, 2010 and 2011) on URLs. Most of his studies are macro level for macro policy and institutional settings. In his 2010, a comparative

study on URLs at local level in two settings of Limu and Robe district capitals and their hinterlands based on primary survey data in Southern Ethiopia is important grounded study at local level. His findings argue that agricultural production in both districts are subsistence with weak URLs. The weak URLs were due to subsistence rural economy, limited basic urban services, poor administrative functional settings of the towns and their hinterlands, unfair competition and domination of some state-owned enterprises, influences of parastatal and cooperatives on urban functions, banks without financial linkages and services to farm households as well as lack of economic infrastructures to attract and foster investment. Moreover, his findings indicate that the district capitals have played only as collecting centres of agricultural products and providing some services to the hinterlands (Tegegne 2010:61-74). One of the gaps that this research did not address is identifying the type of agricultural crops and animals that can have better existing and potential production linkages with their corresponding agro-industries. This is because many types of food crops and cash crops, animals (livestock, sheep, goat and poultry) have been produced in these different districts. Moreover, districts often have no production linkages and economic infrastructures for agriculture-industry linkages in the current Ethiopian situation. Meanwhile, Tegegne (2005:156) confirmed that agriculture has strong consumptive linkages than production in URELs in Ethiopia.

Tegegne (2007:71) argues that agro-processing industries and micro-enterprises have significant roles for URLs. However, he claims that the important roles of agro-industries, partnerships such as cooperatives-investor linkages for developing URLs have little focus in Ethiopia. He also argues that agro-processing industries need to be located in rural areas near to raw materials. However, this author puts rural-biased similar to the government development policy, ADLI. This contradicts with the important role of agro-industries for fostering URLs in the Ethiopia context where urban centres have no other economic infrastructures for URELs.

Wijnands et al (2011) studies the soya bean and sunflower value-chains based on agronomic, economic optimization, strategic management and institutional economics in Ethiopia. Their findings indicate that both soya beans and sunflower oilseeds were economically feasible in Ethiopia though soya beans had poor opportunities compared to

other Ethiopian oil seeds. These authors assert that it was also important to examine the Ethiopian menu gap for identifying the types of value chain development and the menu was usually found insufficient in fats and energy but adequate in proteins. Therefore, sunflower (as compared to Soya bean) is preferred for value-chain agro-processing development for filling the menu gap for fats and energy in the country (Wijnands et al, 2011:16). Tegegne (2007:71). Agro-processing industries were important development strategies linking agriculture for many multiplier advantages of: adding value and creating market to agricultural products; fostering URLs; improving the agricultural sector by establishing strong BPLs and FPLs and providing relatively labour-intensive employment opportunities in the value chain (Wijnands et al 2011:51). Small-scale industries (SMIs) are relatively more productive and efficient than large and medium scale ones with small capital, less skilled labour and less sophisticated provision of infrastructures (EEA 2005:59). This shows that developing integrated development approach is essential and mandatory for ABCs like Ethiopia.

Alemayehu (2007:149) studies product flows (focusing demand linkages) and growth linkages in Ethiopia based on mainly data extracted from Ethiopian Social Accounting Matrix (SAM) (2001/02 of 63*63). His study suggests the transformation of the extensive and subsistence agriculture (staple crops and livestock) into intensive and commercial production by reinforcing key inter-sectoral linkages for complementary and multiplier development effects. He argues that there is a need to identify key variables for actual and potential production and productivity of sectors in both rural and urban areas. This indicates the necessity of doing surveys for identifying the higher potential stable crop or crops and corresponding agro-industries for value chain and URELs.Hence, this study depends on such key economic and value chain agribusiness.

Though the variety of agronomic and agro-climatic conditions of Ethiopia allowed broad range of diverse agricultural products for agro-industrial development, the country have still been importing large quantities of food crops and products (such as cereals and edible oil). Alemayehu (2007:148); Aynalem and Assefa (2011:181); EEA (2005:68-74); Eshetu and Mamo (2009:12) and Tegegne (2005:158) contend on the challenges and problems of URELs and agro-industries that policy makers in Ethiopia have not

recognized and lacked knowledge for roles of interdependence and integrated development approaches of an urban centre and its hinterland. In a similar expression, it is argued that challenges and bottlenecks of URELs and underdeveloped agro-industrial value chain in Ethiopia has mainly related to the government's failure in policy, institutions and governance (EEA 2005:151,162).

Lack of enabling environment and livelihood assets are main challenges and problems in Ethiopia for URELs and sustainable development. The findings of many researchers (Alemayehu 2004:22; Aynalem and Assefa 2011:181; Befekadu 2004:18; Coates et al 2011: 47-50; CSA 2011:26, 27; Demese, Berhanu and Mellor 2010:3; EEA 2005:230; Eshetu and Mamo 2009:12; Seleshi et al 2007:17; Tegegne 2005:157-8 and Wijnands et al 2011: 42, 92) argue that the hidden and unknown managerial system of the current government and the monopoly of its businesses are the main factors for poor URELs and poverty in Ethiopia. Furthermore, problems in: development policy and institutions with state ownership of key assets; coordination of key economic sectors, strong links of trade and politics; ethnic-regionalism; expertise's support for SHFs and industrialists based on R&D; infrastructures and energy supply; market facilities and financial system; land use planning and management; traditional modes of transportation; backward agricultural techniques and technology as oxen-driven plough; governance and urban entrepreneurial outreach to rural and agricultural development in any form of partnership are other important factors for vicious circle URELs. Coates et al (2011:21) confirm that currently a large amount of infrastructure developments (mainly road and electric energy) are unclear and how much net benefit the country would ultimately derive from such infrastructure developments are questionable in Ethiopia. He further argues that road transport development is towards access to local producers for export and the huge Blue Nile dam construction for electricity is export. This situation has aggravated the problems of socio-economic and environment in the country. Demese (2007: 95) claimed that unknown factors for persistent destitution and underdevelopment in Ethiopia did not be studied in systemic and integrated ways with policy-political analysis. He stated the hidden and unknown political sensitive issues in Ethiopia as,

> ...still what makes developing countries economy, including Ethiopia, to be immersed in a continuous and persistent underdevelopment and specifically rural areas to remain in abject poverty with a declining agriculture while their economic base remained mostly natural resources and agriculture based with weak URL, is not known (Demese 2007:81).

In the conservation perspective, Gete (2007:28) argues that poverty-environmental degradation-food insecurity nexus makes many rural and urban households in destitution and poor URLs in Ethiopia. Furthermore, in the study of value chain in Ethiopia, that the challenges of Ethiopian agro-industrial and value chain development are: weak business culture and business to business relationship, change resistance culture, poor financial management capacity and system, weak basic development service delivery, lack of role model, lack of realizing the value chain (VC) supporters and value chain actors (SVN 2011:16). Assefa (2007:181,185) and Tegegne in his two empirical studies (2005:157-159 and 2007:64) asserts that urban centres have not been producing goods and services for its rural hinterlands as well as rural hinterlands were not producing enough food and industrial raw materials for urban centre. Furthermore, poor agricultural development has been dragging the rest of the economic sectors and URLs. As a result, increasing unemployment, food insecurity, poverty and destitution, homelessness, social exclusion and poor quality of life are common challenges in both urban centres and rural Ethiopia (Assefa 2007:181 and Tegegne 2005:159).

The Consequence of the overall cause-effects vicious circle between key economies of rural areas agriculture and urban centres manufacturing industry did nothing right about the Ethiopian economy, policy, culture, education, politics and governance (Kibur 2003:34). Ethiopia is one of the poorest countries in the world based on criteria of low-income (with a threshold of $905) human-assets weakness and economic vulnerability (UN 2011b:37). This can imply that the country needs some integrated development approach for utilizing its potential resources.

Alternative local and regional development approaches and options of Ethiopia need to have: enabling environment for private sector business development, land and asset ownership, investment productivity and efficiency, endogenous potentials nexus new technologies, scale economic system, financial system, different partnerships, agro-

industrial urban centres, good governance, market and its networks (EEA 2005:139; MoFED 2006:1-5; Tegegne, Clacey and Godden 2011:99-107). Integrated regional development and URLs have the advantages of mutual growth and development of both rural and urban areas, multiplier socio-economic and environmental effects, adding value and creating sustainable market outlets, efficiency and diversity of production, elongated shelf-life for reducing risk of perishability, job opportunities in the urban-rural network and value chains (EEA 2005:72-74). Coates et al (2011:57) claim that the role of urban centres for regional development can be seen in three perspectives: optimists (as promoting balanced development), pessimists (as source of rural impoverishment and backwash effects) and intermediate viewers as real decentralization with investment and resource mobilization. Furthermore, Dercon (2009:5) recommends that the argument for inter-sectoral and spatial linkages should not be which comes first or given priority but the question needs to be how to maximize and utilize the symbiotic and mutual development of key inter-sectoral linkages of urban and rural areas through appropriate and integrated national policies and institutional settings in poor and ABCs. URLs could increase efficiency for comparative and absolute advantages of producers in Ethiopia (EEA 2005:44). In a similar way, Assefa (2007:181) claims that urban and rural development in Ethiopia should go hand-in-hand to bring about positive socio-economic transformation and diversification of employment and income sources. Tegegne, Clacey and Godden (2011:95) also suggest that enterprises that take products to higher stage URLs (URLs) and value-adding need to be targeted with special emphasis for their far reaching impacts of local and regional development. The following discussion shows the agricultural problems and inefficiencies of SHFs in Ethiopia.

3.3 Agriculture and its efficiencies

3.3.1 Nature of agriculture and SHFs livelihoods

Though Agriculture in Ethiopia is the backbone economy contributing about 85% of employment, 45% GDP and 95% of foreign exchange earnings, it is characterized by subsistence and rain-fed production on fragmented farmlands of SHFs (Pausewang 2009a:73). Different authors (Coates et al 2011:8; Getnet and Mehrab 2010:11 and Demese, Berhanu and Mellor 2010:3) discuss that land fragmentation is an important

issue. It was characterized by average of 3.3 plots of fragmented land; about 56.7% farm households within less than 0.5ha; about 80% households less than 1ha and only 4.1% households own more than 2ha of land and the overall average land size was 0.81ha. Land fragmentation is mainly due to heavy government intervention and its land mismanagement such as unfair redistribution and land leasing, land market failure (due to government ownership) combined with population growth and inheritance systems. These authors also add that the country have the largest livestock herd and second biggest maize producer in Africa though the productivity is among the lowest. Demese, Berhanu and Mellor (2010:3); Getnet and Mehrab (2010:1) and MoFED (2003:62) complain that Ethiopia has the highest farmland and/or soil degradations in SSACs and this situation is another bottleneck for agriculture and agro-processing development. There is no logical explanation for why the Ethiopian government preferred importing food crops rather than improving the domestic agricultural problems and challenges through appropriate land management and planning.

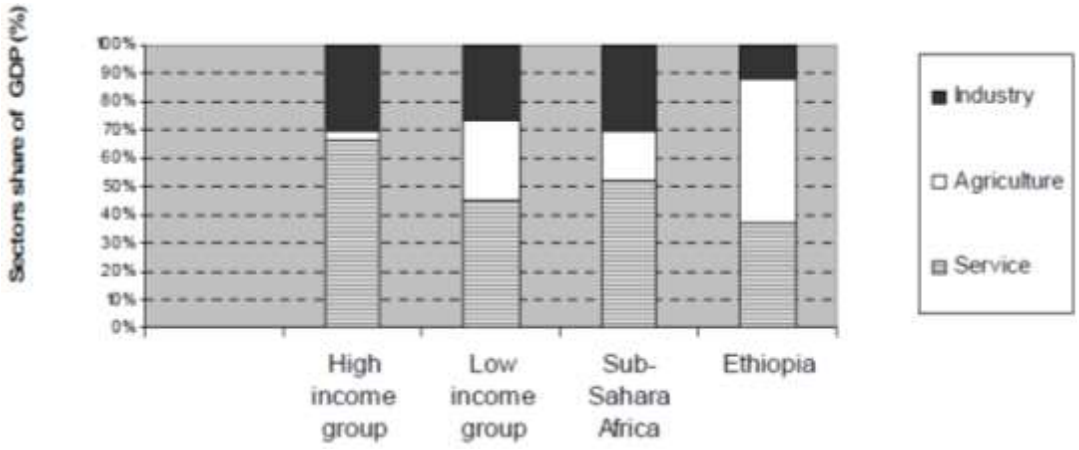
The financial sector for agriculture in Ethiopia is dysfunctional and structurally weak due to political considerations and intervention; lack of liberalized financial system for foreign capital and finance, development agencies, donor; absence of pro-agricultural and agro-industrial development financial system; lack of equity in investment opportunities with prejudices and distrust of new ideas (Coates et al 2011:54).

Researches indicate that natural resources and agricultural produces export-oriented trade have problems and negative influence for URELs and agricultural development. Kibur (2003:27) confirms that export commodities of the country are mainly agricultural raw materials that include oilseeds while the import commodities include processed food types (such as palm oil) and cereals (like wheat). The amount of export is diminishing while the imports are increasing with billions of dollars. One of the main causes for such increase is the landlocked status of Ethiopia that brought additional cost for port services. The trade relation has a huge trade imbalance and the threat of famine in the country due to replacement of food crop production by cash crops including flower expansion (EEA 2005:57). Furthermore, trade policy and regulation of Ethiopia is another problem for agriculture and its corsponding agro-industrial value chain development. The export of

domestic industrial raw materials mainly oilseeds and energy and importing domestically enough products mainly wheat and cheap palm oil are the conflicting factors at local levelin Ethiopia. Diao et al (2007:3) made a study on demand linkages of agricultural growth and non-agricultural (mainly manufacturing) activities in Ethiopia. Their study applied for different econometric models (fixed price semi-input-output model and flexible price multi-market model) based on social accounting matrix (SAM) of 2001/02 and computable general equilibrium (CGE) data. These authors assert that agricultural BPLs and agricultural FPLs have higher and stronger growth and poverty reduction linkages than agricultural export-oriented (sesame, chat, flower and other horticulture products) approach in Ethiopia. They suggest that the radical transformation of the country's economic structure has to begin with shifting the surplus agricultural labour force to non-agricultural economic activities such as agro-processing, mining, rural and urban service sectors development. Furthermore, they suggest that the agricultural transformation could go through reasonable land size (the minimum land size about 3ha per household farmer) with appropriate resettlement pattern and irrigated farming system.

Ayele (2006) asserts that though most SHFs practiced mixed agriculture (production of crop and rearing of livestock), they have not organized and reinforced crop production and animal rearing for interdependent and complementary mutual benefits. Livestock manure and crop residues are used as firewood and/or source of cash at urban centres rather than recycling for organic farming and soil conservation. In the same way, crop residues are sources of cash rather than serving animal feed and nutrients recycling. Both crop production and animal rearing are traditional and subsistence. Agriculture has been seasonal rain-fed and highly susceptible to natural disasters such as the recurrence of drought. Though local cattle breeds such as Borena, Fogera, Barka and Horo have high potential for milk and milk products, animal rearing has many problems in quality and quantity (Ayele 2006:29). Demese, Berhanu and Mellor (2010:15) explain that the rural people are not able to survive unless they have additional resources by commuting or seasonal migration to urban centres and/or supported by social safety net programs (which is locally called 'work for food'). The gap of food demand and supply for the rapidly growing population has been widening and the share of agriculture in the GDP fluctuated depending on the chance of weather condition (EEA 2005:218 and MoFED

2010:122). Even by the standard of Sub-Sahara African countries, Ethiopia economy has relied heavily on a poorly modernized and traditional agricultural sector (Figure 3.2).

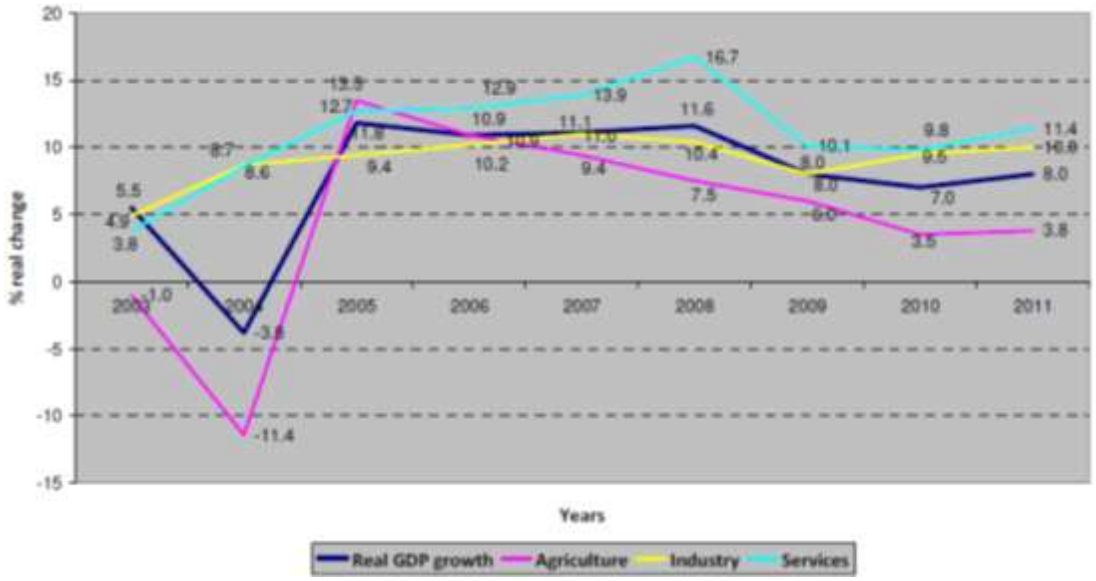


Source: EEA (2005:258)

Figure 3.2: Comparision of the three core economies in Ethiopia and other regions

The contribution of agriculture in the Ethiopian economy is cropping production 60%, livestock 27%, forestry, fishery and 13% other sectors. The major agricultural crops include cereals (*Teff*, barley, wheat, maize, sorghum, millet, oats), pulses (horse beans, chickpeas, haricot beans, field peas, lentils and vetch), oilseeds (nigerseed locally called *neug*, linseed, fenugreek, rapeseed, sunflower, groundnuts, sesame) and others (Ayele 2006:130). However, increasing production and productivity of agriculture has faced two-fold challenges in meeting the demands of: high population (about 95.5million) with rapid growth rate 2.6% and the agro-industrial raw materials for value adding, employment and food security (Getnet and Mehrab 2010:11 and World Bank 2015:1).

It is also complained that strong sectoral FPLs and BPLs of agriculture and agro-industry are missed in the development agenda of Ethiopia and the missing of the key economic sector has resulted in overall growth failure of the economy (Eshetu and Mamo 2009:8). The share of agriculture in the overall GDP has remained with little change for more than two decades. The empirical evidence of the economy with stagnat trend from 2003-2011 is shown in Figure 3.3.



Source: Eshetu and Mamo (2009:8)

Figure 3.3: Trends of agriculture, manufacturing and services growth in Ethiopia

The contribution of agriculture to real GDP (12.7%) has declined from 2005 to the present (about 3.5%) with stagnant industrial development. This is the paradox of the development policy 'Agricultural development-led to industrialization-ADLI'. The development of the service sectors appears to be spontaneous and out of the aforementioned development policy of Ethiopia (Figure 3.3).

Paradoxically, landlocked Ethiopia has agrarian society (85% of national employment) but it has been importing most of agricultural produces (Dercon 2009:2; Demese, Berhanu and Mellor 2010:3 and MoFED 2003:62). Furthermore, rural life was characterized by: the highest infant and maternal mortality; the highest children malnutrition rates; the lowest overall adult literacy rate (even by SSACs standards); of most of the population (about 80%) has no access to improved sanitation; about 38% of underweight children (under the age of five) and over 15 million food emergency people. Hence, many farm households have additional resources from non-agricultural activities such as seasonal migration for wage employment, selling crop residues and dung cakes and support of social safety net programs (Altenburg 2010:6; Demese, Berhanu and Mellor 2010:2; EEA 2005:151,162). The poverty status of SHFs found at a critical stage and they faced a socio-economic crisis. It is argued that most SHFs did not produce enough food for their own consumption and in many cases; there was a prolonged hunger

season for farm households during the pre-harvest periods. Thus, the poor situation in rural areas led high rural-urban migration in search of job and employment, though there was excess unemployment and poverty in urban Ethiopia (Dercon 2009:2; Demese, Berhanu and Mellor 2010:3 and MoFED 2003:62).

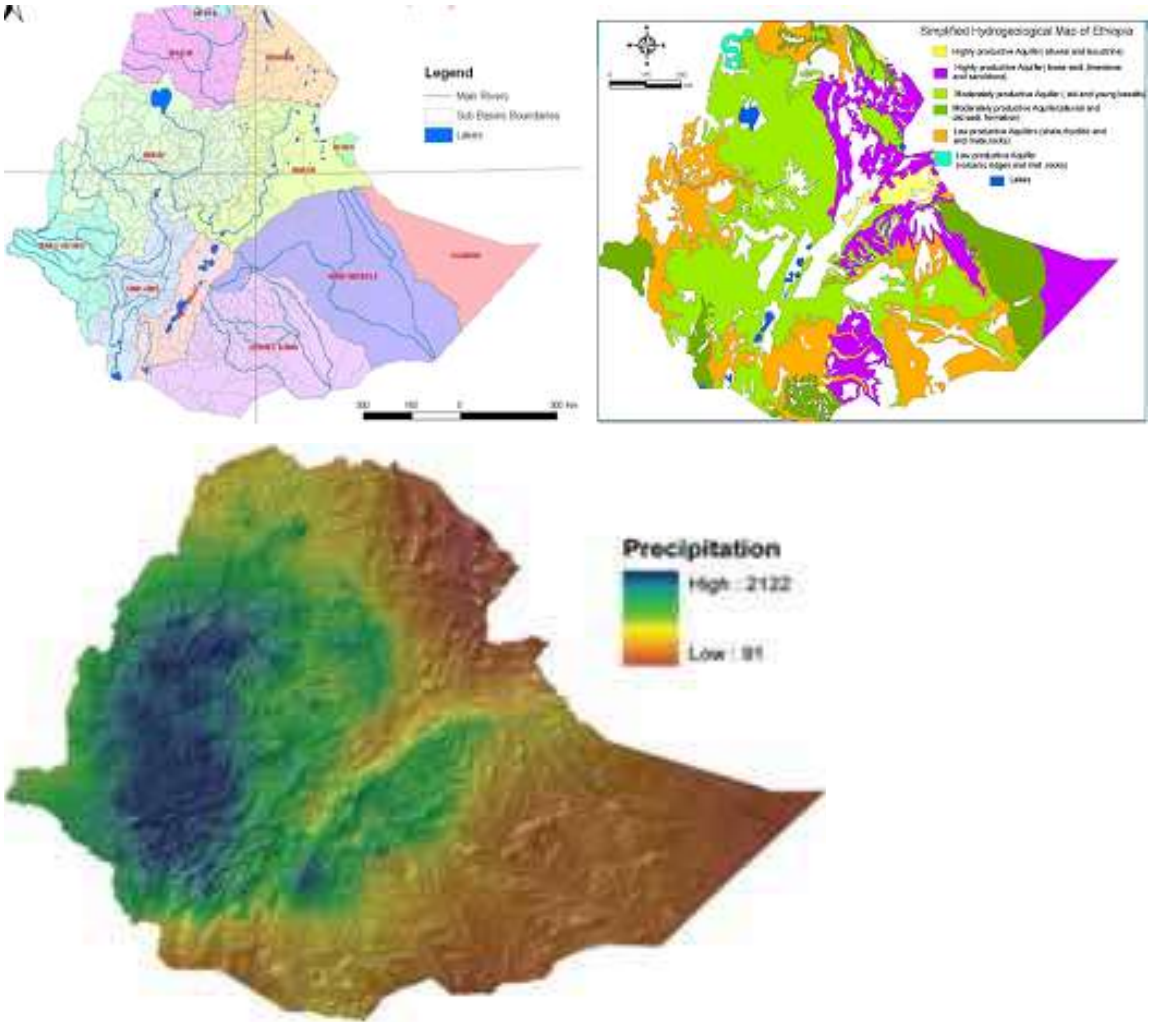
Paradoxically, Ethiopia has high potential opportunity for virtuous circle URELs both in food crop production and in animal rearing. It has a total area of about 1.2 million Km^2 that has about 50% (55 million ha) arable land. About 18 million ha of land are currently under cultivation in Ethiopia. From the remaining total 37 million ha of arable land (55 million-18 million), 32.3 million ha could be used in seasonal rainfall farm and 6.4 million ha irrigable land. These vast potential arable land is found under different agro-climatic zones from Alpine, temperate, sub-tropical and tropical climates to desert climate for a variety of agricultural (crop and animal varieties) and agro-industrial development (Coates et al 2011:17).

Table 3.1: Irrigation potential of major river basins in Ethiopia

Basin	Catchment Area (km^2)	Irrigation potentials (ha) (Respective recent master plan studies)			
		Small scale	Medium scale	Large scale	Total
Abay	198,890.7	45,856	130,395	639,330	815,581
Tekeze	83,475.94	N/A	N/A	83,368	83,368
Baro-Akobo	76,203.12	N/A	N/A	1,019,523	1,019,523
Omo-Ghibe	79,000	N/A	10,028	57,900	67,928
Rift Valley	52,739	N/A	4,000	45,700	139,300
Awash	110,439.3	30,556	24,500	79,065	134,121
Genale-Dawa	172,133	1,805	28,415	1,044,500	1,074,720
Wabi-Shebele	202,219.5	10,755	55,950	171,200	237,905
Danakil	63,852.97	2,309	45,656	110,811	158,776
Ogaden	77,121				-
Ayisha	2,000				-
Total	1,118,074.53				3,731,222

Source: Seleshi, Teklu and Regassa (2010:23)

The potential irrigation of major river basins in Ethiopia is 3.7 million ha on major rivers (Table 3.1). The country has 1.2 million ha of underground water and 0.5 million ha of rainfall harvest irrigation potentials on the present survey and technology (Seleshi, Teklu and Regassa 2010: 20-35). The underground water about 2.6 billion metric cubes annually rechargeable resources; surface water resources such as different lakes (eleven fresh, nine saline and four craters); many major (inter)national river basins such as Tekeze, Abay, Baro-Awash, Akobo, Omo-Ghibe, Rift valley, Mereb-partly, Afar/Denakl, Aysha, Ogaden, Wabi-shebele, Genale-Dawa flowing in different directions crossing vast areas of potential arable land. Reliable rainfall agriculture is has been practised and possible only in the highland Ethiopia (north western and south eastern parts) where enough wet season is available and the current rain-feed agriculture need to be supported by available irrigation opportunity in the country (Figure 3.4).



Source: Seleshi et al (2007:8) and Abiti (2013:5)

Figure 3.4: Water resources and rainfall distribution for irrigation potential of Ethiopia

The country has also over 12 major swamps for the advantages of wetlands ecology and other future potential uses. Though untapped and high potential extensive irrigation agriculture is available and possible through different methods of irrigation (such as rainfall harvest and river diversion), it has yet the potential stage for agriculture. In contrast to the long experience of agriculture and irrigation practice (since 1960^{s} in Awash Valley in Blue Nile), the actual irrigated agriculture is extremely very poor (about 5%) and rain-fed agriculture of the highlands and traditional pastoralism in the lowlands have remained the dominant agricultural economic activities in the country (Seleshi et al 2007:17-35). This implies that there needs structural and managerial adjustment of the agricultural economy in Ethiopia.

Demese recommend that cooperatives have crucial roles to play in rural and agricultural development by enabling access to services (credit, saving, capital accumulation, marketing, health, education, utilities) by accelerating businesses, increasing consumption of non-agricultural goods and services and enhancing URLs (Demese 2007:94, 95). It is also suggested that eliminating the barriers of land tenure, agricultural institutional settings of different partnerships (group of smallholders, fixed-rent, share-cropping as shared tenancy contracts, land-contracts, cooperatives, outgrowers) and organizational structures for developing agri-business linked with agro-processing and value-chain development are important factors in Ethiopia (Dethier and Effenberger 2011:22,26). Diao et al (2007:20) state that the scenarios of agriculture have much stronger consumption linkages than production linkages with limited demand and use of inputs. Without structural transformation and strong contract-discipline for appropriate linkages of agricultural and industrial growth, increasing production and productivity of agriculture and agribusinesses could be a critical problem in the country. Hence, production of sustainable domestic edible oil has demanded clustering (merging) of SHFs fragmented farm plots for scale economies in the Ethiopian context (Wijnands et al 2011:106 and Memedovic and Shepherd 2009:2). It is contended that the current government sold land to domestic and FDI such as Sudan and Djibouti governments by evicting indigenous people (Wondimu 2013:1). Thus, it is suggested that the government need to create an enabling environment for the domestic development through identifying key sectoral linkages in different agro-climatic zones and agronomic conditions (Kibur 2003:37).

3.3.2 Efficiency of agriculture in Ethiopia

Agricultural efficiency is an important opportunity in poor countries like Ethiopia where there is a limitation in technological innovation, resources mobilization and soft and hardware infrastructures such as roads and policies. Ermias, Edrias and Belaineh (2015:8) conducted a study on TE, AE and EE of sesame producers in Southern Ethiopia, Omo zone based on cross-sectional data from randomly selected 120 farm households using stochastic frontier model. Their findings indicate that the mean of TE, AE and EE are 66.1%, 66.25% and 45% respectively. Extension contact negatively affected EE, implying the need for restructuring public extension services. Furthermore, their findings

indicate the presence of efficiency gap and ranges for potential improvement in the existing resources. Hassen et al (2012:16) study mixed crop-livestock system in Ethiopia using stochastic frontier approach. The main determinants were farm size, livestock ownership, labour availability, off/non-farm income, participation, total household asset, total household consumption, expenditure and improved technology adoption. The values of the most inefficient SHFs are 16% TE, 4% AE and 3% EE while the most efficient farmers were 98% TE, 100% AE and 59% EE. The TE, AE and EE means are 62%, 51% and 29% respectively. This implies there are 82% TE, 96% AE and 56% EE ranges in their samples, implying the presence of problems in mixed agricultural complementarities and the higher efficiency ranges are opportunities in the existing resources.

Solomon (2014:151) made a study on TE of the major crops (*Teff*, wheat, barley, maize, sorghum and horse bean) in Ethiopia using stochastic frontier model at the macro level. His results indicate that all his national level variables (land, fertilizer, and seed, labour) and inefficiency variables (education, age, land policy, participation in conservation, improved seed, poverty level, off-farm income, soil fertility and slop) are binding in the production of major crops. The inefficiency effect analysis of education, participation in soil and water conservation, poverty status, livestock ownership and adoption of improved seed have negative values and indicated a significant effect on technical inefficiency of major crops production. His results also show that mean level of TE for major crops is 64%, implying 36% gap of production inefficiency that could be utilized as opportunities in each major crop.

Messay et al (2013:32) study at the source of technical inefficiencies wheat SHFs in selected waterlogged areas of Ethiopia using a translog production function approach. The mean TE of wheat producers was 55% that implies 45% inefficiency level for opportunity in the existing resources. Then, they recommend that scaling up best practices in using integrated farmland conservation and management for improving productivity of wheat. Bamlaku, Nuppenau and Boland study comparative TE among different agro-ecological zones (highlands or *Dega,* intermediate or *Woina Dega* and lowlands or kola) of SHFs in Ethiopia using stochastic frontier production function. Their findings indicate that mean TE is higher in *Dega* (76.9%) followed by *Woina Dega*

(75.8%) with the least Kola (71.67%). The overall mean TE of the different agro-ecologies was 76.68%. Their findings also indicate that extension service and training on farmland management have brought increasing inefficiencies and these authors suggest for future endeavour on better extension services and trainings in the context of agro-ecological zones.

3.4 The scenarios of agro-industries and their efficiencies

3.4.1 Scenarios of Ethiopian agro-industries

The stagnant share of manufacturing industries in the GDP and increasingly unprocessed and/or at best semi-processed exports are features of poor industrial function of the Ethiopian economy (Altenburg, 2010:1). Tassew (2008:3) claims that employment structure of large, medium and small-scale industries are mainly self-employed and unpaid family labour force for the production of consumable goods (food and beverages, textile, garments) in Ethiopia. The classification of manufacturing industries depends upon many criteria such as capital, employees, product amount and type. The Ethiopian manufacturing industries are classified into three based on capital and power consumption (CSA 2010:21):

- Cottage/handicraft enterprises have not more than 20,000 capitals and performing by hand or using non-power driven machinery.
- Micro and small-scale manufacturing industries (MSEs) are business enterprise that has capital limit of 20,000-500,000 with power driven and usually less than ten employees.
- Medium and large-scale manufacturing industries have more than 10 employees and power driven.

This study has focused on mix of MSEs and medium and large manufacturing industries (SFI). The challenges and constraints of manufacturing industries in Ethiopia are complex and many such as pre-processing problems (inputs of raw material, labour, energy), processing (efficiency) and post-processing (marketing and/or further processors as bakery' BPLs and consumers). The small manufacturing enterprises (SMEs) have found under internal (poor industrial managements and industrial professional skill) and external (government failures such as in policy, institutions, governance, heavy and

costly regulatory, more administrative and judicial procedures and weak property rights, globalization and trade liberalization) challenges and bottlenecks (Ruffing 2006:7). Most of the challenges and problems are directly or indirectly related to the political economy and government's policies, institution and governance (Diao et al 2007:29).

The amount of domestically processed oil seeds increased at a slower pace per annum (6% annually) than the exports of oil seeds (25%) and imports of edible oil (12%). There is a wide allegation that the government uses public resources for state-owned, endowment-owned and/or political affiliated firms against independent and non-affiliated private firms by entwining businesses and politics through discretionary allocation. These authors also claim that the current government has lacked incremental development opportunities and it has been deconstruction of preceding governments' development works and projects without reasonable justification. However, the current government used external (foreign countries and donors such as the World Bank and IMF) dominated development model and policies (Altenburg 2010:29 and Tegegne 2005:158). Tegenge, Clacey and Godden (2011:79) confirm that the problems of micro and small-scale enterprises (MSEs) in Ethiopia are the absence of continuous source of inputs and market. Furthermore, problems and challenges of oil industries in Ethiopia are associated with many factors such as worn-out and obsolete, inefficient machines; poor labour quality; higher refining loss and underutilization of by-products like oil cake (with 6-15% oil); high impurity of refined oil; lack of government infrastructures and facilities such as electric energy; lack of further utilization for diversification of products and by-products such as soap, high impurity and low quality oil; burdens from governmental rules and regulations; inefficient raw materials preparation and processing starting from farmland to manufacturing processes passing through inadequate quality control facilities; shortage of raw materials and poor purifying and packaging level (CSA 2010:67 and Wijnands et al 2011:51,52).

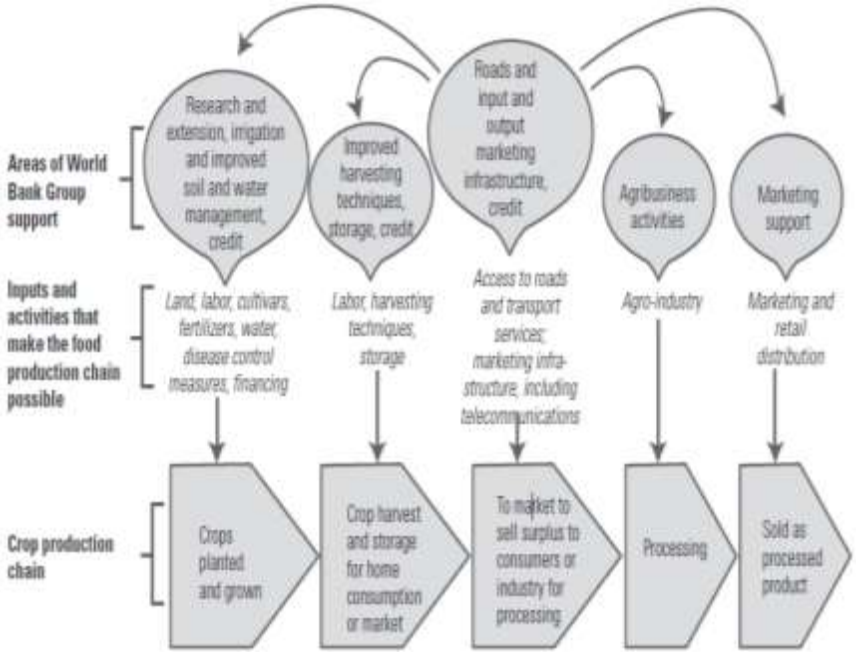
The other authors claimed that paradoxically, Ethiopia is an exporter of oilseeds at the time of critical shortages of oilseeds for domestic industries as well as importer of processed edible oil, mainly palm (65%). MDCs companies mainly Israel, Turkey and China made profits from imported cheap Ethiopian sesames by cleaning and purifying to

international standards and re-exporting to MDCs (mainly UK and the Netherlands). Sesame has wider applications and uses in MDCs such as: edible sesame oil, confectionary biscuits, baking of white, Tahini (pate used for cuisine), halva (tahini and boiled sugar with other situations), sesame flour and sesame seed spouts, pharmaceuticals and cosmetics, many other products and by-products (such as different soaps) (Coates et al, 2011:49). Furthermore, exporting raw material means going to underdevelopment and poverty since it is exporting employment, added value, retarding indigenous and scientific or technological knowledge (Befekadu 2004:22). It is also claimed that exporting raw oilseeds meant losing indigenous knowledge and capacity development, employment opportunities, demand and market network and value-adding (Wijnands et al 2011:37). *S*atterthwaite and Tacoli (2006:170) and Tacoli (2007:48) argue that MSEs did not have the capacity and information: to identify bottlenecks, innovation, advantages of scale economy and compete with cheaper imported goods in the African context. The increasing rate of larger exports of oil seeds (35,000 tonnes by 5% annual increment) retarded the domestic edible oil industrial development and technological innovation. This implies that there needs support system of the domestic industries.

Industrial development in Ethiopia is stuck in 'low-quality trap' mutually reinforcing value chain and coordination failure in bad equilibrium (Altenburg 2010:2). It is not competitive in the global market (Coates et al 2011:49 and Wijnands et al 2011:37). Industrial labour productivity is extremely low even by African standards (Eshetu and Mamo 2009:8 and Wijnands et al 2011:52). Though agro-industries had strong potential linkages with the domestic agricultural sector, available manufacturing industries (45% inputs) and agriculture are dominantly import-dependent (Getnet and Mehrab 2010:11 and EEA 2005:43). Altenburg (2010:2) argues that the overall technological level of firms in Ethiopia was very backward and underdeveloped, even by regional standards of SSACs (4% ISO-certified in Ethiopia while 12% in Sub-Sahara Africa). Oil industries in Ethiopia have low quality, processing and refining oil products for competitiveness. The supply of edible oil has not met the demand level as well as the gap of edible oil supply and demand was widening since 1993 in Ethiopia (Wijnands et al 2011: 37, 51).

Many scholars suggest different possible solutions for the problems and challenges of industrial development in Ethiopia. Satterthwaite and Tacoli (2006:170) and Tacoli (2007:48) recommend that the strategic openness of the government in policy and institutional settings are key option for poor countries infant industrial development. Befekadu (2004:26) and EEA (2005:60) propose that Ethiopia needs to base its development on modernizing medium scale industrial development. They reasoned out the factors that small amd medium scale industrial development has the advantages of demanding small amount of capital for establishing and running; simple institutional settings with domestic raw materials and limited imported spare parts; widely distributed throughout the country in all sectors of economicy; indigenous-based production with scientific and technological knowledge; seedbeds and spring board for entrepreneurial, modern industrial development and local wisdoms for indigenous producers and affordable outputs to low-income groups of the society.

ECG (2011:13) recommends that the following agricultural value chain model for agricultural and agro-processing development with the (donor) financial support in Ethiopia and other ABCs (Figure 3.5).



Source: adapted from ECG (2011:14)

Figure 3.5: Infrastructures and agro-industries value chain

Agricultural infrastructures (inputs and facilities) and expertise support are suggested as precondition for agricultural crops production, good harvest, proper agro-processing and agri-business (overall effective value chain). Moreover, effective value chain needs to have a financial basis to move the second phase (inputs application) for final production and processing efficiently (Figure 3.5).

3.4.2 Industrial efficiency

The available agro-industries in Ethiopia have many challenges and problems with coordination failure for efficiency problems (Altenburg 2011:3). Kidanemariam (2014:2) studies on the TE of the manufacturing sector in Ethiopia using time variant panel data for managing time dynamism. His findings reveal that efficiency varies from industry to industry based on firm size and experience. Machinery and equipment of industrial sector are the most handicapped sector of manufacturing. Based on his input-oriented handicapped model, the main factors for low TE of the manufacturing in Ethiopia are problems of raw material supply to operate in full production capacity. His finding indicates that the overall average TE of the manufacturing sector was 74%. Habitamu also studies about TE of private and public agro-processing (Pasta and biscuit) industries using the SFA model. This author simultaneously estimated all the parameters of frontier function and the inefficiency model using MLE based on panel data (2004-2009). The findings show the presence of TE differences among industries. The average TE of public pasta and biscuit industry is 12% while the private industries are 11% with the increasing trend in both industries.

The main constraints of the food industries are the poor quality of raw materials, poor industry-agriculture linkages and poor technology. Moreover, the factors for low-level development of the sector include lack of modern marketing skills and information, financial resources and sufficient food technologists. The variant parameter gamma (γ) which explains the share of industry level inefficiency in total output variation attributable to external factors of production is 16%. This implies that pasta and biscuit industries' inefficiency contributed less to random external factors of production. Alemu studies efficiency of public manufacturing enterprises and the policy environment in Ethiopia at macro-level during the socialist regime. His results indicate that the two

general causes for technical inefficiency of manufacturing enterprises are manufacturing differences to the extent of negative value added and existing top-down decision making and lengthy bureaucracy. Likewise, there is unacceptable justification for technical inefficiency and discrimination between public and private manufacturing enterprises. As a result, he suggests that incentive system without linking with real measure of manufacturing performance such as productivity as opposed to physical output need to have important inclusion. In addition, autonomy and accountability for enterprise managers in their decisions as well as rehabilitation and restructuring of marginally inefficient enterprises are some of the measures that need to be corrected for better and efficient output from a given inputs or the same output from less inputs (Alemu 1992:164). Melaku studies total factor productivity and TE of Ethiopian manufacturing sector using stochastic frontier model. His findings indicate that there are large inefficiencies at 14% output variation among firms. The effect of efficiency change is very small and scale effect is zero or very small due to most industrial groups have constant return to scale or small deviation from return to scale (Melaku 2013:Vi).

3.5 Trends of development Policies and plans

The focus of this study is mainly on enabling environment (development policy, institution, governance and assets) that has direct attachment with the prevailing political system for integrated regional development through URELs. Therefore, brief understanding on the process of general and national policy-plan and institutional settings and the development effects during the three regimes of Ethiopia could give an insight of the performance of two key economic sectors, agriculture and industry. This is because, governments in most LDCs have pivotal roles for the overall development in general and economic growth in particular (Altenburg 2010:7 and OPHI 2015:5). The discussion on the sectoral policies of rural and urban development is limited to the discussion of the overall comprehensive development policy-plan and the discussion for sectoral policies has given marginal values for limiting the scope of the study. Thus, development policy needs appropriate and democratic institutional settings for synergies and coordination among complementary and reinforcing sectors and places as integrated regional development to tap and exploit their full potential opportunities (ECG 2011:25 and Tegegne 2005:157). Generally, the objectives of development policies and institutional

settings are to bring progress and better well-being of citizens, societal development, sustainability, affordability, feasibility and attainability of policy (Alemayehu 2004:19).

Top-down formulation, biased and dichotomy development policies and plans as well as strategies are features of Ethiopian governments (Tegegne 2007:108). As a result, sectoral ministries have their own independent proposals from national level to regional and local levels for the same sectoral and spatial development policy (EEA 2005: 223). For example, the current general guiding development policy of the country (ADLI) has been the sole responsibility of ministry of agriculture working in partnership with SHFs and pastoralists and all other ministries have their own independent plan and development scheme (EEA 2005:223). It is also contended that governments in Ethiopia have commonly lacked good qualities of policy, institutional settings and governance (participatory democratic systems). Moreover, urbanization did not usually catch the attentions of the Ethiopian development policy-makers and practitioners or politicians. This author also notes that the governments' belief was that urban development was mainly come from rural and agricultural development (Assefa 2007:181). Dani (2004:1) argues that though forceful government intervention was sometimes important to escape from poverty trap in poor countries, government failure is by far bigger evil and disaster than market failure. The following discussions present the three Ethiopian governments' trends of development policies and plans and their development outcomes on the two key economic sectors.

3.5.1 The Imperial era (1931-1974)

The imperial regime had attempted to guide the development of the nation through series of five years development plans from 1957-1974 without consideration of URLs and their symbiotic relationships under mixed economic system. It had launched three successive strategic development plans with their own objectives as follow (Alemayehu 2004:19; Ayele 2006:2, 3 and Assefa 2007:189):

The first five-year development plan (1957-1962) was the first well-organized national development plan document in Ethiopia as well as in Africa. It was prepared for mixed economic system of co-existence of private and public sectors in 1956. It had given priority to the development of infrastructure and manufacturing industries in selected

urban sites by encouraging: foreign direct investment (FDI) (by tax exemptions, remittances of foreign exchange, import-export duty relief and financial access from Ethiopian investment corporation and development bank). The imperial foreign direct investment (FDI) was the main encouraging industrial development agent in this development plan (Ayele 2006:2).

The first five year plan (1958-1962) objectives were to increase productive capacity of the economy; accelerate the rate of economic growth; introduce modern machinery and equipments; raise the saving and investment potentials of people; improve standard of living; provide better social services; offer equal opportunity to socio-economic progress and finally, create and improve national defence and security for peaceful development to the nation and the world (Ayele 2006:3 and Eshetu and Mamo 2009:5). To achieve this five-year development objectives, the designed strategies were development of infrastructures, educational development, agricultural and industrial progress, mobilizing financial and human resources (Ayele 2006:4 and Eshetu and Mamo 2009:5). Generally, the government followed export-oriented and import-substitution industrialization (ISI) strategies. It tried to protect the development of domestic industries by the strategies of high tariffs and banning importation of some commodities such as sugar, food processing, textile, beverage and tobacco, leather and leather products. It also participated through direct investment for beginning on industrial development such as oil refineries, paper and pulps, glass and bottle, tire and cement industries with little attention to agriculture and rural development (Asefa 2007:189).

By the end of this plan, major high ways, airports, a new sea port (Assab), modern telecommunication system, electric power output (completion of Koka HEP), beginning of establishing modern manufacturing industries, export trade of agricultural raw materials (hides, skin, coffee, meat, cereals) were operating and import goods were mainly consumer goods with some machineries and equipments (Ayele 2006:4,7). However, the industrialization strategy which was expected to trickle down and spill over effects as 'growth pole model' had not succeeded and consequently, the supply of agricultural produces was extremely mismatched with higher demand of industrial development and population growth. The main bottlenecks in implementing the first

development plan were low saving capacity, inadequate methods of mobilizing available resources, lack of trained and skilled human power and lack of coordination between investment programs and lack of URELs (Ayele 2006:5). Agricultural production and productivity was extremely unsatisfactory (Assefa 2007:189).

The second five year development plan (1963-1967) of the Emperial era had changed its focus from industrial-urban and infrastructure development to commercial agriculture and rural development. Large area of agricultural land was devoted to the production of cash crops such as coffee, sugar cane, cotton, and some tobacco for export-led development strategy and import substitution of the country. The most notable ISI expansion in manufacturing (16% growth per annum) was also food processing, textile industries, beverages and tobacco, leather and shoe industries (Asefa 2007:189 and Ayele 2006:5). However, this second five-year development plan had not paid adequate attention to smallholder and poor peasants who were the majority of the population (more than 89%). Similar to the first development plan, the second five-year plan was characterized by lack of specialized institutions and coordination failure of inter-ministries and sectors that resulted in very weak change and development (Asefa 2007:189 and Ayele 2006:5).

The third five-year development plan (1969-1974) was sophisticated development plan of the time with valid analysis, institutionalized with inter-ministerial coordination and administrative reform through high-level administrative reform committee. The plan was agricultural and rural-oriented focusing on both commercial and SHFs with little focus on urban and industrial development (Alemayehu 2004:19; Asefa 2007:189 and Ayele 2006:7). It had the development Objectives of improving agriculture, growth and development, real improvement of living standard (3% annual growth of per capita income) (Alemayehu 2004:19; Ayele 2006:7 and EEA 2005:251).

In general, the development plans of Imperial era had significant contribution in that time though coordination failure of different sectors and spatial aspects mainly inherent interdependence between rural and urban economies as well as different sectors were significant problems. The three development plans are summerized in Table 3.2.

Table 3.2: Annual growth rate of national income in the emperial regime

Five Year Plan	National Income Growth Rate	
	Plan	Actual
1st (1958-1962)	3.7	3.2
2nd (1963-1967)	4.3	4.6
3rd (1969-1974)	6.0	4.0

Source: Ayele 2006:9

The policies were export oriented (autarky), influenced by ideas, technical and financial assistance of external donors (World Bank and IMF and USAID) (Alemayehu 2004:20). EEA (2005:253) argue that the causes of the development failure of Imperial era was lack of political and land reform, planning weaknesses for inter-linkages between key sectors of the economy with little accountability and transparency. Consequently, the three consecutive development plans of this regime could not bring meaningful development and on the eve of the regime downfall (1974), Ethiopia was one of the poorest countries in the world (Asefa 2007: 189 and Ayele 2006:9). In such situation, military government through coup in 1974 succeeded the imperial regime.

3.5.2 The Ethiopian people democratic republic government (EPDRG) or Derg regime (1974-1991)

EPDRG had changed the course of development from mixed economy to the socialist economy with a number of socio-economic and institutional radical changes for the construction of socialist philosophy and economic system. The major changes under the socialist economy were: public ownership of all lands and large enterprises (such as extra residential buildings, hotels and commercial farms), rural and agricultural development based on mechanized state and cooperative farms, new peasant resettlement and villagization programs, discouraged private sector development, establishment of central planning supreme council (CPSC) for developing annual plan. The main objectives of the development plan were alleviating acute and urgent socio-economic problems; laying down the material and technical foundation for socialist system and reconstructing the destroyed infrastructures in the course of revolution. According to this author, the nationalization of major industries undermined and marginalized the private sector and

SHFs. Finally, the policy ceased private sectors and FDI involvement on the industrial development (Ayele (2006:9-11) and EEA 2005: 256-7). Tegegne argues that state ownership industrialization for medium and large-scale industries is done by limiting private investors' capital ceiling (500,000birr) to involve only in small-scale industries, handicrafts and hotels or service sectors. Moreover, the socialist policy had not allowed private involvement in commercial farms and hence, the development of both agriculture and industry are lagged behind during this regime (Tegegne 2005:158).

The annual development campaign plans demanded the long-term development plan and the first ten-year long-term perspective plan (1984/5-1993) was launched with many objetives. The following were some of the objectives: improving the material and cultural wellbeing of people; accelerating economic and production capacity for ensuring balanced development of the national economy; exploring, conserving and exploiting national resource of the country; expanding and strengthening socialist production relations and systems; laying down the basis for the development of science and technology; eliminating unemployment for alleviating social problems; ensuring balanced and proportional development of all regions; improving agricultural production and productivity through cooperativisation and state farms; and expansion of irrigated agriculture; increasing the share of industry and mainly import-substitution industrialization. The plan was targeted for 3.5% per capita income growth, 4.3% agricultural growth, 10.8% industrial growth and 5.9% services growth (Alemayehu 2004:20; Ayele 2006:12 and Eshetu and Mamo 2009:6).

In the ten years perspective plan, priority areas of the military regime were ordered as: agriculture to industry and then science and technology (Ayele 2006:11). This implies that there was problem for integrated development approach and URLs for even complementary sectors of agriculture and agro-industry. The private sector and SHFs were undermined with controlled product price and delivery quota system (EEA 2005:257). However, the development objectives and priority of development were not implemented on the ground due to known and unknown as well as internal and external challenges and problems. Poor government capacity in developing and implementing policy, civil and Ethio-Somalia wars in the different sectors as well as the dichotomy of

urban centres and rural areas were some of the problems and challenges (Ayele 2006:11 and EEA 2005:257).

As a result of general development failure of military government, Ayele (2006:12) confirms that in the latter time of the regime (1990), it was decided to transform the development policy from socialist economy towards its predecessor Imperial era mixed economy. The main reason for the transformation was for operating and mobilizing all types of state, cooperatives, SHFs and private sectors enterprises side by side in the fair competitive environment. The over controls of the government on the operation of private enterprises like: capital ceilings, area of operation and enforcement of SHFs for cooperatives were lifted and the government was restructuring public enterprise management towards competitiveness and profitability (Ayele 2006:14). The overall development policy of the government (1974-1991) was rural-oriented development based on state and cooperative agriculture with highly undermining and/or controlling the private sectors involvement, process of urbanization and urban economy, labour mobility, rural-urban and urban-urban linkages (Asefa 2007:189). Consequently, Ethiopia was one of the poorest countries in the world. In such situation of this regime, the next government (EPRDF) came to power through blood shedding civil war and violent overthrowing of EPDRG socialist regime.

3.5.3 Ethiopian People's Republic Democratic front (EPRDF) since 1991 to date

The current government (EPRDF) came to power through guerrilla fighting overthrowing its predecessor Derg regime in 1991. The current government declared transformation from socialist economy to neo-liberalism as well as from centralized to decentralized governance based on ethnic-federalism (MoFED 2003:35). However, the fundamental realities such as rural-oriented development policy in the comprehensive development policy of ADLI, government ownership of basic assets and principles of the government dominancy in all aspects of the Derg regime have been continuing in the current government (Ayele 2006:15).

The following discussion presents the argument between the current government and scholars for and against the current government is enabling environment and governance respectively. The government and its supporters in the political ideology and academic

philosophy argue that rural and agricultural development need to be the main driving factor for Ethiopia through the development policy of agricultural development-led to industrialization (ADLI). This government claim that the important reasons for rural-oriented development policy ADLI are utilization of the abundant land and labour resources; compatible development package for specialization and diversification; ensuring industriousness and work preparedness of agricultural labour capacity with the dissemination of viable and appropriate technology; sustainable and proper use of land and water; market-led agricultural development through building an agricultural marketing system and cooperatives; promoting private investors participation for rural development; expansion of rural infrastructure; strengthening non-agricultural sector and URLs (MoFED 2003:15-61).

In addition, the government argues that the development policy of ADLI and its rural development institutional settings have many advantages for benefiting the largest number of people (85%); guiding path and basis of supply for the entire economy and agricultural industrialization (MoFED 2003:4, 9). In the policy document, building an agricultural post-harvest marketing system is also given focus as essential strategy through promotion and strengthening SHFs' association for using the advantages of scale economies. SHFs' association facilitates consolidating plots, proper pre-harvest and post-harvest advantages such as financial services by establishing their own banks and value-added for farm products via small-scale agro-processing enterprises and technological uses. Furthermore, developing rural non-agricultural infrastructures such as health, rural road and transport, drinking water supply can facilitate healthy, industrious, educated and trained agricultural labour force for the foundation of sustainable agricultural development (MoFED 2003:42-46). The productivity of SHFs can be through developing modern agricultural pre-post harvests infrastructures and inputs (Getnet and Mehrab 2010:16-17).

Similar to the preceding governments, the current EPRDF government has been passing four medium-term successive development plans for achieving the aim of the development policy ADLI (Getnet and Mehrab 2010:16-17):

❖ sustainable development and poverty reduction program-SDPRP (2002/3-2004/5),

- ❖ plan for accelerated and sustainable development to end poverty-PASDEP (2005/06-2009/10),
- ❖ growth and transformation plan-GTP1 (2010/11-2014/15) and
- ❖ The second growth and transformation plan (GTP2 from 2015-2019)

EPRDF has lately developed sectoral policy of urban development document in 2005. However, the policy is influenced by ADLI and it has the principle that rural development should guide the directions and development of urban development. In this urban policy, rural hinterlands are considered as sources of raw materials and natural resources, labour and market for urban centres and urban functions have the sole roles for rural development (MoFU 2005:5,22). This implies that the comprehensive rural biased development policy, ADLI influences the sectoral urban policy for giving priority to rural development and rural hinterlands are expected to provide raw materials without synergy in URLs. This is an important policy problem for urban economic linkages and integrated regional development in Ethiopia.

Some supporters of agricultural fundamentalism (Bezemer and Headey 2007, Alemayehu 2007) argue that the government has been following the right development policy (ADLI) track. Similarly, Bezemer and Headey (2007:20) argue that agricultural growth strategies has vital role to play in igniting development and poverty reduction in early stages of development such as SSACs and poorer regions of south and southeast Asia. These scholars and the government are mainly based on the development philosophy and classic structural model of Rostow's linear development (traditional agriculture, beginning of take-off, take-off stage, maturation and mass consumption) model for the country development (Todaro and Smith 2012).

The current government also argues that public ownership land policy was more important than private ownership. Allowing land as private ownership could expose for sale, exchange and evacuation of SHFs for aim of consolidating fragmented plots for replacing huge farm labour by capital-intensive technologies. Moreover, private land ownership could lead to the unanticipated outcomes and misallocation or unproductive uses of factors of production (capital and labour), investors and the dampening of work motivation among SHFs (MoFED 2003:24). Therefore, the right to ownership of land and

land administration is exclusively and constitutionally given to the state in both rural and urban areas. Furthermore, land cannot be sold, exchanged or mortgaged for collateral by private sectors and SHFs for any financial system (Constitution 1995:98).

The opponent scholars of government's rural-oriented development policy have different arguments and philosophical perspectives. These scholars argue that the government asset ownership of key livelihood assets is one of main challenges and problems of private and individual development in Ethiopia. Rural-urban migration for dependent family members in Amhara regional state are mainly due to: land tenure insecurity and landlessness with indebtedness and massive natural resources degradation (Getnet and Mehrab 2010:9 and Desalegn 2008:146). Other authors (Tegegne 2005 and 2007; ECG 2011 and Altenburg 2010) argue that rural and agricultural biased development policy and institutional settings of the current government have most development failures in agricultural and agro-industrial development and they explain in many philosophical and ideological perspectives in the following ways. ECG (2011:25) and Tegegne (2005:157) claim that problems and failures in development policies and institutions of the current government are lack of knowledge and capacity for policy-makers and key politicians to design and implement appropriate and integrated development policies and strategies. Many scholars contend that ADLI and its institutional setting failed to bring transformation and development in all dimensions for agricultural industrialization and development in both rural and urban areas in Ethiopia. They confirm that despite the free-market policy of the country, most means of production and basic assets such as land have been still effective in the form of state and party-affiliated ownerships. This implies that the dichotomy policy with public ownership of assets has failed to bring agricultural change and overall urban-rural development (Altenburg 2010:18; Assefa 2007:189-193; Ayele 2006:19-20; Coates et al 2011:12; Demese, Berhanu and Mellor 2010: 18, 22; Desalegn 2008:146; ECG 2011:21 and EEA 2005: 79, 320 and Tegegne 2005: 158, 159).

The Ethiopian governments have lacked incremental development policy and strategies for the same development paradigm and philosophy. Seleshi et al assert that the current government has destroyed all the development projects and institutional memories of the past and started from scratch for the same previous functional development schemes and

projects. Abandoning and vandalizing of the previous Derg's multimillion irrigation projects by the current regime can be evidence for lack of incremental development (Seleshi et al 2007:28). Alemayehu (2004:21) argues that the EPDRF has failed to bring economic development and citizens' well-being focusing on theoretical structural adjustments (non-implemented many short and medium-term plans) rather than implementing set institutions. It is also stated that importing of food commodities and raw materials for food and domestic agro-industries are the outcome of development policies and strategies' failure in the current government (Ayele 2006:146 and Desalegn 2008:146). It is a paradox to see agriculture being suffered from various problems to support livelihoods while the country is following rural-oriented development policy, ADLI. This is manifested through the measure of absolute rural poverty (45%) compared to urban poverty (37%) by national poverty standard (Ayele 2006:45; EEA 2005:151). Policy and political system are two faces of a coin and the next section discusses about the political situation for URELs in the current government.

3.6 Politico-governance and URELs

The political system and institutions in both urban and rural governments have the pivotal role for URELs and overall regional and national development. The politico-governance of the current government (since 1991) has followed the administrative and institutional settings of ethnic-federalism and regionalism (Almazung 2010:80). Moreover, ECG (2011:23) asserts that development has usually positively correlated with democratic governance and its institutional settings. However, the control of political system means controlling all resources of socio-economic and development factors for corruption and malfunctioning in Africa. Hence, conflict for political power is higher and common in this continent.

The political system determines not only the development policy and philosophy but also the institutional settings. Institutions are generally the rules of the game and playing ground for patterned humans' behaviours, norms and actions individually, privately, organizationally and/or as government agencies (Yeraswork 2006:30). Institutions can be formal and informal. Formal institutions have organizations with laws, political or judicial and economic rules and they are stated as humanly devised political, economic

and social structures for guiding human interactions and behaviours as rules of game (Wijnands et al 2011:90). Institutions are cornerstones and crucial points for realization of harmonious existence and development of a society and they have the following benefits: reducing transaction costs and sustaining favourable working conditions by defining and determining the nature and type of relationships among different actors; providing knowable and reliable future directions by having the rules of the game among development actors for mobilizing social, economic, natural, physical and human assets; allowing greater sense of responsibility and efficiency; defining clearly the limits the of legislative, judiciary and executive (of the three basic components of the government) for democratic system; curbing people's natural selfish-interests (egoist behaviour) and greedy individuals by any opportunism and corruption into honest and hardworking propensity for community common benefits (Yeraswork 2006:30). Institutions are playing grounds for all actors including the primary roles of governments in good leadership qualities. Some of the good leadership qualities are: ability to lead by examples and to follow rules that apply to everyone (impartiality); real following of ethical principles (accountability, transparency, honesty, integrity, trustworthiness) and enforcing country's supremacy of laws, international conventions and agreements without favouritism and discrimination in system of good governance for popular decision in nation building (Kibur 2003:29 and NPC 2011:429). The political institutional structure and policy are interrelated factors for significant influence on URELs and agribusiness (Demese 20107:81 and Tacoli 2007:175). The assessment of the political administrative structure is vital for the study of URELs at local level. The general institutional arrangements of the district level has a theoretical decentralized governance system that starts at *mengistawi Buden* (hamlet-30-60 household), *sub-kebele* (50-100 households), *kebel*/peasant association (150-250 households) and finally district (20-30 *kebeles*) (Hadingham 2003: 6,22). In principle, decentralization is a political process and one of good governance systems for empowering people. It has both advantages and disadvantages. The advantages are: identifying local priorities and needs; direct contact and decision with users and more responsiveness to local needs; optimizing local resources for revenue; more accountability of local authorities; reducing dependence of local governments from top-down orders; integrating top-down strategic

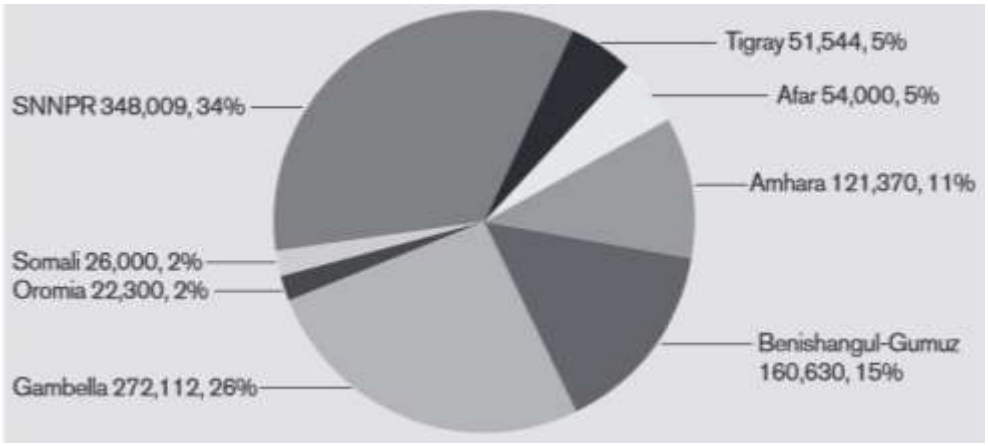
obligations and bottom-up outcomes; empowering local communities; developing democratization and improving delivery of basic services. Meanwhile, this author listed decentralization disadvantages as benefiting local elites more than the local people; possibility of high (political) corruption; local governments' capacity limitation to mobilize resources as well as weak administrative and management systems (Hadingham 2003:4,5). The appropriate mechanisms to the challenges of decentralized local governments in LDCs are: using different approach for different municipalities; establishing clear roles and responsibilities of different stakeholders; strengthening participatory development; mobilizing agricultural and agro-industrial value-chains; developing infrastructures and service delivery (Goldman and Reynolds 2008:149).

Ethnic-regionalism form of governance structure and its institutional settings have problems and challenges for integrated regional development approach and institutional system as well as aggravating many ethnic conflicts in the country (Hadingham 2003:24 and Abebe 2006:30). It is also confirmed that spatial diversity of urban centres and rural areas in Ethiopia has been considered as independent and isolated development in policy, institutional settings and political administration strategies (Tegegne, Clacey and Godden 2011:34). Abebe argues that ethnic regionalism and ethnic-politics in Ethiopia has created poor urban governance that is a challenges and problem for URELs in the urban centres (such as Hawassa, Harrere and Dire Dawa towns) (Abebe 2006:30).

Furthermore, the core economic and business sectors are under the ownership and control of the government and they have the following structures in the current ethnic-federalism (Altenburg 2010:10-11; Coates et al 2011:14, 20; Minga 2013:45 and Kibur 2003:23-25):

i. state-owned enterprises (SOEs) mainly on strategic sectors such energy, insurance, import-export trading, wholesaling and retailing and banking. SOEs have three sub-sectors: government-owned enterprises (Parastatals), ethnic-regional state political parties-owned enterprises or called endowment-owned firms and military-owned business enterprises. For example, some of the political party-owned enterprises are the endowment fund for rehabilitation of Tigray (EFFORT) since 1995 (the biggest conglomerate in assets, number of subsidies, sectoral coverage, supra-regional orientation) by TPLF, endeavour (*Tiret*) by ANDM (Amhara), Tumsa endowment

(formerly Dinsho) by OPDO (Oromiya) and Wondo by SEPDM (Southern). EFFORT is the most powerful business organization engaging in almost all number of enterprises and sectors (about 66 huge companies) such as building materials (Sur construction and Mosebo cement factory), tannery, textiles, garments, pharmaceuticals, industrial engineering (as Mesfin engineering), mining, banking, insurances, trading (like Guna and Ginad), construction, livestock and other many socio-economic sectors throughout the whole country. The government has also the ownership of most ket assets such as land and it has been leasing for large-scale agricultural investment. Keeley et al (2014:21) state that about 1.06million ha of land have been allocated for commercial agriculture. The federal government has allocated 2/3 of the total commercial land for investors and state farms like sugar plantation while the regional governments have allocated only 1/3 of these lands (Figure 3.6).



Source: Keeley et al 2014:21

Figure 3.6: Large-scale land allocation in Ethiopia

On the contrary, many landless and near landless SHFs have suffered from lack of access to farmland in this country. Agricultural investors have given many advantages over SHFs such as: access to extensive use of credit facilities from commercial bank of Ethiopia and the government and political affiliated businesses have financial access without audit and transparency as well as treated as charity organization free from any tax payment (Altenburg 2010:2,16). As a result, many government officials of Ethiopia have illicit financial flow of corruption for capital flight (Wondimu 2013:1 and annex-E). As a result, some key politicians have been classified as one of the richest politicians (on source of corruption) in the world (warner 2013:1). Similarly, Glavan (2008:65) confirms

that corruption is a ‘disease of poor countries’ and most common in LDCs for vicious circle of poverty trap in coordination failure for bad equilibrium and O-ring trap.
ii. Private sector enterprises (PSEs) and businesses have three types: strongly political affiliated private sectors in partnership with key politicians; independent private sectors within the pains of unfair market competition.

Therefore, some of the private businesses are forced to either sell their enterprises to politically affiliated groups or enforced to be political affiliated private businesses in Ethiopia (Altenburg 2010:30). For example, the government dismantled the Ethiopian manufacturing industries association and its international donor partners regardless of its numerous advantages of scale economy and other technological and economic relationships (Altenburg 2010:8). Similarly, though different international organizations (such as UNIDO, FAO) are working on ensuring the participation of the private sector and other key stakeholders in all aspects of value chain and agribusiness in Ethiopia, the government ownership and government implicit and explicit businesses are found major constraints for their agricultural and industrial development endeavours in private sectors (Coates et al 2011:19). Though Ethiopia is a member of many international conventions and laws which are important elements of strong and democratic institutional foundation, the institutional failure has mainly caused by governments' violation and failures of practical implementation (Almazung 2010:72 and Yeraswork 2006:30). Moreover, the current government has also increasingly appeared absolute dictator and autocratic, suppressing people with excessive interference on their every activity and system (such NGOs, civil society, individual and private enterprises) by violating the set institutions (Hailu 2004:11). Consequently, Befekadu (2004:29) suggests that government enterprises and businesses need to be privatized for preventing their further increasing effects such as joblessness, poverty and economic slavery of the society. Hailu (2004:16) and OPHI (2015:5) confirm that because of governments’ failure in multidimensional integrated development, Ethiopia is currently found incomparable socio-economic distress and misery as 86.3% of Ethiopians are under multidimensional poverty level.

Generally, governments in Ethiopia are not ready and have no willingness to include non-state and independent actors in partnership for (regional) development> the local

economic development (LED) requires considerable participation and contribution of all actors and multi-stakeholders in knowledge, skill, ideas, and financial resources such as mayors, local governments (district and *Kebele*) and the community (Tegegne, Clacey and Godden (2011:53,55). Sustainable local and regional economic development need two key critical development elements: de-politicized economies or decentralized governance and working financial system free from political system (Tegegne, Clacey and Godden 2011:32, 78). Furthermore, Minga (2013:45) and Ayele (2013:28) suggest that there need to be simultaneous cutting off SOEs and reforming in all aspects of governance including political, institutional and regulatory frames for effective development. Altenburg argues that private entrepreneurs are usually much better equipped to recognize trends and challenges for taking advantages of new opportunities, dynamism and innovation better than government agencies and business enterprises. This author suggests that the political agenda and development policy should focus on market-friendly and enabling environment for open-ended entrepreneurs and nurturing private sectors' new business models and technological changes (Altenburg 2010:30).

The Ethiopia administrative power structure and responsibilities have theoretical decentralization in the following manner. *Kebele* level[3] has development tasks and responsibilities of: executor of local development plans; identifying local development projects and efforts; mobilizing people and coordinating their development efforts; government budget allocation and infrastructure maintaining. The district local governments' responsibilities and authorities are providing capacity building, coordinating, monitoring and evaluation the works of *kebeles;* performing district wide activities of primary schools, agricultural training and extension institutions, potable water, roads; planning, mobilizing and doing district-level plans and development. Regional governments' responsibilities and authorities are: developing the capacities of districts and *kebeles;* prepare regional development packages on the basis of agricultural development packages; formulate and execute economic, social and development policies, strategies and plans of the regional state. The federal government duties and

[3] the lowest political administrative entity of both in urban and rural areas in the government structure as the rural *kebeles* of Genet and Girakidamin in this study.

responsibilities are to: formulate and implement the national policies, plans, programs and strategies; enact laws for land and other natural resources; formulate and implement foreign policy and commerce, inter-state trade and international agreements; regulate agricultural marketing and the supply of inputs; provide financial and infrastructural projects for country-wide packages; build the rural development capacities of regions and setting up universities and research institutes (R&D) (constitution 1995:105-108 and MoFED 2003:72-74).

In decentralization, the district is the last tier of the ruling government for SHFs' participation. However, the district level has inability to realize its own local development plan due to: the development plans need to basis the regional and national plans framework (lack of autonomy and decentralized function); the districts plans mainly focus on budget saving mechanisms rather than community needs and problems; annual plan focus not medium term plans (3-7 years) that allows strategic view points to link local plans, to gear public and private investments as well as to access donor and NGO funded initiatives; limited capacity at all levels of the government, mainly district and lower levels, has problems and constraints to undertake development planning activities; the same plan with slight difference every year in dynamic environment and lack of participation (top-down approach) and prioritization (Getnet and Mehrab 2010:42 and Hadingham 2003:22-24).

The lack of real decentralization at the SHFs' participation level is an evidence for top-down governance. Real decentralization is crucial for good governance and government services delivery for URELs. However, the politicians had the interest to generate the financial means and businesses to retain their political hegemony. Lessons from Taiwan and Korea make the Ethiopian government to give priority for export-led production of high value agricultural produces such as horticulture flowers. Latecomer developments in china, Korea and Taiwan in some cases Japan strongly influence political elites in Ethiopia. However, the development of export-flower agriculture has created risks on the indigenous nutritionally valuable crops and the environment **(**Altenburg 2010:18).

Poor countries like Ethiopia have somewhat narrower room for its policy formulation and autonomy in developing their context. They need to adapt from international development policies, international laws and rules, regional and international agreements and business organizations or partnerships such as transnational corporations (TNCs), foreign direct investment (FDI) and increasing networks or globalization without considering their micro-impacts (on households livelihoods, local and regional levels)) (EEA 2005:139). GTP's major objectives are empirically adapted from the following four development pillars of new partnership for Africa's development: extending the farming area under sustainable land management and reliable water; improving rural infrastructure and trade related capacities for market access; increasing food supply and reducing hunger and agricultural research, technology dissemination and adoption. Moreover, Africans, Asians and free market economies of Europe are adapted as basis of development policy of Ethiopia such as agricultural development-led to industrialization (ADLI) as well as Ethiopian's first ever competition law in 2003 and its institutional settings (NEPAD 2009:1). As a result of lack of context-based development policy and institutional setting, free market and privatization have failed to bring smooth competition and development in Ethiopia (Hailegabriel 2009:2, 4). Moreover, the Ethiopia government critically depends on annual foreign aid and debt finance/budget that has curtailed the country's striving for its resource mobilization and development (Michael 2004:48).

3.7 Urbanization, trade and URELs

This section presents urbanization, its roles as nodal point for trade and infrastructures in Ethiopia. It has discussions of trade policy and development in Ethiopia in relation to agriculture and agro-industries for URELs.

3.7.1 Urbanization and its roles for development

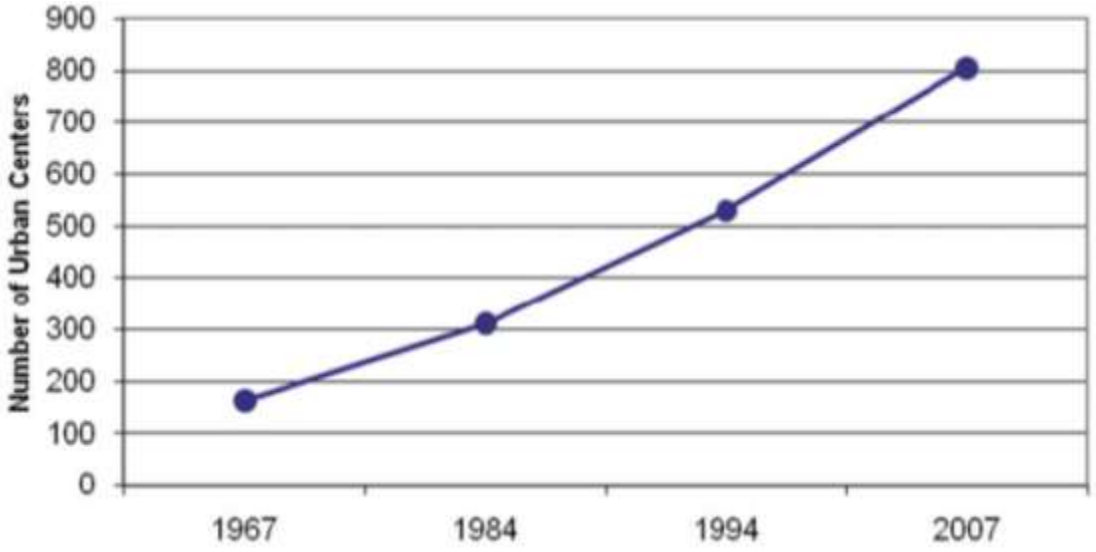
Urban centres and rural areas have no clear cut socio-economic and physical boundaries (as a continuum of one another) and lacked universally accepted standards and hence, different countries define urban centres in different ways depending on their own criteria and context (Tacoli 2006:16). Urban centres in Ethiopia are determined by the following criteria: the strength and role of a settlement to lead as centre of development for the

surrounding environment such as market centre, service centre and industrial centre; threshold population size (more than 2000 inhabitants); centre of politics and administration role; centre of historical and cultural role; a settlement having urban dwellers association such as *Edir*, 1000 and/or more inhabitants engaged in non-agricultural activities (MoFUA[4] 2005:20 and CSA 2010:9). The fulfilement of either of these criteria can make a setlment to be urban in the current government.

The locations of almost all urban centers in Africa were determined by the interests of colonizers, usually the capital at the ports. However, the histical urban development and location in Ethiopia is based on the demand and interest of domestic socio-economic and environmental factors. Military strategy, political and administrative settings and changes, infrastructures, cultural and religious centres were the main factors for the establishment and development of urban centres. As a result, urban distribution and structure is almost balanced with the socio-economic and administrative needs of people in Ethiopia. However, urban centres have mainly service functions such as administrative, hotel and tourism, marketing rather than production and industrial development and integrated development linkages (Abebe 2006:13 and EEA 2005:111).

Similar to other African urbanization rate and level, Ethiopia has rapid rate of urbanization (about 4.5%) and low urban level about 17% (Abebe 2006:13 and EEA 2005:111). One of the major factors hampering the achievement of sustainable rural development in the country is the absence of a well-functioning system of urban centres. The rapid urbanization scenarios and increasing number of urban centres without integrated development in URELs, industrialization and non-agricultural employments have created a serious challenges of development rather than serving to an asset building (EEA 2005:124 and Figure 3.7).

[4] Ministry of Federal Affairs



Source: EEA 2005:124

Figure 3.7: Trends of number of urban centres in Ethiopia.

The utilization of urban centres as engines of development has faced many policy and institutional challenges, though the pattern of urban centres' development is rapidly increasing. Consequently, urban centres are characterized by: poor infrastructures and facilities, high level of unemployment, political system intertwined with urban governance, weakening social capital, environmental pollution (mainly streams and rivers), lack of integrated functions and URLs, homelessness and street children, expansion of squatter settlements, prevalence of poverty and destitution (Abebe 2006:15; EEA 2005:124 and MoFED 2006:1,5). Furthermore, the economic basis of most urban centres is dominated by consumption linkages, public administration and services (EEA 2005:111). Policy making in Ethiopia has focused more on current issues and problem than basic developments. Thus, urbanization and URLs have not attention in the development policies and strategies of the country (Assefa 2007:194). Urban institutional development is mandatory for urban centres to serve as engines of (regional) development and the creation of economic competitiveness. It implies the need to integrate urbanization and key economic sectors in URELs and URLs for integrated regional development.

3.7.2 Trade and development

ABCs have based on the agricultural exchange and trade both domestic and international levels. Preville and Claudius (2010:1) claims that Ethiopia foreign trade has been widening to higher trade deficit with decline in exports and expansion in imports for lower share in GDP. The main factors for the poor performance of trade in Ethiopia are very high trade costs for landlocked country, unsupportive macro-economic policy mix and underdeveloped private sectors at micro-economic framework. Ethiopia is one of the countries with *excessive challenges* (among the highest challenges as 166th) across border trade in the world (World Bank 2014:1). This implies that there is poor trade infrastructures and poor FDI attraction for agricultural industrialization in the country.

3.8 Summary and concluding remarks of the chapter

Ethiopia is located at the geo-political strategic place to Ero-asiatic countries as well as north and South African countries in the horn of Africa. Historically, the country is one of the oldest independent states with impressive ancient development footprints and curdles of humankind (Lucy and Ardipithecus). It had been larger area coverage including Djibouti and Eritrea (utile recent secession in 1993) and long Red sea boundary. It is also one of the founders and the site of African union (AU) and African Economic commission (AEC). Against this background, the country is one of the poorest countries next to Niger in the world due to the absence of enabling environment, mainly politico-governance and development policy.

Many research works (mainly at macro-level) have been conducted on URLs and URELs almost all have similar findings that argue in favour of poor URLs in the country. Some working papers were conducted on the local level based on empirical data and they show weak and defragmented URLs. Though mixed agriculture is the backbone economy of Ethiopia, it is characterized by subsistence, rain-fed, traditional (oxen-driven and human plough) on highly fragmented farmlands of SHFs. However, agriculture has higher potentials in spatial of 55 million ha arable land of which only 18 million ha as well as 5% of the irrigation the irrigable arable land currently under cultivation.

The different challenges and problems of agriculture have resulted in extreme rural poverty of SHFs, especially pre-harvest seasons and weak agro-industries for truncated URELs. Almost all the problems of agriculture and agro-industries are corsponding to lack of enabling environment. Therefore, it may be concluded that there is a need of transformation from dichotomy philosophy to integrated and complementary development approach for agriculture industrialization and agribusiness development.

In the industrial function and efficiencies, Ethiopia has been one of the least industrialized countries at all types of industries due to many and different intertwined dimensions such as pre-processing problems, lack of the advantages of scale economy in processing and post-processing. The industrial situation in Ethiopia is classified into three: cottage, SEs and medium and large-scale industries. The efficiencies (TE, AE and EE) of industries are extremely low with wider ranges among industrialists in Ethiopia.

Different scholars have reviewed the development policies and plans of the different governments in Ethiopia since 1957. Their findings of most authors agree on lack of enabling environment to bring integrated development for key different sectors and actors in Ethiopia. The case of the development policy, ADLI with its institutional settings of the current government is explained as rigid for more than two decades without bringing any change to either agriculture or industry. Factors of underdevelopment and poverty at any level are considered as part and parcels of coordination and development failures. All regimes have come to power through non-democratic system (coup data or guerrilla war) for following autocratic, traditional top-down approach. Moreover, they have limited capacity, knowledge, willingness and commitment for revealing their ignorance in URELs and integrated development approach. The governments have ownership on almost all key assets (including land). Furthermore, the current form of government and its institutional setting is ethic-federalism and ethnic/linguistic-regionalism based on cultural traits difference. This form of government has increasing misunderstandings, loss of social capital among groups and individuals, enhanced differences and ethnic conflicts with dichotomy of policy ADLI and institutional setting. This form of government has been retarding factors for inter and intra-regional linkages and URELs in the development agenda. Though there was no hard evidences for systemic and illicit abuses

and corruption, political elites were found corrupted, rent seeking and self-enrichment involving in different profit-oriented businesses in the country.

There are opportunities of regional and national development. Decentralization is an important recommended part and opportunity for local economic development (LED) and URELs. The current government political administration structure has theoretical opportunity of decentralization as least level of district. Urban spatial structure in Ethiopia is a result of socio-cultural and political economy for relative good nodal locations for serving as engines of national and regional development. However, this locational advantage is misused for centres of poverty and destitution with rapid rate of urbanization (4.5%) under lower level of urbanization (16%) of Ethiopia. There could have been opportunity for overcoming underdevelopment and poverty through integrated approach (URELs) among key inter-sectoral economies as big push approach for regional and national development. The fact that the geographical unit of analysis for this study is a region, the forthcoming chapter highlights relevant methodological approaches applied for multi-stage regionalization and study procedure in the region.

4 Chapter Four: Methodology and description of the study region

4.1 Introduction

The focus of this chapter is to explain methodological, paradigmatic application procedures and ways of using in examining URELs. The main issues of the chapter are research design, description of the study area, ways of addressing research questions and their data requirement, data sources, sampling technique and sample size, instruments for survey data collection, processes of data collection and analysis, research validity and reliability, ethical consideration, research report writing and summary of the chapter.

4.2 Research design

Research design is a procedural roadmap for the overall structure and methods of investigation to a research problem in responding the basic questions of what, why, where, when, whom and how (5W and H) (Kumar 1999:74 and Leedy and Ormrod 2001:91). The research is designed as explanatory sequential mixed methods of research and it is crossectional survey. The following discussion presents the philosophical view of paradigm.

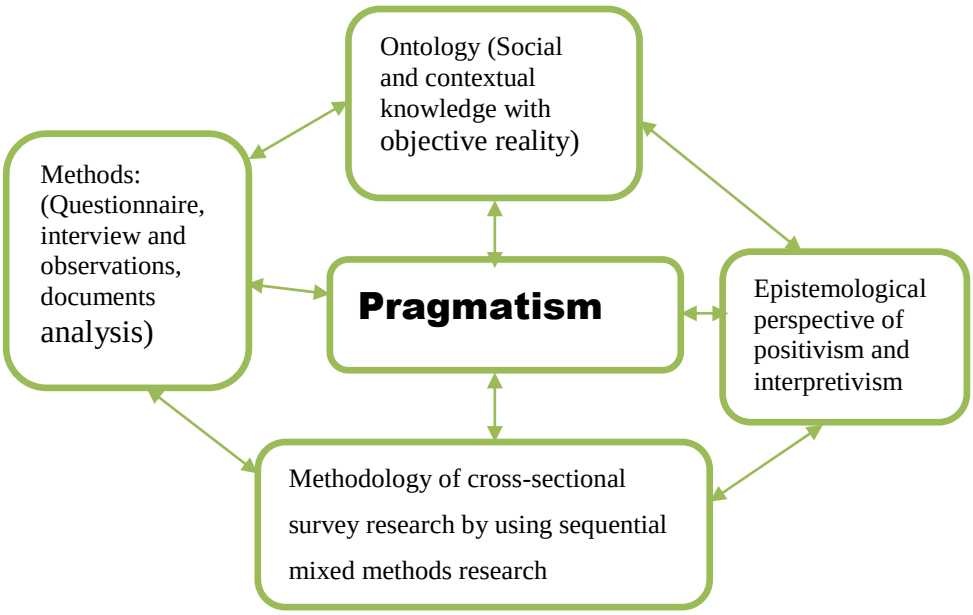
4.3 Research paradigm and philosophy

A research paradigm that guides this research is pragmatism for transformative philosophical view, appropriateness to multiple reality URELs using any mixed methods research (MM). A researcher is advised to make explicit for its paradigm that shows the basic set of its beliefs and views for reality and truth. A paradigm also shows the reason why for specific ontology, epistemology and methodology were used in the study (Cresswell 2009:5; 2011:537).

Johnson and Onwuegbuzie (2004:17) suggest that researchers have to know the advantages and disadvantages of a paradigm for avoiding the potential weaknesses and using the strengths. The advantages of pragmatism for research are: middle ground philosophical dualism between philosophical dogmatism and scepticism such as

rationalism versus empiricism, realism versus antirealism, free will versus determinism, subjectivism versus objectivism; recognizing natural world and the emergence of social and psychological world that has culture and subjective thoughts; viewing knowledge as constructed based on the reality of the world; recognizing theories as become true and true to different degrees based on applicability and predictability; viewing current truth, meanings, knowledge as changing overtime for continuously searching and moving to absolute truth; endorsing strong and practical empiricism; taking value-oriented approach to research, especially on shared values as democracy, freedom, equality and progress; rejecting reductionism of culture, thoughts, beliefs of neurobiological process. While its disadvantages are more focus for applied research than basic research; more emphasis for incremental development than fundamental, structural and revolutionary changes; difficulty for useful but non-true beliefs or propositions and non-useful but true beliefs or propositions (Johnson and Onwuegbuzie 2004:18, 19).

The researcher has followed pragmatic philosophical worldview in this study. This is mainly because pragmatism's: pluralistic view in MM that combines the philosophies of quantitative method (positivism for deductive reasoning of objectivism) and qualitative method (interpretivism and social constructivism from inductive reasoning of subjectivism). It also uses the researcher's imagination and desire of knowledg (abductive reasoning) based on practically oriented from the collected data (empiricism) as 'truth is what works at the time' in the real world. It has better suitability for the study of multi-spatial (urban and rural areas) and multi-disciplinary fields of URELs which need different instruments (questionnaire, interview and observation) and perspectives (SHFs, agriculturalist, industrialist, politicians or policy makers, business man in the value chains of wheat and nigerseed); allows researcher to emphasize the research problem and use all available approaches, methods, different world views, different assumptions and different data collection and analysis methods (Figure 4.1).



Source: Adapted from (Johnson and Onwuegbuzie 2004:18)

Figure 4.1: Philosophical worldview of the study

Pragmatism worldview with its ontology, epistemology and methodology would show the clear line from methods, data collection instruments and data analysis. The epistemology of this research was based on a combination of inductive, deductive and abductive reasoning and argument (often-going simultaneously called retroduction) for explaining a complex problem (Figure 4.1). It is argued that no pure research from a combination of these three reasoning's in the processes of logical inference or proposition in the real research due to ideas coming partially from researcher's conceptual knowledge, partially from personal experience and perhaps from intuition (Miller and Brewer 2003:3). Thus, pragmatism has grounded theory such as practice inductive reasoning and grand theoretical uses for deductive approach. The grand contemporary underdevelopment and development theory with its sub-theories can serve the problem of URELs for multi-spatial and multidisciplinary approaches. The mixed methods research (MM) was appropriate method for the study of such complex issues in space (urban centre and rural hinterlands), multi-descipline as economic, social and environmental isuues and from micro to macro level. The next discussion presents the organization of qualitative and quantitative method for using MM.

4.4 Research methods

The research method of the study is mixed methods research (MM) that combines both quantitative and qualitative methods. However, quantitative, qualitative and MM approaches have their own individual procedure, approach, reasoning and argument. The goal of the researcher in qualitative approach is to develop theoretical concepts and patterns from observed data, usually inductive reasoning. On the other hand, a researcher in quantitative study uses the macro-level theory or policy to study local context application called deductive approach. In abduction, it is argued that a researcher can hypothetically explain any single set of empirical observations by a number of alternative explanations ((Bhattacherje 2012:15 and Miller and Brewer 2003:3).

All approaches and instruments of data collection have both advantages and disadvantages in any field of study. MM has both advantages and disadvantages. Some of the advantages of MM are more appropriate for multi-spatial and multi-disciplinary study; more powerful investigation and explanation from all sides of URELs problem for new insights and multiple perspectives; complementing the strengths of qualitative and quantitative approaches for detailed understanding and generalization of findings; helpful for correcting errors in sequential and multi-phase surveying; correlating with implementation within pragmatism worldview; providing text, image and number together for precision and fuller understanding; giving more strong evidences and inferences by the principles of triangulation; addressing simultaneously of confirmatory and exploratory questions and providing opportunity for greater assortment of divergent views. In line with the advantages of MM, Cresswell (2009:33, 203) explains that MM has gained popularity in research due to its superior application in capitalizing the respective strengths of different methods. While some of the disadvantages of MM are: challenges of resources (extensive in time, finance and human resources); demanding scientific expertise and familiarity for each of the quantitative and qualitative methods; the difficulty for a single researcher, especially concurrent timing; demanding different approaches, knowledge and writing styles for each approach to appropriately processing the data collection, analysis and integration; demanding additional field survey for resolving contradictory findings from different methods and instruments (Cresswell

2009:19; Bhattacherje 2012:22; Creswell 2011:19-22; Crumb and Logan 2008:25-27 and Johnson and Onwuegbuzie 2004:21; Teddie and Tashakkori 2009:33-36).

It is also important to understand the strenth and weakness of each component of MM. Therefore, the advantages of quantitative method are: less time consuming and expense for collecting larger sample population and easy provision for numerical analysis. However, quantitative approach has limitation of quantifying non-quantifiable variables, problems of non-measurable phenomena such as human behaviour and culture and high possibility of errors for larger data (Airasian 2003:282; Johnson and Onwuegbuzie 2004:19). Qualitative method has advantages of: providing in-depth data by stimulating people's individual experience and knowledge in certain ways; most appropriate for issues that cannot be structured in the form of multiple choice (such as attitudes, feelings and psychological behaviours); allowing follow up on incomplete and/or unclear responses by asking additional probing questions, flexible and iterative process of detailed understanding of the issue and correction of errors. While its weaknesses are often time consuming and expensive; difficult to make systematic comparisons for widely differing responses; more dependent on skills of a researcher; a researcher has heavily involved in the process for chance of high subjectivity or biases (Airasian 2003:282, 291 and Johnson and Onwuegbuzie 2004:20). The general philosophical paradigm, ontology, epistemology and methodology of the three methods of research are presented in the following way (Table 4.1).

Table 4.1: Comparison of quantitative, qualitative and MM approaches

Dimensions of contrast	Quantitative approach	Qualitative approach	Mixed methods (MM)
Worldview/paradigm	Positivism	Interpretivism and constructivism	Pragmatism and transformatism
Theory	Quantitative theories	Qualitative theories	Eclectic theory
Purpose of research	Confirmatory (hypothesis or questions) and testing theory	Interpretation (to explain) Exploration to generate theory	Confirmatory and exploratory
Nature of the research process	Known variables, static design and context free	Unknown variables, flexible and iterative, context bound	Iterative with unknown and known variables
Methods	Questionnaire, experiment	Interview, observation, FGD...	Mixed methods
Reasoning	Deductive	Inductive and/or abductive	All types
Findings communication	Numbers in scientific style	Text and images in literary style	All types
Validity-reliability	Validity, reliability, generalizability,	Credibility, dependability and transferability	All types

Source: adopted from Johnson and Onwuegbuzie (2004: 18); Cresswell (2009:211); Leedy and Ormrod (2001:102), and Teddli and Tashakkori (2009:22).

The breadth and depth understanding of each approach is important for using the strong parts and their complementary advantages in MM for merging or integrating, comparing and triangulating the results in the discussion (Table 4.1).

4.5 Ways of addressing research questions

The study of URELs has cross-sectoral multidisciplinary fields (agriculture and agro-industries, bakeries, traders, value chain) and multi-spatial situation (rural area and urban centres) within a specified region. Thus, MM is employed for investigating and examining many continuous and discrete variables. Different variables have been selected and used to examine and investigate the following themes and objectives of the study:

- ❖ Wheat and nigerseed value chain, agribusinesses actors and value adding in production linkages of agriculture and agro-industries (URELs);
- ❖ Efficiencies (TE, AE and EE) of agriculture (wheat and nigerseed) and corresponding agro-industries (SFI and NOIs)
- ❖ Challenges and problems of wheat and nigerseed agricultural farming (inputs linkages, pre-harvest and post-harvest) and their agro-processing linkages (with SFI and NOIs);
- ❖ Exploring optimal URELs model for virtuous circle regional development.

The variables in agriculture are: dependent variable or output, input variables include improved seed, fertilizer, labour, land size, raw materials and independent variables such as sex, experience, government, financial system, assets for the study URELs. About twenty-four explanatory variables for wheat and nigerseed production are included in the econometric analysis model and qualitative data collection (Table 4.2).

Table 4.2: Explanatory variables in wheat and nigerseed production

Variable	Type	Description	Percent with value 1	Mean	SD
Land size	Continuous	Farm size (in ha)		0.9	0.78
Labour	Continuous	Number of labour used		58.5	49
Oxen number	Continuous	Number of farm oxen used		56.5	45.5
Seed	Continuous	Seed (in qt) example improved seed		0.9	1.05
Per capita income	Continuous	income per head (in $)		1.14	1.03
Family size	Continuous	Number of family members		5.2	1.9
Non-working days	Continuous	Number of non-working days in 2014		153.6	0.73
Agricultural experience	Continuous	Number of years		26.3	10.5
Leadership experience	Binary	1 yes, 0 No	46		
Education	Binary	1 yes, 0 otherwise	86.1		
Sex	Binary	1 male, 0 otherwise	86.2		
Marital status	Binary	1 married, 0 otherwise	86.8		
Family size	Continuous	Number of family		5.2	1.9
Off-farm employment	Binary	1 yes, 0 otherwise	36.5		
Credit access	Binary	1 yes, 0 otherwise	86.6		
Fertilizer application	Continuous	Number (in qt) as example DAP		1.85	1.55
Chemicals and herbicides	Continuous	Anti-insects and herbicides (in litres or kg)		0.9	0.77
Extension contact	Continuous	Number of contacts in 2014		3.2	1.6
Policy benefit	Binary	1 yes, 0 otherwise	25.7		
Government support	Binary	1 yes, 0 otherwise	13.9		
Training	binary	1 yes, 0 otherwise	85.7		
Irrigation access	Binary	1 yes, 0 otherwise	31.3		
Market availability	Binary	1 yes,0 otherwise	9.2		

Source: different literature, preliminary survey in the study area and empirical experience

The explanatory variables for agro-industries (SFI and NOIs) were similar. About eighteen variables were mainly used for agro-industrial processing in econometric model analysis for efficiency measurment (Table 4.3).

Table 4.3: Description of determinant variables in agro-industries at DMT

Variable	Type	Description	Percent with value 1	Mean	SD
Sex	binary	1 if respondent is male, 0 otherwise	100		
Education	continuous	Years of formal education		8.7	3.7
Family size	continuous	Number of family members		5.5	1.3
Credit access	binary	1 yes, 0 otherwise	90		
Raw materials	continuous	Number of qt used in 2014		12924	30936.3
Labour	continuous	Total labour in the firm in2014		2456.6	3194.6
Electrical interruption	continuous	Average number of days in 2014		96	0.0002
Electric cost	continuous	Electrical payments in Birr		16376.5	25956.6
Automobile	binary	1 yes, 0 otherwise	20		
Capital	continuous	The total amount of assets/capital		18305000	46463764
By products	continuous	By-products in qt in 2014		2346.67	2022
Miscellaneous expenses	continuous	Expenses for repair, machine wash and oil and grease		28154.5	73500.3
Warehouse	binary	1 yes, 0 otherwise	40		
Government support	binary	1 yes, 0 otherwise	20		
Policy benefit[5]	binary	1 yes, 0 otherwise	10		
Tax	continuous	The number of tax paid		43831.3	97433.2
Industrial experience	continuous	The number of years in the work		23.7	3.4
Other work	binary	1 yes, 0 otherwise	90		
Non-working days	continuous	Number of days without work		92.6	16.1

Source: adapted from different literature, preliminary survey in the study area, empirical experience

These explanatory variables were developed from theoretical and empirical literature, indigenous knowledge of SHFs and agro-industrialists, experts in the field and the researcher's knowledge and empirical experience for responding research questions. All variables are unidimensional constructs which have a single underlying dimension or single measure such as inputs and outputs. Multidimensional variables were not available in this study. Bhattacherje (2012:44) argues that multidimensional constructs consist of two or more underlying dimensions like a person's academic aptitude that has two dimensions (mathematical and verbal ability). Thus, mathematical and verbal ability must be measured separately using different tests and the two scores can be combined to create an overall value for the academic aptitude construct.

[5] Industrial and comprehensive development policies of Ethiopia.

4.6 Multi-stage sampling and regionalization

4.6.1 Population of the study

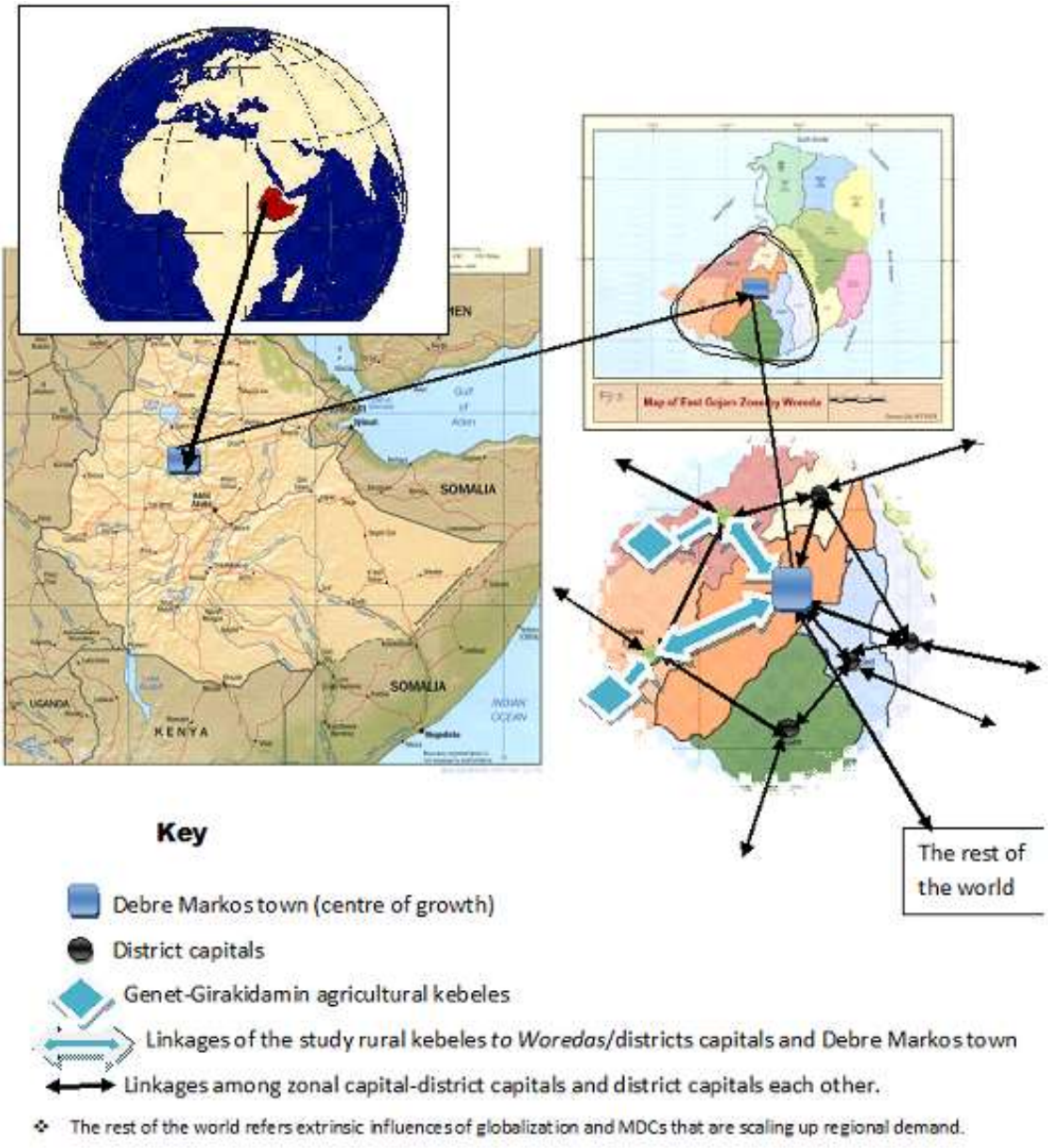
The theoretical population (universe) of the study are SHFs and agro-industrialists in ABCs. The target population of the study are wheat and nigerseed SHFs and corresponding owners of agro-industrialists (SFI and NOIs) in ABCs that are accessible to this study. The sample frame of the study has variations in quantitative and qualitative data. Thus, the sample frame for quantitative method was SHFs in Genet and Girakidamin rural *kebeles* and corresponding agro-industrialists of SFI and NOIs at DMT. The qualitative method has sample frame of key informants from all stakholders of agriculture and agro-industries in Ethiopia.

4.6.2 Regionalization and demarcation for URELs

The demarcation of the study region is based on Douglas's regional network model approach that confirms for regional networking of urban centre and its rural areas at the scope of provincial level (Douglas 2006:136). Though Douglas (2006:130,148) argues that method of selecting high potential urban centre and its hinterlands for regional development has no clear criteria in specific context, research on regional context need better pinpoint bottlenecks for virtuous circle development between urban-rural key sectors.

The study region is located in north-west highlands of Ethiopia where agriculture has high potential and the livelihoods of the hinterland people are entirely depend on agriculture. The prototype political administrative regional cluster of the government political administrative region (east Gojjam zone) was larger and not convenient for the objective of integrated regional development study. Thus, DMT and its seven (adjacent) high potential and actual agricultural districts were selected for clustered spatial

framework regional development approach for the study of URELs (Figure 4.2).



Source: Adapted by GIS from Google earth 2013 and Ethiopian political map 2013

Figure 4.2: Multi-stage process of regionalization

Different from Kilimo's (2012:3) functional and economic analysis based on micro, meso and macro level, this study was seen in multi-spatial and functional levels: at local level (Genet and Girakidamin rural *kebeles*), meso-scale at (Debre Elias and Machakel districts as a point of transfer and bridge), the pillar urban centre (DMT) and its hinterlands seven districts, regional level (Amhara regional state) and macro-scale (the federal government level). This is because the scenario of URELs is the effects of multi-stakeholders, multi-

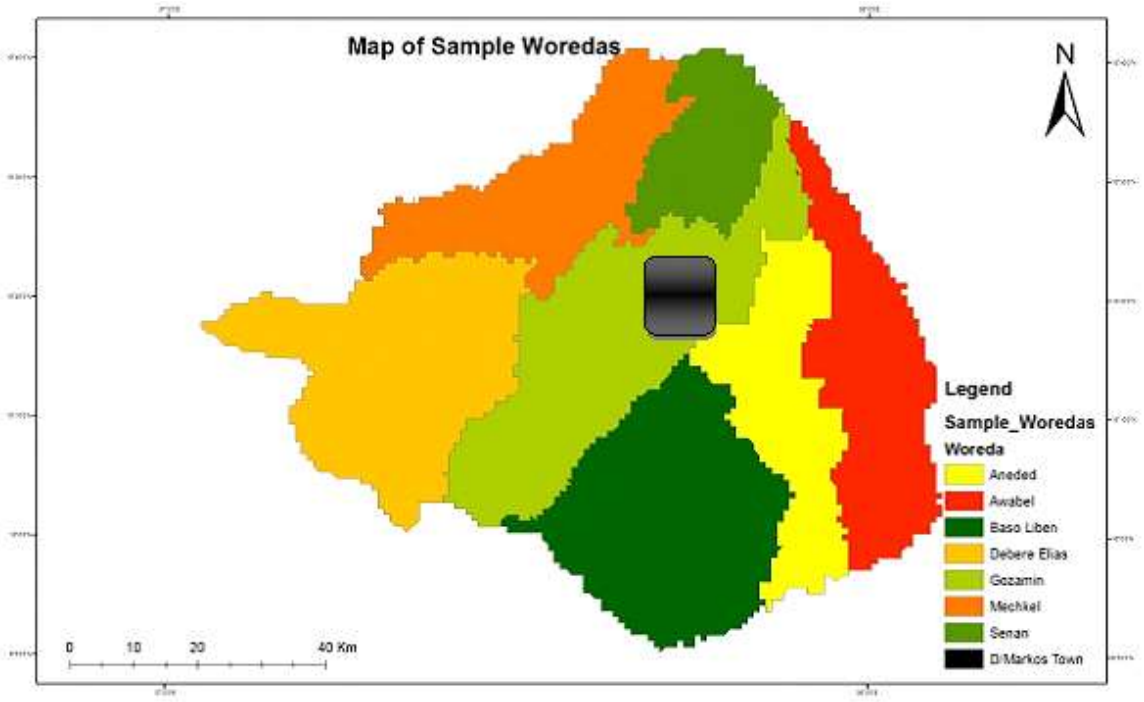
spatial areas, multi-scalar (local to federal levels) and multidisciplinary for regional development approach.

The study of URELs and structural settings can have better oriented to policies and institutional settings for supporting symbiotic and reciprocal linkages between urban and rural development (Douglas 2006:152). In addition to rationales listed for the studying of the problem URELs, the rationale for selecting DMT and its seven surrounding agricultural districts are due to the higher productive potential and other personal factors. The inherent productive nature of the surrounding districts in wheat and nigerseed has significant contribution for flour and NOIs in the study region and the country. Consequently, based on Douglas's regional development model that presupposes regional development (urban centre and surrounding rural areas) could be best linked with urban centre at provincial level for coordinating and integrating a large number of reciprocal, horizontal and vertical complementary functional linkages within that region. Hence, the study region for this research is a system of functionally diversified seven districts settlements comprising of socio-economic and physical linkages within the urban (DMT) influence zone through discourses of URELs for regional development (Figure 4.2).

4.6.3 Agro-ecological conditions and regional sampling technique

The study region is located in North West Ethiopia in East Gojjam zone in Amhara regional state within the Blue Nile basin tropical highland regions of Choke Mountain watershed. It has altitudinal range 800metre above sea level (along the Blue Nile valley) with upper *Kola* (tropical) climate to places of 4200metre above Sea level (Peak of Choke Mountain) of Alpine climate. It has adverse effects of climate change and variability that greatly affected and determined rain-fed agricultural production and productivity of agriculture. Despite high climate variability and uncertainty, the region has no any mitigation strategy such as irrigation scheme to overcome the challenge.

The researcher has delimited the study region with seven districts (Gozamine, Debre Elias, Machekel, Sinan, Awabel, Annede and Basoliben) for the assumption of reversing vicious circle to virtuous circle URELs regional development in optimal region. The demarcation of the study region depends on Douglas (2006:136) and the purpose of the study URELs with accessibility in time, finance and humans resources (Figure 4.3).



Source: EGZOFED 2013:74)

Figure 4.3: The study region

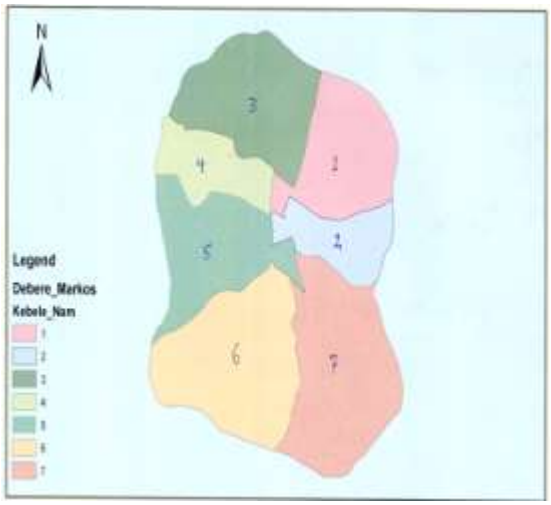
The study region has actual and potential wheat and nigerseed production and productivity for the purpose of the study long-term URELs at DMT (the only zonal capital having SFI and NOIs) as agro-politan centre.

4.6.4 Sampling technique of agro-industrialists at DMT

Geographically, DMT is located in northwestern Ethiopia and the capital of east Gojjam zone political administration at a distance of 300kms from Addis Ababa (Figure 4.3). Similar to growth pole model, DMT is the only urban centre that can serve for centre of agro-processing (agro-politan region) within the agro-ecological zone for the study of URELs. It is the centre of regional growth and development and located in the womb of Choke mountain agro ecological zone (Figure 4.3).

Historically, Dejazmach Tedla Gualu had founded DMT with the name of Menkorer in 1852. In 1879, it was renamed to DMT with the establishment of Saint Markos church in this town. The town has astronomical location of $10^{0}21'$ north latitude and $37^{o}43'$ east longitude at average altitude of 2500metre above sea level. It has conducive temperate climate and fertile and productive hinterlands (DMTID 2011:78). DMT was chartered

town its own urban administration and governance (mayor and municipality). The administrative structure of DMT can show the governance and *kebeles* in agro-business value chain. It had seven political administrative *kebeles* (Figure 4.4).



Source: Debre Markos municipality document 2014

Figure 4.4: Seven administrative *Kebeles* of DMT

Demographically, DMT had 20555 households and total population of 102630 of which 47557 are males and 55074 are females. The average family size was about five (102630/20555) in 2010. An excess number of females over males in the town could be the result of female dominated migration to the town (Table 4.4).

Table 4.4: Trends of population growth and sex ratio of DMT

Year	Population size	Sex ratio
1967	21536	70
1970	27073	79.5
1984	41136	82.5
1994	49297	86.7
2010	102630	85.2

Source: DMTID (2011:74)

Socially and economically, the town is dominantly a service centre rather than industrial production and many people engaged in various service economic activities such as employees in government and private sector in trade, construction, health and education, civil service such as advocacy, wage labours, hotel and tourism with a few small-scale

manufacturing. The linguistic composition of the town is Amharic speakers 97%, Tigrigna 2%, Oromifa 0.7%, Agewigna 0.6% and others 0.4%. The economic activities of people are dominantly service sectors from petty trading and shoes polishing to large business and wholesale, hotel and tourism, zonal government administration and services, a few small-scale industries and other civil services (DMTID 2011:17, 54).

Though it has an important location of conducive climate and fertile agricultural hinterland for achieving the development of virtuous circle agro-industrialization, agro-industries were in critical shortage of raw materials (nigerseed) and lack of local market (wheat) with bypass effect out of the region (Document, 2014). DMT has few industries and employment opportunities with weak BPLs and FPLs. Nigerseed oil industries (NOIs) and Selam flour industry (SFI) were the only agro-industries with both BPLs and FPLs (Table 4.5).

Table 4.5: DMT industrial types and their production linkages

Type of firm	Number	Utility for community	BPLs	FPLs	Employees structure
Grain Mills	76	Flour from cereals	No	Yes (value added	1-2 per millers, Family
Sawmills	40	HH furniture	NO	Yes	2-10 depending
Sand and blockat firm	6	Blockate and blocks	No	Yes	Self-employment
Bakery	10	Bread	No	Yes (value added	2-4 depending
Pastry	1	Pastry	No	Yes (Value-adde	2-4 depending
NOIs	9	nigerseed oil and anima feed oilcake	Yes (nigerseed raw material)	Yes (oil and oilcake)	Family and depending
Garage	1	Automobiles	NK*	NK	5-10 depending
SFI	1	Flour production	Yes (wheat raw materials)	Yes (flour and *Furishca*)	27 with family
General machinery	1	Machines work	NK	NK	3-5 depending
Printing press	2	Paper	No	No	2-4 depending
Sweater enterprise	2	Sweater	No	No	Self employee
Thread pump industry	1	underground water	Yes	No	Self employee
Welding	1	Metal welding	No	No	2-4 depending

Source: adapted from DMT trade and industry document 2014 NK*=not known

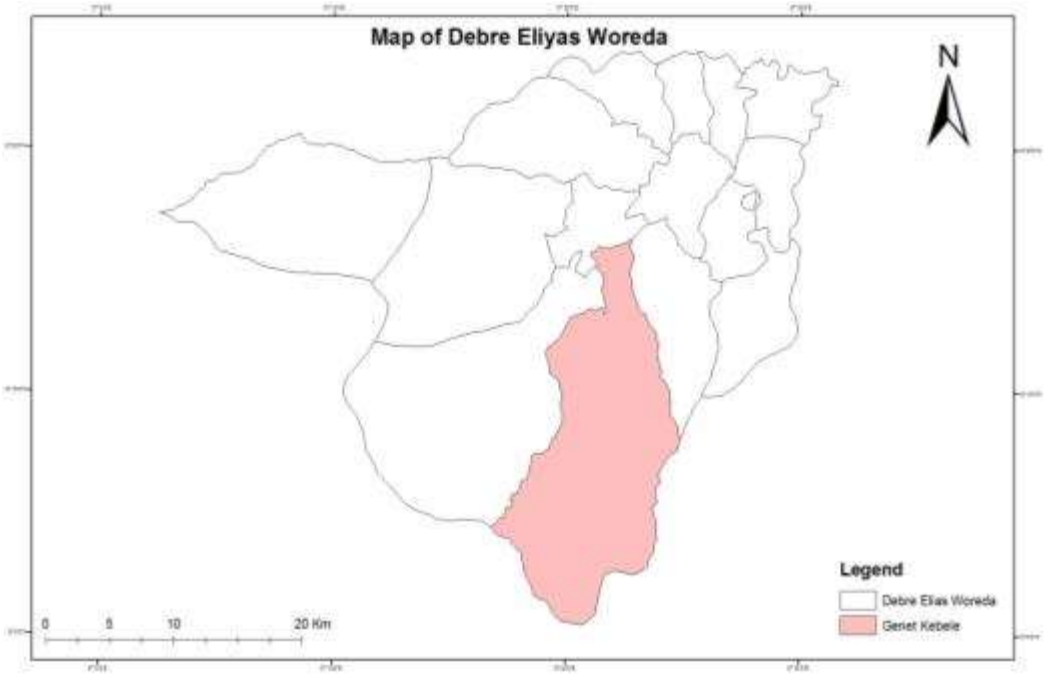
Based on the existing industries in the town (Table 4.5), the researcher took all nine nigerseed oil industries (NOIs) and one Selam Flour industry (SFI) which had BPLs and FPLs with the hinterlands for URELs study at DMT. The selection of DMT and its hinterlands fit well with Scott and Stotper (2007:194) that urban centres are privileged sites for agglomeration and scale economy in the regional development model because they economize capital-intensive infrastructures and are sources of innovation, market opening, entrepreneurs and technological progress.

4.6.5 Sampling technique of smallholding farmers (SHFs)

SHFs were sampled from two DMT's hinterland kebeles (Genet and Girakidamin) from the two districts of Debre Elias and Machakel in the multi-stage sampling. In the study region, the two districts and kebeles' socio-economic and physical factors are explaind in the following discussion.

Debre Elias district is located in the foot-slope of Choke Mountain in east Gojjam zone. Its attitude ranges from 800metre (Blue Nile valley) to 2400 metre above sea level (Choke Mountain). It has traditional agro-climatic zone of *Kola* (warm and semiarid) to *Woina Dega* (cool sub-humid) in accordance with corresponding altitude. Agro-ecologically, annual average temperature ranges from 18^0c to 23^0c, annual average rainfall ranges from 500mm to 1000mm, Wheat, and maize with some nigerseed farming system dominated the district agro-ecosystem. It has mainly Nitosols soil with some Leptosols and Cambisols soils for high production. Moreover, the disrict has high potential for oilseeds and pulses along Blue Nile valley and it is potentially suitable for input-intensive and mechanized agriculture and irrigation (Belay, Zaitchik and Ozdogan 2013:604).

The district had a total population of 88487 of which 45444 males and 43043 females. It had 21310 households with 4.2 average family size. It had 15 administrative rural *kebeles*. Then, by multi-stage sampling, Genet *kebele* was randomly selected for the study from the 15 kebele due to almost similar production, productivity and potential in wheat and nigerseed farming in this district (Figure 4.5).



Source: Adapted from Figure 4.3

Figure 4.5: Map of Genet rural kebele in Debre Elias district

Genet *kebele* is located on the most southern toe of Debre Elias district and has both Blue Nile valley lowland kola (warm and semiarid) and *Wiona Dega* (sub-tropical) traditional agro-climatic zone (Figure 4.5). The agro-ecological condition had annual average temperature of 18^0c-23^0c and annual average rainfall of 500mm-1000mm (Belay, Zaitchik and Ozdogan 2013:598).

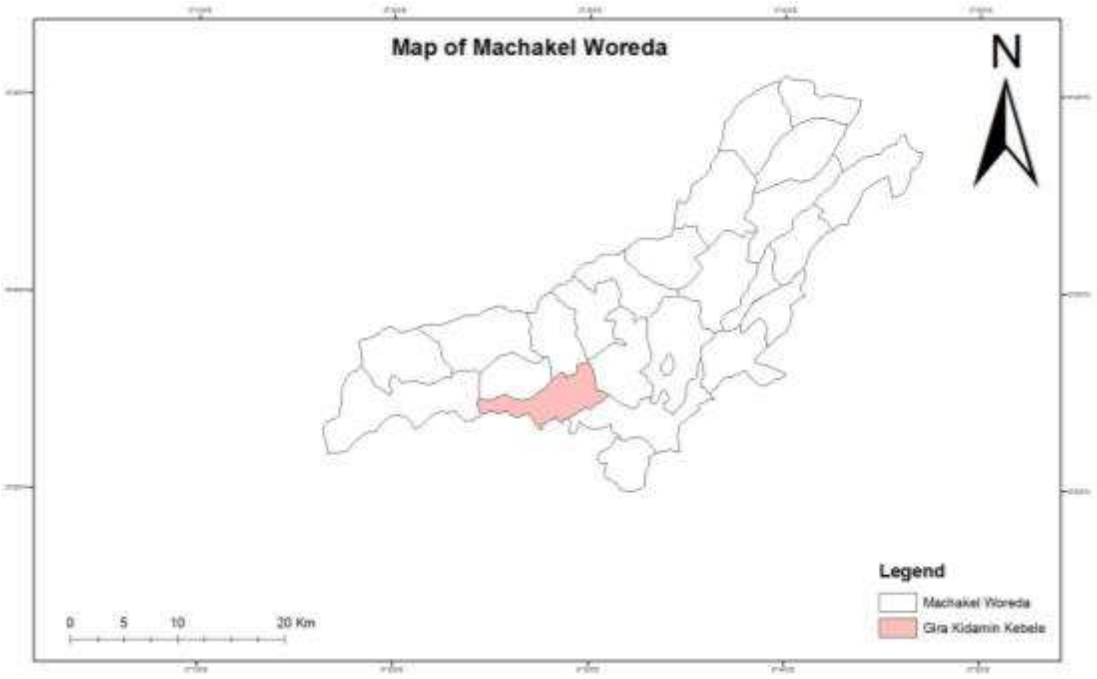
Socio-economically and demographically, it had 6770 total population with 1354 households of which 1000 household male-headed and 354 female-headed landowners. There were 204 landless households and youths in the kebele. Hence, the total number of SHFs was 1558 in this rural Kebele. The main agricultural crops in descending order by areal coverage were wheat, maize, *Teff* and nigerseed while by production maize, wheat, *Teff* and nigerseed in this kebele. The number of landowners within economically productive SHFs age group participating in rural agricultural development (such as soil and water conservation) was 954 while the remaining 400-landowner households were unproductive (old and/or handicapped) SHFs, usually renting or contracting their farmlands. The rearing of animals includes cows, oxen, donkeys, sheep, goats, hens and calves. Culturally, all are Orthodox Christians and Amharic language speaking people.

They have many non-working days in the name of saints, Engels, Christ, trinity and many others (Field survey 2014). The kebele is connected with Debre Elias town by dry weather road. It had one clinic, one elementary school with Kindergarten (KG), SHFs primary cooperative office, electric power and partial tap water at the centre of the Genet rural town (Personal observation 2014/15).

The second sample district is Machakel. This district is located at the foot-slope of Choke Mountain adjacent to the study region. It has altitudinal range of 2400m-2800m above sea level. The main soil types are Leptosols, Alisols and Nitosols. It has highly rugged landform, land degradation and soil acidity that are constraints for agricultural production. Eucalyptus tree is extensively grown as the main livelihood for some households, especially along any type of transport system. Hence, it demands high soil and water conservation measures (Belay, Zaitchik and Ozdogan 2013:604).

The district had a total population of 152754 of which 76863 male and 76862 females. It had 26260 landowner households with 19292 male-headed and 6968 female-headed households. Out of the total landowners, 20951 are economically productive landowners (soil and water conservation participation) while 5309 owners are unproductive (old and/or handicapped) who are renting out and/or contracting or sharecropping production. There were about 5627 landless households and youths (Document 2014).

Machakel district has 22 kebeles of which Girakidamin was randomly selected since all rural *kebels* had almost similar production and productivity in wheat and nigerseed production regardless of individual differences (Figure 4.6).



Source: Adapted from Figure 4.3

Figure 4.6: Map of the study Girakidamin kebele in Machakel district

Girakidamin kebele has total population of 5345 of which 2652 males and 2693 females. Similar to Genet, All the SHFs in Girakidamin kebele were orthodox Christians and they have many non-working days in the name of saints, Engels, Christ, trinity and many others. This study kebele has 1167 households of which 798 male-headed and 369 female-headed households. There were also 1061 farmland owners of which 718 male-headed households and 343 female-headed households. There are 106 landless households and 57 youths (18-25 years old) for 163 landless in this kebele (Document 2014).

The main economic activity of people is mixed agriculture (production of crops and rearing of animals). The main crops produced in descending order by areal coverage were *Teff*, wheat, maize and nigerseed. In terms of total production in ascending order were maize, wheat, *Teff* and nigerseed. The domestic animals include cows, oxen, donkeys, sheep, goats, hens and calves (DA document 2014).

The traditional agro-climatic zone of this kebele is *Woina Dega* (cool sub-humid) with average temperature of about 19^0c and average annual rainfall of about 1200mm (Belay, Zaitchik and Ozdogan 2013:598). The kebele is connected with Ammanuel town by dry

weather road. It has one clinic, one elementary school, one PACs, electric power and tap water at the centre of this rural kebele (Field observation 2014).

4.6.6 Sample frame and Sample size determination

The sample size has two groups. There were SHFs in Genet-Girakidamin and corsponding agro-industrialists at DMT. In agricultural sampling technique, SHFs of both wheat and nigerseed (in either 2013/14 or 2014/15 harvest years) were identified (DA document, 2014). Then, systematic random selection (every 11^{th}) was used among a list of 2752 SHFs in both Genet and Girakidamin *kebeles*. As a result, the sample size of 250 SHFs has been determined. However due to 55 questionnaires were screened out and missed, the sample size of the study has based on 195 SHFs as in the table (Table 4.6).

Table 4.6: Sample size of smallholding farmers (SHFs)

District	*Kebele*/ward	Total hhs	Sample hhs (9.1 %)	Actual sample (6.1%)
Debre Elias	Genet	1558	142	111
Machakel	Girakidamin	1194	108	84
	Total	2752	250	195
DMT	Agro-industrialists	10	10 (100%)	10 (100%)

Source: Field survey 2014

In qualitative method, though the unit of analysis were wheat and nigerseed SHFs and corresponding agro-industrialists, the key informants included all stakeholders, landless households and youths (18-25 age groups), government officials at all levels, agriculture extension workers, sectors ministers, experts and industrialists involving directly and indirectly in production, processing and markets agriculture, agro-industries and agribusiness in URELs. Moreover, snowball samplings were used in the process of key informants that extended to 97 in all levels until saturation point starting from micro (*kebeles*), meso (districts, zonal and regional) to macro at federal (ministries, authorities and agencies) levels of the country (Table 4.7). This is because economic linkages and value chain are part and parcels of local, regional, national, and even continental links and GVC (Table 4.7).

Table 4.7: Number and type of key informants

Hierarchical system	Target group	Key informants
Federal/national level	MOEFD (head) (1) Ministry of agriculture (2) Ministry of industry (2) Electric power authority (ELPA) (3) Custom and revenue authority (FGCRA) (2) Agricultural cooperative agency (2)	12
Regional level: Amhara, Tigray, Oromia, SNNPs)	ACSI (4) SHFs cooperative (4) Custom and revenue authority (CRA)(2)	10
Zonal level (government officials)	Burea of Agriculture (2) Burea of industry (2) Urban administration (2) Farmer cooperative agency (1) SHFs unions (5) ACSI (1) agriculture and industry Investors (12) Traders (3) Urban households (3) Bakeries (10)	41
District level	agricultural officials (4) Burea of industry (2) Burea of micro credit (2) Investor (2)	10
Kebele levels	Agricultural extension agency DA (4) Community representative HHs (3) SHFs' organization (4) (Landless) SHFs (4) Urban residents (5) Traders and assemblers (4)	24
Total		97*

Source: Field survey 2014-2015

*****The first key informant proposal was 50 but in the process of data collection, it reached to 97 interviewees at saturation point.

4.7 Data sources

The sources of data for this study were both primary and secondary resources. The following sub-sections discuss the sources and processes of capturing these data.

4.7.1 Primary data sources

The primary sources of data were mainly SHFs, agro-industrialists (owners of SFI and NOIs). Other stakeholders: bakeries, traders, concerned government agencies at different

levels from micro to macro. These data were collected based on self-report approach through using the instruments of questionnaire, interviews and observations.

4.7.2 Secondary sources

The secondary sources of data were published and unpublished materials of both public and private documents, memos and literature. They were used in analysis and triangulation of the discussion. They were collected from both hard copies of Debre Markos university library, government documents, UNISA library, Economic commission for Africa library, Addis Ababa University library and soft copies from internet such as UNISA e-libraries and Google scholarData collection instruments

The survey research was conducted by using different data collection instruments such as questionnaire, interviews and observation. The following discussion presents each of the method.

A. Questionnaire

Two types of questionnaires for SHFs and agro-industrialists were prepared and used (Annex-A and Annex-B respectively). One type of questionnaire is structured with some free expressions for SHFs. The structured questionnaire has introduction, socio-demographic variables, assets ownership and access, challenges and opportunities of wheat and nigerseed farming and agro-industrial production linkages. The advantage of some open-ended questions embedded within close-ended questions for SHFs is to motivate their close-ended responses as well as to avoid monotonous situation. Much time was taken to prepare sound and simple questions based on objectives without any jargon and leading or touchy questions. It was more simplified and tested in the pilot study. I used structured questionnaire for efficient use of time and finance for large and dispersed rural SHFs. In line with this, Similarly, Airasian (2003:307) confirms that conducting a questionnaire study has advantages of less time and expense for large sample size.

The questionnaire was used to collect wheat and nigerseed data from SHFs starting from pre-harvest, farm inputs (BPLs) and farming management practices to post-harvest market links (FPLs). It is prepared in English and then, translated into respondents' local language 'Amharic' for proper understanding and response for the issues.

A total of eight data collectors who have diploma and above were selected from Debre Elias and Machakel districts with two supervisors. Moreover, supervisors and data collectors were given two days short training for house to house data collection process and in what way and conditions that they could give support and clarification for respondents problem (if any). They were also given training for how to read the questionnaire and support illiterate respondents. The researcher and two supervisors were around for facilitating and managing the process of field survey. A total of 250 questionnaires were distributed for all sample SHFs but the total 195 actually collected and used for analysis due to screening and absentees.

The second questionnaire type was designed to collect both quantitative and qualitative data at the same time by semi-structured questionnaire from ten agro-industrialists at DMT (Annex-B). The researcher himself conducted face-to-face interview with industrialists.

B. Interviews

Semi-structured questionnaire was prepared and pretested (Annex-B) for collecting reliable quantitative and qualitative data. Moreover, different interview guides were used for key informants from multi-stakeholders and multi-actors in URELs from micro to macro levels for in-depth and triangulated data sources. For validity and reliability, the researcher himself collected all interview data with each key informant by probing their answers to unfold problems. The interview was prepared in English and the researcher used the local language for key informants discussion and probing.

C. Observations

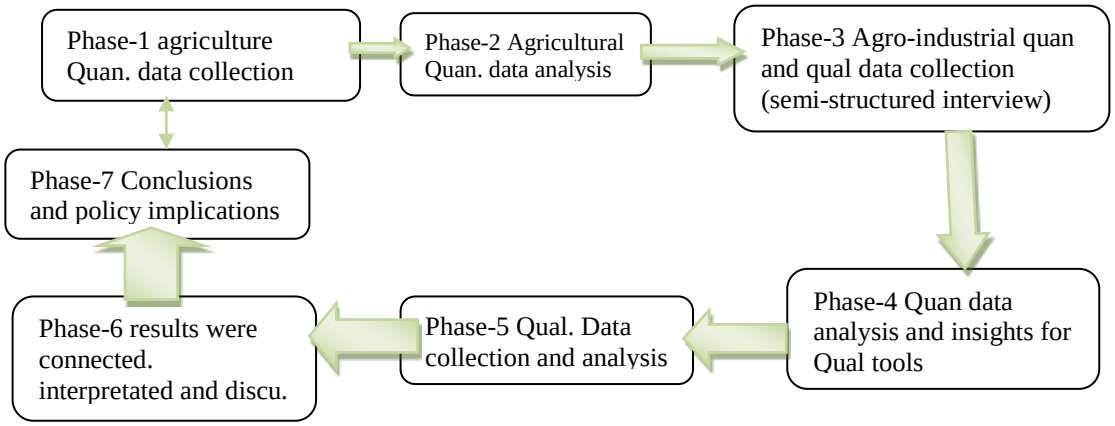
The researcher used direct (naturalistic) observation for URELs' data. Necessary direct observations were recorded on field notebook with photos. This method helps the researcher for better understanding from real transactions and linkages as well as for triangulation of contradictory and/or differences of results from questionnaire and interview.

D. Documents analysis

Different documents (policy documents, constitution of the country, proclamations, office records, manual guides and memos) were used for the analysis and discussion of wheat, nigerseed value chains and agribusinesses.

4.8 Process of data collection and analysis in MM

This section presents the process of data collection procedures, data organization, analysis and discussion. In MM, the genral phases of data collection, instruments upgrading and data analysis are presented in Figure 4.7 diagramatically.



Source: adapted from Cresswell (2009:14) and Taddli and Tashkkori (2009:73)

Figure 4.7: Sequential explanatory mixed methods research design

The sequential explanatory design has better advantages of straightforward, clear and separate stages for correcting errors.

The process of data collection and analysis was sequential explanatory mixed methods research in multi-phase design. Timing of sequential data collection had three phases. In the first phase, agricultural quantitative data were collected and analyzed from SHFs in June-August 2014. The collected quantitative data were organized and analysed using SPSS and then frontier 4.1c package for descriptive and inferential efficiency results. Connecting phase one results, the second phase semi-structure questionnaire was developed, collected and quantitative data were analysed from agro-industrialists. In the third phase, qualitative data were collected from different key informants as shown in Table 4.7. These qualitative data were categorized, sub-categorized, coded, organized and

analysed. Finally, all results were connected, triangulated and interpreted in the discussion (Figure 4.7).

4.8.1 Data management (coding screening and organization)

The quantitative data were organized and managed by SPSS for descriptive and econometric data analysis that were captured from both SHFs and agro-industrialists. In the same way, the qualitative data were manually coded and themed into quates, themes, classes and sub-classes based on the objective of the study for thematic content analysis.

4.8.2 Methods of sequential data analysis and findings

Based on the sequential phases (Figure 4.7), in the first phase, quantitative data were collected and analyzed for results using SPSS-version 20 mainly for descriptive analysis and then Frontier 4.1c version was used for measuring efficiency of SHFs and agro-industrialists. Then, the qualitative data phase and finally the integration and mixing the results in MM (Figure 4.7).

Analysis using SPSS tool: Descriptive statistical analysis and multicollinearity test of variables were conducted to use in Frontier version 4.1c application. It is recommended that before taking the selected variables into Frontier software application, the existence of multicollinearity among variables need to be checked. The researcher also used simple Chi-square coefficients of contingency of association test. Multicollinearity refers the existence of one variable having more than one exact linear relationships with other variables need to be avoided in the analysis to clearly measure the independent variables effect (Yenetila 2013:51). In pre-test of multicollinearity, age was found multi-collinear with many variables and rejected in the frontier 4.1c package analysis for estimating of efficiencies.

Econometric analysis: Econometric model application for production and cost efficiency analysis has been employed for inferring technical efficiency (TE), allocative efficiency (AE) and economic efficiency (EE) of each and average of samples (SHFs and agro-industrialists) in the existing resources and technology. Frontier 4.1c software package has automated the maximum likelihood estimation (MLE) method or stochastic frontier analysis (SFA) for TE, AE and EE in Cobb-Douglas production model. It has

both descriptive and econometric analysis for SHFs and industrialists. The descriptive analysis describes the nature of demographic and socio-economic variables and their multicollinearity tests (through chi-square in SPSS) for suitability in econometric model application. Then, these data were transferred to frontier 4.1c software for processing. The econometric analysis in the Cobb-Douglas stochastic frontier analysis infers efficiencies (TE, AE and EE) of SHFs and agro-industrialist in agricultural production and agro-industrial processing. There are three model results: Stochastic frontier analysis (SFA), inefficiency model and variance parameters. The SAF model analysis shows the relationship between inputs and output. The inefficiency model analysis presents the socio-economic and demographic variables of actors (SHFs and agro-industrialists and government). The variance parameter shows the percentage inefficiencies of actors from other external variables (Sigma squared as σ^2) and the inefficiency effects of uncontrolled variables such as human and natural factors (Gamma as γ). Furthermore, it has shown the fitness of the data distribution in the econometric analysis.

The main explanatory variables (input variables, socio-economic and demographic variables as well as institutional and policy effects) of efficiency factors are identified to infer levels of efficiencies and elasticity of production functions in both agriculture and agro-industries. The agricultural efficiency analysis has been based on wheat and nigerseed farming while agro-industries' efficiency analysis has been based on food crops corresponding SFI and NOIs. The analysis of efficiency for the two key economic sectors has advantages of spatial development policy-makers, development practitioners and agribusiness stakeholders for increasing efficiencies of actors within URELs without any other expenditure for resource and technological change. The data were parametric cross-sectional data in the value chain of wheat and nigerseed. However, the mathematical programming approach called Data envelopment analysis (DEA) approach lacks estimating external factors effect on efficiency (Mohapatra and Sen 2013:373 and Colli 1996:10).

The main rationale of the researcher using the efficiency of SHFs and agro-industrialists in URELs are: Each farmer and industrialist s well as average got its own production and cost efficiency and inefficiency in the existing resources, technology, institutional and governance system. Hence, this will motivate for further improvement of individuals

producer's efficiency. Policy makers and development practitioners may use the gaps and potential opportunities for developing virtuous circle agriculture-industry production in any preferable approach. The other key intrinsic and extrinsic challenges and determinants were attempted quantitatively. Measuring the efficiency of interdependent agriculture and agro-industries can help for integrated development policy and institutional setting for policy-makers, professionals (agriculturalists and industrialists or agricultural economists) and other key stakeholders. Moreover, the econometric model of production efficiency analysis was conducted by one-step estimation of the Cobb-Douglas production function of stochastic frontier analysis (SFA) for input variables, personal variables and variance parameters (external variables out of the control of the actor) efficiency effect. The Cobb-Douglas production function of stochastic frontier analysis (SFA) measures the input variables for proportional output. The inefficiency model explains the socio-economic and demographic factors of respondents for inefficiency in the production and allocation processes. The variance parameters measure the overall data distribution, fitness and behavioural inefficiency as well as external variables effect. Technology application and resources development is a critical problem in poor countries like Ethiopia and measuring efficiencies of farmers and industrialists in the existing situation would indicate the possible solution for developing the efficiency of key economic actors and sectors (agriculture and agro-industries) in the existing technology, available resources and environment. Moreover, policy-makers may see the change in technology or other resource for changes of SHFs and industrialists. The chapter provides the main determinants of factors of production inefficiency and the gap of potential opportunity for increasing production efficiency of SHFs and corresponding agro-industrialists in partnership. Finally, serving as initial platform for further researchers in the agriculture-industry production linkages efficiency since most empirical literature on production efficiency are either on one crop or firm level.

Three types of production efficiency measures (TE, AE and EE) were investigated for (wheat and nigerseed) SHFs and agro-industrialists based on cross-sectional survey data. The value index of these three efficiencies has the same ranging from $0<x<=1$. The econometric formulae are taken from derived and simplified forms of econometric application (Coelli 1996:16-22; Yenetila 2013:43-48) respectively.

A. Technical efficiency (TE) measures the ability of producer to produce maximum output possible from a given set of resources. It measures deviation of individual producers from best practice performance or stochastic production frontier. The TE in stochastic production function analysis or Cobb-Douglas functional model in Frontier version 4.1c (Coelli 1996:3) is:

$$Y_i=X_i\beta+ (V_i-U_i)$$

where: Y_i=production efficiency of the i^{th} firm (SHFs and agro-industrialists)

X_i=input quantity of the i^{th} firm in translog (SHFs and agro-industrialists)

β= a vector of parameters to be estimated

V_i=assumed for unexplained random error (inefficiency) independent from producer (such as hazards)

U_i=composite error terms of assumed producer's technical inefficiency

The TE of individual SHFs and agro-industrialists could be the ratio of the observed output over frontier output, conditional on level of inputs used by the producer, mathematically as (Yenetila 2013:43):

$$TE_i = \frac{Y_i}{Y_i^*} = \frac{f(X_i;B_i)\exp(V_i - U_i)}{f(X_i;B_i)\exp(V_i)} = \exp(-U_i)$$

where: Y_i is the observed output and Y_i* is the frontier output. The TE ranges between zero (0) and one (1).

Hence, it is the measures of SHFs (wheat and nigerseed production) and agro-industrialists (SFI and NOIs) ability to produce the maximum output and/or value added from a given set of inputs and production technology (observed production output/frontier production output). The output of frontier 4.1c package for TE is directly used without any other further processing.

Note: The tests of data that are used in the econometric model are important. The significance of sigma squared (σ^2) indicate whether the average production and cost function adequately represent (significant any number) or not (about zero). While Gamma (γ**)** parameter is the percentage change or total variability of output due to (TE or AE) inefficiencies of producers or processors. It indicates the significance of the

variables used in the production or cost function inefficiency effect for rejecting or accepting of the null hypothesis (H_o) (Solomon 2014:149).

B. Allocative efficiency (AE) measures the ability of producers to produce a given output using least cost inputs (production cost). The frontier 4.1c package's output is the one/output of the frontier equals to AE for each farmer or industrialist. The stochastic frontier cost function analysis in Frontier version 4.1c could be written as (Coelli 1996:8):

$$Y_i=X_i\ \beta+(V_i+U_i)$$

Where: Yi= Cost of production i^{th} firm (farm and industry)

Xi=(translog) input prices and output of i^{th} firm

β=Vector parameter to be estimated

V_i=cost of random error variable effect beyond the producer

U_i=cost of producer inefficiency

It measures deviation of individual producer from the minimum cost input ratio and AE of individual producers (SHFs and agro-industrialists) is the ratio of the predicted least cost to observed cost. The frontier output for individual producers need to be manually converted as ratio of predicted least cost (1) over observed cost (frontier output) (Coelli 1996:21). Hence, it is used to measure individual ability of wheat and nigerseed SHFs, SFI and NOIs to measure the production cost for optimal outputs from the existing resources and situation.

C. Economic efficiency (EE) is the product of TE (TE) and AE (AE) as EE=TE*AE. It measures the ability of producers to produce a maximum output at a minimum cost in a given resource. It is a combination of quantity of output and cost of inputs (Yenetila 2013:44). As a result, it used to measure wheat and nigerseed SHFs and their corresponding agro-industrialists overall economic performance. The second phase qualitative data analysis was conducted for qualitative findings. Themes and sub-themes, quotes and some sayings were manually analysed based on the objectives.

4.8.3 Method of data integration and discussion

The quantitative results and the qualitative findings are mixed and integrated or triangulated at all parts of the discussions with variation in degree of dominance in the

different chapters of analysis due to difference in the nature of the objectives (Figure 4.7). The themes and quotes of qualitative data were used as a finding and/or discussed in the discussion with quantitative results. Interview and observation were made to have methodological and interpretive rigour from data collection to themes formation in the interpretation processes in the qualitative approach. Therefore, qualitative findings are dominant in chapter five while quantitative approach is dominant in chapter seven.

4.9 Research validity and reliability

This research was conducted in sequential mixed methods research in clear procedures and methods in data collection and analysis as well as triangulation and discussion. The methods of data collection were well prepared and structured for respondents and key informants accompanied with naturalistic observation. Though policy and institutional research is very difficult to generalize, the external validity of the research could apply to draw generalization for similar urban centres and rural hinterlands production linkages in Ethiopia and other ABCs (Miller and Brewer 2003:234).

Using sequential data collection that depends one correcting the errors of the preceding, piloting and pretesting of the questionnaires and participation of multiple participants (SHFs, agro-industrialists and all other actors from micro to macro levels), triangulation of results in analysis were important steps for increasing validity and reliability of the study. Care was taken to get real life experience and observation of participants for for similar urban centres and rural hinterlands production linkages in Ethiopia and Africa.

4.10 Ethical consideration

The subjects of this study were humans with their emotions, knowledge and humanness that needs to be respected at all times and levels. Hence, the entire process and procedures of the study are designed with ethical principles and guidelines of University of South Africa (UNISA). Moreover, the research was conducted with the ethical approval letter of UNISA (Annex-D). Most social science research rights: privacy, anonymity and confidentiality, voluntary for participation or withdrawal, pre-awareness for the research objective with informed consent form for sample SHFs and agro-industrialist were kept throughout the whole research process. The researcher strictly kept academic ethics and trustworthiness in analysis and discussion. As a result, iterative field

surveys were conducted for conflicting and ambiguous data and results from local to federal levels of the country. The participants were granted and secured with confidentiality on political and cultural sensitive issues from the beginning to the end analysis and discussion. It is confirmed that a researcher need to have their permission and knowledge giving consent form with full information ahead of time (Leedy and Ormrod 2001:108) and there would also be political and culturally safe research practice (Hay 2000:119).

The researcher behaved as an insider and outsider position in this research. As an insider, the exact meaning and interpretation of the respondents' perspectives were organized as well as like an outsider, the researcher collected every relevant known and unknown data from the informants. This double position of the researcher could help for accurate interpretation of results from respondents' different perspectives free from personal bias and data fabrication

4.11 Research report writing

Writing research report is the last phase of a research and the report needs to be accurate, clear, logical and coherent for pursuing the academic audience and readers. Kumar (1999:244) describes a research report writing need an ability of writing results and discussions in a clear, logical and sequential way based on the subject matter. The researcher wrote the report of this research comprising the whole procedure starting from rationalizing for selecting a problem and stating methodology, discussion and interpretations based on the empirical findings. Hence, I believe that appropriate academic and scholarly report style is done in order to satisfy the scientific community and end users.

4.12 Summary and concluding remarks of the chapter

The research design has sequential mixed methods research (MM) based on pragmatic philosophical worldview. Pragmatism has the advantages of pluralistic situation in MM (inductive, deductive and abductive) reasoning and perspectives. Furthermore, URELs study is multi-spatial, multi-scalars and multi-disciplinary nature and it requires MM method and pragmatism paradigm.

The study region was selected and delimited through multi-stage spatial sampling based on Douglas's regionalization principles. The research was conducted based on validity and reliability procedures. Data of different variables were identified, sequentially collected from micro to macro level. These data were independely analyzed for results in quantitative and qualitative approaches respectively. Finally, the results were connected and triangulated during interpretation and discussion. The philosophy and paradigm of MM served the core of the overall research. The next chapter presents the status and magnitude of URELs, focusing agribusiness of two industrial food crops (wheat and nigerseed) and two types of corsponding agro-industries (SFI and NOIs).

5 Chapter Five: Analysis and discussion on Status and magnitude of URELs

URELs have multi-disciplinary, multi-spatial and multi-stakeholders nature with many vertical and horizontal linkages. In this chapter, status and magnitude need not confused with their different dimensional meanings. Status of URELs is the manner and situation of linakages while the magnitude of URELs is the measure of the extent and influence of BPLs and FPLs of agriculture and agro-industries with multiplier effects. The study is restricted only the value chains of two food crops: wheat and nigerseed from their conception in agriculture to processing and their end consumption.

5.1 Introduction

URELs have circular model of vertical and horizontal linkages in the value chain for overall regional and national development (Staantz 2011:78). The main objective of this chapter is to 'examine the status and magnitude of BPLs and FPLs of agriculture and agro-industries'. Based on this objective, the chapter discusses BPLs and FPLs of agriculture in wheat and nigerseed farms, the non-agricultural off-farm and non-farm activities with ecological system, the BPLs and FPLs of agro-industries SFI snd NOIs and their value added and finally summary and concluding remarks. The next section discusses BPLs and FPLs of wheat and nigerseed cultivation.

5.2 Backward and forward production linkages (BPLs and FPLs) of agriculture

The country has high production potential for cereals and oilseeds up to three times per year using rainy season, wheat farming or mulching and irrigation within a year (CSA 2014:13). Almost all SHFs (98%) and all agro-industrialists stated that agriculture and agro-industries have no any production linkages in the study region. The production of wheat and nigerseed depends on one annual rainfall season in a year (Field survey, 2014). This indicates that industrial crops such as wheat and nigerseed have no any multiple production season and irrigation was almost non. They did not have any partnership with processors for reinforcing mutual development in the study region. Similar to this finding, it is confirmed that strong sectoral BPLs and FPLs of agriculture and agro-

industry are missed in the development agenda of Ethiopia resulting overall growth failure of the economy (Eshetu and Mamo 2009:8). Similarly, Getnet and Mehrab confirm that manufacturing sector is too small and underdeveloped with distorted policy and poor vertical and horizontal linkages in Ethiopia. The existing manufacturing industries (45%) and agriculture are import-dependent (Getnet and Mehrab, 2010:11 and EEA, 2005:43).

5.2.1 BPLs and FPLs of wheat

Wheat is one of the important stable food and industrial crop in the study region in particular and in ABCs in general. However, its production has different challenges and problems in vertical (BPLs and FPLs) and horizontal (scale economy and commercialization) linkages as explained in detail in the following discussions.

The supply of appropriate agricultural inputs is a prerequisite factor for wheat production and productivity. Informants complained that agricultural input supply enterprise (AISE) was the only input supplier for their own Gozamin agricultural union (GAU). They further explained that AISE caused many problems such as lengthy processes, lack or shortages of supplying basic seed or improved seed, lack of timely availability of inputs, increasing and higher costs. In this study, the supply of agricultural inputs: fertilizer and basic seed were supplied through fragmented institutional settings and processes for the benefit of politically affiliated government business, AISE (Figure 5.1).

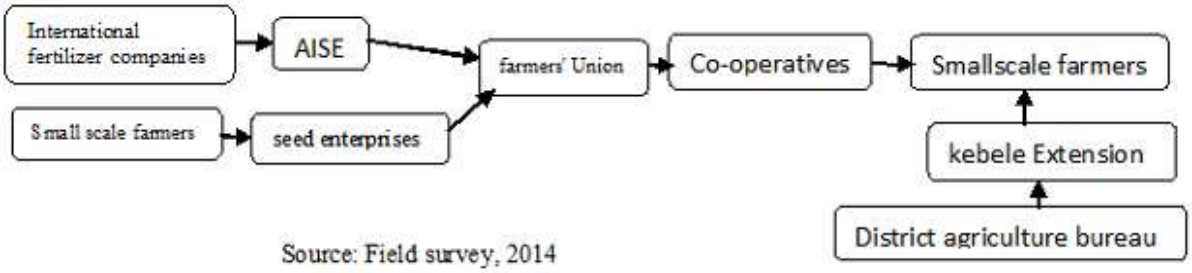


Figure 5.1: Phases and structures of wheat BPLs in the value chain

The imported fertilizer and locally produced basic wheat seed were supplied through lengthy and complicated bureaucracy to reach SHFs. Unnecessary government actors

such as AISE and seed enterprises (ASE[6] and ESE[7]) illegally interved duties and responsibilities of SHFs' organizations. This results for increment of structural, managerial, institutional and bureaucratic costs for SHFs (Figure 5.1).

Why could SHFs organizations not supply their agricultural BPLs by its advantages of scale economy was the other important question raised. Informants stated that the invisible and informal institutional structure of the government had prohibited SHFs' organizational formation at national level to communicate with national and international organizations. Informants in GAU confirmed that the existing flow of SHFs' inputs and goods passed at least four layers of loading and unloading processes from Djibouti port to SHFs. This unloading-loading procedure extends from Djibouti port, Mojjo dry port, GAU, PAC and to SHFs' utility. From this, one can infer that SHFs organizations (PACs and GAU) were assigned to serve as intermediary between the government enterprise (AISE) and SHFs. This implies that direct linkages of SHFs organization and key companies for inputs can be one possible opportunity in developing cost efficient and sustainable BPLs of agriculture in the study region.

The other challenge for BPLs of wheat is the case of seed supply. Seed enterprises' (ESE and ASE) partnership model in wheat production was foundout better than the government agricultural extension for SHFs in the study region (Figure 5.2). Informants stated that the ESE had direct supply chain and seed production linkages agreement with SHFs as outgrower. They added that the agreement includes market price incentive 15% additional costs from available market price. The agreement also includes supplying all the necessary inputs of basic wheat seed, fertilizers application and consultancy services with monitoring and evaluation of on-farm processing and harvesting. Informants further explained that ESE implemented good farm management and support for every agricultural phase starting from pre-harvesting as farmland preparation and management (Figure 5.2).

[6] Amhara seed enterprise
[7] Ethiopian seed enterprise

Source: Field survey 2014

Figure 5.2: Comparison of government extension (traditional) and ESE wheat farms

Informants stated that basic seed production (C1) had usually high quality wheat seed but lower productivity as compared with second round improved seed (C2). Thus, the seed production was usually recorded about 50 qt per ha and 60 qt per ha for basic seed (C1) and second round improved seed (C2) under similar farm management and monitoring in seed enterprises partnership model respectively.

The government had limitation in providing agricultural management for SHFs. Informants stated that inputs such as basic wheat seed, complex fertilizer (NPSBZiFe) and farm technologies had not even provided based on the given manual. Moreover, they explained that the government used blanket recommendation for fertilizer application. For example, fertilizer application was recommended as one DAP: one urea for a long time, one DAP: 2.65 Urea in 2014 in the study region. This implies the inconsistency of blanket recommendation for fertilizer application. Informants confirmed that SHFs resisted the application of any of new blanket recommendation in wheat and other crops production. Almost all SHFs (98%) confirmed that wheat-producing SHFs applied fertilizers based on their indigenous knowledge. They used two DAP: one Urea ratio in wheat production (Field survey 2014). They furthermore explained that the government agricultural institutions (district agricultural experts, DAs and rural administrators) and SHFs' organizations (PACs and GAU) did not provide proper support and follow-up in

agricultural production and practices such as provision of inputs, consultancy, monitoring and evaluation. Consequently, SHFs' production and productivity of wheat became traditional and subsistence in the government institutional system (Figure 5.2). Informants confirmed that DAs advised SHFs in Debre Elias and Machakel districts to use the recommended fertilizer ratio application though they themselves had no trust on the blanket recommendation. This implies that there is a need of R&D for soil map rather than blanket recommendation in diversified agro-ecological zone of Ethiopia.

There was a great loss in the production and marketing of wheat. Almost all SHFs (96.4%) had lost 10-20% of their wheat agriculture in the pre-harvest period in the government institutional system but almost none in the partnership of ESE (Field survey 2014). From this, it is possible to infer that the poor government institutional support in BPLs of wheat could be one of the causes for subsistence production of wheat. This situation may need changes of the government agricultural institutional setting for supporting BPLs of wheat.

On the contrary, there was an indigeneous knowledge on the side of SHFs. Though the focus of agricultural experts and development agencies (DAs) were on chemical fertilizers and its application, few SHFs (2.6%) prepared and used compost manure for organic farming in the study region (Figure 5.3).

Source: Field survey 2014

Figure 5.3: Prepared compost for organic agriculture at Girakidamin Kebele

These few compost users had used on some crops such as maize and some other gardening but not in wheat farm (Field survey, 2014). However, manure and crop residues were sources of income for SHFs in supplementing subsistence agriculture rather than utilizing on the farm soil for recycling nutrients as organic farming and environmental conservation (Figure 5.4).

Source: Field survey 2015

Figure 5.4: cereals residue *Shehems*[8] at DMT market

Similarly, informants explained that SHFs were selling the sources of compost due to lack of financial access and provision of affordable agricultural inputs (Figure 5.4). Although SHFs faced many problems and challenges in BPLs of wheat, a total of 887364 qt and 483487 qt of wheat were produced in the sample Debre Elias and Machakel districts, respectively in 2014 (Document, 2014). This implies that lack of financial capital in agricultural production has made cyclic effects on soil fertility, agriculture and environment.

Due to lack of coordination and collaboration in horizontal and vertical linkages caused a great impact on the effectiveness of FPLs of wheat. Informants stated that both good harvests and bad weather conditions resulted in huge losses on wheat production of SHFs. For instance, when there was surplus production in the study region, there had no access for market. Bad weather condition also created a great loss on the production of wheat. Thus, SHFs are negatively affected in both surplus production and bad weather

[8] Hunam load

condition. Almost all SHFs (96.4%) confirmed that they had 20-30% loss of wheat during post-harvest period of wheat in every year. Problems such as lack of direct link with processors and/or market linkages and lack of agricultural infrastructures (modern warehouses facilities) were considered as the main causes of post-harvest losses of wheat. SHFs had fragmented market linkages. They sold their wheat products as 45% PACs, 25% traders, 9.5% assemblers and 20% other way (Field survey 2014). From the abve discussion, one may infer that there need to be post-harvest infrastructure development and coordinated marketing linkages or partnerships with processors. Due to the absence of post-harvest infrastructure development and FPLs of wheat, the approximate pre-post harvest losses of 195 SHFs in the study region were computed as follow:

Minimum values mean of pre-harvests loss=(10%+20%/2) =15 %

Maximum values mean of post-harvests loss=(20%+30%/2) =25%

Pre-post mean loss=15%+25%/2=20%

Total production of sample SHFs (195)=7605 qt

Pre-post losses=20*7605/100=1521 qt of wheat or 1216800 birr (based on 800 birr/qt market during field survey 2014).

The huge pre-post loss implyies that the government and other stakeholders need to have policy and strategic interventions for mitigating production risks. Proper utilization of agricultural BPLs and FPLs through URELs need to have proper network for local and regional development. In line with this study, Tegegne (2005:156) argues that agriculture has stronger linkages to consumption rather than production linkages. Christy et al (2009:154,186) also found that SHFs have faced market failure and challenges in an unprecedented situation. For example, the domestic wheat production is less competent with imported wheat.

Informants stated that traders and PACs collected agricultural products and commodities from Genet and Girakidamin *kebeles* bypassing district capitals: Debre Elias and Amanuel towns; because, these towns lacked economic infrastructures, agro-industries and direct connection with GAU at DMT. What can be inferred from this discussion is that the district capitals lacked value adding and value chain development for their hinterlands production linkages. Then, policy makers and agribusiness development

sectors may need to give focus on the hierarchical functions and development of district capitals. Tegegne (2007:108) also suggests that the location of agro-industries need to be rural *kebeles* in Ethiopia for raw material-oriented industrialization and development.

Generally, BPLs and FPLs of wheat can be evaluated by the production return of SHFs. They were computed in the following way. The sample SHFs had average wheat farmland size of 0.98 ha (about one ha) and 39 qt of wheat per ha (average of 42 qt per ha in Genet *kebele* and 36 qt per ha in Girakidamin kebele) with two DAP: one urea ratio per ha fertilizer application in the study region (Field survey 2014/15). In FPLs, informants stated that the common local measurement unit and price of wheat residue was seven birr per *Shehem* and one ha of wheat farm would have 120 (115-125) human loads. Based on the average wheat farmland size and average inputs of SHFs in 2014, the general gross return and economic feasibility of wheat production were calculated in government extension and seed enterprise partnership model by using the agricultural transformation agency formula (ATA 2013: 33).

Table 5.1: Cost and gross return of wheat production (per ha)

No	Type of inputs	Measurement unit	Quantity	Unit price (Birr)	Total price (birr*)
1	Land tilling	Person/oxen/day	21	130	2730
2	Fertilizers DAP	qT	2	1179	2358
3	Fertilizer and seed sowing (line)	Person/day	8	45	360
4	Fertilizer Urea	qt	0.87	1090	948.3
5	Urea side dressing	Person/day	4	45	180
6	Improved Seed	qt	0.24	1250	300
7	Local seed	qt	0.87	800	696
8	Chemicals (herbicides)	Litres/kg	1	100	100
9	Chemical spraying	Person/day	2	45	90
10	Weeding	Person/day	4	45	180
11	Harvesting	Person/day	16	45	720
12	Threshing Oxen	Number	20	30	600
13	Transport	Person/donkey/trip	38	20	760
14	Miscellaneous costs				600*
15	Total production cost				11522.3
16	Productivity per ha	qt*	39*	750	29250
17	Residue cost	Shehem/one band	120	7	840
18	Net profit of a farmer				18566.7 birr
19	ESE partnership production	qt	60*	750	45000 birr
20	ESE fertilizer	qt	1DAP,	1179	1179
			1.5 urea	1090	1635

Source: Field survey 2014

* Exchange rate at USD1=18.5 Eth. birr DAP=1179 birr/qt; Urea=1090 birr/qt; qt* is qt, 1000* miscellaneous expense from informants for four 'Timad' farmland (one Timad=0.25 ha), 39* is average productivity of wheat per ha during 2014 survey and 60* is ESE productivity of C_2.

Since wheat agriculture in the study region was traditionally labour-intensive and nature-based with risks of climate changes, lion share cost of wheat production was human-animal labour (Table 5.1). Traditional system of farming, wedding, harvesting, threshing activities were labour-intensive in wheat production in particular and agricultural production in general. Most farming implements were wooden materials except the tip of the plough. The separation of straw from seed was performed in a traditional ways depending on the availability of wind (Figure 5.5).

Source: Field survey 2014

Figure 5.5: Different phases of agriculture in the study region

Lack of modern agricultural system and application had resulted for poor output for subsistence and local market. In line with this finding, Similarly, Tegegne (2005:156) confirms that agriculture has stronger linkages to consumption rather than production due to mainly subsistence nature of production with low technological implements and inputs.

Fertilizer application was based on their indigenous knowledge ratio (as two DAP:one urea ratio) per ha due to lack of clear guideline and the absence of R&D based system. The average price of different fertilizers per ha in the study region was 3305.3 birr for sample SHFs. Then, average gross return of wheat production in Genet and Girakidamin was calculated as:

Wheat gross return (WGR)=market cost (output cost+ residue cost)-inputs cost

WGR=(29250+840)-11522.3=18566.7 birr per ha and 516.77 birr per qt for average 42 qt per ha (Table 5.1).

Food crops production feasibility is also measured by using the formulae of ATA (2013:33): Wheat production feasibility (WPF)=crop gross return/total expense, where WPF has minimum index of two; WPF=18566.7/11522.3=1.6. From this empirical result, it is possible to realize that wheat production in the government institutional setting was not feasible to reinvest for the next farm production since the feasible production index result was less than two in 2014.

Based on ESE C1 wheat partnership model, gross return of a SHF (in Genet kebele) was evaluated as follows. C1 wheat seed price could rise to 1875 birr per ha as compared with traditional use of wheat seed for a price of 996 birr per ha. Thus, there was 879 birr incement per ha additional production cost for ESE C1 model. Whereas, the production

cost of fertilizer application per ha in traditional wheat production would raise for 492.3 (3305.3-2814) birr due to two DAP: one urea ratio than one DAP: 1.5 urea. The overall net additional expense of a SHF in partnership with ESE model could have an increment of 385.7 birr per ha (Table 5.1). Total wheat cost of production in the study region could be 11522.3+385.7=11909 birr per ha while market price of total output was 45000 (60*750) birr per ha of farm plot.

ESE wheat gross return (EWGR)=(market cost-production cost)+residue cost

=(45000-11909)+840=33931 birr per ha, implying 566.52 birr per qt

EWGR feasibility= crop gross return/total expense

EWPF=33931/11909=2.849 which implies feasible production potential of wheat for SHFs reinvestment and development which is sustainable. ESE partnership wheat production model confirmed that the study region has high wheat productivity potential opportunity and the government institutions need to have lessons from ESE-SHFs partnership model in the study region in particular and Ethiopia in general. In line with this study, Nwanze argues that there is demand increment for processed agricultural outputs in Africa. However, there are small agribusinesses that remain trapped in a cycle of subsistence production and processing in the continent due to: lack of access for modern technology and production assets, lack of market and facilities for scale economy and lack of downstream linkages of agricultural production linkages (Nwanze 2011:17).

Precisely, BPLs and FPLs of wheat value chain in the government institutional settings faced different challenges. Some of these include lack of timely and genuine input supply, R&D basis, capable of DAs support as well as adapting farm technology, using pre-post harvest loss mitigation strategies, appropriate policy and institutional frames for URELs, lower production cost and production feasibility to reinvest further agricultural development. These challenges are important areas of potential opportunities for developing BPLs and FPLs of agriculture and URELs. For example, surplus wheat 3175538 qt produced in the hinterlands in 2014 for more than SFI's demand (87360 qt per year) for virtuous circle URELs and multiplier regional development effects.

5.2.2 BPLs and FPLs of nigerseed

Oilseeds are the third most important commodity in production and export in Ethiopia and the main raw materials for domestic NOIs. The main oilseeds of the country are sesame, nigerseed and linseed (UNIDO, FAO and ILO 2013:1). Nigerseed[9] has many food and non-food usages (Melaku 2013). Informants stated that nigerseed is used for source of income, consumption (for sandwiched making called *Guzguzo*, locally prepared edible oil called *Kibanug)* and it is used for oilcake and furnishing farm equipments.

The major problems and challeges in nigerseed production were absence of government extension services, lack of farm management, monitoring and evaluation support services, modern inputs supply, positive SHFs' production perception and R&D. All sample SHFs (99.5%) confirmed that nigerseed was neglected in its production but one of the most important domestic use and export crops in the country. The government agricultural institutions had no any consideration and recognition for the production of nigerseed. Most of the respondents (95%) confirmed that SHFs had the perception of sowing nigerseed to improve soil fertility. However, informants claimed that there were variations among them during the production of nigerseed in pre-harvest farm management (tilling the land, weed control, screening and using better traditional seed) and post-harvest of nigerseed agriculture in the study region (Figure 5.6).

Source: Field survey 2014

Figure 5.6: SHFs variation in nigerseed cultivation at Girakidamin in summer

Better nigerseed production was characterized with good physical harvest without weeds while bad nigerseed had thin, short and scattered features with full of weeds (Figure 5.6). Most SHFs (92.3%) stated that they had lost 20-30% of their nigerseed during pre-harvest

[9] is scientifically called Guizotia abyssinica Cass and locally called *neug.*

period by animals, weed (locally called 'YenugAnbessa') and insects (Dengeza and plussia worm) (Field survey 2014). Informants explained that there was also lack of indentifying appropriate period for nigerseed production in both summer and irrigation (locally *Fisho Nueg*). In their explanation, when nigerseed was sowed in May for summer season harvest, it can resist weeds, but it had low productivity. On the other hand, when it had been sowed in Jun-July, weeds and insects could affect it, but it had more productivity. This implies that SHFs are sandwiched in problems and dilemma of getting optimal production season for high productivity of nigerseed. This dilemma could be again caused by lack of R&D and farm management. In conformity to this study, UNIDO, FAO and ILO (2013:1) confirm that oilseeds in Ethiopia were produced under low production and productivity due to lack of inputs, appropriate farm management, market-oriented production, partnerships and warehouse.

All sample SHFs had no any nigerseed partnership and/or direct FPLs with NOIs. They produced a total of 1755 qt nigerseed for post-harvest FPLs in 2014. However, they had sold nigerseed for fragmented market partners as 53% for PACs, 36% for traders, 11% for local market (assemblers). Almost all respondents (99%) responded that the post-harvest loss of nigerseed was about 10-20% every year (Field survey 2014).

In December 2014-April 2015, the price of nigerseed per qt was 1700 birr at DMT. Based on the field survey data in 2014, the researcher computed the total pre-post harvest losses of SHFs as follow:

Minimum values of mean for pre-post harvests=15% (10%+20%/2)

Maximum values mean for pre-post harvests=25% (20%+30%/2)

Pre-post losses mean=(15%+25%/2)=20%

Total production of sample SHFs (195)=1755 qt (Field survey in 2014)

Pre-post losses=20*1755/100=351 qt of nigerseed or 596700 birr (based on 1700 birr/qt nigerseed market price).

The huge pre-post nigerseed losses implies that there is a need to have proper BPLs and FPLs in nigerseed production with key stakeholders through URELs for multiplier effects of local and regional development. In line with this study, sustainable maket linkages and URELs are as important causes for SHFs' market failure (Christy et al 2009:154,186).

Informants complained that the government institution and SHFs' own organizations (PACs and GAU) did not provide any support in nigerseed production like that of wheat production. They explained that the absence of direct production linkages with NOIs helped the involvement of many traders (PACs) in the local market for gaining better profit on SHFs' nigerseed product. During the survey, district capitals had no any agro-industries (such as NOIs) and economic infrastructures for production linkages and market with its hinterlands. These towns were functioning as centres of administrative and politico-governance services.In line with this finding, Satterwaite and Tacoli (2006:179) confirm that bypass effects on small urban centres in favour of larger urban centres are mainly due to a wider range of processing and value adding differences.

The other problem for nigerseed production was land use competition with other crops. For example, most respondents (89.7%) were producing *Gibto* in 2014 on the expense of nigerseed due to many ecological, agricultural and nutritional advantages (Table 5.2). Ecologically, Gibto increases better productivity within any climatic variability, higher land renewal and fertilization capacity (nitrogen fixation) for the next harvest. Agriculturally, *Gibto* is advantegious for mixed cropping production system like barley and wheat, and it is used for renewing soil fertility. Nutritionally, the people's feeding habit has been increasing. The other major advantages of *Gibto* were its least production cost with increasing market price (Field survey 2014, Figure 5.7 and Table 5.2).

Table 5.2: Nigerseed and Gibto landuse comptetion

Year	Nigerseed				Gibto			
	Farmland (ha)	Yield (Qt)	Productivity/ha	Price/ Qt	Farmland (ha)	Yield (Qt)	Productivity/ha	Price/ Qt
2010	174	2373.75	6.9	450	2.5	32.5	13	110
2011	153	2147.95	8.15	520	3.5	49	14	235
2012	135	2076.75	9.45	650	5.1	128.1	21	250
2013	130	1927	11.2	850	10	250	25	345
2014	97	1755	10	1200	22	605	26.5	450

Source: Field survey 2014 and DA document *Price/Qt is in Birr

A trend of nigerseed production and farmland size was decreasing in the study region while Gibto production had been increasing year to year in the sample SHFs (Table 5.2). However, Melaku's (2013) experimental result (average 14 qt per ha) in Adet (rain feed)

and Koga (both rain fed and irrigation) may open opportunity of nigerseed land use competition with Gibto. The expansion of Gibto production was observed in the study region (Figure 5.7).

Source: Field survey 2014

Figure 5.7: land use comptetion of *Gibto* and nigerseed

Gibto has been becoming important stable food crop relatively for lower economic people in local beer and some teahouses at DMT (Figure 5.8).

Source: Field survey 2015

Figure 5.8: Gibto feeding habit in local beer houses at DMT

Informats argued that in the past, homemade roasted barley with some gummed nigerseed were used as common traditional snacks that accompany local beer or coffee ceremonies. Gibto was not considered as a food crop some 15 years back. However, it is becoming a popular snack replacing gummed nigerseed in the local beer house at DMT. This is because a kilo of roasted barely alone was 20 birr and with gummed nigerseed had been

becoming more expensive for most urban poor. This implies that the eating habits of the urban people have been shifting from nitrous stuffs (nigerseed and barely) to lower foodstuffs (such as Gibto), especially for the poor.

Gibto preparation for consumption had some challenges. To make Gibto edible for human, it has long, exhaustive and labour-intensive process. It should be soaked in any flowing river water for five to seven days with regular washing to avoid its bitterness. Then, malted *Gibto* could be roasted and mixed with green pepper, onion and other spices to make ready for consumption (Figure 5.8). Informants confirmed that *Gibto* was presented for sell in both malted and original forms, but its malted form had higher price (8 birr per kg) than its original form (6 birr per kg).

In measuring effectiveness of BPLs and FPLs, gross economic return of nigerseed regarding to SHFs was computed within the given agronomic conditions (altitude, temperature, rainfall and soil). SHFs sold nigerseed residues: *Adabole* and *Ebike* for sources of income in the study region (Figure 5.9).

Source: Field survey 2015 **locally ebike is also called Dibak*

Figure 5.9: Different nigerseed's residue for market in the study region

Informants described that the common local measurement unit and price of nigerseed residue (locally called *Ebik)* had 15 birr for one qt and one bundle of 'Adabol', locally called *Shehem* has 4 birr. One ha farmland has average 50 *she hems* Adabole and two qt *Ebik*. Sample SHFs had average productivity of 9 qt per ha and 0.5 ha average farmland size for every nigerseed SHF (Field survey 2014). Then, gross return, economic feasibility and profitability of nigerseed were calculated based on the field data average farm land size and production inputs. The agricultural document formulae and the

national standard crop feasibility production index two was used for the computation (ATA 2013:3 and Table 5.3).

Table 5.3: Feasibility of nigerseed production

No	Type of inputs	Measurement unit	Quantity	Unit price (Birr)	Total price (birr)*
1	Land preparation	Person/oxen/day	4	130	520
2	Local seed	Qt	0.06	1250	75
3	Harvesting	Person/day	4	45	180
4	Threshing Oxen	Number	5	30	150
5	Transport	Peron/donkey/trip	4	20	80
6	Miscellaneous costs as feeding				150*
7	Total production cost				1155
8	Productivity per half ha	Qt	4.5*	1200	5400
9	Residue cost	'Ebik' 'Adabol'	1 25	15 4	15 100
	Total market price				5515
10	Gross return of a farmer				4360
11	Market price change	Qt	4.5	1700	6610
11	Melaku's productivity	Qt	7*	1700	10860

Source: Field survey 2014

Exchange rate* at USD1=18.5 Eth. birr DAP=1179 birr/qt; Urea=1090 birr/qt; 4.5* is average productivity of nigerseed per half ha of HHS and 7* is based on the nigerseed experimental production per half ha of Melaku (2013:145).

Gross economic return of nigerseed production was computed as follow (one qt=1200 birr nigerseed in May-July):

Nigerseed Gross return (NGR)=market cost (output+total residue costs)-production cost; NGR=1200*4.5+115-1155=4360 birr/half ha or 8720 birr/ha which implies 968.9 birr per qt greater than 516.77 birr/qt wheat in summer rain-fed production season in 2014, while 8720 birr per ha is less than wheat gross return (WGR) 18566.7 birr per ha.

Nigerseed production feasibility (NPF)=NGR/production cost, 4360/1155=3.775 which shows high feasibility due to low costs of inputs in the absence of BPLs, farm management as well as total production. Nigerseed production was neither labour-intensive nor capital-intensive in the existing agricultural system. For example, the total land preparation cost was only 1040 birr/ha and 2310 birr/ha total production cost (Table: 5.3). Nigerseed had also the least EE (0.78%) from wheat and agro-industries as discussed in chapter six (Table: 6.25 in chapter six).

Nigerseed poor productivity 9 qt per ha made it uncompetitive in land use competition with other crops such as Gibto and wheat (42 qt per ha). Consequently, informants argued that production trend of nigerseed had been declining from year to year with increasing

farmland fragmentation and land shortage and land use. Furthermore, SHFs own Genet and Girakidamin PACs and GAU did not support SHFs and these organizations rather made profit on SHFs' nigerseed products. Furthermore, informants complained that nigerseed lacked BPLs and FPLs in its value chain system; given less attention by SHFs themselves in farm managment and the government or key partners in all its pre-farm preparation, on farm management and post-harvest agro-processing linkages. This implies that nigerseed and its corresponding NOIs were found under different problems, challenges and threats.

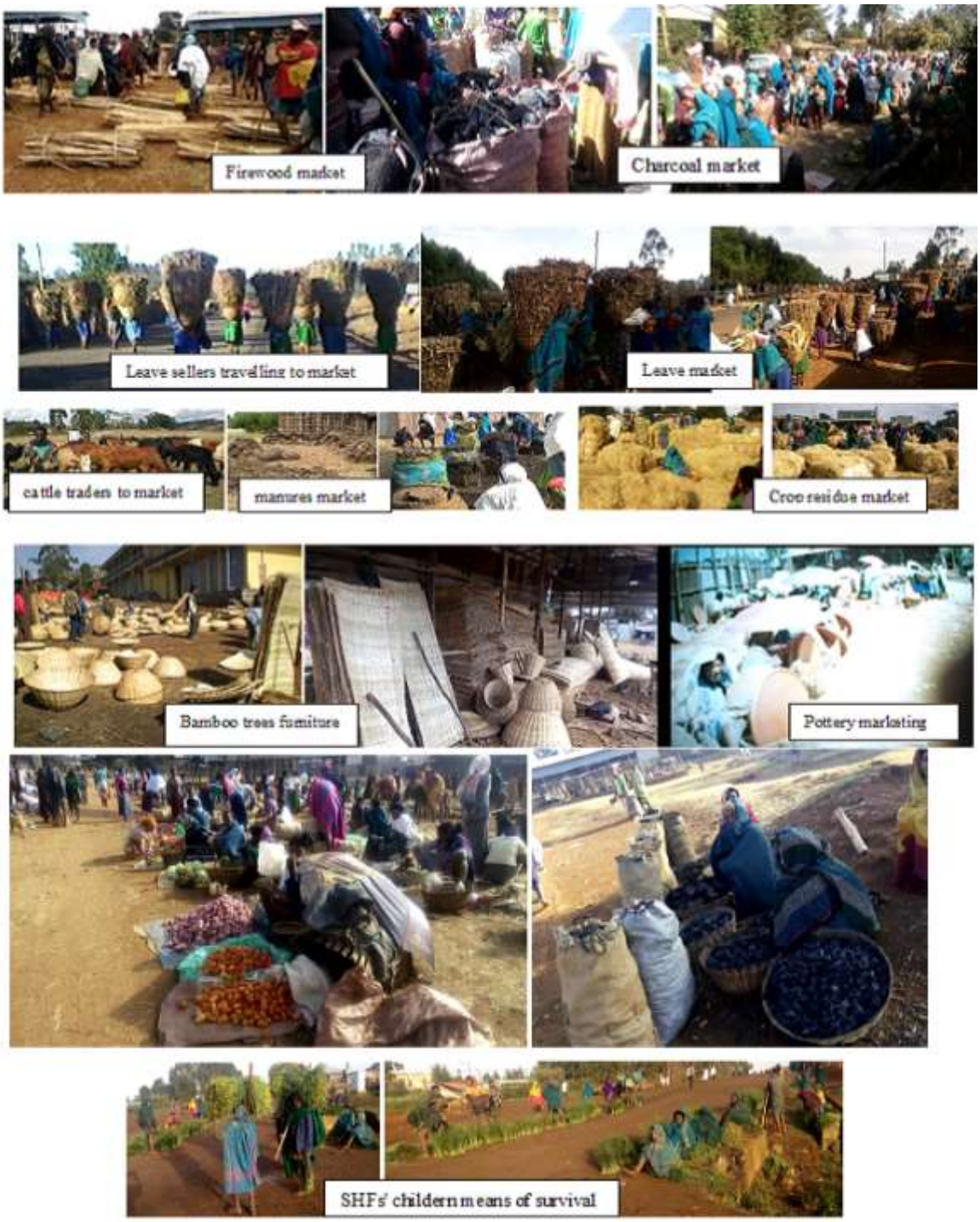
There are possible options for overcoming the challenges and problems of nigerseed agriculture and corsponding NOIs in the study region. Some of these opportunities include availability of potential production opportunity 14 qt per ha in Melaku's experimental study (2013) in the study region; making BPLs and FPLs with direct production partnerships NOIs; giving attention for government agricultural institutional settings and extension services; coordinating R&D; improving the SHFs organizations PACs and GAU for scale economy; changing SHFs' cultural attitude and perceptions towards nigerseed agriculture and developing pre-post harvest infrastructures.

5.3 Non-agricultural economic activities and URELs

SHFs involved in different non-agricultural activities for complementing the subsistence agriculture. Almost all sample SHFs (79%) had mixed farming. However, most of them (67%) involved in non-agricultural off-farm as migrating for wage and seasonal employment to urban centres or rural area and/or non-farm income sources in or around their local area. A few SHFs (33%) had either subsistence or consolidation and accumulation (Field survey 2014). SHFs explained that mixed agricultural activities were not enough for subsistence, especially poor landless and near landless farmers. Thus, non-agricultural activities were used for livelihood survival strategies complementing the subsistence agriculture. This may imply that the absence of regional development economic activities such as value adding, value chain and agribusiness in URELs with bypassing effects of different crops to other region. These situations might lead to SHFs to involve in non-agricultural activities that had affected their mixed farming and the natural environment in a circular way.

Informants confirmed that landlessness was not a measure of poverty since landless farmers could access farmlands in different forms such as land renting or sharecropping and/or contracting. They asserted that a poor farmer was the one whose livelihood had depended on either only crop production or animal rearing or lack both in extreme case in the study region. In line with this study, Satterthwaite and Tacoli (2006:179) suggested that livelihood diversification and non-farm activities are important for poor farmers' survival strategy in many poor countries.

Diversified non-agricultural economic activities have their own market place at DMT. Some of them are charcoal, fuel wood, crops residues, manures, leaves, grasses, mini-trading, wage, carpentry, farming tools, weaving, pottery, products of bamboo tree in the study region. The children and each family member had their own means of survival such as selling grasses for coffee and other ceremonies. There were different market places for different non-agricultural goods at DMT such as Abima church (dominantly for tree leave), Bole market for almost all types; university road locally called 'Chidtera' for straw and crop residdues and Beklobete for chaorcoal market (Figure 5.10).



Source: Field survey 2014-2015

Figure 5.10: Non-agricultural survival strategies of SHFs

Informants argued that SHFs knew the importance of manures and agricultural by-products for maintaining soil conservation and fostering organic farming. They complained that the absence of financial access however had enforced them to these

environmental and agricultural pain strategies. In line with the finding, SHFs' financial access can foster using farm waste and animal dung for organic fertilizer as compost and other soil and environmental conservation in poor countries (Behrense et al 2012: 27).

Similar to specialized rural non-agricultural market places, most of these rural non-farm activities were gender-based. Leaves, manures (dung cake) and pottery marketing are the sole responsibility of females while crop residue, bamboo tree furniture and cattle trading were mainly for males businesses. Informants added that some non-agricultural activities such as weaving, pottery and blacksmith were associated with some culturally discriminated groups of people in the society (Figure 5.10).

Informants stated that some cultural traits had challenges on the local market activities. Informants asserted that home-based businesses were not common and considered as taboos. In most rural areas in study region, marketing of dairy products including milk was not allowed for using other source of income. However, SHFs had prepared and sold not only their own cattles' manure but also collected manures on the fields for market. Selling residues, manures and green grasses were considered as normal non-agricultural activities in the region. These most non-agricultural activities were elements of land degradation and soil depletion resulting for overall ecological destruction. Similar to this study, Douglas (2006:148, 150) confirms that poor performance of rural economy has a dampening effect on resources and environment in variety of non-agricultural (off-farm and non-farm) activities. Thus, the depletion of resources and environmental degradation is a common problem in the truncated cycle of urban-rural linkages. Thus, he suggests that policy intervention of the energy supply is one of the important factors for overcoming the problem. In conformity with this finding, Eshetu and Mamo (2009:3, 5) confirm that livestock manure and crop residues are used as firewood and/or source of cash at urban centres within the highest land degradation in SSACs. These scholars argue that the essential instruments and basic infrastructures such as R&D, macroeconomic policies, administration and governance and farmland management for agricultural and agro-industrial development have remained retarding factors in the economy of Ethiopia.

The different non-farm activities imply other associated implications in urban centres and rural areas. Leaves and firewood market at urban centre DMT can imply the problems of electrical energy supply for domestic and agro-industrial activities. (*Teff*) residue (locally called *Chid*) market indicates the prevalence of sub-standard mud house construction. These economic activities may also imply extreme level of poverty and living standards at DMT and its hinterlands. In conformity to this findings, it is confirmed that many rural households are finding their livelihoods in a very difficult situation for survival unless there are additional resources from non-agricultural activities such as seasonal migration for wage employment, support from social safety net programs and other means of financial access (Demese, Berhanu and Mellor 2010:2; EEA 2005:151, 162). Using fuel wood and/or charcoal is one of the poverty indicators in multi-dimensional poverty measure (OPHI 2015:1). Pausewang (2009a:73) also explain that poverty is a common phenomenon in rural Ethiopia. In relation to this finding, Alkire, Conconi and Seth (2014:5) confirm that households who are cooking in dung and charcoal are deprived poor who have been doing pains and sufferings on environment.

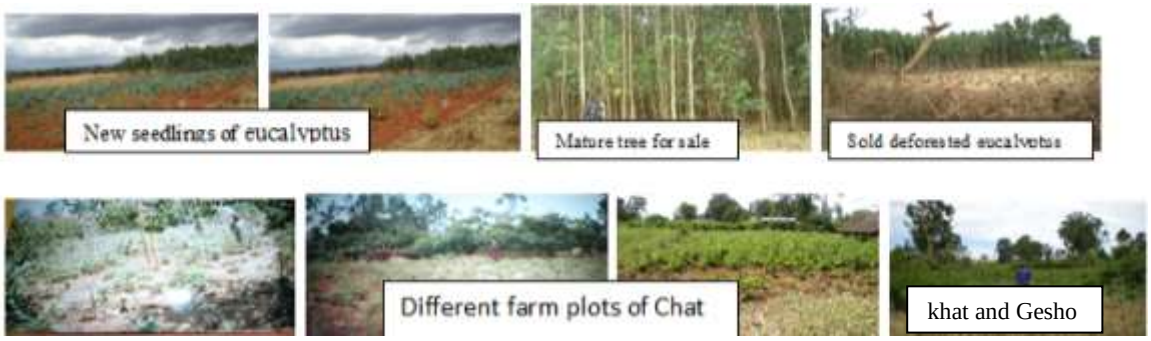
The overall non-farm and urban-rural interactions are interdependent in the form of cause-effect relationship. Poverty, electrical energy problems, natural environmental depletion and truncated URELs have systemic synergy and network in reinforcing ways. Therefore, policy makers and environmentalists need to focus such systemic problems and challenges in poor countries for saving resources, agriculture, agro-industries and the natural environment for virtuous circle URELs and overall development.

Land use conversion had created problems and risks for food crops production. The risk and challenge of URELs was the land use conversion from food crops production to non-food cash plants. Within peri-urban areas, SHFs had increasingly grown cash crops (eucalyptus trees, khat[10], Egesho[11]) instead of food crop production (Figure 5.11). This land conversion was out of the conventional development of Boserup theory[12].

[10] Locally called *chat* that is stimulant erotic plant when its leaves are consumed by people, especially Muslims.

[11] Plant also locally called 'Chat' that uses for local alcohol beer preparation with other cereals with its scientific name of Rhamnus prinoides.

[12] state population growth and land shortage could bring increasing inputs, more advanced technological use and increasing food productivity for more production intensification



Source: Field survey 2015

Figure 5.11: Landuse conversion and risk of food crops

The researcher observed that many areas were under the process of rapid conversion from food crops production into cash trees. The much uninterrupted long distance eucalyptus tree alone the road to Rebu Gebya town (about 27 km) could be one empirical evidence for the land use conversion risk in the study region. Around one-quarry areas that had dry weather road in the remote rural area, most farmlands were wholly covered by eucalyptus tree seedlings. Roads had been encouraging the conversion of land use from food crops agriculture to cash plants, mainly eucalyptus trees on non-irrigable farmlands, khat and *Gesho* tree were expanding on irrigable farmlands in the study region. Many SHFs converted their whole farmland to eucalyptus trees and khat. For example, one farmer in Dasa Enesie rural *Kebele* had planted all his fertile farmlands by khat seedlings in the study region (Figure 5.11). This informant argued that food crops and other vegetables gave only annual incomes whereas khat could bring daily income. Informants stated that some SHFs were daily labourers and employment seekers in urban centres.

The researcher observed that this farmer had better living standard and good social status as compared with other SHFs in the surrounding. The farmer argued that he had diversified livelihood strategies such as rearing of animals and production of crops. DA workers in the study site confirmed that there were many rapid conversion agricultural lands to cash trees in many rural *kebeles*. They confirmed that lack of modern rural agricultural inputs and infrastructures with the absence of value chain and agri-business were the main causes for farmland degradation. Farmland degradation also paved a way for landuse conversion as a copping mechanism for SHFs (Figure 5.12).

Source: Field survey 2014

Figure 5.12: Cash trees marketing at DMT

Production of Khat was changing the feeding habits (chewing khat) of urban people, mainly youths. According to informants, khat consumption had mostly negative socio-economical impacts of exacerbating poverty and social ills: conflict and criminal activities. Informants argued that khat created social problems such as addicted youths who were chewing Khat for long leisure time and this situation led them for unemployment and health problems. It is confirmed that the huge trade imbalance and threat of famine in Ethiopia is due to replacement and loss of food crops production and expansion of cash crops such as chat, coffee, flowers (EEA 2005:57).

The other consequence of landuse conversion was the risk of agro-industrial raw materials. Food crops production are the basis of food agro-industries development, but the landuse conversion created negative effects on food crops wheat and nigerseed production for SFI and NOIs. Land use conversion; on the other hand, has advantages of supplying eucalyptus trees to sawmill lumbering in DMT (Informants 2015).

It can be concluded that the non-agricultural economic activities and landuse conversion had negative impacts for raw material production and URELs in food crops. The non-agricultural economic activities: Chaorcoal, manure, residues and firewood have negative

cyclic effects on agriculture, environment and URELs. Landuse conversion from food crops production such as wheat and nigerseed to cash plants of khat, *Gesho* and ecualpytus trees had created food scarcity by weaking URELs.

5.4 BPLs and FPLs of agro-industries

All sample NOIs in DMT were categorized under micro and small-scale manufacturing industries (MSEs), while SFI was categorized in medium and large-scale industries. This category was based on the criteria: capital limit, power driven and index of ten employees. The capital limit of 20000-500000, power driven and less ten number of employees is categoried as MSEs and otherwise medium and large scale industries (CSA 2010:21). Based on these criteria, the study town DMT municipality had demarcated industrial zone in southeastern part of the town with some infrastructures such as electric power supply and gravel road. A few sample NOIs (56%) and SFI were established in this industrial zone. Most industrial investments; however, in this town were not capable of promoting agro-industrial development though there were many beginnings: electric automobile industry, ongoing flour industrial construction of GAU. One key informant stipulated that challenges and barriers of industrial development at DMT as follows:

> There were many proposed industries at DMT: flour and pasta-Macaroni industry, electrical car industry, and plastic factory. However, none of them has begun their production. I do not know the hidden factors behind the projects though hinterlands and East Gojjam zone have endowed with high potential and actual natural resource (conducive climate, productive soil for different crops, variety of plants and animals, water resources of many rivers and streams including the Blue Nile). The region has also high industrial crops production such as wheat, maize in Debre Elias, Basoliben. Sinan, Machakel and half of Gozamin are rich in nigerseed and potatoes production. Gozamin, Basoliben, Aneded and Awabel as Shebelberenta are famous in *Teff* production and Blue Nile basin has great potential in oilseed production such as sesame. Sinan district is rich in huge forest resource mainly Juniper and eucalyptus trees. Furthermore, these regions have cheap labour force.

It may be concluded that conducive natural environment and resources of a region alone could not bring virtuous circle URELs. Thus, policy-makers and development actors have to create enabling environment in policy, governance and institutional settings for linking and bridging agriculture-industry in URELs. Accordingly, Dorosh, Schmidt and Admasu

(2012:35) assert that government regulatory and financial policies need to be friendly with small and medium enterprises for their starting and scaling up. These authors also confirm that the country's transformation has been retarded due to very slow development of industrial sector, unbalanced development approach on transformative sectors, mostly nature dependent and poor development infrastructures.

Agro-industries had a number of problems related with policy, institution, governance, infrastructure, and culture for their BPLs at DMT. Informants pointed out that for industrial production and development had key problem of electric power supply. Apparently, the region had chronic shortage and unreliable supply of electric power similar to the rest of the country. They further complained that electrical energy interruption, lower power supply and energy consumption-based taxation were common problems for agro-industries and further processors such as bakeries at DMT. The researcher counted interrupt of electrical power for 10 times (seven times during the day and three times during the night) on 23/03/2015. This situation indicates that the high magnitude of electrical power problem and challenge for all technologies and agro-industrialists in the study region in particular and Ethiopia in general. In line with this finding, availability, accessibility and cost of energy were critical challenges of agriculture and agri-business development in many LDCs (Rodgers 2012:30). The following section presents challenges and problems of BPLs and FPLs in SFI.

5.4.1 BPLs and FPLs of Selam flour industry (SFI)

BPLs and FPLs of SFI faced complex challenges and opportunities. Informants confirmed that in the BPLs of SFI processed 240 qt each day. The government and the local market were providing wheat for this industry. In other words, SFI was working under mixed economic system (closed and open). The government was supplying about 120 qt per day imported wheat in a controlled market and SFI was buying 120 qt each day from disintegrated local markets (SSFs, assemblers and wholesalers) in open market (Figure 5.13 and Figure 5.13).

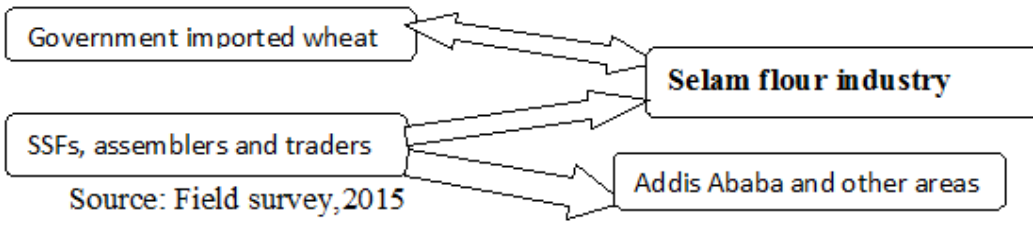


Figure 5.13: Disintegrated BPLs of SFI

BPLs of SFI had no grantee and sustainability either from the government imported wheat or SSFs[13] and traders (Figure 5.13). This lack of sustainable and scale economy approach for BPLs has increasing cost on the value chain and consumers. The researcher saw a letter that stated the termination of government imported wheat supply in January 2015 written to SFI. The government; however, had again started its imported wheat supply in February 2016. In such inconsistency and discrepancy of the government BPL to SFI, the sustainability and feasibility of URELs was a problem for SHFs as well as for the agro-industry due to the government's wheat supply intervetions without giving pre-awareness. Consequently, SFI was collecting every possible available wheat from disintegrated local markets that exposed the industry for unable to use the advantages of scale economy 240 qt per day and about 86400 qt per annuall in its BPLs (Figure 5.14).

Source: Field survey, 2015

Figure 5.14: SFI collecting BPLs from any possible source at DMT

Key informants' interview indicated that SFI collected raw materials from disintegrated sources with different prices: 800 birr per qt from SHFs and 830 birr per qt from traders at DMT. This discrepancy of URELs of wheat value chain had great regional and national multiplier effects. Informants further complained that though SFI had the ability

[13] SSFs (Small-scale farmers) is interchangeably used with SHFs (Small holding farmers).

to access directly to raw materials from SHFs and had modern warehouses with a storage capacity of 2.5 million qt, the absence of enabling environment prohibited SFI to have sustainable URELs and regional development (Figure 5.15).

Source: Field survey 2015

Figure 5.15: SFI warehouse and the industrial site

Informants complained that the government continually enacted a numbers of rules, laws, institutions, proclamations, usually against the national constitution for industrial development in the country. For example, the government developed new proclamation stating any industry not to hoard greater than 25% of its business capital (FNG 2014:7331). This proclamation prohibited SFI from using the advantages of its scale economies in input-output. Informats further complained that the current government used most institutional and legal settings for dejur and defacto discriminations on SFI without empirical application in other regional states in Ethiopia. They argued that implementation of electrical energy-based tax system for any power driven industry only at DMT was an empirical evidence for discrimination and biased situation.

Informants stated that the government paradoxically worked against the domestic production linkages of agriculture, agro-industries as well as URELs. Though large number of domestic wheat about 3175538 qt in the hinterlands was available in the study region for agro-processing, the government imported wheat supply for domestic SFI

within closed market system. This imported wheat supply against availabile and domestic wheat was not clear for everyone. According to these informants, the current government was working similar to the local proverb 'the child of Nile River faced critical water thirsty'. DMT dwellers had suffered from shortages of flour and bread within truncated URELs and value chain. This means, although there was surplus domestic wheat in the study region, the government supplied imported wheat for SFI. This was a paradox for SHFs, SFI, and vicious circle URELs for overall regional development. In line with this finding, available manufacturing industries and agricultural inputs are made to be import-dependent (Getnet and Mehrab 2010:11 and EEA 2005:43).

Most of the surrounding local wheat were being transported to the capital Addis Ababa and/or other places bypassing DMT due to poor scale economy and government intervention in supplying imported wheat for SFI (Figure 5.16).

Source: Field survey 2014

Figure 5.16: The paradox of wheat domstic bypassing and imported utilization in SFI

URELs in DMT had challengs and problems due to governnce problems. Informants pointed out that SFI did not buy wheat regulary in large-scale economy. As a result, they stated that they were selling the local wheat mainly to the capital and/or other competitive places in the country and in some situations to SFI at DMT (Figure 5.16). This implies that the government's imported wheat and lack of enabling environment are important challenges and obstacles for URELs facilitating bypassing effects at DMT. The local wheat is usually exported to other regions (like Addis Ababa) like that of NOIs and nigerseed's export paradox (Figure 5.16 and Figure 5.28). Therefore, most of domestic wheat products, value added, and multiplier effects of employment, income diversification and other multiplier opportunities were captured in other regions as backwash effect to this study region. Douglas (2006:149) also confirms that vicious circle backward and forward production linkages between urban centre and its hinterland is the

greatest limitations for higher disparities in value added between small urban and core metropolitan regions in Indonesia. Hence, most production has been transported to ports for shipment. Alkire, Conconi and Seth (2014:5) also argue that Ethiopian peasants do not get their right price during their surplus production as happened in 2002 bumper harvest of 80% price drop.

SFI products passed through different stages.These stages were grading, cleaning, soaking (at 46^0c), grinding and milling with some bleaching agents for final flour with flavour and salt before packaging and distributed (Figure 5.17).

Source: Field survey 2015

Figure 5.17 SFI stage of wheat industrial processing

In the closed market, the government provided imported wheat to SFI for price of 500birr per qt. Whereas, SFI provided flour back to the government orders in a fixed price of 851.85 birr per qt under the control and supervision of consumer association[14] and east Gojjam zone industry bureau at DMT. The government provided about 120 qt wheat each day for SFI. SFI was buying 120 qt wheat from fragmented markets of SHFs, traders and assemblers. And then, it was selling wheat flour for 1200 birr and 1170 birr per qt in retailing and wholesale, respectively in the shop (December 2014-April 2015) (Figure 5.18).

[14]also called consumers association but government institution for controlling agro-processing (flour industry, bakeries, NOIs), sugar and fuel within regional government fixed price and distribution as well as making profit.

Source: Field survey 2015

Figure 5.18 SFI open market shopping centre

The shop was not adequate for scale econmy of SFI that was producing 240 qt each day (Figure 5.18). Under such different problems and challenges however, SFI had better TE, AE and EE than NOIs at DMT in the existing situation (Table 6.25). Computation of value added and gross return of SFI discuss value added and gross return in closed (government supply and control) and open markets.

A. Value-added of SFI in the government closed market system

Based on the interview discussion with key informants, the government was providing 120 qt imported wheat each day for price of 500 birr per qt and SFI provided processed

wheat (flour) for price of 851.85 birr per qt back to the government. According to the discussion on value adding of SFI, the average final output of one qt wheat has 78 kg flour, 20 kg *Furishica* as residue and two kg waste (mud, sand, metals and other residues). The value added of SFI in command economic system was computed as follow:

I/ Inputs (wheat) price per qt=500 birr per qt (Imported wheat price)

II/ Output market price=flour + furishca (residue) cost=0.78 qt*851.85 birr+ (20*3.5) birr=664.44 birr+70 birr=734.44 birr per one qt.

III/ Value added (VA) =output price-input cost=734.44-500=234.44 birr per qt and 234.44*120=28133.16 birr per day.

B/ Value added of SFI in the open market

SFI sold its output in three different prices: contract, wholesale and retail. SFI had different prices considering scale economy and services and it was selling one qt wheat flour at 1249, 1200 and 1170 birr per qt flour for DMU, retailing, wholesale (bakeries) respectively. The researcher used the common retailing 1200 birr per qt price as intermediate and appropriate price evaluation for value adding in open market (market price in 2014).

Given: Input cost was 800 birr market price for SHFs during the survey period.

I/Inputs (raw material) price=800 birr per qt and 800*120=96000 birr per day

II/ Output market price=0.78*1200=936 birr and 20 kg (Furishca)*3.5=70 birr per one qt wheat, then, 936+70=1006 birr per qt and 120720 (1006*120) birr per day.

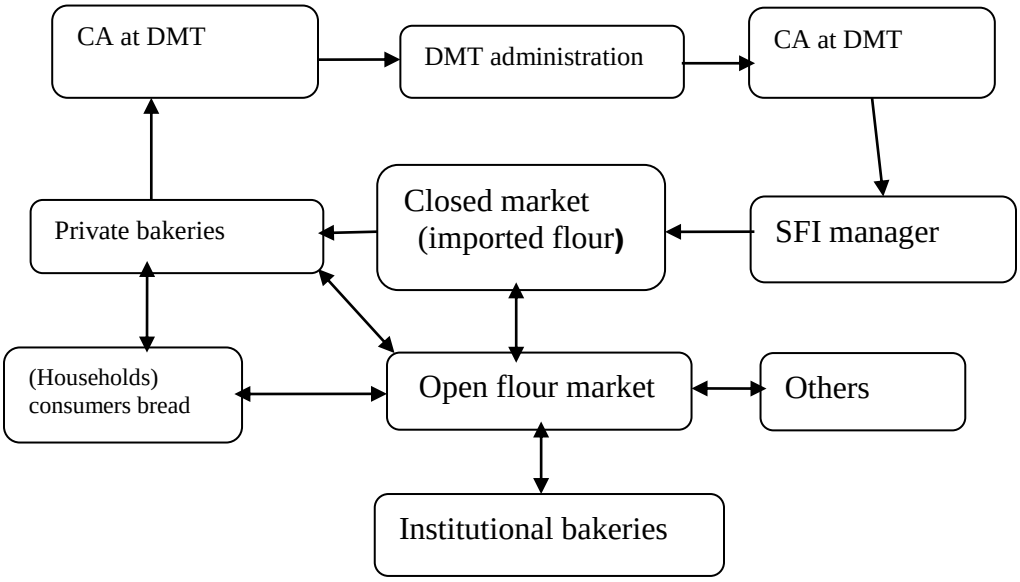
III/ Value added=1006-800=206 birr per qt, 206*120=24720 birr each day.

C.Total gross value added of SFI=closed market value added+open market value added =28133.16+24720=52853.16 birr per day and 19254406.188 (52853.16*364.3) birr per annum

SFI seems feasible without considering other internal and external situations. In comparison between closed and open markets, SFI had more value added advantage in the government-closed market (234.4 birr per qt) than open market (206 birr per qt). In wheat value chain, SFI had diversified economic and social values and multiplier effects for regional development such as value adding and market expansion for wheat (farmers); flour supply for public and private bakeries, restaurants and individuals; employment

opportunities (14 employees) and the development of animals husbandry (mainly livestock, sheep, hens) by providing fodder (*furishca)*. These cumulative causation and multiplier effects for regional development were some of the deriving factors for URELs in particular and integrated development approach in general.

Bakeries were the only intermediate actors of SFI flour for bread baking. Similar to SFI, the private bakeries were working under both closed and open markets in wheat value chain for further processing and value adding. There were no other intermediate firms with SFI for macaroni and pasti for end users in DMT. There were ten private and six public institutional bakeries and regular customers for SFI at DMT. Similar to SFI, informants claimed that bakeries had both closed and open market. The government controlled its subsidized imported wheat's value chain through its agent consumer association (CA) at DMT. CA had been distributing average of two qt flour every day for each private bakery (Figure 5.19)



Source: Developed from field survey data 2014/15

Figure 5.19: Bakeries lengthy bureaucracy in closed market system at DMT

In the closed market of government imported wheat, private bakeries at DMT had to pass long bureaucracy (minimum five phases) starting DMT consumer association (twice the consumers association) in the pattern of DMT administration, then, SFI manager and finally SFI warehouse to get imported wheat flour for each average 60 qt per month.

District capitals in East Gojjam zone were participants in the closed market system. On the other hand, public institutions, others (restaurants, hotels), urban dwellers and private bakeries had been buying flour in the free market. Private bakeries at DMT did not have enough flour in the closed market and participated in the open market (Figure 5.20). Private bakery owners stated that they had been processing four qt flour each day in the present environment. They further described that if other things kept constant (such as electricity and flour supplies), they would process average eight qt flour (6400 bread of 150 gm type) each day with additional five employees in each bakery at DMT.

In wheat value chain, institutional bakeries had only open market access with SFI. Debre Markos University (DMU) had six baking machines, 14 employees in the form of association for the production of 17600 breads of 150 gm weight from 22 qt of flour per day in similar manual and labour-intensive baking technology to private bakeries at DMT (Figure 5.20).

Source: Field survey, 2015

Figure 5.20: DMU bakery materials and processing

Informants pointed out that DMU bakery institute created greater market opportunity for SFI. DMU made one-year contract agreement in the open market system with SFI to buy one qt of wheat flour in a price of 1249 birr including transport services. SFI gained gross return from DMU 449 (1249-800) birr per one qt flour for a total of about 3595592 (22*449*364) birr. Consequently, public bakeries were also key stakeholders and actors

in wheat value chain and wheat agribusiness development with cumulative causation and multiplier effects. The university bakery produced 840 loaf of breads from one qt but the private informats argue that one qt flour could be 800 bread of 150 gm loaf.

Informants revealed that there were high scarcity important food commodities such as flour and bread, oil and sugar. Bakery owners stipulated that the reason for bread related problems were regular electrical power interruption, lack of enough and sustainable supply of imported flour and/or free and competitive open flour market at DMT. CA informants pointed out that bakery owners were selling the public flour at a profit of 348.15 birr per qt in the open market without processing into bread locally called 'air by air business'. As a result, bakery owners were causing critical shortages of bread supply in the town. The bakery informants; however, argued that the government fixed the price of bread 1.80 birr for 150 gm loaf of bread when one qt of flour was 750 birr. Whereas, the price of one qt SFI's had increased to 851.85 birr per one qt, still the price of the same bread remain 1.85 birr. Bakeries further argued that CA was taking most imported flours for its businesses rather than distributing for private bakeries and urban community. Though the debate between bakaries and CA was discussed, it needs further research for unlocking the hidden knowledge.

Informants and the researcher observation confirmed that bakeries had not developed sustainable coping mechanism for problems at DMT. Private bakeries used time shift strategy in baking (usually at night) for the problem of lower electrical power supply during the day. However, they had no any copping mechanism for unexpected electrical interruption for a day or may be weeks. Only one bakey had used firewood alternative to electrical energy problems at DMT. These informants complained the destructive effects of electric power interruption for wastage of dough. The dough would be over-fermented, lost its quality, and exposed for additional production cost. Multitude problems associated with the bakery industries had led to illicit use of electric power and poor quality and quantity of bread baking. One bakery owner explained that the electric power authority gave one phase electric power (5 KW) for his power demand of 27 KW electrical power supply. However, he was caught as ‘red-handed’ using that 27 KW wire

electrical energy supply and punished 2000birr at DMT in 2015. This implies that electrical energy supply is bottleneck challenge for electrical machines such as bakeries.

One informant complained that government officials, CA and government imported wheat in closed market system had created problems and challenges on private bakeries and the community. He further explained that the government officials closed his bread-baking license without any reasonable justification. This implies that legal license has no grantee for value chain production in the study region. Some bakeris and oilindustries were stopped their processing within such challenges and problems (Figure 5:21).

Source: Field Survey 2015

Figure 5.21: closed bakery house around Abima Church at DMT

There was no technological difference between private and institutional/public bakeries (like DMU) and all had the same type of baking machine, dominated by manual work (Figure 5.22).

Source: Field survey 2015

Figure 5.22: Private bakery materials and processes at DMT

Bread baking at DMT was labour-intensive in both private sectors and government institutions. Most of the works were doing their work by labour force except mixing of

flour for dough (Figure 5.22). Hence, the private small bakeries had a minimum of four employees and average of six employees (Informants and document 2014). Based on their information stated below, value added and value share of private bakeries were computed as follow. They baked four qt flour averagly with in 24 hours (every night). However, informants confirmed that they had been working under mixed market similar to SFI. Based on the commonest private bread type (150 gm) at DMT, there was variation in quantity and quality between private bakeries and institutional bakeries (like Debre Markos University). Based on discussion with informants, one qt flour could have about 800 breads at 150 gm type loaf of bread and private bakeries, respectively.

Transformation and value added (flour to dough) per qt flour (100 kg=100000 gm) could be calculated as follow: 100000 gm/150 gm=665.67 (about 667) breads per qt without mixing water and transforming to dough. Thus, private bakeries got additional value weight per qt flour in transformation of flour into dough as (800*150)-100000=20000 gm weight water and salt in the dough or 133 (800 breads-667 breads) breads of per qt since one qt flour could have the average 800 loafs of breads (for 150 gm) in private bakery. Thus, value added by transforming flour into dough is 133*1.85=245.04 birr per qt flour and 984.16 birr per day (average four qt flour each day baking). The value added of bakeries was computed in the following way based on the above informants' data in mixed economic system.

A) Value added of private bakeries in closed market:

I/Input cost=852.85 birr per qt, 1706.7 birr per two qt each day of each bakery and 17057 birr of all ten private bakeries each day.

II/Output cost= (800*1.85) =1480 birr per qt flour, each bakery per day=2960 birr per two qt and all ten bakeries per day=29600 birr.

III/Value added in closed market=output cost-input cost per qt=1480-851.85=628.15 birr per qt, each bakery=1255.3 birr per two qt and 12563 birr all ten bakeries per day.

B) Value added of private bakeries in open market

Bakery owners filled the gap of two qt flour from SFI at free market of 1170 birr (with 30 birr price discount for scale economy).

I/Input=1170 birr per qt

II) Output=800 breads *1.85 birr=1480 birr per qt.

III/ Value added=1480-1170=310 birr per qt, each bakery per day=620 birr per two qt and 6200 birr all ten bakeries per day at DMT.

C.The total value added (TVA) of private bakeries:

TVA =closed market value added + open market value added

=1255.3+620=1875.3 birr each bakery per day, 468.825 birr per qt, 56259 birr per month and 675108 (56259*12) birr per annum. Thus, all ten bakeries could make value added=18753 birr per day, 562590 birr per month and 6751080 birr per annum under the existing situation.

Consumer informants complained that there had no sustainability in bread: supply, price, types or diversity (only 150 gm bread), quality and quantity. They confirmed that bakeries added more salt and mixed with other ingredients for increasing weight of the bread for more private making profit. Some other informants claimed that the bread had seemingly large size due to powerful yeast and/or not keeping baking period. Based on informants' data, the author measured all bakeries' commonest 150 gm bread weight, taste, softness with two urban dwellers. As a result, all ten bakeries' breads had variation in weight: 120 gm, 140 gm, 145 gm and 150 gm. These breads also had variation in tastes: sour, salty, and neutral. The texture variation ranges of these breads were rough, intermediate and soft. Private bakery owners also argued that the reason for different weight of bread was due to the manual guess for each bread amount from dough.

The researcher however, did not find any bread, which was above the standard 150 gm weight from all sample 10 bakeries at DMT. One may realize that private bakeries need some types of training and consultation with monitoring and evaluating for competitiveness with healthy and fair community services.

It is also observed that one private bakery put dough, locally called 'Buko' in qts for night baking bread in unsanitary and inappropriate environment (Figure 5.23)

Source: field survey 2015

Figure 5.23: Physical quality comparison of private and DMU doughs respectively

According to one expert informant, "The prepared dough should be discarded as useless after a maximum of 12 hours and the quality of bread deteriorates with increasing time after 1:00-1:30 hours stay". The implication is that there should regulatory framework and supervision for private bakery processes to safeguard bread quality and consumers' health. Considering DMU dough as normal standard, the physical colour of DMU is white while that private dough is physically grey color which may have other ingriedients that need further research (Figure 5.23).

On the other hand, informants stated that they had problems of access and shortage of bread and wheat flour at DMT. Queues of people were common for obtaining bread at some critical periods (Figure 5.24).

Source: Field survey 2015

Figure 5.24: queus for bread at DMT

Bakeries did not provide enough number and varieties of bread for consumers. The irregularity of bread supply and complete absence for some days in the town was common. Bread consumers suffered from long queues to get limited number of breads

shops (Figure 5:24). The pattern of wheat, flour and bread had shown increasing prices (Table 5.4).

Table 5.4: BPLs and FPLs of SFI and wheat value chain

Months	Wheat (birr/Qt)	Flour (birr/Qt)	Bread (150gm/birr)
Sep-Dec 2013	620	796	1.10
Jan-Mar 2013	650	1120	1.30
Apr-Jul 2014	750	1150	1.80
Aug-Sep 2014	930	1230	1.85
Oct-Dec 2014	800	1200	1.85
Jan-Feb 2015	850	1200	2.25* and 1.85
Mar-Apr 2015	800	1200	1.85
May, 2015	750	1200	1.85

Source: Field survey 2014 and 2015

The price increment and fluctuation of wheat supply and government closed market system created problems in wheat value chains, mainly for end consumers. However, decreasing price of wheat in the open market (Oct-April 2015) did not correspondingly decreasing price of bread and flour value (Table 5.4).

The interruption of government imported wheat supply resulted in market failure: shortage of bread and price rising. In February 2014 for instance, bakery owners raised the price of a loaf of 150gm bread from 1.85 birr to 2.50 birr during 2 weeks market failure at DMT as opportunity of market. Their value added within these two weeks was computed as follows:

I/ Input cost per qt=1170 birr

II/Output cost per qt=800*2.25=1800 birr per qt flour

III/Value added/gross return=Output-Input prices=1800-1170=630 birr per qt and average value added=630*4=2520 birr per day and 35280 birr with 14 days of each bakery. Then, total ten bakeriesvalue added=352800 birr within 14 days.

Additional value added from the normal (open+mixed) value added in DMT =630-468.825=161.175 birr per qt, each bakery per day=644.7 birr (161.175*4 birr) and all ten bakeries per day=6447 birr and 90258 birr within two week.

The government's interruption had created 90258 birr advantages for bakeries, raising of domestic wheat price from 750 to 800 birr for SHFs and burdens for consumers. On the other equilibrium, the government-imported wheat negatively affected SHFs' domestic wheat and URELs. In conclusion, both the government imported wheat (closed market system) and its interruption for full open market created disequilibrium URELs with unexpexted opportunity and damages on actors in the value chain. In sustainable URELs, all actors could have opportunity and benefit by changing place (traders), time (scale economy and wharehouse storge) and transforming form (SFI and bakeries).Value added could be either in the process at each level change in place, time and form or in any combination in URELs and value chain (Coltrain, Barton and Donand 2000:17).

CA was established by the community for community services. However, AC was serving for the government's business-making agents in collaboration with district agencies in the closed market system. The profit and value added of AC in wheat value chain was computed as follow. Informants stated that in the closed market system, AC had received the imported wheat flour in the closed market from SFI at a price of 851.85 birr per qt. Then, it sold to consumers at 1196 birr at the different DMT administrative *kebeles.* CA had been given the responsibilities of controlling and distributing imported wheat flour for bakeries and oil. By using the proxy of government imported wheat given for SFI (120 qt wheat per day), total profit of CA without any value added was computed as follow (based on SFI data for flour as one qt wheat has 78 kg flour, 28 kg furshica and the rest waste):

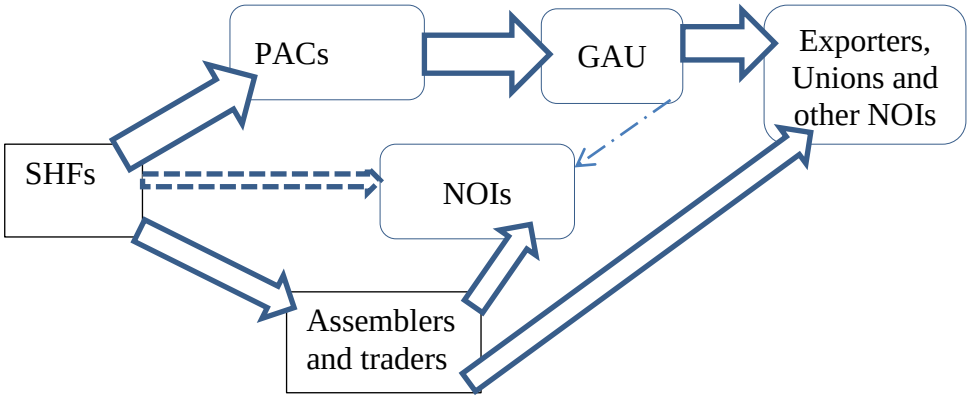
1. The government-imported flour=0.78*120=93.60qt per day
2. Ten private bakeries were given 20 qt (each 2 qt) imported wheat flour per day. Hence, the remaining imported flour for consumers association=93.6-20=73.6 qt flour per day.
4. Profit of AC=1196-851.85=344.15 birr per qt, 25329.44 (344.15*73.6) birr per day and 759883.2 birr per month, 9118598.4 birr per annum in DMT.

In short, CA was accessing the lionshare gross return of wheat value chain without any value adding in the chain. Comparing the gross return with the main actors in wheat value chain, 344.15, 234.443, 468.825 and 516.77 birr per qt were the gross returns of CA, SFI,

bakeries and SHF respectively in wheat value chain in the study region. This implies that AC had greater gross return than SFI in comparing per one qt flour. Furthermore, the overall gross return per annum for CA, SFI, bakeries and SHF were 9118598.4, 19254406.188, 675108 and 18566.7 respectively. The government business agent AC obtained larger annual gross return than bakery and SHF who were the main actors for adding value of wheat. This implies that the main actors of wheat value chain were not benefiting from the return and this may be one cause for vicious circle URELs.

5.4.2 BPLs and FPLs of Nigerseed oil industries (NOIs)

Nigerseed production has high potential opportunity since it was produced without government agricultural extension support, inputs, proper farm management and Melaku's experimental 14 qt per ha output in 2013. In the existing situation, about 62586 qt nigerseed were produced in 2014 in the study region (Table 6.8). Informants explained that NOIs had fragmented sources nigerseed with little direct linkages to nigerseed SHFs. As a result, they had not been using the advantages of scale economies in both BPLs and FPLs.



Source: Adapted from field survey data 2014/15

Figure 5.25: BPLs of NOIs at DMT

NOIs had weak linkages with SHFs, PACs and GAUs in the study region. NOIs had also obtained nigerseed in tough competition with assemblers and the government business agencies such as Ambasel trading, Guna and private exporters (Figure 5.25). Most SHFs (46%) sold nigerseed to their PACs, 30.8% to local traders, 11.8% to local market assemblers[15] and consumers, 11.3% directly to NOIs (Field survey, 2014). Traders had

[15] Are informal traders,usually any of the family members.

been collecting nigerseed from individual SHFs and they had been transferring to either exporters or agro-processors by using the advantages of scale economies. They confirmed that they were selling their collected nigerseed from SHFs to the capital Addis Ababa for export traders and/or larger NOIs for the advantages of scale economy (Figure 5.26).

Source: Field survey 2015

Figure 5.26: Nigerseed traders at DMT at DMT

Traders in DMT argued that collecting nigerseed from fragmented individual SHFs is exhaustive and tiresome for agro-industries. This implies that policy-makers and development actors need to work for SHFs and the agro-processors to have the advantages of scale economy by clustering SHFs' fragmented farmlands. Industrialists complained that there was no any enabling environment and facilities in the vertical and horizontal linkages of their agro-industries due to mainly the government-induced problems and challenges. These challenges and problems of industries were exporting oilseeds without value adding, unique taxation burden on NOIs based on electrical kilowatt (KW) consumption rather than profit, industrial infrastructures scarcities, absence of appropriate policy and local governance. Concerning unfair taxation system, NOIs' informants contended that the government used not only wrong taxation basis of KW-based taxation but also similar taxation system for different value adding and capacity agro-industries (SFI and NOIs) at DMT. SFI had better scale economy (240 qt per day) than NOIs (average 2.22 qt nigerseed per day). Consequently, NOIs-industrialists had faced unbalanced raw material increasing prices (Table 5.5).

Table 5.5: Unbalanced BPLs and FPLs of nigerseed

Months and years	Niger seed (birr/qt)	Nigerseed oil (birr/littre)
Sep-Nov 2013	750	38
Dec-Feb 2013/14	850	41
Mar-May 2014	950	46
Jun-Jul 2014	1200	46
Aug-Sep 2014	1250	50
Oct 2014	1500	50
Nov-Jan 2014/15	1700	50-65 (slowly changing)
Feb-May2015	1700	70
June 2015	2000	74

Source: Field survey 2014 and 2015

The government's open market on nigerseed and closed market on NOIs' output edible oil created imbalance between BPLs and FPLs of NOIs and nigerseed sources. Informants concluded as, 'how can SFI and NOIs have the same taxation system let alone

uniquely from all Ethiopian NOIs at DMT'? (Table 5.5). The government failed to coordinate and bridge agriculture-industry production linkages for regional, national and global value chains (GVCs). Thus, market instability and failure of NOIs value chain was the result of lack of good governance.

The government determined the price of domestically processed nigerseed oil and it was also importing cheap palm oil that could create domestice nigerseed market failure (Table 5.5 and Figure 5.27).

Source: Field survey 2014 and 2015

Figure 5.27: The queus and crowds of people for imported palm oil at DMT

A large number of urban people had been crowded to obtain imported palm oil in 03 kebele at DMT. Consumers did not directly buy imported palm oil in the open market. However, consumers should fulfil some criteria such as availability of kebele ID, AC membership card and coupon (Figure 5.27).

Similar to flour control and distribution, AC had a management and distribution role on palm oil in DMT. Informants explained that the problems of edible oil market failure for the mismatched between demand and supply was the deliberate act of the government for

running its own businesses. One CA committee argued that each members of CA had paid 65 birr for the establishment of this association. There were 1800 household members for 13000 littres of palm oil supply per month for 03 *kebele* in DMT. He stated that there was no oil problem and each household could take up to six littres. Based on this committee's data, each household had the right to obtain a minimum quota of 6.22 (13000/1800) littres. However, informants complained that there was critical oil shortage in the *kebele* and each household was given three littrees palm oil individually and 20 littres in a group of five households. One informant stated that she was recorded in the list for about two months ago but she did not yet obtain any palm oil. She explained her problem as follow:

> I have one-month child and coming and returning is a problem. The maximum limit for all these crowd is three littres and how can we live in such market failure. The consumer association committee did not serve for us but their own black market with political administrators. The government should give for private traders as in the previous rather than letting us to suffer in such crowed and long waiting situation every month. This is because there are risks of transmitted diseases through breathing, contact in such crowded gathering. Where can we appeal our problem? There is no government official who can listen our troubles and problems. We are poor to buy nigerseed oil at the price of 74 birr per littre from NOIs but this palm oil 24 birr per littre is affordable for our purchasing power though the quality and the taste of nigerseed oil is better than imported palm oil.

The AC informants and consumers had contradicting views and information. Thus, I observed 03 *kebele* two times at DMT for rechecking the contradiction in palm oil demand and supply. The researcher found that the crowed of people who were waiting their turn were complaining and appealing many problems to me as if the researcher were the concerned official. The crowd had serious to the extent of breathing problems and suffocation especially for mothers with infants; pregnant women and elderly people. The researcher confirmed that the supply of palm oil was 1.5, two or three littres in packed small plastic oil container or the larger 20 littres for five households in group with 2 and 1.5 littres for individual households (Figure 5.27).

Finally, the diffences of CA and consumers was concluded that AC had not provided 7600 (13000-3*1800) littres' palm oil every month to consumers since the maximum palm oil for one household was three littres in 03 *kebele* at DMT. CA was found a

lionshare business in imported wheat without its own value added in wheat chain. Similarly, it acted as the government business agent in the 'so-called' name CA. This again implies that the shortage of palm oil and market failure in 03 *kebele* was related to lack of appropriate distribution of the imported palm oil quota to each member household. Generally, the imported palm oil was area of conflict and corruption with many challenges and problems on: domestic nigerseed production, NOIs forward linkages and market failure, citizens overcrowds and sufferings (Figure 5.27). Though the full spectrum of the problems needs further political economy and governance research, good governance, institutional framework, clear industrial policy and practice are important issues of consideration for policy makers and key actors. In the literature, the LDCs infant industries have failed to compete with MDCs influence. Empirically, European's policy of selling subsidized beef to the nations of West Africa has devastated cattle marketing in those countries (Todaro and Smith 2012: 621,626). Similarly, Satterthwaite and Tacoli (2006:170) and Tacoli (2007:48) argue that MSEs have not had the capacity and information to identify bottlenecks, innovation, and advantages of scale economy and compete with cheaper imported goods in the African context. Consequently, these authors recommended that strategic openness supported by policy and institutional settings are key factors for these infant industries.

NOIs at DMT had simple stages of processing nigerseed: cleaning, milling outputs of edible oil and by-products and their problems needed further training and support (Figure 5.28).

Source: Field survey (2015)

Figure 5.28: Stages of processing and output storage system of NOI at DMT

Obsolete[16] equipment with poor sanitary situation and low capacity and efficiency were some features of the NOIs at DMT (Figure 5.28). One informant explained the problems and challenges of under capacity and poor efficiency of NOIs at DMT in the following way:

> I have no any other additional or alternative occupation. My family and I have depended on this edible oil processing. However, the critical imbalance of inputs availability and industry's output price (market failure) by the government intervention made the processing in loss rather than profit. The price of oilseeds is usually increasing but the prices of our nigerseed oil with high quality and nutritional value has fixed price by the government. There is no any enabling environment for input-output scale economy (like government storage limit). Generally, NOIs are made to dedevelop by the government at DMT. The government will close all the domestic NOIs by mismatching the input-out prices, fixing edible oil price, exporting oilseeds with sanctions not to process, rules and regulations of hoarding 25% of the total capital and unique KW-base tax burdens. If the government were truly stand to benefit the community, it would not export oilseeds and keep the imbalance of URELs of the whole nigerseed value chain without fair competition. Hence, how can we bring technological and industrial development and why do we need to upgrade our obsolete edible oil agro-processing industries? I am sure that unless there will be a solution to such problems on edible oil industrial environment, all the industries will be closed in the near future.

[16] traditional and backward technologies without up to date technological change or upgrading.

Many challenges and problems on agro-industries resulted in poor business and marketing. Some NOIs industrialists had stopped and terminated their processing at DMT since 27 March 2014 (figure 5.29).

Source: Field survey 2014

Figure 5.29: NOI that was stopping its processing at DMT

I was fortunately around NOI on the closing date 27/03/2014 in DMT for data collection and data rechecking. The owner emotionally explained the situation of agro-industrial activity as follow:

> I have no other employment option and my family and I will be starved but I do not have other option except closing the edible oil. This is because I have lost a lot and I am now without any left additional money to continue in loss, as the price of nigerseed is 1700 birr per qt while the government fixed the price of oil to 50 birr per Littre. Our input-output is clearly documented and known as our profit from one qt nigerseed that has an average of 27 litres of oil and 60 kg oilcake. You can calculate my losses. However, the government has knowingly and deliberately fixed output price of nigerseed oil without balancing the inputs cost. It should be a deliberate avoidance of my NOI from the system. Though I cannot go more than this in loss but, but…without any other option that I do not know what to do.

The researcher calculated this informant's data and obtained 1560 birr (50*27+60*3.5) per qt nigerseed lower than the raw material price 1700 birr per qt nigerseed. As a result, he had 140 birr loss per qt nigerseed. This would be an indication of the climax stage of problems and challenges on sustainability of NOIs and URELs.

In the literature chapter two, the advantages of scale economy for industrial development were discussed and the disadvantages of lacking scale economy in retailing of NOIs. NOIs were only retailing to local markets at DMT and all NOIs had no modern technological system such as packaging and wholesaling activities. Thus, they lacked

using the advantages of scale economy as wholesaling. Most of the customers of NOIs were SHFs who had been buying oil in small amounts starting from 0.25 littres (Figure 5.30).

Source: Field survey 2014 and 2015

Figure 5.30: Nigerseed oil industrialists' nigerseed oil marketing at DMT

Similar to palm oil crowds in the different 03 *kebele*, informants stated that domestic nigerseed oil market had crowded people, especially during Holydays and weekends (Saturday) and NOIs serve as retailing function for the people (Figure 5.30). This implies that these agro-industries cannot compete in larger markets in national and global levels that demand scale economies. Therefore, NOIs had multi-directinal challenges and problems or risks in their BPLs and FPLs. Wijnands et al confirm that in Ethiopia, about 65% of total domestic edible oil supply was imported with 12% import growth, 25% growth of export of oilseeds and 6% growth of domestic edible oil processing. This is because of the supply of domestic edible oil has not meet the demands and consumption level of Ethiopian (Wijnands et al 2011:37). In line with this study, Wijnands et al (2011:39) confirm that Ethiopian consumers preferred locally produced nigerseed oil rather than imported palm oil. However, in the absence of scale economy in domestic industrial nigerseed and its oil, it was very difficult to compete with cheap imported palm oil. This study was also in line with the other African industrial problems and Bah et al (2006:65) confirm that local vegetable oil production by women's group in Tanzania undermined by cheaper imports under liberalization of international trade. Similarly, Satterthwaite and Tacoli (2006:176) argue that the positive roles of intermediate urban centres need to have access to international and national markets for SHFs and agro-industrialists without import competition in the infant stages of development.

Value added of NOIs was calculated based on the industrialists' information and their documents 2014 as follow. The processing one qt nigerseed had 27 littrees of oil, 60kg oilcake and 1.5kg waste (called locally *Chika)*. The average daily processing of NOIs was 2.22 qt nigerseed (60 litres nigerseed oil) and the price of one littree nigerseed oil was 70 birr. The price of oilcake had 3.50 birr per kilo (Field survey 2014). Based on this field survey data, the value added of NOIs was computed as follow:

- Input cost (nigerseed)=1700 birr per qt and the daily average 2.22 qt of nigerseed price=2.22*1700=3774 birr each NOI.
- Output market price:

  i/ Nigerseed oil=27*70=1890 birr per qt

  ii/Residue (oilcake) =60*3.5=210 birr per qt

  iii/Total output=nigerseed oil price+ oilcake price= 1890+210=2100 birr per qt, average daily market=2.22*2100=4662 birr
- Value added=Total output-input

  =2100-1700=400 birr per qt, 4662-3774=888 birr per day for each NOI and total value added of all NOIs=888*9=7992 birr per day.

The government agro-industries were working against the private agro-industries. Informants claimed that agro-industrialists and the government were conflicting in many factors: due to retail selling and wholesale production, electrical-basis taxation and in scale economy (output-inputs amount storage). The government officials argued that wholesale and retail marketing were two different works that need two licenses. According to these government officials, agro-processing license is production for wholesaling but retailing needs other license. The researcher observed the conflict of SFI and urban administrators at the flour shopping and the urban administrators temporarily locked the shop. Informants complained that enabling environment was arranged for stated-owned and political affiliated agro-industries. Ambasel agro-processing had, for example, special favour for processing sesame and exporting. The paradox is the unions such as Tsehay agricultural union provided sesame to the government business agro-industry, Ambasel. However, private NOIs had sanctions not to process or trade sesame. In line with this study, Diriba (2013:132) confirms that lack of enabling environment, technical and business skill problems, large taxes burdens, problems of rules and

regulatory procedure and lack of government support are the main constraints for the micro and small-scale enterprises development in zonal capitals of Ethiopia.

In conclusion, the following overall agribusiness of nigerseed in the study region can show the poor nigerseed farming system and agricultural infrastructure for vicious circle URELs (Figure 5.31).

Source: Adapted from field survey, 2014 and 2015

Figure 5.31: Scenarios of nigerseed vicious circle URELs in the study region

The vicious circle of URELs was the result of pre-harvest, cultivation and post-harvest system in bad equilibrium that has poor coordination of key actors (SHFs and their association and agro-industrialists) and stakholders (Figure 5:31). Similar to this study, Altenburg findings on industrial policy development in Ethiopia argue that Ethiopia's natural resources export path have a range of documented economic and political challenges in using the advantages of scale economy and trading networks. Eppler, Fritsche and Laanks (2015: ii) argue that vertically integrated businesses that follow the logic of 'network' and collaboration can develop horizontal business linkages and valuing elements of social (trust, cooperation) and environmental capitals.

5.5 Summary and concluding remarks of the chapter

URELs refer production, financial and consumption linkages. Wheat, nigerseed and their corsponding agroindustries were the basis of studying URELs. The findings indicated that they both wheat and nigerseed had disintegarted vertical and horizontal linkages of agricultural production and marketing. They had huge losses of pre-post-harvest such as wheat (1521 qt/ha) and nigerseed (351 qt/ha). The low gross production return of wheat (18568 birr/ha) and nigerseed (8720 birr/ha) from sample SHFs under the government agricultural system. However, these two food crops had empirical practice and research evidences for their high potential opportunity. For example, the partnership production of ESE with SHFs resulted in 60 qt per ha wheat for gross return of 33931 birr and production feasibility of 2.84 above the standard index. Similarly, nigerseed had experimentally proved evidence of 14qt per ha. The poor gross production return was the result of labour-intensive traditional farming system and technology, lack of R&D based agriculture and farm management. Nigerseed production had no any BPLs, agriculture extension support and poor farm management of SHFs. On the other hand, the partnership model of SHFs and Ethiopian seed enterprise (ESE) on wheat production had good role model production and productivity different from the poor government agricultural extension system.

The poor mixed agriculture led SHFs to systemic problems and challenges. They had involved in other non-agricultural income sources affecting agriculture-natural environment synergy as well as problems for URELs in the study region. In addition, land use conversion

from food crops production to cash trees such as Eucalyptus and khat had also been creating threat for URELs though sawmills had obtained good opportunities.

The main causes for vicious circle URELs (wheat and nigerseed) were government-induced paradoxes and problems on SHFs and agro-industrialists. Some of the problems were importing wheat to SFI against the surplus domestic production of SHFs. The government was exporting nigerseed and importing palm oil against the BPLs and FPLs of NOIs in DMT. Exporting of nigerseed had bypassing and backwash effects on the study region and DMT. The value added of SFI under closed and open markets were found 234.44 birr per qt and 206 birr per qt respectively with overall average value added of 220.22 birr per qt. It has 52853.16 birr per day total value added.

There were no other intermediaries between SFI and consumer in macaroni and pasti processing in the FPLs except bakeries. Private and public bakeries were other important actors in wheat agribusiness. Similar to SFI, private bakeries were found working under mixed (closed and open) economic system in the DMT. However, different from SFI, private bakeries should pass complex and lengthy bureaucracy (at least five phases) in the government closed market system. The overall gross return of each private bakery (in both open and closed market systems) was 469.075 birr per qt flour, 1875.3 birr (from four qt) per day.

Similar to SFI, the government closed market system gave the lion share and better profit (628.15 birr per qt flour) to private bakery and this profit was more than the gross returns of SFI. Queues of people for bread were common at DMT for value chain's failure.

In nigerseed optimistic model, it will be possible to develop the potential opportunities of both agriculture and agro-industries in the study region by developing strong vertical (BPLs and FPLs) and horizontal linkages for virtuous circle URELs and global value chains (GVC). The study region had evidences of high potential in both nigerseed agriculture (14qt per ha) and NOIs had 888 birr per day value added in the existing under capacity (2.2 qt per day for the maximum capacity of 24 qt per day). In the bad equilibrium of agricultural crops, agro-industries were working under free and closed markets with many challenges and problems such as 25% storage limit. Similar to other

processors in the study region, NOIs were working under closed market such as price determination of nigerseed oil market and raw material oilseeds sanction such as sesame.

CA was found non-value adding government business agent in wheat value chain gaining gross profit of 314.15 birr per qt flour and 23121.44 birr per day and about 8416204.16 birr per annum at DMT by proxy data. Thus, CA as government business had more gross return than SFI (234.443 birr per qt flour) in closed market system. Most of the factors for truncated URELs were government-induced problems and challenges such as electrical energy supply problem.

The consequences of all these problems and challenges of URELs resulted in disintegrated and bad equilibrium between raw materials (wheat and nigerseed) and processors (NOIs and SFI) in the study region. This situation confirmed the theoretical frameworks of coordination failure and O-ring theories under the grand theory of contemporary development and underdevelopment theory.

The complex challenges and problems would be taken as lessons for creating enabling environment and good playing field for key actors: SHFs, agro-processor, the intermediate processors of bakeries and final consumers in URELs. Furthermore, multiplier effects of these actors need other special focus and dimensions for overall regional and national development. For example, SFI and NOIs have a systemic multiplier regional development effects by supplying wheat residue locally called *Furishca* and oilcake locally called *Fagulo* for animal feed and fattening. Then, animals can again create diversified opportunities such as manure for cyclic organic farming in the production of crops. Thus, the multiplier effect and value added dimensions in URELs are key focuses of systemic development in ABCs' policy, institutional and support system with R&D. Moreover, agro-industries need to have direct BPLs and FPLs with SHFs and/or their organizations in any type of partnerships for sustainable value chain. The direct linakges of actors may minimize or limit the involvement of non-value adding actors such as AC wheat value chain in this study. The government need to create enabling environment for the main actors in URELs. The other potential opportunity for virtuous circle URELs was the good will of the two key economic sectors: SHFs and agro-industrialists in production linkages as partnership in the study region. Based on this

potential opportunity of URELs, the next chapter measures the efficiency of SHFs and their corsponding agro-industrialists for more opportunity for the synergy of the complementary sectors in agribusiness. By using Cobb-Douglas stochastic frontier analysis (SFA) and inefficiency model, technical efficiency (TE), allocative efficiency (AE) and economic efficiency (EE) of sample SHFs and agro-industrialists were measured in the study region for showing the gap in production and processing to policy and practice.

6 Chapter Six: Agriculture and agro-industries efficiencies and opportunities for URELs

6.1 Introduction

Agribusiness of wheat and nigerseed depends on the efficiency of various actors at different stages. The efficiency failure of one actor in agribusiness is the failure of all agents SHFs, governance and agro-industrialists in the system similar to coordination failure and O-ring theories. Therefore, the efficiency analysis is an important issue in URELs to identify and improve the gaps of actors for good equilibrium and integrated system. It is also important for agricultural green revolution and industrialization in the existing situation of ABCs. For example, wheat in many high-yielding varieties HYVs is one of the important stable food and industrial crop under green revolution for food self-sufficiency and commercialization in the study region and Ethiopia.

The main objective of this chapter is to assess the efficiencies of SHFs and agro-industrialists (the second objective of this study). Substantiating the efficiency analysis for URELs, regional development scholars such as Douglass (2006:127) in his study of regional network strategies for URLs suggests that identifying potentials and opportunities of a region need to be main emphasis for URLs that can serve as engines of regional development. In Ethiopia and other ABCs, there is limited resources' expansion and application of modern technologies. Thus, the analysis of interdependent sectoral efficiency has paramount importance for better productivity and processing of SHFs and agro-industrialists in agribusiness for developing the potential opportunity and virtuous circle URELs. Based on the objective and the recommendation of efficiency analysis in URELs, the main contents of this chapter include efficiency of agriculture that has descriptive analysis of SHFs and the study region and the econometric analysis (TE, AE and EE) of wheat and nigerseed. It has also the econometric analysis of agro-industrialists that has sub-sectors of descriptive analysis of industrialists and the agro-industries, econometric analysis (TE, AE and EE) of agro-industries in the existing resources. Finally, the chapter summerises the main points with concluding remarks.

6.2 Efficiency of agriculture for URELs

It is important to find efficiency of SHF and their overall behaviour in the existing resources and technology for appropriate intervetion. This is because capital-intensive technology application and expansion of resources in agriculture are critical problems in the study region in particular and ABCs in general.

6.2.1 Descriptive analysis of SHFs

This section shows the socio-economic, demographic characteristics of sample SHFs, enabling environment, support services and potential opportunities of the study region in wheat and nigerseed production. These variables are presented in descriptive analysis such as percentage; mean and standard deviation for brief understand and further analysis in the econometric model. The following section discusses the utility of age and experience in agricultural system.

1. Age and (farm and leadership) experiences

Though age was not used in the inefficiency model due to its multi-collinearity test result in the descriptive analysis, describing the age characteristics of sample SHFs is important for using other descriptive purposes, mainly productive age groups in agriculture and labour-intensive agro-industries. The age of the sample household heads ranges from 22 years to 78 years old with an average of 42.6 and standard deviation of 10.3 with range of 56 years (Figure 6.1)

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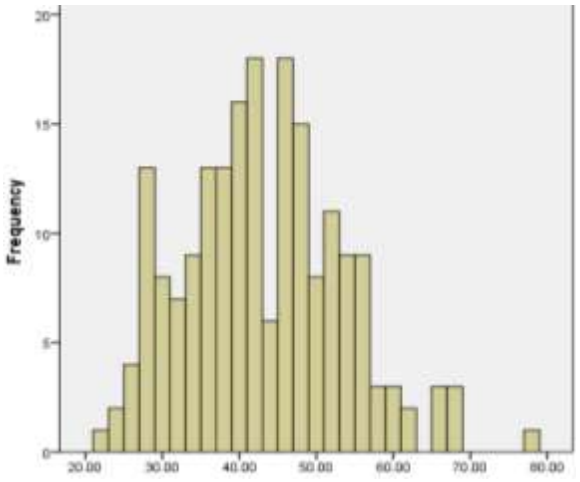


Source: Field survey 2014

Figure 6.1: Age structure of respondents

Most of the sample respondents (95.4%) were economically active SHFs and only seven (3.6%) of SHFs are inactive agricultural persons (elder than 64 years) (Figure 6.1). On the average, farming experience of respondents was 26.3 years within a minimum farm experience of two years and maximum of 50 years (Field survey 2014). Some of them (21%) had leadership experience in different governmental, NGOs and community institutions and organizations.

2. Sample SHFs marital status and family size

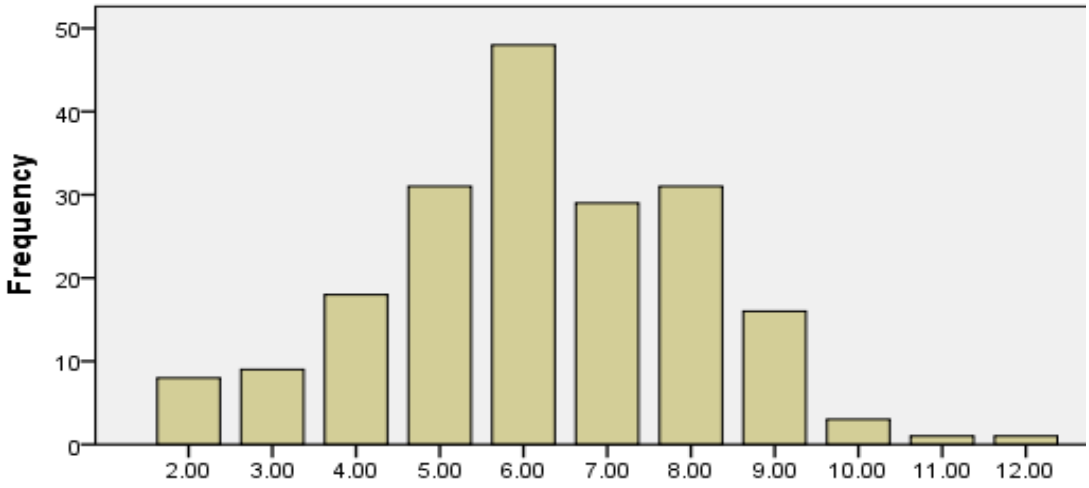
Table 6.1: Marital status of sample respondents in 2014

Description	Frequency	Valid%	Cumulative%
Married	172	88.2	88.2
Single	3	1.5	89.7
Widowed	15	6.9	96.6
Divorced	5	2.6	100.2
Total	195	100.0	

Source: Field survey 2014

Most of the households (88%) are married that implies most SHFs were male-headed while a few were female-headed households. The issue of gender is important in the labour-intensive and traditional oxen-driven plough agricultural system and hence, males have stronger physical fitness than females for such economic activities.

Family size of the sample SHFs ranged from two to 12 persons with average family size of 5.2 with standard deviation of 1.9 (Figure 6.2).



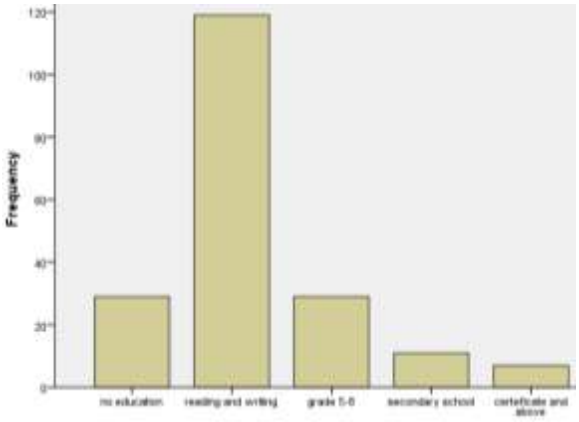
Source: Field survey 2014

Figure 6.2: Family size of sample SHFs

One possible explanation in relation to family size is that lager households are more likely to have more production efficiencies and labour-intensive production for improved agriculture.

3. Educational status

Education is important for adaptation and progress of technology and production system. The educational status of household heads could have significant influence on agricultural production and efficiency. Most sample SHFs (65.6%) could read and write attending grades up to eight; small number of SHFs (14.9%) attended secondary school up to grade 12 and 3.6% of sample SHFs had certificate and above but a few sample SHFs (14.9%) could not read and write (Figure 6.3).



Source: Field survey 2014

Figure 6.3: Educational status of sample SHFs

SHFs who could not read and write filled questionnaire interview by the researcher and data collectors. One possible explanation in education is that knowledge of household heads is important for adaption and adoption of scientific and technological outputs that could result in better production efficiency.

4. Non-agricultural economic activities of SHFs

Most SHFs (67%) had additional non-agricultural income sources through family members in the study region (Field survey 2014). Informants stated that agriculture (production of crops and rearing of animals) is subsistence and crop production is dependent on seasonal rainfall. Therefore, agricultural activities were supplemented by non-agricultural economic activities such as marketing of: firewood, charcoal, crop residue, leaves, other forest materials, utensils, animal manure, local alcoholic drink, processing and selling, trading of food crops and livestock. One possible explanation for diversified non-agricultural employment was due to insufficient agricultural production and poor farming efficiencies.

5. Consultation and training of SHFs

Training and consultation of SHFs need to be based on scientific research and local experience for scientific outcomes and technology adoption for increasing efficiency and productivity. With regard to the frequency of extension contact of sample SHFs, informants stated that it was more of during sowing months (mainly May and June) that

SHFs had the maximum farmer-extension workers contact. Hence, the researcher used these two months for evaluating the number of contacts (Table 6.2).

Table 6.2: Frequency of SHFs-extension workers (DAs) contact

Number of extension contacts per May and June	Frequency	%
0	43	22.1
1-2	39	20
3-4	26	13.3
5 and above	87	44.6
Total	195	100

Source: Field survey 2014

Some SHFs (22.1%) had no any contact to extension workers during critical sowing season while 44.6% of respondents had contacted five and above times in 2014. Considering the impact of extension contact and consultation, SHFs who had more contacts with extension had poor wheat production than those without (22.1%) or less contact of one-two times (20%) per month in average. Informants stated that extension workers (DAs) consulted and trained SHFs based on wrong blanket recommendation such as fertilizer application for wheat production one DAP (Di-Ammonium Phosphate): one urea and then one DAP: 2.65 Urea application that was the reverse of the previous application for many years. As a result, those SHFs who faced continuous deterioration of land productivity were found to have more contact (more than three times) with agricultural extension workers due to the wrong blanket recommendation for the inputs application. It was found that the more the frequency of SHFs contact to agricultural extension workers, the more deteriorating and declining their agricultural production and the largest contacted farmer (21%) are found the poorest among samples in the study region (Field survey 2014). This implies to the conclusion that the more the frequency of SHFs contact to agricultural extension workers, the more deteriorating and declining their agricultural production

6. Access to formal credit

Financial access is an important institutional service for the survival of poor SHFs for risky and vulnerable agricultural production system, inputs application and technological purchasing. ACSI and FSCC are the main formal sources of credit access for SHFs since

they have no land ownership for collateral to banks and other financial institutions in the study region. Hence, 90.5% of SHFs borrowed from ACSI and FSCC for agricultural inputs and/or other projects (Field survey 2014). However, those SHFs who had borrowed from these institutions had deteriorating livelihood and faced different problems such as repayment and down payment failure to some expropriation of assets by ACSI. Similar to this study, Yenetila (2013:72) argued that only 9.2% of SHFs borrowed formal financial credit from ACSI and FSCC in this study region due to down payment as well as the burden and continuous repayment problems of the micro-financial institutions.

7. Land holdings and tenure security

Farm size of sample respondents had ranged from landlessness to a maximum of 3.5 has (ha) per household with an average landholding of 1.5 had with standard deviation of 4.1.

Table 6.3: Farmland size distribution of SHFs

Farmland size	Frequency	%
Landless	26	13.3
<=2 ha*	113	58
2.1-3 ha	54	26.7
>3 ha	2	1.03

Source: Field survey 2014 ha* stands hectare

There was high farmland holding inequality in the study region that 13% landless, usually youths and about 58% SHFs near to landless. In land use classification, the average cultivated land was 1.23 ha with standard deviation of 0.87 (Table 6.3). The greater number of landless farmers (13%) implied the presence of excess labour in rural Ethiopia. However, other studies indicate that the average farmland size of all Ethiopian SHFs is 0.81ha (Getnet and Mehrab 2010:11). Informants complained that the government the owner of the land and they had use right in the legal institution. Most were highly insecured for government leasing system and displacement. The landuse pattern of SHFs was fragmented into non-economical level in some cases.

Table 6.4: Landuse pattern of sample SHFs

Land use type	Mean	SD
Cultivation	1.23	0.85
Pasture	0.0026	0.14
Homestead	0.12	0.017
plantation	0.0032	0.006

Source: Computed from field survey data 2014

The average cultivated farmland size had lower value (1.23 ha) since it was the result of landless and near landless SHFs with range of 3.5 ha. Moreover, SHFs had almost non-private pastureland and plantation or gardening (Table 6.4).

8. Livestock and small domestic animals

SHFs in the study region had mixed agricultural activities (production of crops and rearing of animals) in subsistence production and almost all SHFs (86.9%) had livestock units for personal use as drought animals, oxen plough, for agricultural mutual support and crops residue for animals feed with small animals (sheep, goat, hen) for immediate cash sources (Field survey 2014). Therefore, subsistence production of food and industrial crops indicated the presence of potential opportunity for underutilized potentials of crop production and rearing of commercial domestic animals (livestock) in the study region.

Table 6.5: Average size of sample SHFs' domestic animals

Average size	Frequency	%
0	3	1.5
<5	82	42.1
6-10	68	34.9
11-15	25	12.8
16-20	24	12.3
>20	17	8.7

Source: Field Survey 2014

The average livestock and small animals holding of sample SHFs was 5.43 tropical livestock unit (TLU) (Table 6.5). Informants stated that there was no commercial rearing of livestock and small animals except marketing for problems such as eggs, hens, sheep and goat in Genet-Girakidamin *kebeles*. The larger livestock have one possible explanation of organic farming and greater use of manures in the mixed agriculture

complementary advantages. However, the greater livestock is advantage for dung cake market rather than organic fertilizer.

9. Labour availability and utility

Sample SHFs used dominantly their own family labour and they had productive family labour ranging 1-7 productive age in each household. The average productive family size was 3.22. Since agriculture is seasonal, most SHFs (94 %) faced critical labour problems, especially in peak agricultural periods such as harvesting (Table 6.5). This implies that agriculture is not supported by adapted technology in labour-intensive system.

Table 6.6: Labour shortage responses of sample SHFs

Description		Frequency	%	Valid %	Cumulative %
Valid	Yes	183	93.9	93.9	93.4
	No	12	5.1	5.1	100.0
	Total	195	100.0	100.0	

Source: Field survey 2014

Informants claimed that most SHFs needed government and other stakeholders support in critical agricultural seasons, mainly harvesting. However, rather than supporting, the government made higher cost (70 birr per qt) for its harvester price during harvesting season in 2014. They added that it was the institutional and governance failure of the government that SHFs' cooperative had no harvester and other agricultural technologies. Hence, they used other possible solutions such as hiring labour, labour exchange, renting out farmland or any combination of them (Table 6.7).

Table 6.7:Options of SHFs for labour shortage problems

Description	Frequency
no problem	7
hiring wage labour	79
Working in 'Debo[17]'	56
land renting or contracting	11
hiring wage labor and 'Debo'	70
A combination of all	37
Total	260*

Source: Field survey 2014 260* indicates one SHF used more than one option

[17] A mechanism of labour synergy in-group for solving a problem turn by turn to each other.

The problem of agriculture in Genet and Girakidamin *kebeles* was labour-intensive agricultural production with traditional technologies and the problem is prominent especially in agricultural peak periods (land preparation, sowing, weeding and harvesting) (Figure 6.7). Informants stated that female-headed households and elders contracted their farmland while the landless youths and near landless households contracted farmlands from these female-headed and elderly households.

10. Membership of SHFs organization

All SHFs were members of their PACs and GAU (highest SHFs' organizational level) in the study region (Field survey 2014). Informants argued that there was no difference between member and non-member SHFs in providing inputs and other commodities except dividend share from the organization (GAU). However, informants complained that SHFs organizations were serving as bridges between government businesses and SHFs rather than benefiting for SHFs in scale economies. They further explained that farmers associations had not been fulfilling the farmers' interest and timely inputs supply and outputs marketing.

11. Policy benefit and government support

The development policy of Ethiopia is 'Agricultural development led to industrialization (ADLI)'. All SHFs confirmed that they had not gained any policy support for agricultural production and agricultural infrastructure development. Furthermore, most respondents (87%) answered for no support in the yes-no question for the policy benefit to their agricultural and other development (Field survey 2014). Key informants claimed that the government support through agricultural professionals (DAs, and district experts), agricultural inputs and infrastructures such as irrigation storage and market were not more than the SHFs' traditional agricultural management, harvest and agricultural practice in the study region. This implies that policy makers and agricultural professionals need to see their trend of agricultural development in friendly with SHFs and the context of the study region.

12. Production and productivity of the study region

The two sample districts, Debre Elias and Machakel had some variation in the productivity of the two sample crops and the average wheat productivity in Genet rural

kebele in Debre Elias district is 42 qt/ha while 36 qt/ha in Girakidamin in Machakel district. The overall production of the two districts was the highest in both wheat (Debre Elias) and nigerseed (Machakel) (Table 6.8).

Table 6.8: Wheat and nigerseed production in the study region in 2014

District	Population	Wheat (Qt)		Nigerseed (Qt)	
		Area (ha)	Production (Qt)	Area (ha)	Production (Qt)
Gozamin	160359	12671	537707	1208	9242
Debre Elias	88487	18826	887364	1583	18857
Machakel	152754	10287	483489	1917	19524
Sinan	117993	2561	80154	16	144
Awabel	143651	2996	150967	1210	13110
Aneded	104736	8866	458872	109	1090
Basoliben	157264	12061	576985	86	614
DMT	102,630				
Total	1027874	68268	3175538	6129	62586

Source: East Gojjam zone agricultural office document 2014

Based on the DA documents in the sample rural *kebeles* 2014, the average 39 qt/ha and nine qt/ha were the average productivity of wheat and nigerseed respectively in the study region. The average productivity of nigerseed was eight qt/ha in Genet and 10 qt/ha in Girakidamin. The zonal data could show the actual and potential wheat production for integrated development through URELs in the existing environment.

13. Irrigation potential and agriculture

There were no significant irrigation production in the study Genet and Girakidamin *kebeles*. Some SHFs (17%) were using small-scale irrigation such as gardening and vegetables production from wells and streams around their homestead (Field survey 2014). The study rural *kebeles o*f Genet and Girakidamin had potential irrigation (many streams, rivers and potential underground water, swampy areas and wetlands) using simple technology.

14. Partnership and economic status

No SHFs had any form of partnership (contractual, outgrower, rent or joint venture) with their corresponding agro-industrialists. In the same way, all agro-industrialists had no any linkages with SMFs in the study region. However, all SHFs had willingness to have production linkages with agro-industries. Informants claimed that the absence of partnership between complementary sectors of agriculture and agro-industries was the absence of enabling environment. Therefore, most SHFs (87%) sold their produces in disintegrated ways to local markets such as local market, their organization PACs and local traders with seasonal market instability (Field survey 2014). Informants stated that agricultural produces usually faced market failure and instability in winter (January and February) when SHFs were at critical financial demand for different purposes such as taxes, clothing for family to Holyday (such as epiphany) celebration and different wedding ceremonies. They further confirmed that middle humans and cooperatives used the opportunities of market failure seasons on SHFs' produces and they got almost double profit by transporting and selling to agro-processors, wholesalers and exporters. This implies that URELs have potential opportunity for reversing disintegrated and vicious circle in the study region. The economic status of SHFs is complex and difficult but it was categorized based on international poverty measurement index (Table 6.9).

Table 6.9: Economic status of SHFs

Economic status		Frequency	Valid %	Cumulative%
Valid	absolute poverty	119	61.0	61.0
	relative poverty	57	29.2	90.3
	free from poverty	19	9.7	100.0
	Total	195	100.0	

Source: computed from field survey data 2014

Most SHFs (61%) were in absolute poverty and while a few SHFs (about 10%) were free from poverty in the international poverty measures or index (<1.25$ and 2.25$) in the study region (Table 6.19). Similar to this study, about 80% of all the target poverty groups are found in the rural areas of Africa and Asia (Todaro and Smith 2012:238). It is found that poverty free SHFs (10%) had no contact agricultural extension workers. This implies that extension worker need to be based on R&D for their support services for

SHFs rather than unreliable and wrong blanket recommendation. This poverty is caused by many factors such as lack of R&D agricultural extension service, appropriate financial services and scale economy through their organizations PACs and GAU.

6.2.2 Econometric analysis of agriculture

Efficiency is an important indicator of performance and productivity of individuals and the group within input-output model. The maximum likelihood estimate (MLE) in the econometric model estimation of Cobb Douglas stochastic frontier analysis (SFA) was used to process for TE, AE and EE of both agriculture and agro-industries. One important software tool in the model is frontier version (4.1c package) that was used for processing the data in this study. SHFs who were producing wheat and nigerseed in 2013/14 were selected in the sample for this input-output data sources.

6.2.2.1 Technical efficiency of agriculture

The following discussion would estimate TE of wheat and nigerseed production for indicating opportunities of further increasing production and productivity in the existing resources and technology.

6.2.2.1.1 Technical efficiency of SHFs in wheat production

In the Cobb-Douglas production model in the translog linear application, coefficients represent the association of input variables with output and elasticity of production in the study region. Maximum likelihood estimate (MLE) in Cobb-Douglas frontier model represents percentage change in the dependent variables (output) for the percentage change in the independent variable or output (Table 6.10).

Table 6.10: MLE of Cobb-Douglas stochastic frontier production function and inefficiency models for wheat production**.**

Variable	Parameter	Coefficient	SE	t-ratio
SFA constant	β0	98.7648*	0.9848	100.2854
Ln(Farmland size ha)	β1	-4.3316*	0.9286	-4.6647
Ln(Local seed qt)	β2	16.4092*	0.4442	34.6901
Ln(Improved seed qt)	β3	16.5522*	0.4417	36.2084
Ln(DAP fertilizer qt)	β4	0.1922	0.4136	0.4647
Ln(Urea fertilizer qt)	β5	0.0046	0.3581	0.0129
Ln(Number of labour used)	β6	-32.3717*	0.7225	-42.3633
Ln(Number of oxen used)	β7	-31.0438*	0.7327	-43.3817
Ln(Herbs in number of litres)	β8	15.6135*	0.9070	18.3165
Inefficiency model constant	β0	0	0	0
Agricultural experience (in years)	β1	-0.0026	0.0101	-0.2532
Leadership experience (in years)	β2	-0.0310	0.1701	-0.1826
Sex	β3	-0.5615	0.4036	-1.3912
Family size	β4	0.0231	0.0407	0.5676
Education	β5	0.0186	0.0226	0.8229
Marital Status	β6	-0.5228	0.3696	-1.4137
Per capita income (in US $)	β7	-0.0299	0.0777	-0.3848
Off-farm employment	β8	-0.0199	0.2137	-0.0931
Policy benefit	β9	0.5312***	0.2562	2.0734
Extension contacts	β10	0.0617	0.0525	1.1765
Government support	β11	0.1282	0.2551	0.5027
Credit access	β12	0.0736	0.2189	0.3363
Irrigation access	β13	0.0966	0.2108	0.4584
Variance parameters				
Sigma squared (σ^2*)		0.2691*	0.0367	6.3335
Gamma (**γ*)**		0.0954	0.1284	0.7428
Log Likelihood function		-138.861		
Likelihood ratio test (LR one sided error)		5.6015		

Source: Computed from field surveyed data 2014

*; ** and *** are 1%, 5% and 10% significant levels respectively

Note: the value of significance index of t-ratio is taken about 1% >2.99; 5% between 1.99-2.99 and 10% 1.5-1.99

(σ^2*) value indicates composite error terms (Ui) of SHFs' or industrialists' inefficiency

(γ*) value indicates the systematic influence of uncontrolled factors outside the control of farmers or agro-industrialists.

*In SFA model: Positive value is underutilization while negative value is overutilization to diminishing return in respect of inputs.

*In the inefficiency model: positive value has inverse relationship while negative values have positive relationship with output.

In the stochastic frontier analysis (SFA), the positive coefficients of agricultural inputs (seeds, fertilizer, and labour and oxen labour) had implication of proportion increment with wheat output while the negative ones (farm size and farm chemical) had implications of inversely proportional with TE of SHFs. Hence, proper seed (16.4) application had positive significant values for elasticity of wheat yield (Table 6.10). Similar to this study, Solomon (2014:34) confirmed that seed has significant and positive

effect in TE of wheat production in Northern Ethiopia. In line with this study, Mohammad and Showkat (2013:43) conducted non-parametric Data Envelopment Analysis (DEA) for estimating the TE of SHFs and their finding indicate that seed is an important determinant that influences SHFs' TE and their yield. The other positive coefficient inputs were the significant positive relationship of number of oxen (ox-per-day) and labour (human-per-day) that indicate labour-intensive and conventional oxen-plough intensive and increasing use of them can increase TE and output of wheat production in the study region. Labour value of 32.4 implies that all labour number increasing (for pre-post harvest employment) by 1% had proportionally increase wheat yield by 32.4% within the existing resources, technology and situation (Table 6.10).

On the other hand, the negative coefficient inputs (farmland size and herbicides) had increased technical inefficiency and reducing output of wheat to diminishing return-to-scale. Increasing farmland size had negatively related with wheat production output, implying that wheat farming is labour-intensive on small farmland in the present technology and resources better than extensive land size in the study region. This shows that the smaller the farmland size, the more labour-intensity for higher productivity and yield (Table 6.10). In a similar way, Abu, Ater and Abah (2012:264) confirm that farm size and farm chemicals have negative coefficients in the stochastic frontier model and these input variables decreased the TE of sesame producers. On the contrary, Musemwa et al (2013:150 argued that farm size did not affect TE of SHFs but AE and EE. Different from others, Mohammad and Showkat's (2013:43) finding indicates that farm size and TE have irregular and non-linear relationship.

The return-to-scale (absolute values of inputs coefficients) can be diminishing, constant or equal and increasing in production efficiency measurement. Mohapatra and Sen (2013:368) have applied in the discussion of Cobb-Douglas production model outputs and the return to scale in their study is in all characters (diminishing scale, constant scale and increasing) of return to scale. The calculated return-to-scale in this study was 116.523 calculated as 4.3316+16.4092+16.5522 +0.1922+ 0.0046+ 32.3717+ 31.048 +15.6135) (Table 6.10). This implies as 1% increase in inputs has 116% increasing

return-to-scale in wheat outputs. This is an important indication for inputs application in wheat TE of SHFs in the study region.

In the inefficiency model, the negative coefficient socio-economic and demographic variables (farming experience, leadership experience, sexes, marital status, per capita income, off-farm employment) had decreased technical inefficiency of SHFs in wheat farming. They also imply further improvement and application of these socio-economic variables for better wheat production efficiency. On the other hand, the positive coefficient variables (family size, education, policy benefit, extension contact, government support, credit access and irrigation access) had significant retarding effects on TE in wheat production. The policy benefit in wheat agricultural production (0.5312) had significant retarding force at 10% significant level in the model (Table 6.10). This suggests that policy makers need to see the problem of the country development policy and plan: ADLI and GTP. Moreover, institutional strengthening, training and proper agricultural extension services for SHFs (male dominant culture of agriculture) were other important areas for TE development in the study region. The nature of traditional farming in the study region was labour-intensive and it was gender-biased to male household heads (about 85%) for more physical strength than female headed households. Consequently, about 73% of farmland contract and rent was found for female-headed households in the study region (Field survey 2014). This can also be important policy implication for gender-based agricultural development for the participation of all concerned female and male bodies in the existing strong labour-intensive and animal-powered agricultural practice with some technological support for female household heads. The role of education was contrary to a prior expectation in this study. In line with this study, Abu, Ater and Abah (2012:265) confirmed that positive and significant coefficient of educational status of SHFs had positive influence on technical inefficiencies of sesame producers in Nigeria. Similar to this study, Mesay et al (2013:31) argued that educational level enhanced TE of waterlogged wheat SHFs in Ethiopia. Policy support was a dummy variable that had significant effect for technical inefficiency and diminishing return-to scale in wheat production. Hence, the government need to see land policy and its development policy (ADLI) for production efficiency of SHFs in the study region. Solomon (2014:34) confirms that land policy owned by the government

ownership has negative and significant effect on TE of SHFs in wheat production by preventing belongingness and long-term investment in maintaining soil fertility.

Informants stated that increasing contact of SHFs to agricultural extension workers was misleading for fertilizer application of two DAP: one Urea in wheat production in 2014. Consequently, SHFs who had more contact and guided by agricultural extension workers in wheat production had less productivity and production than non-contacted SHFs in the study region. In line with this study, Solomon (2014:34) confirmed that the more frequently the SHFs meet with the extension workers, the more technical inefficiency and lower yield for those farmers. He concludes that extension services and trainings have increased technical inefficiencies of SHFs in farm management. Contrary to these finding, Mohammed and Kidanemariam (2014:26) argue that extension participant SHFs (with average 57%) are more technically efficient than non-participant SHFs with the average 53% TE in Tigray. This shows that though Tigary regional state has soil map and R&D-based extension support services, the difference (4%) of extension consultation participation and non-participation had no meaningful difference that implies institutional and capacity development of extension support services in the country.

Educational level appears to reduce TE, perhaps SHFs that were more educated (completed grade secondary school and above) had better opportunities for off-farm works that can reduce on-farm activities and farm management. Moreover, the dummy variable access to irrigation had positively proportionate for technical inefficiency, implying that irrigation may take more time and labour for reducing TE in the production of rain-feed wheat farming in the study region. In a similar stochastic Cobb-Douglas production frontier model, the estimated values for variance parameters indicated that SHFs' TE in the conventional production (oxen-driven plough) of SHFs had an impact on the total value of wheat production.

In the variance parameters, sigma squared results (σ^2 =25.91%) indicated the goodness of fit and correctness of the distributional form error of SHFs. Hence, its value indicated the average wheat production that was significantly affected by SHFs' inefficiency behavioural and technical skills (Table 6.10). In line with this study, Abu, Ater and Abah (2012:264) asserted that most of sesame production inefficiency (91%) is due to the

practical and managerial problems of SHFs in Nigeria. The variance parameter gamma (γ) was a dominant source of random error and a measure of systematic unexplained influence in the production function and it was significant at one percent level, implying the presence of high level assumed, unexplained and independent composite error term for technical production inefficiency effects beyond SHFs' control. The result 9.54% of the production technical inefficiency effects of gamma (Vi unexplained random errors) in wheat production meant that uncontrolled factors outside SHFs (such as statistical noise, natural and environmental factors, unexpected rainfall and climate change) were systematically and significantly affecting wheat production in the study region. Hence, wheat productivity differentials related to the variance in external disturbances outside the control of SHFs (Table 6.10). This finding indicates that government and policy makers need to consider these uncontrolled factors for further improvement in technical inefficiencies of SHFs in wheat production.

In interpreting production efficiency from the frontier output, the model measured each farmer's production efficiency to the context of relative to each other from sample SHFs (Table 6.11).

Table 6.11: Summary of TE distribution of wheat SHFs

TE level	Frequency	%
<0.21		
0.21-0.3		
0.31-0.4	1	0.513
0.41-0.5	6	3.078
0.5-0.6	2	1.026
0.61-0.7	10	6.13
0.71-0.8	59	30.267
0.81-0.9	117	60.021
0.91-1		
Total	195	100
Mean	0.7981	
Minimum	0.3225	
Maximum	0.8814	
Range	0.5589	
SD	0.2172	

Source: Computed from field surveyed data 2014

Based on the frontier statistical summary (Table 6.11), the average TE of SHFs (80%) had average 20% opportunity gap from the frontier (100%) TE under the existing resources and technology within perfect production. The range of wheat SHFs' TE (56%) between the least efficient and most efficient was other potential opportunity of wheat SHFs' improvement in the existing resources and technology. This implies that policy makers and practitioners (agro-industrialists and SHFs) needed to focus on these potential opportunities of development. In line with this, the study of Mesay et al (2013:32) on water-logged areas of wheat production in Ethiopia indicate that the average TE of SHFs is 55% with wider range of TE of 1% least efficient to 93% most efficient due to input-output market and socio-economic variability.

6.2.2.1.2 Technical efficiency (TE) of SHFs in nigerseed farm

The decreasing production and productivity of oilseeds, mainly nigerseed and their processing in Ethiopia in general and the study region in particular was major challenge and problem for farmers, NOIs and consumers. Informants claimed that nigerseed production had extremely neglected food crop from all other crops in agricultural inputs, policy and management in the study region. As a result, SHFs had produced nigerseed only traditionally without much plough of the land (maximum three times), improved seed, fertilizer and agricultural extension support. On the other hand, it was one of the most important and preferred ram material for domestic nigerseed oil and export second to sesame in Ethiopia (Field survey 2014). The following Cobb-Douglas model has confirmed a similar result for the poor BPLs of nigerseed and its outputs in the study region (Table 6.12).

Table 6.12: MLE of Cobb-Douglas stochastic frontier production function and inefficiency models for nigerseed SHFs

Variables	Parameter	Coefficient	SE	t-ratio
SFA model constant	β0	-56.0996*	0.9886	-56.7580
Ln (total farmland size)	β1	0.2333	0.6977	0.334
Ln (Niger seed farmland size)	β2	1.5674*	0.1342	11.6796
Ln (Seed Qt)	β3	2.5962*	0.6204	4.1847
Ln(number of oxen labour)	β4	0.1066	0.07618	1.3983
Ln (Number of human labour)	β5	-0.8797*	0.0875	-10.0537
Ln (miscellaneous expenses)	β6	-2.3334**	0.8977	-2.5593
Inefficiency model constant	β0	0	0	0
Agricultural experience	β1	0.005	0.0084	0.5937
Partnership and linkages experience	β2	-0.1404	0.1273	-1.1031
Policy benefit	β3	0.8739*	0.0391	22.3504
DA contact	β4	0.0081	0.0118	0.6891
Sex	β5	0.0073	0.0126	0.5794
Education	β6	0.6281*	0.1731	3.6285
Marital status	β7	-0.0212	0.0867	-0.2446
Family size	β8	0.0831	0.1005	0.8266
Training	β9	0.0179	0.0217	0.8253
Credit access	β10	0.0093	0.0397	0.2347
Irrigation access	β12	-0.1474	0.1415	-1.1041
Social leadership	β13	-0.0156	0.0710	-0.2201
Variance parameters				
Sigma squared (σ^2)		0.2413*	0.0279	8.6382
Gamma (γ)		0.57	0.0001	20.43
Log likelihood function		-136.4151		
Likelihood ratio (LR one sided error) test		65.6446		

*,** and *** represent 1%, 5% and 10% significant level

Source: Computed from field survey data 2014

The MLE in the stochastic frontier analysis (SFA) model had shown both the positive coefficients of inputs (total farmland size, nigerseed farmland size and number of oxen labour, human labour) and the negative coefficient inputs (seed, land miscellaneous expenses such as feeding of daily labourers or *debboo*). The positive coefficient inputs had an increasing elasticity while the negative inputs have decreasing function for TE of SHFs and decreasing elasticity of nigerseed production (Table 6.12).

In contrast to wheat production TE and farm size, the agricultural inputs in nigerseed production such as farmland size had positively significant for TE and output. This implies that the larger the farm size, the more output from a given set of inputs in the current context of the study region. Moreover, the amount of seed negatively influenced the production output of nigerseed agriculture since a very small amount (0.12 qt seed covers for one ha) of seed was enough without land size proportionate analogy. In the

same way, miscellaneous expenses (such as the habit of feeding people in the agricultural activity) negatively affected TE and the total nigerseed outputs in the study region (Table 6.12). This suggests that there had been traditional feast and invitation in connection to nigerseed harvesting. Moreover, informants stated that there was traditional invitation of neighbours during nigerseed harvest for the test of newly harvested nigerseed, locally called 'Yenug kimsha') which had an impact on the nigerseed outputs in the study region.

The calculated return-to-scale of SHFs is 6.7166 (computed as 0.2333+1.5674+2.5962+ 0.1066+0.8797+2.3334), implying 1% increased in inputs could have 6.7166% increasing return to scale in nigerseed outputs. This is an important indication for policy in applying inputs such as improved seed, fertilizer, labour for farm management and other farming system for more output in nigerseed production. Hence, key stakeholders (the government, SHFs and nigerseed oil industrialists) in nigerseed production could apply this opportunity of increasing return to scale for larger production of nigerseed output.

The socio-economic and demographic variables in the inefficiency model have both negative and positive coefficients. The negative coefficients of variables (partnership and/or production linkages experience, marital status, social leadership) had negatively proportionate to technical inefficiency of nigerseed production in the study region. This means increasing these socio-economic and demographic variables increases and improves for SHFs' TE in nigerseed farming. However, the positive coefficient variables (agricultural experience, policy benefit, DA contacts, training, education status, family size, credit access and social leadership experience) had increased technical inefficiency of SHFs in the production of nigerseed. Informants claimed that nigerseed production had less emphasis by both SHFs and the government agricultural extension services. SHFs were based on traditional rain-feed with less farmland preparation, less labour, less educational background and experience. Family size had no significance for generating labour in nigerseed production, agricultural development agents (DA) had not provided any service for nigerseed farm and hence it encourages technical inefficiency of SHFs in the study region. In the same way, credit access had contributed to repayment problem since the production of nigerseed is without modern inputs, (fertilizer and improved seed)

and other financial expenditure (Table 6.12). Hence, the government need to have training for SHFs and other extension services for oilseed agriculture in the study region.

Informants confirmed that SHFs had considered nigerseed production as mechanisms of land rehabilitation (such as nitrogen fixation crops) rather than its own output and commercial use. I empirically observed that nigerseed agriculture had no provision and use of any agricultural inputs (improved seed, fertilizer, land preparation and weeding) in its production but the local community had grazed their animals at the early growing stage of nigerseed crop to increase buds and productivity in the study region. This can be an implication for policy makers to utilize the potential and prospect opportunity of developing nigerseed production for domestic agro-processors and export.

In the variance parameters, sigma squared (σ^2) has 24% composite error terms (Ui) of SHFs' inefficiency, implying the rest 86% of the production inefficiency is caused by the effect of other external or uncontrolled variables. While gamma (γ) has 57% that showed the production technical inefficiency of independent and unexplained random error terms (Vi) (Table 6.12). Most SHFs (96.5%) confirmed that the main problem in nigerseed production was weed (locally called 'Yenug Anbessa'), lack of improved seed and fertilizer, absence of government agricultural extension support and priority of food crops due to farmland shortage (Field survey, 2014). This implies that nigerseed production inefficiency is mainly caused by variables outside the control of SHFs such as government related problems and challenges. In line with this findings, Mittal (2007:462) asserts that there are many government related problems for agro-processing in India and some of them are: lack of good quality seeds, inadequate infrastructures such as irrigation, lack of soil tests and extension staffs, inefficiency in pest management, huge post-harvest losses and low and declining productivity. In conformity to this finding, it is also suggested that the government of Uganda has lacked focus on addressing declining soil fertility, promoting direct commercial relations between SHFs and private-sector firms to promote the long-term sustainability of oilseeds and edible oil production (IFAD, 2011:32). On the contrary, Abu, Ater and Abah (2012:264) argue that most of sesame production inefficiency (91%) is due to the practical and managerial problems of sesame SHFs. Hence, the government, policy makers and agriculture development agencies

(DAs) need to consider the nigerseed production problems for further improvement in technical efficiencies in production and productivity. TE of nigerseed production is summarized in the following way (Table 6.13).

Table 6.13: Summary of TE distribution for nigerseed SHFs

TE level	frequency	%
<0.21		
0.21-0.3		
0.31-0.4		
0.41-0.5	2	1
0.5-0.6	3	1.5
0.61-0.7	4	2.1
0.71-0.8	65	33.3
0.81-0.9	85	43.6
Up to 1	37	19
Total	195	100
Mean	0.8348	
Minimum	0.4927	
Maximum	0.9881	
Range	0.4954	
SD	0.0729	

Source: Computed from field surveyed data 2014

Based on the frontier data (Table 6.13), the average TE of nigerseed SHFs was 83% and the deviation gap from frontier efficiency was 15.5% (that is 100%-83%). Though range of efficiency had wider value of 50%, the efficiency of most of the SHFs (44%) had lied about the average. Moreover, the data had small standard deviation (0.0729) suggesting slight variation of nigerseed SHFs. This implies that SHFs nigerseed production is almost the same because all SHFs have no any modern inputs (fertilizer, seed and herbicides) and without agricultural extension support. However, the higher TE does not explain the poor production system of nigerseed in the study region since the model measures inputs against output for similar nigerseed SHFs.

6.2.2.2 Allocative efficiency (AE) of agriculture

Allocative efficiency (AE) was a cost effectiveness ratio of SHFs in inputs for agriculture and it is equal to frontier output cost over observed output cost. The following discussion measures AE of wheat and nigerseed SHFs.

6.2.2.2.1 Allocative efficiency (AE) SHFs of wheat

Wheat SHFs need to have cost effective combination of inputs for higher AE (Table 6.14).

Table 6.14: MLE of Cobb-Douglas stochastic frontier cost function (in US$) and inefficiency model for wheat production

Variable	Parameter	Coefficient	SE	t-ratio
SFA model constant	β0	299.8637*	0.9562	313.6023
Ln (local seed cost)	β1	-9.8268*	0.5190	-18.9350
Ln (improved seed cost)	β2	10.0151*	0.5180	19.3336
Ln (DAP cost)	β3	-23.6558*	0.8574	-25.0294
Ln (Urea cost)	β4	34.3765*	0.9176	36.2840
Ln (labour cost)	β5	-12.1652*	0.8173	-16.0331
Ln (oxen labour cost)	β7	-13.5684*	0.8856	-16.3216
Ln (herbs cost)	β8	16.1667*	0.7237	23.7216
Inefficiency model constant	β0	-1.8889***	1.0071	-1.8753
Farming experience	β1	-0.0119	0.01608	-0.7385
Leadership experience	β2	1.2362**	0.4710	2.6247
Irrigation access	β3	0.5777	0.6210	0.9303
DA contacts	β4	0.0587	0.0439	1.3374
Sex	β5	-0.0276	0.6678	-0.0413
Family size	β6	-0.3564**	0.1440	-2.4756
Educational level	β7	-0.1695*	0.0651	-2.6033
Marital status	β8	0.4898	0.7747	0.6322
Off-farm employment	β9	-0.9517	0.6975	-0.3645
Farm training	β10	0.0716	0.5238	0.1367
Credit access	β11	1.8144*	0.5265	3.4463
Variance parameters				
Sigma squared (σ^2)		0.8027*	0.8317	9.6516
Gamma (**γ**)		0.8322	0.0287	0.0029
Log likelihood function		-108.7320		
Likelihood ration (LR one sided error		133.3610		

Source: Processed from field survey data 2014

*,** and *** significant at 1%,5% and 10%

In the SFA of MLE model, the elasticity's of wheat agricultural inputs costs with respect to local seed, improved seed, urea fertilizer and oxen labour cost were positively significant for dependent variables (AE of SHFs and wheat yield) while DAP, labour cost and herbicides cost had negatively influenced AE of SHFs and yield of wheat. Hence, the results of Cobb-Douglas stochastic frontier analysis model shows that the elasticity of mean value of wheat farm production cost was estimated to be an increasing function for positive coefficients variables (local and improved seeds, urea and oxen labour) while a decreasing function for negative coefficient variables (DAP, human labour and

herbicides) in the study region. Different from urea fertilizer in wheat production, DAP fertilizer was negatively significant for SHFs' cost efficiency since it had been used in excess from the traditional normal system (two DAP: one urea) (Table 6.14). Thus, the excess use of DAP had a decreasing effect on cost allocation efficiency of SHFs in the study region. This is an important implication for policy makers and practitioners for research-based fertilizer application and agricultural practices. Different from this study, Abu, Ater and Abah (2012:264) found that sesame SHFs has faced critical problems in higher price and lack of access for fertilizer.

In the same way, increasing use of labour cost had decreased AE of wheat SHFs, implying that labour-intensive wheat production is not appropriate and cost effective as diminishing return to scale in the study region. It is an important indication for technological change and mechanization of wheat production for better cost AE of SHFs. It will also helpful for clustering of individual fragmented farmlands for better AE from scale economies in the study region. The other positive coefficient inputs (herbicides, urea and improved seed) were in good cost combinations for good wheat output (Table 6.14).

The return-to-scale parameter in this model was found 120.7745 computed as 9.8268+10.0151+23.6558+34.3765+12.1652+13.5684+16.1667 (Table 6.14), implying higher potential for increasing return-to-scale in production cost among SHFs in the study region. This increasing return-to scale suggests 1% increased in inputs cost could increase 121% return to scale or output. This is an important implication for policy and SHFs for using the potential opportunity in the existing situation.

In the inefficiency frontier model, the socio-economic and demographic variables had similar values of both negative and positive coefficients for efficiency and output. The negative coefficients of variables (farm experience, sex and family size, educational level and off-farm employment) had significantly decreased SHFs' cost allocative inefficiency in wheat production. On the other hand, the positive coefficient variables in the model (leadership experience, irrigation access, DA contacts, marital status, farm training and credit access) had been increasing factors for allocative inefficiency of SHFs in wheat production. It had more likely true that social leadership experience (in *Idir*, *Ekub*,

Mahber, SHFs' cooperative, kebele association) was non-profitable community service in time, energy and finance for retarding AE in wheat production. In the same way, increasing number of contact with agricultural extension workers misled SHFs' AE (Table 6.14) since informants state that agricultural extension workers had been based on wrong blanket recommendation of one DAP: one urea ratio for the latter blanket recommendation one DAP:2.65Urea ratio in wheat production for more than two decades in the study region. This is an important policy recommendation for research based (soil map and crop type) fertilizer application and institutional capacity building of agricultural extension services. Both negative and positive coefficients of socio-economic and demographic variables had lessons and policy implications for further agricultural development in inputs combination.

In variance parameters, sigma squared (σ^2) has 80.27%, implying the presence of significant SHFs' inefficncy in wheat agriculture. While the gamma (γ) value 83.22% indicates the presence of significant systematic influence of uncontrolled variables (Vi) outside the control of SHFs in wheat farming (Table 6.14). I observed that unseasonal rainfall (October-December) damaged wheat harvest in the study region in 2014. AE of SHFs was summarized in the following way (Table 6.15).

Table 6.15: Summary of AE distribution of wheat SHFs

AE level	Frequency	%
<0.21		
0.21-0.3		
0.31-0.4		
0.41-0.5	2	1
0.51-0.6	2	1
0.61-0.7	14	6.2
0.71-0.8	51	25.2
0.81-9	122	62.6
Up to 1	4	2
Total	195	100
Mean	0.6220	
Minimum	0.4710	
Maximum	0.9703	
Range	0.4993	
SD	0.0713	

Source: Computed from field surveyed data 2014

Based on the summary of the frontier statistical data (Table 6.15), the average AE of SHFs was 62.2%. This indicates high potential opportunity of 36.8% from frontier and 35% (that is 97%-62%) from the most efficient SHF in the existing resources and technology. In comparison, SHFs had average AE (62.2%) less than their corresponding average TE (78.81%). The range of most efficient and least efficient SHFs was 50% AE gap that could be utilized as opportunity for cost minimization efficiency in the same situation. On the contrary, there had been smaller standard deviation (0.0713) in wheat production, implying that most of the SHFs' AE were approximately the average value (62.6%) but most of the SHFs had higher value between 80%-90%.

6.2.2.2.2 Allocative efficiency of nigerseed production

The allocative efficiency (AE) of nigerseed need to have good efficiency since there has no any modern inputs supply and costs scale economy in URELs. The result revealed that the relationships between cost of inputs and output was positive and all inputs cost (seed cost, labour as human and oxen costs and other costs) could boost AE of SHFs for more output production. Oxen labour cost had positively more significant than other inputs at 1% significant level. These positive value and good AE of wheat indicated that nigerseed demanded more inputs for better output. This was because nigerseed had no any cost of modern inputs and little farm management (little labour in the study area) (Table 6.16).

Table 6.16: MLE of Cobb-Douglas stochastic frontier cost analysis and inefficiency model for nigerseed production

Variable	Parameter	Coefficient	SE	t-ratio
SFA cost constant	β0	349.6468*	73.4665	4.7593
Ln(seed cost)	β1	28.9835	25.0444	1.1128
Ln(human labour cost)	β2	29.1056	25.0405	1.1177
Ln(oxen labour cost)	β3	33.1325*	2.3556	14.5452
Ln(other costs: land tax, threshing, feeding)	β4	28.0408	54.4823	0.5298
Inefficiency model constant	β0	-28.7129	43.2065	-0.6645
Farming experience	β1	-4.7004	4.3482	-1.081
Leadership experience	β2	16.7643	19.4177	0.8118
Irrigation access	β3	-10.1468	16.642	-0.6487
DA contacts	β4	48.6360*	4.095	11.8769
Sex	β5	0.0428	0.0833	0.5129
Family size	β6	0.0079	0.0871	0.0913
Educational level	β7	0.0126	0.0106	1.1902
Marital status	β8	-0.1173	0.1517	-0.7732
Off-farm employment	β9	-0.0091	0.0235	-0.3879
Farm training	β10	-0.0088	0.0138	-0.6352
Credit access	β11	0.0788	0.1663	0.4740
market access	β12	0.055	0.0891	0.6168
Variance parameters				
Sigma squared (σ^2)		0.2518*	0.0270	9.3380
Gamma (**γ**)		0.4931***	0.3045	1.6194
Log likelihood function		-136.6423		
Livelihood ratio test (LR one sided error)		206.4434		

Source: computed field survey data 2014

*, ** and *** represent 1%, 5% and 10% significant level respectively

The greater significance of all inputs for boosting AE implies that nigerseed production demanded more additional inputs application in the existing situation. Hence, increasing inputs was an important potential opportunity for increasing nigerseed AE of SHFs in the study region. In a similar study on sesame production by Abu, Ater and Abah (2012:266) indicate that all the inputs (costs of fertilizer, labour, seed and chemical) in sesame production are positively significant at 1% for increasing SHFs' AE in Nigeria.

In the model, the return-to-scale was increasing as 1% in inputs had proportionately been increasing 119.26% as computed 28.9835+29.1056+33.1325+28.0408 for production cost efficiency of SHFs in the study region (Table 6.16). This shows that higher potential increasing return-to-scale for minimum cost of additional improvements of inputs in nigerseed farm. It also suggests that SHFs can reduce their inputs cost at the current level

of resources to the point of optimal proportions. However, informants stated that nigerseed production had the lowest inputs application and cost since it had not used any BPLs and FPLs support from any institution, even SHF.

In the inefficiency model, the socio-economic and demographic variables had also both negative and positive coefficient variables. The negative coefficients of socio-economic and demographic variables such as farm experience, irrigation access, marital status, off-farm employment and farm training had positive correlation with AE of small-scale SHFs. This indicates that they are important variables for boasting efficiency and reducing cost inefficiency of SHFs. On the other hand, the socio-economic and demographic variables of positive coefficients (social leadership experience, DA contacts, sex, family size, educational level, credit access and market access) were inversely related to the AE of SHFs and had the effect of decreasing AE of SHFs (Table 6.16). Social leadership experience and educational level had significant contribution for allocative inefficiency of SHFs, probably due to encouraging for SHFs' expense in other off-farm activities such as access for urban related expenses and seeking other extra works. Different from this study, Musemwa et al (2013:14) findings in the model of data envelopment analysis (DEA) argue that educational status of SHFs has important support and enhancement for AE of SHFs. Similar to this study finding, Abu, Ater and Abah (2012:266) findings in the inefficiency model indicate that farming experience, educational status and access to credit have positively significance at one percent for AE of sesame SHFs. The negative and positive coefficients of socio-economic and demographic variables have important indications for potential opportunityof agricultural sub-sector of oilseed production. Moreover, greater emphasis for developing negative coefficient variables and reducing the effects of positive coefficients in the real situation of SHFs is the option for policy makers and implementers for agricultural progress.

The outputs of variance parameters confirms that sigma squared (σ^2) value 26.18% cost inefficiency was due to SHFs' composite error terms (Ui) such as farm managerial and other production problems. The gamma (γ) value 49.31% of cost inefficiency was the result of independent and unexplained variables (VI) beyond SHFs' control (Table 6.16). The next section summarizes AE of nigerseed SHFs (Table 6.17).

Table 6.17: Summary of AE distribution for nigerseed SHFs

Level of efficiency	Frequency	%
<0.21	111	55.9
0.21-0.3	33	15.9
0.31-0.4	23	11.8
0.41-0.5	3	1.5
0.51-0.6	3	1.5
0.61-0.7	7	3.6
0.71-0.8	10	6.1
0.81-0.9	5	2.6
Upto 1		
Total	195	100
Mean	0.1289	
Minimum	0.104	
Maximum	0.9048	
Range	0.8008	
SD	0.2222	

Based on the descriptive statistics of frontier data (Table 6.17), the average AE of SHFs was 13%. Hence, its index indicated that nigerseed SHFs had the potential to reduce costs by about 87% (100-13) which is higher opportunity gap. Furthermore, the range of the most efficient and least efficient SHFs was 80%. This wider variation among SHFs is an important potential opportunity for further development in nigerseed for both domestic and export oilseeds production and productivity in the existing resources and technology in the study region. In comparison, average AE of SHFs (13%) was lower than their corresponding average TE (83.48%) in the study region. This implies that policy makers and agriculturalists need to work on AE (expenditure allocation) of SHFs than their TE (total output) in the existing resources and technology.

6.2.2.3 Economic efficiency of agriculture

Economic efficiency (EE) is simply the capacity of a farmer (firm) to produce a maximum outputs (TE) at least cost (AE) within the existing level of resources and available technology. It is the product of TE and AE as EE=AE*TE (4.8 in chapter four). The following discussion shows the economic distribution of SHFs on wheat and nigerseed production.

6.2.2.3.1 Economic efficiency (EE) of wheat SHFs

EE has the result of MLE of TE, AE for each SHF in wheat production.

Table 6.18: Frequency distribution of TE, AE and EE of wheat SHFs

Efficiency level	TE		AE		EE	
	Frequency	%	Frequency	%	Frequency	%
<0.21						
0.21-0.3						
0.31-04	1	0.513			2	1
0.41-5	6	3.078	2	1	5	2.6
0.51-6	2	1.026	2	1	40	20.5
0.61-7	10	6.13	14	6.2	112	56.5
0.71-0.8	59	30.267	51	25.2	34	16.4
0.81-0.9	117	60.021	122	62.6	2	1
Up to 1			4	2		
Total	195	100	195	100	195	100
Mean	0.7981		0.6220		0.6475	
Minimum	0.3225		0.4710		0.3031	
Maximum	0.8814		0.9703		0.8405	
Range	0.5589		0.4993		0.5374	
SD	0.2172		0.0713		0.0720	

Source: Computed as TE *AE=EE through Frontier 4.1C

Based on the descriptive statistical results (Table 6.18), the average EE of SHFs was 65% implying potential opportunity of increasing their wheat production by about 36.25% within the existing resources and technology of SHFs. The range of 54% between the least and the most economically efficient farmers was the other greater variability and dispersion among SHFs' EE for further agricultural development in the study region. In line with this study, the comparative study on SHFs by using Data envelopment analysis (DEA) model has (60%) EE that has wider potential opportunity (Musemwa et al 2013:14). This implies that there is high potential opportunity for future efficiency development and policy makers and concerned stakeholders can consider this opportunity for future potential development in the existing resources and technology. In comparison, sample SHFs' average EE (65%) was less than their TE (80%) and greater than their AE wheat production in the study region.

6.2.2.3.2 Economic efficiency of nigerseed SHFs

The economic efficiency (EE) of nigerseed SHFs was similar to EE of SHF in wheat production. It shows the relative efficiency scores of sample SHFs in relation to each other and to the frontier.

Table 6.19: Summary of TE, AE and EE distribution of nigerseed farming

Efficiency level	TE		AE		EE	
	Frequency	%	Frequency	%	Frequency	%
<0.2			111	55.9	127	66.2
0.21-0.3			33	15.9	33	15.9
0.31-4			23	11.8	10	6.1
0.41-5	2	1	3	1.5	5	2.6
0.51-6	3	1.5	3	1.5	11	6.6
0.61-7	4	2.1	7	3.6	4	2.1
0.71-8	65	33.3	10	6.1	4	2.1
0.81-9	85	43.6	5	2.6	1	0.5
0.91-1	37	19				
Total	195	100	195	100	195	100
Mean	0.8348		0.1280		0.2098	
minimum	0.4927		0.104		0.0078	
Maximum	0.9881		0.9048		0.8037	
Range	0.4954		0.8008		0.7959	
SD	0.0729		0.2222		0.1859	

Source: Processed from TE*AE=EE through frontier 4.1c

Based on the summary of descriptive statistics (Table 6.19), sample SHFs had 21% EE in nigerseed production. This implies that SHFs have about 79% EE gap for potential opportunity in the existing resources and technology. The wider range EE (80%) of SHFs implies the greater opportunity of nigerseed production for increasing in both quantity (TE) and cost (AE) between the least and most efficient SHFs in the existing resources and technology.

Based on Table 6.19, in comparison, the average EE of SHFs was lower than many times from corresponding TE (84%) but better than AE (13%) in nigerseed agriculture. Policy makers and concerned stakeholders could use these greater gaps of efficiency for future development opportunity of SHFs' TE (larger quantity output), AE (cost-effective) and EE dimensions in nigerseed agriculture as well as further development of NOIs and export in the existing resources and technology. In conformity with this study, Abu, Ater

and Abah (2012:267) confirm that there is extreme gap (94.5% EE) between the least and most efficient SHFs in sesame production.

6.3 Efficiency of agro-industries and URELs

Ethiopia has diversified agro-ecologies for the production of different food crops for corresponding development of agro-industrial development. However, agribusiness domestic and foreign earnings are truncated and vicious circle due to inefficiencies of agriculture and agro-industries at bad equilibrium and URELs. It is argued that agro-industries in LDCs are generally characterized by: early stage of development employing simple technologies, small and micro enterprises (SMEs), less developed downstream linkages in the value chain with rare or non-existent distribution and marketing chains or services (UNIDO 2009a:6 and Memedovic and Shepherd 2009:6). This is because agri-business and agricultural industrialization in LDCs have given little attention for sustainable production and integrated development approaches for complementary and reinforcing advantages. Importing agricultural production inputs (seeds, fertilizers and irrigation systems) and exporting agricultural raw materials is the other scenario in LDCs for poor performance in agro-industrial development in poor countries (UN 2008:208). The following section presents the descriptive and econometric analysis of agro-industries for evaluating efficiencies in the present situation.

6.3.1 Descriptive analysis of agro-industrialists

The descriptive analysis described the sample industrialists' socio-economic and demographic factors and other influencing variables affecting their vertical (BPLs and FPLs) and horizontal (organizational and social capital) linkages and networks in their industrial processing.

1. Educational status and Gender of industrialists

Most agro-industrialists (80%) had completed secondary school and above in their educational status while 20% of them could only read and write attending below grade five. However, I observed that there was no technological difference among sample NOIs due to educational and other personal differences. All industrialists were male-headed households but majority of the agro-industrial licenses (70%) were in the name of their

wives (Field survey 2014). Informants stated the reason for industrial licence in the name of female was that it was for the using the government's tax reduction strategy for females. This was because females' entrepreneurs and businesses had theoretically better government support as gender issue. This implies that the government tax is one burden for agro-industrialists.

2. Age and work experience

The agro-industrial experience of respondents had ranged from four years to 45 years with average year of 13.7 years. However, in my observation there was no difference between the oldest and the newly established NOIs. Respondents had age range of minimum 33 years and a maximum of 63 years old (Field survey 2014). This implies that all the respondents were in active productive age group for better labour-intensive agro-industrial production. Informants stated that there were six NOIs that had been closed due to many challenges and impositions or interventions at DMT and most of these stopping NOIs were in 01 *kebele*. The researcher investigated these previous NOIs and all were converted into resident houses in DMT.

3. Marital status and family size

All industrialists had married with average family size of 5.5, minimum family size of four and maximum eight. The average family size of industrialists is more than the sample SHFs' 5.2. Agro-industrial activity had some positive association family size. Informants argued that the larger family size was important opportunity for straddling on diversified income sources and occupation with agro-industrial activity. This implies that one possible explanation is that the larger family size households are more likely to use in labour-intensive agro-industrial processing and other additional diversified economic system.

4. Training and access to financial system

Agro-industrialists had not given any training and/or consultation from concerned officials (industry sector) and other stakeholders (Filed survey 2014). Informants stated that political members who had no industrial relationship for consultation and training to industrialists occupy the government industrial sectoral institution. The workers in the industrial sector office were appointed for only computing and collecting industrial taxes.

Furthermore, they explained that the industrial sector institution was better to have professionals rather than politician for different supports and training of industrialists as well as leading how to use the advantages of scale economies.

They confirmed that they had demanded finance for scale economies in collecting and storing raw materials, automobile for input-output distribution and upgrading the obsolete industrial system. However, all industrialists had no access to any financial system from either banks or formal credit institutions (Field survey 2014). They explained that bank credit system needed higher collateral, interest with immediate repayment (usually within a maximum of three years). On the other hand, industrial activity and development needed long term financial system for profit and repayment. As a result, all agro-industrialist had 'Ekub[18]' as alternative financial system (Field survey 2015). This implies that lack of government professional support in training and consultation with the absence of financial access made industrialists to use obsolete and backward industrial technology for NOIs. However, the obsolete and traditional agro-processing would affect community health.

5. Production partnership and agro-industrial linkages

All industrialists had no any partnership and direct production linkages with their main stakeholder of SHFs as well as their own association. All had disintegrated sources of BPLs such as local market (SHFs), assemblers, cooperatives, wholesale traders and intermediaries (Field survey 2014). This implies they have lacked many advantages of vertical (BPLs) and horizontal (association) for socio-economic and governance. In conformity to this study, Innocent and Adefila (2014:166) argue that associations have significant contribution in overcoming socio-economic and governance problems by capacity building for members and networks with international institutions.

6. Additional occupation and employment

Concerning other additional occupation, almost all agro-industrialists (80%) had also other additional occupation such as cereal storage and wholesaling, shopping, hen farming and other types at DMT and Addis Ababa (Field survey 2014). This implies that

[18] Is the local name for financial support system turn by turn for all members without interest. Any member with critical problem can get the first turn by paying some administrative cost for the group. Then, it can have time for every turn to repay without interest (Informants, 2014),

industrialists have straddled on different income sources because the agro-industrial system is in vicious circle for unable to have profitable processing. The availability of additional other jobs was neither transforming obsolete technology like packaging of products for scale economy nor resources expansion as different branches. This argument is based on lack of relationship and complementarity between the additional jobs and their agro-industrial processing. For example, one agro-industrialist had unrelated business of hotel with its agro-processing. However, except one agro-industrialist who had good capacity in either of the occupation, all other sample agro-industrialists had used diversification as a risk avoiding and survival strategy. Agro-industrial activities at DMT were at risk of different challenges and problems. (Field survey 2014). In line with this study, income diversification in LDCs is commonly used for survival and a few for consolidation or accumulation similar to subsistence farmers' spatial straddling to urban centres and rural areas (Baker 2006:52).

In the employment status of agro-industries, except one that had four permanent employees, all NOIs had used family labour and occasional wage. SFI had 12 employees and about 20 wage labourers (Field survey 2014). This implies that agro-industries have little significance for employment opportunity due to mainly their poor performance and inefficiency.

7. Manufacturing partnerships and social capital

All the respondents stated that they had no any association and social capital for mutual support system. They had been blaming and conflicting one the other. They added that there were industrial association for supporting each other at DMT and in the country. However, the current government had dismantled their association in 1997 and they had not yet had any industrial organization (Field survey 2014). This implies that dismantling the industrial orgware without reorganizing any other has negative effects on the industrial economy in particular and the overall development of the country in general. The absence the national industrial organizational structure can have lack of knowledge for the socio-economic and politico-governance advantages such as building social capital, using advantages of scale economy, knowledge sharing and joint bargaining power. Similarly, Innocent and Adefila (2014:161) assert that cooperatives have

significant advantages for agricultural development by empowering people for creating awareness and capacity building, solving their politico-governance and socio-economic problems.

8. Policy benefit for industrialists

In the literature, the comprehensive development policy ADLI was rural biased marginalizing industrial and urban issues. All industrialists stated that there had no any policy (ADLI, GTP, or sectoral industrial policy) that benefited or supported agro-industrialists (Filed survey 2014). This can indicate that policy-makers need to evaluate the comprehensive ADLI and industrial development policies.

9. Production and productivity of agro-industries

The sample agro-industries are wheat agro-industry (SFI) and nigerseed processors (NOIs). The existing status of the sample agro-industries had differences in the production and productivity. SFI had a processing capacity of 240 qt of wheat per day while NOIs have processed on the average 2.2 qt per day. NOIs were found working under their capacity due to mainly market failure, lack of enabling environment (Field survey 2014).

10. Industrial infrastructures

Industrial infrastructure was a critical problem at DMT. The core infrastructure, electric energy had many challenges and problems including serving as taxation-basis. Informants contended that electrical energy access, supply and accountability were 'totally' absent at DMT in particular and Ethiopia in general. There were circular and repeated interruptions (average eight days every month) without awareness to industrialists and lower power supply that could not move the industry for exposing great losses and damages in industrial processing. Furthermore, all nigerseed industrialists had no industrial automobile for input-output transportation and distribution (Field survey 2014). This implies that policy makers and concerned industrial development actors need to consider all industrial infrastructures in the system of orgware, hardware and software for their regional and national development.

6.3.2 Econometric analysis of agro-industries

The parameter of Cobb Douglas stochastic production and cost function used maximum likelihood estimation (MLE) method in frontier version 4.1c package. The development of agro-industrial processing needs to improve efficiency in output quantity (TE), expenditure and cost-effectiveness (AE) and overall economic performance (EE). The next section discusses econometric analysis of sample agro-industries TE.

6.3.2.1 Technical efficiency (TE) of industrialists

The MLE of agro-industries through frontier packages had three categories for TE: stochastic frontier model, inefficiency model (Ui) and variance parameters (Table 6.20).

Table 6.20: MLE of Cobb-Douglas stochastic frontier production and inefficiency models for TE of industrialists.

Variable	Parameter	Coefficient	SE	t-value
SFA model Constant	β0	-3.8315*	0.7757	-4.9393
Ln(Rm)	β1	1.3724*	0.0985	13.9212
Ln(labour)	β2	0.5969**	0.2103	2.8382
Ln(electricity)	β3	0.3302*	0.0520	5.3542
Ln(nonworking days)	β4	-0.0582	0.0597	-0.9756
Ln(capital)	β5	0.0535	0.1129	0.4736
Ln(Tax)	β6	-0.1948	0.0075	-0.8329
Ln(miscellaneous expense)	β7	-0.0284*	0.2763	-6.0499
Inefficiency model constant	β0	0	0	0
Sex	β1	-0.3146	0.6245	-0.5037
Experience	β2	0.0051	0.0052	1.0092
Education level	β3	0.0187***	0.0104	1.7904
Family size	β4	-0.0098	0.0291	-0.3381
Credit	β5	0.0146	0.0398	0.3662
Policy benefit	β6	0.0448	0.1059	0.4235
Other additional job	β7	0.1015	0.1220	0.8314
industrial automobile	β8	0.6022*	0.1185	6.0807
Government support	β9	0.6181*	0.0985	5.2740
Variance parameters				
Sigma squared (σ^2)		0.0012*	0.0006	3.2676
Gamma (γ)		0.7984*	0.0124	64.3871
Log likelihood function		26.7392		
Livelihood ration test (LR one sided error)		16.6474		

Source: Field survey data 2014

*,** and *** represents statistically significant at 1%, 5% and 10% respectively.

In the MLE of Cobb-Douglas stochastic frontier analysis (SFA) model, positive coefficients input variables (raw materials, labour force, electricity provision and capital) were positively proportional to elasticity of production in the agro-industries. This implies that increasing these variables have significant value for increasing TE and elasticity of agro-industries to the diminishing return to scale. Labour had also significant contribution for industrial output since these sample agro-industries were traditional and labour-intensive. Capital was significant input in agro-industries TE for more outputs, implying that the agro-industrial production could have the advantages of scale economy. Though electric energy supply was crucial for all the processing activities and value transformation, it had critical problems in the study region in particular and Ethiopia in general. On the other hand, the negative coefficients of input variables (non-working days, government tax and miscellaneous expenses such as daily wage) had increased technical inefficiency and retarding agro-industrial output progress (Table 6.20). This implies that both positive and negative coefficients can give lessons for agro-industrial TE. In the same way, policy makers and concerned key stakeholders need to consider the extrinsic problems (electricity provision, Tax and other problems of enabling environment) for boosting agro-industries.

TE of agro-industrialists had increasing return-to-scale parameter 2.6344 calculated as 1.3724+0.5969+0.3302+0.0582+0.0535+0.1948+0.0284) (Table 6.20). This implies increasing inputs by 1% can increase total output by 2.6344%. Consequently, in the development process of agro-industrial outputs (TE), increasing and improving inputs need all key actors participation.

In the stochastic frontier inefficiency model of socio-economic and demographic variables, the negative coefficient variables of sex and family size were positively proportional to TE and output of industrial production. This shows that increasing these variables increase output and TE of agro-industries. On the other hand, the positive coefficient variables (industrial experience, education, credit access, policy benefit[19], other additional job, lack of industrial automobile, lack of government support, industrial consultancy services) had positively proportional with agro-industrial technical

[19] Comperhansive development policy of the country, ADLI and sectoral iindustrial policy

inefficiency (Table 6.20). This implies that these negative intrinsic and extrinsic variables in the inefficiency model indicate coordinated action and solution from agro-industrialists, SHFs, policy makers and implementers. In line with this study, the study of Habitamu (2010:35) on Ethiopian agro-industries asserts that the mean TE of public and private industries is 12% and 11% respectively due to mainly poor quality of wheat, poor linkages between agro-industries and farm as well as poor technology. He furthermore explains that lack of modern marketing skill, financial resources and sufficient professional food technologists are the external constraints in agro-industrial development in Ethiopia.

In variance parameters, sigma squared (σ^2=0.12%) indicated industrialists' technical inefficiency was smaller and almost insignificant. On the other hand, the gamma (γ=79.84%) indicated the presence of significant effect of uncontrolled factors outside the control of agro-industrialists (Table 6.20). The next summary shows the gaps and average potential opportunities of efficiency development.

Table 6.21: Summary of TE distribution for agro-industrialists

TE level	Frequency	%
<0.21		
0.21-0.3		
0.31-4	1	10
0.41-0.5	2	20
0.51-0.6		
0.61-0.7	1	10
0.71-0.8	1	10
0.81-0.9	5	50
0.91-1		
Total	10	100
Mean	0.7406	
Minimum	0.3919	
Maximum	0.8989	
Range	0.507	
SD	0.2187	

Source: Computed from field survey data 2014

Based on the frontier data (Table 6.21), in interpreting the inefficiency measures of industrialists, the range of the least efficient and most efficient (51%) had greater

difference and dispersion among agro-industrialists in TE. However, about half of the agro-industrialists were found above the average TE (74%) with smaller standard deviation of 0.2186. Hence, agro-industrialists had average potential opportunity of 26% (frontier- average) development in the existing resources and technology under perfect and technically efficient production situation. However, some input and inefficiency variables such as electricity, tax, policy benefit and support were outside the control and management system of agro-industrialists that need the government's intervention. Consequently, attaining the potential opportunity gap (26%) depended on the practical implementation of agro-industrialists, SHFs and the government since about 20% of the TE of gamma value was found outside the agro-industrialist control. Different from this study, Habitamu (2010:35) on the TE of Ethiopian agro-industries asserts that the mean TE of public and private industries is 12% and 11% respectively in Ethiopia. The following discussion presents the AE and the gaps of agro-industries for development.

6.3.2.2 Allocative efficiency (AE) of agro-industrialists

The coefficients interpretation in the frontier model output have AE that is cost minimization index of agro-industrialists (Table 6.22).

Table 6.22: MLE of Cobb-Douglas stochastic frontier cost function and inefficiency model for sample (SFI and NOIs) industrialists

Variable	Parameter	Coefficient	SE	t-ratio
SFA model constant	β0	118.835*	0.9871	119.704
Raw material cost	β1	20.6669*	0.8892	23.2429
Labour cost	β2	21.50734*	0.9112	23.8081
Energy cost	β3	-35.6125*	0.8864	-40.9888
Energy interruption cost	β4	-18.7919*	0.9212	-20.5705
Non-working days cost	β5	-40.6736*	0.8684	-45.4485
Tax cost	β6	-19.8960*	0.9007	-21.9679
Miscellaneous cost	β7	34.2461*	0.9218	36.874
Inefficiency model constant	β0	-0.0176	1.0003	-0.0176
Sex	β1	-0.2535	0.1850	-1.3704
Years of work experience	β2	-0.0487	1.003	-0.04859
Educational level	β3	0.0045	0.9959	0.0045
Family size	β4	-0.0411	0.3627	-0.1133
Credit access	β5	0.0273	0.9963	0.0274
Government support	β6	0.1355	0.9471	0.1431
Policy benefit	β7	0.5052	0.3837	1.3167
Other additional job	β8	-0.0176	1.0003	-0.0176
Company automobile	β9	0.1561	0.1008	0.1548
variance parameters				
Sigma squared (σ^2)		1.6772	1.5306	1.0958
Gamma (γ)		0.8459	0.1194	6.0818
Log likelihood function		-8.7141		
Likelihood ratio (LR test one-sided error)		20.2669		

Source: Processed from field survey data 2014

*,** and **** the 1%, 5% and 10% significant level respectively

In the MLE of Cobb-Douglas stochastic frontier production model, the positive coefficients inputs (raw materials, labour force and miscellaneous expenses) had highly significant value for AE of agro-industrialists' output change (elasticity). Agro-industrialists could have better cost efficiency with increasing raw materials. This means if raw materials value increases by 1%, the AE of output can increase by 20.67%. The positive coefficient of labour force confirmed the labour-intensive industries for using the cheap labour force and wage though their employment opportunity had not yet more than family-industry. The miscellaneous expenses such as maintenance and machine clearance

had positively significant proportional to elasticity; implying increasing such agro-industrial services would boost the outcome of AE. On the other hand, negative coefficients of input variables (cost of electrical energy utilized, energy interruption cost, non-working cultural and national days interruption cost and tax) were significantly decreasing TE of agro-industrialists and retarded output. For example, electrical energy cost had been increasing allocative inefficiency for more expenditure. This implies that both positive and negative coefficient outputs have given good lessons and alternative considerations for policy makers, implementers and agro-industrialists in the improvement of TE (Table 6.22). This is an important potential area of AE where increasing all positively proportionate inputs while decreasing or changing all the negatively coefficient inputs in the agro-industrial production for increasing return.

The return-to-scale parameter (absolute values of inputs sum) in this AE of agro-industrialists had been 192.3943 (calculated as 20.6669+21.5073+35.6125+ 18.7919+40.6736+19.896+34.2461), implying that high increasing return-to-scale that an increase all inputs prices in 1% can proportionately be increasing by 192.3943% of agro-industrial production in the study region (Table 6.22).

It was the potential opportunity for increasing cost of inputs allocation in some combination for higher increasing return-to-scale in the study region. However, it also demands the coordination of all stakeholders (agro-industrialists, SHFs, the government and implementers) for effective inputs combination and allocation in the existing resources, technology and overall situation.

In the stochastic frontier inefficiency model, the socio-economic and demographic variables had non-significant effects on AE of agro-industries. The negative coefficient variables of sex, year of work experience, family size and other additional job had directly proportional to AE of agro-industrialists while the positive coefficient variables such as educational level, credit access, government support, policy benefit[20], and company automobile had inversely proportional to AE of agro-industrialists (Table 6.22). This implies that both negative and positive coefficients are good considerations for improving agro-industrials inefficiency in the study region. The important issue in this

[20] Comperhansive development policy of the country, ADLI and sectoral iindustrial policy

finding is the industrialists' educational value that shows retarding situation for both TE and AE. This could be the other employment options and devotion area for poverty reduction. All industrialists except SFI had no vehicles for collecting raw materials and distributing their outputs. Consequently, lack of agro-industrial vehicle was positively proportional to AE. This implies that vehicles would be an essential part of agro-industries for the advantages of scale economy in BPLs and FPLs.

In variance parameters, sigma squared (σ^2=166.72%) indicates highly significant industrialists' allocative inefficiency value. The gamma (γ=84.59%) presented important effects of uncontrolled variables for allocative inefficiency outside the control of agro-industrialists (Table 6.22). Informants substantiated that the government had no any consistent system in implementing legal and institutional framework for industrial production and working environment. Consequently, industrialists had no managed processing for the advantages of scale economy. Interview with government officials confirmed the presence of many problems and tax related complaints on local agro-industries. The implication that government support is found a significant factor for AE in the analysis of econometric model though the model can only consider policy benefit and government support as dummy variables. This also implies the policy makers can consider their improvements for better AE of agro-industries.

Table 6.23: Summary of AE distribution for agro-industrialist

TE level	Frequency	%
<0.21		
0.21-0.3	1	10
0.31-4		
0.41-0.5		
0.51-0.6		
0.61-0.7		
0.71-0.8		
0.81-0.9	9	90
0.91-1		
Total	10	100
Mean	0.7084	
minimum	0.2778	
maximum	0.8968	
Range	0.62	
SD	0.1859	

Source: Computed from field survey data 2014

Based on the frontier results summary of agro-industrialists (Table 6.23), the inefficiency measures of agro-industrialists indicated the presence of wider gap of range (62%) among the least and the most efficient industrialists that could be potential opportunity of more AE of each agro-industrialist. Agro-industrialists had the opportunity of increasing their AE cost to the minimum likelihood frontier opportunity cost by 29% under perfect AE production condition. Though the standard deviation had lower value (0.18590), most of the individual agro-industrialists' AE (90%) was found above the mean value 71%. This implies that a few agro-industrialists need special support for improving their inefficiency to reach the most efficient one. It is also important to consider that improving the allocative inefficiency also needs the coordination of all key stakeholders (agro-industrialists, SHFs and the government).

In comparison, the average AE of agro-industrialists (71%) was lower than their corresponding TE (74%). As a result, it had larger potential opportunity (29.16%) than the potential opportunity of corresponding TE (26%) of agro-industrialists in the existing resources and technology (Table 7.23). The following discussion presents the economic efficiency (EE) of agro-industrialists for overall improvement.

6.3.2.3 Economic efficiency of agro-processors

Economic efficiency (EE) is the result of TE and AE of agro-industrialists. The TE and AE were also compared with EE for showing the gap of opportunity (Table 6.24).

Table 6.24: Summary of EE distribution of agro-industrialist in the study region

Efficiency level	TE		AE		EE	
	Frequency	%	Frequency	%	Frequency	%
0.1-0.2						
0.21-0.3			1	10	1	10
0.31-4	1	10				
0.41-5	2	20			3	30
0.51-6						
0.61-7	1	10				
0.71-8	1	10				
0.81-9	5	50	9	90	6	50
0.91-1						
Total	10	100	10	100	10	100
Mean	0.7406		0.7084		0.6721	
Minimum	0.3919		0.2778		0.2455	
Maximum	0.8989		0.8968		0.8921	
Range	0.504		0.619		0.6466	
SD	0.2187		0.1859		0.2498	

Source: Computed as TE*AE=EE in Frontier 4.1c.

The relative EE of agro-industrialists indicated that the least efficient (24%) and most (89%) EE agro-industrialists. The wide range of EE (65%) had higher (35%) average potential opportunity of future EE development under existing resources and technology to the frontier production model. However, the small standard deviation 0.2498 might be due to some inappropriate data in the model application. In comparison, average EE (67%) was the least form average TE (74%) and AE (71%) of agro-industrialists (Table 7.24). This implies that there is greater and untapped potential opportunity for agro-industrialists' inefficiencies improvement under existing resources, technology and environment. The next section summarizes the main points and put concluding points.

6.4 Summary and concluding remarks of the chapter

The data were analyzed both in descriptive and inferential econometric model of Cobb-Douglas stochastic frontier analysis in the existing situation for further development interventions for the support of SHFs and industrialists. The descriptive and econometric analysis of SHFs and agro-industrialists had socio-economic and demographic descriptive analyses and three econometric models (SFA, inefficiency and variance)

results. Some of the socio-economic and demographic descriptive statistics of sample SHFs were 88% married, the average 42.6 years old, most (95.4%) in productive age groups with average farm experience of 25 years, average family size of 5.2, most (61%) primary schooling up to grade eight, almost all (98%) mixed agriculture with 88% livestock possession and 5.43 TLU, based on blanket recommendation without R&D as well as soil map, 90.8% financial credit access to exploitative political affiliated institution (ACSI) and their organization FSCC, average landholding 1.5ha per household, and high irrigation potential opportunity. The average wheat and nigerseed productivity of SHFs were 42 qt/ha and 8 qt/ha respectively in Genet while, the average wheat and nigerseed productivity were 36 qt/ha and 10 qt/ha respectively in Girakidamin *kebele*. Based on international poverty measure (1.25$ and 2.25$ criteria), SHFs had most (61%) in absolute poverty, 29% in relative poverty and 10% free from poverty in the study region.

The descriptive statistics of agro-industrialists were all productive age group and married, average family size of 5.5, *Ekub* as financial access for all, good average industrial experience (14 years), majority (80%) additional other employment and critical electrical energy problem (average eight days per month without supply). The processing capacities of SFI and NOIs were 240 qt per day and average 2.2 qt per day in the existing situation respectively. The econometric model analysis had three measures focused on wheat and nigerseed SHFs and corresponding agro-industrialists (Table 6.25).

Table 6.25: Overall summary of agriculture and agro-industrial efficiencies

Efficiency description	Wheat			Nigerseed			Agro-industries		
	TE%	AE%	EE%	TE%	AE%	EE%	TE%	AE%	EE%
Mean	79.81	62.20	64.75	83.48	12.80	20.98	74.06	70.84	66.21
Minimum	32.25	46.10	30.31	49.27	10.4	0.78	39.19	26.78	24.55
Maximum	88.14	96.03	84.05	98.81	90.48	80.37	89.89	89.68	89.21
Range	56.85	49.93	53.74	49.54	80.08	79.59	50.7	62	64.66
SD	0.2172	0.0713	0.0720	0.0729	0.2222	0.1859	0.2187	0.1859	0.2498

Based on the short statistical summary of Table 6.25, wheat SHFs had averages efficiencies of 80% TE, 62% AE and 65% EE. In wheat production, the least efficient SHFs had 32% TE, 47% AE and 30% EE while the most efficient had 88% TE, 97% AE

and 84% EE. Thus, the efficiency gaps of the most efficient and least efficient SHFs were 56% TE, 50% AE and 54% EE in the existing resources and situation.

Nigerseed SHFs efficiency: averages of 49 TE, 13% AE and 21% EE. In nigerseed production, the least efficient SHFs had 49% TE, 10% AE and 1% EE against the most efficient SHFs who had 99% TE, 91% AE and 80% EE in the existing situation. Therefore, the efficiency gaps of nigerseed farm were 50% TE, 81% AE and 79% EE.

In agro-industrial processing, the least efficient industrialists had 39% TE, 28% AE and 24% EE while the most efficient ones had 90% TE, 90% AE and 89% EE. The efficiency gaps of agro-industrialists were 51% TE, 62% AE and 65% EE and the average of efficiencies were 74% TE, 71% AE and 67% EE in the existing situation and resources.

In short, the wider efficiency ranges among SHFs and industrialists are good potential opportunities for policy intervetions. The important implication of efficiency analysis is the identification of key agricultural and agro-industrial inputs implication for solving truncated URELs of chapter five. The next chapter presents the main challenges and problems for poor efficiency and truncated URELs in the study region in particular and ABCs in general.

7 Chapter Seven: Challenges and problems of urban-rural economic linkages (URELs)

7.1 Introduction

The focuse of this chapter is unlocking paradoxes and contraditions in URELs for the third objective of the study. Ethiopia is rich in agricultural and industrial resources for the advantages of developing virtuous circle agricultural industrialization (Wohimuth 2013:3, 16). However, the country is the poorest country in the world next to Niger in 2015 (OPHI 2015:5). The chapter unlocked and uncovered challenges and problems for the country's underdevelopment by responding the third objective. This objective is to 'investigate challenges and problems of URELs'. The variables were selected based on literature and field survey (pilot, sequential explanatory mixed methods research, researcher's empirical experience and researches). The variables are important challenges and problems in the political economy and development of Africa countries (Levan 2015:212 and Ojo, Aworawo and Elzabeth 2014:147).

The main contents of this chapter for responding the third objective of the study have many key variables that affected URELs in the study region. The main determinant variables are: institutional settings and their implementation in URELs, taxation system and agriculture-agro-industries, government intervention and URELs, the conflict of resources mobilization and utilization, Independent government businesses (AISE and ACSI), and institutionally dependent businesses (DMU agro-processing enterprise and ERA enterprise) and URELs, small government enterprises and farmers organization PACs and GAU, the conflict of public and private industrialization, R&D and URELs, macro-micro conflicts and URELs, Ethnic-regionalism and socio-cultural capital risks and finally summary and concluding remarks. The next discussion presents the relationships of the political administrative structure and the regional development approach of URELs. The next section discusses the political economy of Ethiopia.

7.2 Ethnic regionalism and URELs

The political leaders have pivotal role for integrated and reinforced socio-economic and environmental developments through policy and institutional settings. Informants stated that the Ethiopian government had been following unitary and centralized form of government based on superficial decentralized ethnic-regionalism under the name of federalism. The Eritrean people's liberation front (EPLF) and the Tigrian People Libration Front (TPLF)[21] had fought guerrilla civil war against the previous Derg government. Then, they succeeded in taking power from the military socialist Derg regime in 1991. EPLF and TPLF did many changes on the political landscape, spatial disintegration for emerging new country Eritrea and landlocked Ethiopia, socio-cultural and economic situation of the country (Berhanu 2013: 1478). EPLF officially seceded from Ethiopia as independent state in 1993. Then, TPLF restructured the landlocked Ethiopia in the form of nine ethnic-regional states and two federal level cities of Addis Ababa and Dire Dawa (Figure 7.1).

[21]TPLF was Guerrilla fighters who came from relatively resource-poor, stony, unfertile highland with drought-prone Tigray (Pausewang 2009a:71).

Descrpition: Ethiopia Political map showing the international boundary, ethnically based states and self-governing administrations' boundaries with their capitals and national capital AA.

Source: Map of the world 2016

Figure 7.1: Nine ethnic reginal states under the unberela of federalism in Ethiopia

These regions were reorganized under the political umbrella of Ethiopian People's Republic Democratic Front (EPRDF). These ethnic regional states were formed by cultural differences in ethnic, linguistic or other mix criteria with many different ethnic zones and special districts since 1991. Informants confirmed that the government had still found any cultural differences in order to establish ethnic-politico administrative areas. Kimant district was established in Amhara regional state in 2015.

Different informants stated that the government of Ethiopia had two structures: the visible ethnic-federalism structure and the invisible and illicit structure of the TPLF behind this federal structure in every regional states and zones. They further explained that the visible structure had legal and known institutional structure of ethnic-federalism and ethnic or linguistic-regionalism (Figure 7.1).

The invisible and mysterious current TPLFs government structure had only key TPLF members who were drivers of ethnic-federalism and regionalism behind the legal government institutional structure in the current political economy of Ethiopia. Informants also claimed that this invisible structure was a fact of visible by its functions and outputs outside the legal institutional tasks and responsibilities. They confirmed that many workers in different government legal institutions lived without known or little responsibilities and tasks for their offices assignment. They explained that there were many tangible accomplished tasks that had no anyone who had responsibilities and accountabilities for them in the country. Some of these accomplished tasks were the unique electric kilowatt (KW)-basis taxation of agro-industries at DMT, many bloodshed conflicts throughout the country, the unique four types of SHFs' taxations (farmland, VAT 15%, withhold tax 2% and dividend tax 10%) only in the study region in particular and Amhara regional state in general. Informants further explained that interethnic deadly bloodsheds and conflicts in different parts of Ethiopia were the results of this hidden and illicit current government ethnic-federalism and regionalism for its 'divide and rule' system. They further explained that the first objective of the ethnic-based regionalism in the so-called ethnic-federalism was the aim of this hidden administrative structure to disintegrate Ethiopia, especially Amhara heritages in the name of 'Neftegna and chauvinist[22]'. Informants claimed that most of systemic and illicit spatio-temporal ethnic conflicts were hidden structure government-induced outcomes and most of the conflicts were between Amhara and other ethnic groups. They pointed out that some of the major conflicts: Amhara and Oromo peoples in Arsi in 1992; Amhara and Oromo peoples in Bure Wollega in 2008 and 2014; Amhara SHFs and SNNPs people at Gura Fedra in 2012 and 2014; Amhara SHFs and Gumz People in 2013 in Benishangul Gumz Regional State; Amhara and SNNPs people in Bench Maji zone in 2014 and youths and university

[22] Citizens having extremist and dogmatist for nationalism and unity of the country.

students of Amhara; some Tigreans with Oromo in Ambo, Haremya and other many Universities in Oromia regional state in 2014 and Amhara and Kimant in Amhara regional state between 2015-2016. These informants added that Kimant' special district has been established from Chilga, Gonder Zuria, Lay Armachew, Tach Armachew and Wogera in north Gondar zone in 2015. This implies that regional development approach and inter-intra regional linkages for virtous circle URELs have challenges and problems or threats for vicious circle model. Most respondent (78%) confirmed the problem of intra-regional and national markets for agricultural and processed goods. One reason for retailing and local activity for both SHFs and agro-industrialists was ethnic-regionalism and conflicts (Field survey 2014 and 2015).

Political science scholars explained that the usual discrimination and inequality, disastrous civil ethnic wars were ethnic cleansing and genocide in the current government in Ethiopia. In Amhara regional state, informants complained that most of urban and rural key political, economic and administration positions were under the administrative leadership of some other ethnic people rather than the indigenous majorities of the region. This implies that the government has added 'fuel on fire' for disintegration and secession of the country and this situation is a challenge for SHFs and agro-industrialists in using the advantages of scale economy. The overall results of ethnic-federalism in the study region and Ethiopia imply that establishing and enhancing cultural differences of a society for further misunderstandings and loss of their social capital is against regional development approach for national, regional and gloval value chain development. In line with this study, ethnic segregation and discrimination without meaningful devolution of power to the ethnic or linguistic regional states in Ethiopia has been a continuing habit of TPLF (Berhanu 2013: 1478). This study is similar to Almazung (2010:72; and Shinn 2004:32) study and their findings confirm that the current government of Ethiopia has created: misunderstandings, deteriorating social capital and national unity and violating the set institutions and policies for making themselves at the centre of complexities similar to Mobutu Seseko in Zaire and Idi Amin in Uganda.

The concerned government bodies also confirmed that institutional framework and political administrative structure had problems of building social values and national

unity. Diverty and misunderstandings were common in many parts of Ethiopia, mainly SNNPs regional state. The government officials further confirmed that they had burdens of orders outside their responsibilities and duties from unknown origin and responsible government authority. They added that root causes for different ethnic bloodshed conflicts and many other social ills in both urban and rural Ethiopia were unknown and hidden in the current government. This implies that the absence of transparency and accountability for roles and responsibilities of government structure could be the main challenge for URELs. In line with this study, Todaro and Smith (2012:40) insist that poor countries have greater social fractionalization that has created development challenges and barriers.

The constitution of Ethiopia with the first real secession of Eritrea has continued enshrining self-determination up to the right to secession for ethnic regional states (Constitution 1995[23]:116). However, informants argued that constitutional secession was for the TPLF's objective as the renaissance of *Zemene Mesafint*[24] during the 18thC in Ethiopia in the name of independent ethnic-regional states. Informants further stated that the paradox of the current government as:

> The current government TPLF has divided the country into ethnic-regional states with their own demarcated territories and flags with legal right for secession that has made ethnic regional states prone to independent territory. It has the aim of forming

[23] is constitution document of the federal democratic republic of Ethiopia for governing laws above all.
[24] was the period when Ethiopia was divided into many regional lords with their autonomous territories as a nation.

> disintegrated Ethiopia with its own regional state in the name of 'Greater Tigray' with institutional support and legal constitution. On the other hand, the government theoretically stated that it has a vision of rebuilding the renaissance of larger, civilized and greater empire of Ethiopia that was during the 4th Century Axumit state. TPLF has used ethnic and linguistic diversity of Ethiopians for 'divide and rule' as past colonizers' legacy by disintegrating the common social capital and values. Before 1991 TPLF government in Ethiopia, there was no such clear notion of linguistically Amhara, Oromo, Somali and any other demarcated ethnic-regional society or community in Ethiopia. Ethnic-federalism has created new incompatible regional states for any development but compatible for new divided and disintegrated Ethiopia for the plan of TPLF similar to Yugoslavia and former Russia.

Informants stated that ethnic-regional states with their special linguistic zones and districts with micro-linguistic minorities created different challenges and problems for intra and inter-regional states communication and linkages for scale economies and macro level agribusinesses. Ethnic-regionalism was a key tool for developing misunderstandings, antagonism and mistrust prone to conflict and civil war for disintegration of the country. They further argued that TPLF had been using ethnic-regionalism and administration structure for the success of its expansionism and secessionism prospect for 'Greater Tigray' in time of its failure and exclusiveness. They asserted that TPLF had made the Ethio-Eritrea border to wait without demarcated boundary and gave large plots of Ethiopian land for Sudan in order to accomplish its 'Greater Tigray' formation (Annex-G). They further explained that Ethiopia was currently been suffering from lack of access to seaport as the largest east Africa landlocked country. In conformity with this study, Dereje (2011:1) confirms that the 1976 TPLF manifesto has the independent Republic of 'Greater Tigray' with geographically demarcated borders of Sudan, including Humera, Welkait, Alewuha, Alamata, Ashengie, Kobo, Eritrean Kunama, Saho, and Afar including Asseb and the renaissance huge dam on Blue Nile. Similarly, political science professionals complained the current situation in Ethiopia that political philosophy of the current government in the name of ethnic federalism and regionalism was renaissance of disintegrated Nagorno-karabakh in Azerbaijan, Abkhazian in Gorgia, Chechnya in communist party of Soviet Union and Serbian region of Bosnia-Herzegovina in Yugoslavia.

The political science experts claimed that ethnic federalism had created strong ethnic nationalists for hardly coexist in the same political space. They suggested that it needed to have integration and expansion of the country through federation and con-federation for the renaissance of the Axumit civilization 'Greater Empire' of Ethiopia. The Greater Empire of Ethiopia had territorial boundary of northern Somalia including Zeyla and Berbera ports, part of Yemen, bordering Egypt to part of eastern Sudan bordering Kharoum and part of Northen Kenya in 400B.C.

Integrated regional development and URELs based on the potential resources has faced challenges and problems in the current sole cultural regionalism. SHFs and agro-industrialists have challenges and barriers for using the advantages of scale economy in their agribusiness at macro and micro levels in the current ethnic-federal government of Ethiopia. In conformity with this findings, Todaro and Smith's (2012) in their economic development analysis on SSACs confirm that dictator governments have preferred to keep their country in underdevelopment trap for their perception of economic development and power loss parallelism with empirical example of Mebutu Seseko of Congo (Todaro and Smith 2012:161, 530). In conformity with this study, Haynes (2008:91) confirms that fragmented society in ethnic or any other cultural traits in SSACs have weakened and disintegrated social capital and interethnic coexistence, individual and minority rights, common citizenship or nationalism and civil societies (such as labour unions) and CBOs. He further explains that dictator governments of Africa have managed to stay in power by transforming themselves via 'divide and rule' colonial principles with ballot box in tightly controlled elections for apparently democratic government. TPLF has also been doing various strategies of disguising itself in the name of 'formal but superficial' rule of law and democratic principles (Haynes 208:109).

The political structure of ethnic-regionalism and federalism without any linguafranca[25], most SHFs (83.6%) and all sample agro-industrialists complained that they had no national and inter-regional agribusiness linkages and social capital in the current government. As a result, almost all SHFs (96.4%) and all industrialists explained that their only local market options were at their zone and/or the capital Addis Ababa (Field

[25] A common communication language for different language speaking people and peoples.

survey 2014). They complained that the pretext of ethnic-based self-administration with illicit and mysterious political system of TPLF aggravated agricultural and agro-industrial market failures for using scale economy in macro and micro levels. One informant stated the problem of linguistic regionalism on macro market situation as, "unless someone speaks the regional languages, even with similar ascent; nobody would like to communicate with for business and may face risk of life, especially in most part of Oromia, Somalia and Afar regional states." This implies SHFs and agro-industrialists could not use the advantages of scale economy and macro market network. As a result, they are restricted to subsistence production for consumption and local market. Contrary to ethnic-regionalism and political system, the institutional and legal frames[26] confirm that every Ethiopian has legal and constitutional right to engage freely in any economic activity and business anywhere to pursue livelihoods within the national territory (Constitution 1995:99).

Informants also explained that there was no multi-party system and democracy to change this inter-ethnic disintegration and conflicts. The institutionalization of most opposition political parties in Ethiopia was even ethnic-based without national vision and missions and they could not have winning prospect in any democratic system let alone the mystery of TPLF political situation. Hence, they would be serving as vehicles for ethnic-driven federal political structure of TPLF. Informants claimed that the underlining cause of almost all failures, underdevelopment of agriculture, agro-industries and URELs was government-induced and the government's lack of willingness, accountability, transparency and commitment with rent seeking, corruption, discrimination and exclusion system in the country. The overall conclusion of ethnic regionalism is the failure of social capital among citizens and a challenge and barrier for agricultural industrialization and integrated regional development approach for using the advantages of scale economies from macro to micro level. In line with this study, Levan (2015:211,2012) studies longitudinal post-independenc political economic development of Nigeria. His findings claims that increasing use of diversity of people as electoral authoritarism results superficial democracy for dictator governments in the grime reality of the country in performance and delivery of broader common goals through 'veto players'. Similarly,

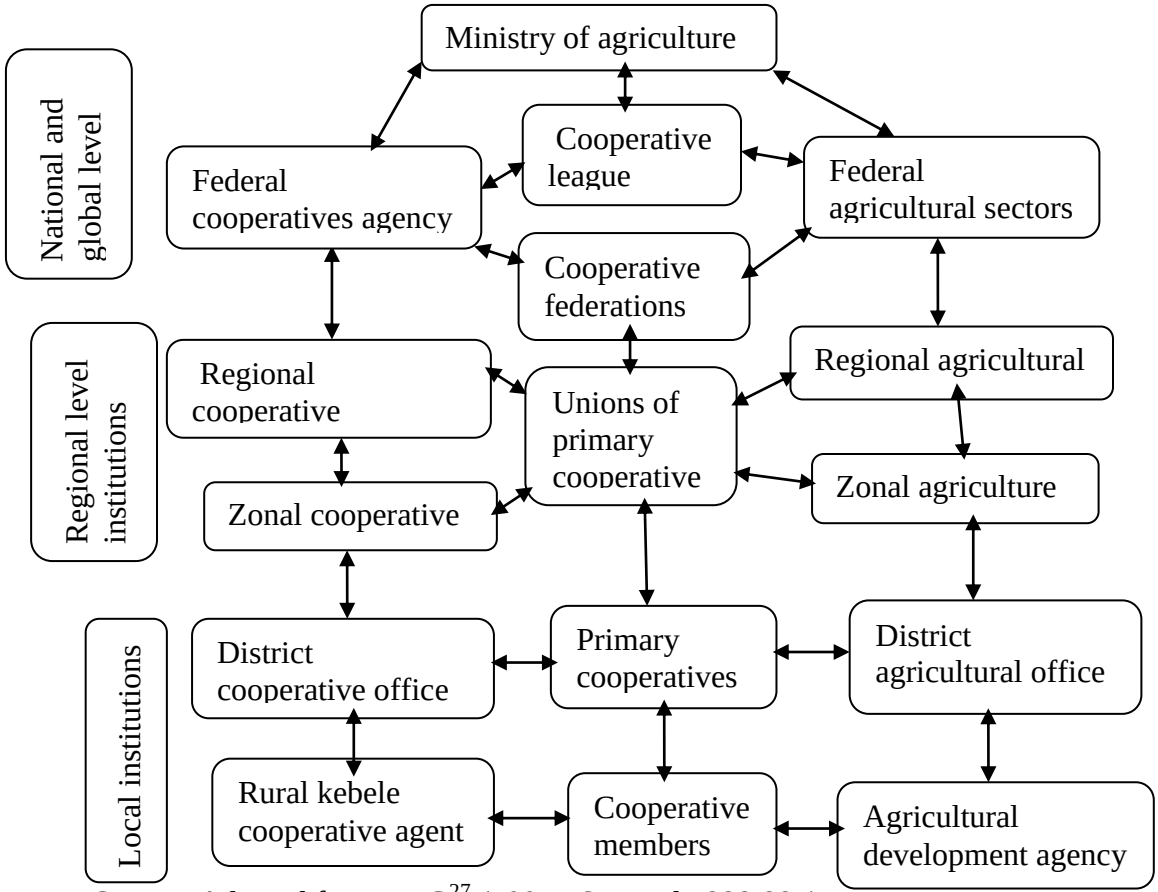
[26] is the opposite of illegal that is out of the framework.

Ojo, Aworawo and Elizabeth (2014:143, 147) argue that theoretical democratic governments can hardly open opportunity of strong governance institutions for socio-economic development. They also conclude that the poor style and institutional governance of Nigeria has resulted in underdevelopment of the country. Criticizing diversity-based governance systems in Africa and other ABCs, Berhanu (2013:1476) concludes that ethnic-federalism in Ethiopia is a mess of citizens, tower of conflict for coexistence, a means of destruction of social capital and facilitating ethno-nationalists for secession and disintegration of Ethiopia. The next section presents the contradiction of theory and practice in agriculture, agro-industries and URELs.

7.3 Institutional implementation failure and URELs

The government has roles and responsibilities for accountable and transparent implementation of its policies and institutional frameworks. However, informants claimed that the implementation of legal and institutional frameworks had different from practice and they were implemented based on personal interest and the will of TPLF and its members. This implies that there is no the rule of law. The following section discusses institutions and practices for URELs in the study region and Ethiopia.

Institutional settings are important guidelines and rules that shape the behaviour of humans in the formal and informal structure. The formal vertical and horizontal organizational arrangement of SHFs and agro-industrialists have many advantages: consolidating fragmented plots, proper pre-harvest and post-harvest advantages (such as storages, scale economies, financial services and modern technological uses, upstream and downstream linkages), developing non-agricultural capacity and infrastructures (education, health, rural road and transport, drinking water supply, telecommunication and electricity) for industrious agricultural labour force (MoFED 2003:42-46). For these advantages, the government established institutional framework for SHFs organizational development (Figure 7.2).



Source: Adapted from FNG[27] (2004:2642 and 1998:994)

Figure 7.2 Vertical and horizontal institutional setting of SHFs organizational structure

The different sectors of the ministry of agriculture are set as the main stakeholders in all levels of SHFs' organizational and institutional settings. The key stakeholders have different responsibilities and duties for supporting SHFs' orgware in horizontal and vertical agricultural management system with different functions including R&D attaining sustainable agriculture and agribusiness development in Ethiopia (Figure 7.2 and Constitution 1995:100).

The institutional establishment of SHFs' organization had criteria from micro primary cooperative to macro cooperative league. Primary cooperative (APCs) can be established greater than nine SHFs at sub-district level while union can be formed by two or more primary cooperatives at sub-regional level. The cooperative federation is the third higher

[27] is the government news paper for issuing legal and institutional proclamations, regulations and directives .

level of SHFs' organizational structure and two or more similar unions can establish only at national level. Cooperative league is the only highest and top hierarchy of SHFs' national organization that can be established by all unions at national level (Figure 7.2 and FNG 1998:944).

This implies that the organizational structure is based on the objective of rural and agricultural-oriented development policy ADLI and it has not included the industrial linkages structure for responsibility and accountability to the ministry of industry. Though the industrial structure has direct BPLs and FPLs with agriculture and agribusiness development in Ethiopia, the dichotomy development policy, ADLI has no integrative development institutional structure for SHFs and industrialist in the country (Figure 7.2). This dichotomy development approach may be one main cause for lack of the complementary and reinforcing sectors (agriculture and agro-industries) at micro and macro levels. This bad equalibruim of the key economic sectors proves the real application of coordination failure and O-ring theories in ABCs.

Informants claimed that the first serious challenge for SHFs is lack of complete organizational arrangement in horizontal and vertical lines of agricultural and industrial sectors based on the constitutional and legal framework. The national SHFs cooperative league and federation had not yet re-established in the country. Informants from local *kebeles* to national level government hierarchy confirmed that the government failed to implement the set SHFs' institutional structures for unknown reasons.

Informants added that their GAU conducted import-export activities but after 2007, it had been prohibited to do its advantages of scale economy at national level. One key informant explained the SHFs' organizational and functional development problems as follow:

> Though unions from all regional states in the country have established committee and contributed one million birr each from 156 unions all over the country for the establishment of national level cooperative league in 2012, this committee was detained, tortured and dispersed by the federal government authorities without any responsible body and reasonable justification. We have still requesting our legal rights for establishing national cooperative league though reunifying and organizing unions in ethnically divided regional states and lack of government willingness are challenges. Moreover, the government has wrongly established the national level cooperative structures at regional federations in Tigray, Oromia and SNNPs. The other bottleneck for our organizational development is the establishment of the government's profit business enterprise called agricultural inputs supply enterprise (AISE) that has overtaken the responsibilities and tasks of our cooperative league. Currently, AISE has been supplying imported fertilizers by its own price and profit determination without any competition of all unions.

The researcher observed the signed application letter addressed to the federal cooperative development agency. The letter has name list of committee members from different regional states and it requested the establishment of cooperative league for the objectives of national and international responsibilities as well as the advantages of membership of international agriculture alliance (IAA). Furthermore, informants at the federal government level asserted that the reason for the absence of national level SHFs' organization was for keeping ethnic federalism as a means of 'divide and rule' without any national level unity as well as for government's business AISE's advantages in divided political and economic environment in the country. They further stated that TPLF-led government had rent-seeking and corruption behaviour at all government levels without the rule of law from its profit businesses as well as the public resources. They suggested that this leadership elites group would result the bad social, economic and environmental consequences on the country similar to other many SSACs such as disintegrated Sudan, Somalia and Nigeria. The different informants at different government hierarchies and key informants confirmed that governance and administration were characterized by institutional violation, subjectivity and personal interest without the rule of law. They suggested that these situations were bottlenecks for agricultural industrialization and integrated regional development approach. They pointed out that the main SHFs and their organizational problems and challenges in the study region and Ethiopia were: the government's lack of willingness and commitment to

support SHFs' organization with the violation of set institutional and legal frameworks. The government and its political affiliated businesses such as AISE were other problems in agriculture and agro-processing as well as truncated URELs (Figure 7.2).

Informants from federal government and regional states of Tigray and Oromia confirmed that there were federations in the three regional states. However, Amhara regional state unions had not want to establish regional federation but they demanded the cooperative league at national level. This shows that the general institutional and organizational settings as well as legal frameworks such as the country's constitution of 1995, proclamations No.147/1998, and regulations No.106/2004 did not give any legal protection and function for SHFs, private manufacturers and their associations. This problems and challenges of agriculture and agro-industries are not only the dichotomy development policy and institutional settings but also lack of implementing the existing policy and institutional settings in the country. Different from this study, Alemayehu (2007:95) argues that the Ethiopian government has recognized cooperatives as one of the major stakeholders for playing tremendous roles such as providing rural basic services and business cooperation for enhancing URLs and development.

Industrialists[28] contended that the national industrial association had been given many socio-economic and governance advantages such as short training and knowledge sharing in industrial management, financial support system and other related activities by many international institutions such as international industrial association development (IIAD). However, they claimed that the current government dismantled the national industrial association (NIA) in 1997 and had not yet re-established for these advantages.

The current government's establishment of regional federations from macro institutional setting only in three ethnic regional states (Tigray, Oromia, SNNPs) from the nine regional states in Ethiopia had confirmed the absence of the rule of law and violation of institutional framework. Thus, it can be realized that the current cultural and ethnic-based governance system would not bring any integrated regional development and URELs for using the advantages of scale economy. Similar to this study, Owusu (2005: 127) confirms that enabling environment in Africa are challenges rather than opportunities for

[28] Can interchangeably used with agro-industrialits of SFI and NOIs.

URLs. In line with this study, Pausewang (2009b:70) and Alemante (2013:17) confirm that the EPRDF constitution is superficial political disguise for obtaining support from political observers and donors in the pretext of democratic governance and the rule of law with constitutional guarantee of human rights. Staatz (2011:79) argues that the inadequate and inconsistent supply of quality agricultural outputs to agro-industries in SSACs is a major constraint for the growth and profitability of agri-businesses. This challenge is due to mainly the poor vertical and horizontal linkages. Thus, he suggests that the agricultural horizontal and vertical value chain need to have complementary arrangements in the form of open markets, contracting arrangements, grading standards, strategic alliances, value chain for the advantages of scale economies.

7.4 Taxation system and URELs

The power and functions of the federal government and regional states have relatively clear responsibilities and tasks as well as governance (Constitution, 1995:106-108). However, informants argued that the TPLF-led government had often made defacto and dejure discriminations, injustices and illegal interventions in many issues such as discriminative taxation on SHFs and agro-industrialists in the study region in particular and Amhara regional state in general. The SHFs' quadrant taxes and agro-industrialists' unique energy-consumption based taxation system were presented as empirical evidences for the absence of rule of law in the study region They further explained that almost all tasks and works were done outside the intuitional and policy frameworks based on the subjective and personal opinion of TPLF members.

Based on document and informants 2014/15 and field survey 2014, SHFs had quadrant tax payments through their rural *Kebele* administration to the Amhara regional state and through their organization, GAU to the federal government called FGCRA. The SHFs tax had farmland tax starting from 40 birr for less than 0.5 ha to 40 birr increment rate for every 0.5 ha additional farmland with other miscellaneous payments to their respective Amhara regional state. SHFs' other miscellaneous payments were: school building, military or locally *milisha* training, 100 birr per annum for Amhara development association (ADA), 51 birr per annum for rural kebele administration services, 10 birr per annum for sport, 5 birr per annum for Red Cross and 7 birr for community support

services. They confirmed that individual SHF had been paying the highest tax in the country. Based on the findings in the study region, the researcher conducted field survey for crosschecking the overall situation within other adjacent Oromia Regional State and Tigray Regional State in May 2014. Informants explained that SHFs paid minimum 15 birr for less than 0.5 ha and maximum 260 birr for any farmland above five ha in Oromia Regional State. In the same way, SHFs had been paying minimum 20 birr for less than 0.5 ha with increasing rate of 30 birr for every 1ha farmland increment in Tigray Regional State (Annex-F).

The other SHFs' taxation problem and challenge was from FGCRA on GAU in the study region and all other agricultural unions in Amhara Regional State. Informants explained that GAU had been paying three types of taxes: value added tax (VAT) 15%, withhold or turnover tax[29] 2% and dividend tax 10% since 2011 to FGCRA. Informants complained that other maladministration and power corruption of the TPLF-led government in the study region in particular and Amhara regional state in general was uncountable. For example, they stated that capital punishments of SHFs unions were 3.3 million birr for GAU and Damot agricultural union (6.5 million birr), Tsehay agricultural union (14 million), Merkeb agricultural union (4.4 million birr) and other unions (with 56 agricultural unions) only in Amhara regional state in 2011 by the pretext of lately beginning for tax payment to federal government. FGRCA directly took its punished capital from bank accounts without unions' consent and awareness such as Damot union bank deposit of five million birr (documents and informants, 2014). Informants claimed that different from all other regional states and SHFs' unions in Ethiopia, TPLF government through FGRCA discriminately punished SHFs' organization GAU and all other unions in Amhara regional state. Informants further elaborated that all SHFs' organizations had not yet paid any tax in other regional states of Ethiopia. One key informant stated the situation of illegal punishment and irregular taxation of agricultural unions in Amhara regional state as follow:

[29] Service payment above 500 birr from client and buying above 10,000 birr from the seller's total payment (expert informant, 2014) and it does not touch the union capital. All inputs are free from any tax (VAT, withhold or dividend).

> Without any order, warning as well as any other information, any transparency for punishments' calculation, any legal and constitutional right, without any administrative, and management structure, the federal revenue and customs authority (FRCA) expropriated our unions' working capitals by using its current political power and authority in the disguised name of punishment and tax payment. For some unions such as Damot union who were not willing to pay the punishment and appeal to the court, their capitals were directly taken from their bank accounts without their permission. Moreover, the unique punishment and regular taxation of only Amhara regional state unions different from other regional states agricultural unions is defacto discrimination that need to be considered as genocide attacking Amhara people. Since 1991, the invisible government structure has been governing the Amhara regional state and Ethiopia in all aspects such as investment, industrial and agricultural development, infrastructures and facilities. No one could appeal and get solution from the court since they are two sides of a coin. I can say that Amhara regional state in very problematic situation and poverty without asset ownership. Houses of SHFs are even expropriated by the government micro-credit (ACSI) in this region. The current government could not learn from its ignorant behaviour and change can be expected since 1991. It is dangerous and mysterious[30] agent for poverty and underdevelopment.

The FGRCA officials and federal cooperative development agency workers asserted that the authority had wrongly collected punishments and taxes from agricultural unions in Amhara regional state as taxpayers of the federal government since 2011. They explained that there was general meeting between federal cooperative development agency and FGRCA in January 2014 and the federal cooperative development workers stated as "they promised not to do such wrong taxation intervention on agricultural unions in Amhara regional state in the future." However, informants 2015 and GAU documents 2015 confirmed that FGRCA had been continuing its tax collection from GAU and other SHFs' unions in Amhara regional state until 2016.

Key informants further complained that GAU had tax related problems from misallocation and maladministration of tax payment to FGRCA. The problems of FGRCA was not only its illegal taxation of SHFs organization GAU but the long distance 300 kms tax payment centre at the regional capital, Bihar Dar town from DMT. They stated that travelling this distance had additional expense for GAU and it usually cost average of 900 birr every month. Then, the average burden on GAU was averagely

[30] disguised, hidden and secret strategy

calculated as 900*12=10800 birr and with average loss of 36 working days per annuam. Hence, the union has lost about 10800*5=54000 birr and 36*5=180 working days for the past five years since 2011 to 2015.

Different from ACSI' loan repayment system, informants confirmed that FSCC had not expropriated assets of SHFs in time of repayment failure and accidents such as agricultural failure and death or migration. However, the duration of repayment and the interest would be paid for completely extended period. Informants complained that ACSI had overtaken the input credit services of SHFs from FSCC's in Genet *kebele* for benefiting politically affiliated business. Most of the SHFs borrowers (87%) had no any idea for interest rate of FSCC and ACSI credit interest (field survey 2014).

The other challenges and problems were the wrong intervention and taxation of agro-industries in DMT. All agro-industrialists claimed that the government taxation system for industries at DMT is unique based on the consumption of kilowatt (KW) for each industries (Field survey, 2014). Informants complained that this was the hidden mystery of TPLF's government not to use much energy and not to produce efficiently at DMT unique from the rest of the country, even the Amhara regional state. The concerned government informants confirmed that the tax system for industrialists at DMT was based on KW and it had its own directives from the regional government. I observed the directive that had the rating formulae for calculating KW consumption of industries and amount tax to the respective regional government at DMT. The researcher crosschecked this directive in the different towns including the capital Addis Ababa and the DMT taxation system was unique from all other observations. Moreover, one expert stated that FGRCA had the largest tax paying centres 48 in Amhara regional state followed by the second maximum 17 tax centres in SNNPs in the country. This extreme difference in the number of tax centres can substantiate the presence of hidden government structure that is not based on legal and institutional settings of the country. This situation violated the government legal framework. It is stated that SHFs and agro-industries as well as their organizations are responsible only to their respective regional states. In the legal framework of the country, the regional states shall levy and collect taxes from SHFs in accordance with their powers and tasks (Constitution, 1995:106,138). In the other legal

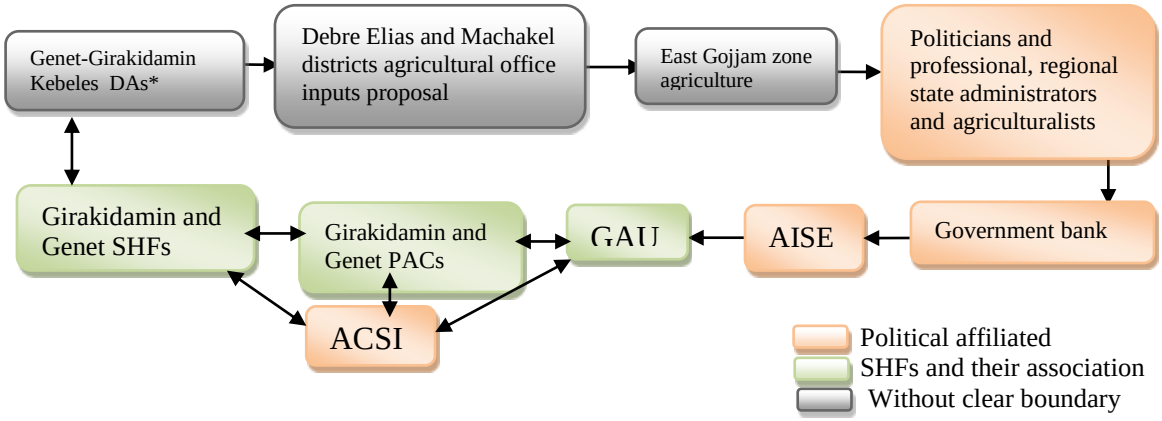
framework, SHFs has the right to get incentives and other supports from the respective regional government and it is stated as "All investment incentives and laws are given for cooperatives and unions with the exemption of income tax except each member's dividend tax from their associations" (FNG 1998:950).

In conclusion, SHFs and industrialists had serious challenges and problems from the ethnic government. Dejure and defacto discrimination on SHFs and agro-industrialists were common in many systemic, illicit and hidden administrative structures of the government for dedevelopment of their own people in the study region in particular and the country in general. Illegal tax payment, illegal punishment, misallocation of tax payment centres, maladministration without transparency and responsibility and bank account robbing were some of the paradox events from the TPLF-government on SHFs, industrialists and their organizations in DMT. The vicious circle of URELs and poor integrated regional development may be the deliberate act of ethnic and dictator government in poor countries. I suggest that any cultural difference-basis of administration and governance needs to be transformed to resources and development basis and models. In line with this study, Todaro and Smith (2012:161) in the theory of 'underdevelopment as a coordination failure' and O-ring theories conclude that some governments may exacerbate underdevelopment trap rather than development in their countries for hidden politico-economic reasons.

7.5 Interventions and URELs

Intervetion mainly refers the involvement of facilitator and/or supporter for outside its responsibilities and duties in this study. The government institutions such as the agricultural sector bureaus, cooperatives development authority and different institutional levels of the ministry of industry had given responsibility and priority as key stakeholders to SHFs, industrialists and their association development. However, informants complained that they were working for the government regional political affiliated profit-oriented enterprises and institutions such as AISE and ACSI rather than SHFs and industrialists. Political science experts argued that the failure of these key government stakeholders in their institutional responsibilities and duties was the greater crisis of the economy. This is the fact that dictator governments followed Mechavelly's principle of

"the end justifies the means" for sustaining only their political power in Africa and most LDCs. The wrong interventions of government officials, wrong intervention of agricultural and political administrators and government businesses overtaking the responsibilities of PACs and GAU created many challenges and problems on SHFs and workers of PACs and GAU (Figure 7.3).



*DAs is the agricultural development agency at kebele/ward level (Genet and Girakidamin).

Source: Developed by the author from field survey 2014

Figure 7.3: Bureaucratic burden on SHFs and their organizations PACs and GAU

Informants stated that all key stakeholders for SHFs at different government leadership levels were political members who did to work for their professions and SHFs' organizational development. SHFs' PACs and GAU were under the command of regional politicians and the organization were made to serve as intermediary for government businesses of AISE and ACSI. Thus, agricultural inputs are arranged in relation to government businesses of AISE, ACSI and government commercial banks in network system value chain. However, the key actors SHFs and their PACs and GAU had no any role except receiving top-down orders in the study region (Figure 7.3). Informants stated that the Amhara regional state politicians also decided 14.5% loan interest rate of farmers' saving and credit cooperative (FSCC) rather than SHFs.

Informants also claimed that the other wrong government intervention was enforcing GAU to be shareholder of Blue Nile Bank that was one of political affiliated businesses at DMT. As a result, GAU bought 30 shares each of the share had bought 50,000 birr,

totalling 1.5million birr as shareholder of this political affiliated bank. The contributions and impacts of politically affiliated Blue Nile bank for GAU and SHFs needs other further research. The next discussion shows how the government businesses affected the SHFs in input and other agricultural supplies (Figure 7.4).

Source: Field survey 2014

Figure 7.4: ACSI's credit supply of machine for its credit system on SHFs in Debre Elias

I observed in Debre Elias and Machakel districts that agricultural professionals had transferred agricultural support technologies and inputs (such as water pumps, different agricultural machines and tractor) to the political affiliated micro-finance institution (ACSI's) rather than direct supply to SHFs or their PACs or GAU in the study region (Figure 7.5). Though informants argued that these agricultural technologies and inputs were bought by public budgets for SHFs or their organizations (PACs and GAU), they were supplied for ACSI for its credit profit on SHFs. Then, the SHFs were encouraged and forced to take or buy these agricultural inputs and technologies for high interest rate 18% profit of ACSI but burden for SHFs with lengthy bureaucracy such as losing a number of working days for processing. This implies that agricultural development for virtuous circle URELs need some form of enabling environment free from much intervention. Rigg (2006:74) suggests that good governance system and institutional setup are decisive factors for the relationship between urban centres and their surrounding regional development. Similarly, Pausewang (2009b:72) confirms that low educated, inadequately qualified and inexperienced youths who are relying for government political

requirement, salary and prestige are recruited as loyal members for TPLF administration system in defending the party in the name of EPRDF. He further explains that the reason why TPLF remains ignorant of unpopularity member cadres, corruption and crimes to keep many of its secrets hidden. Some of these illicit and hidden administrative functions were expropriating private assets, false reports regardless of chronic poverty and suceesses for problems. The overall consequences of wrong government interventions and impositions on SHFs and agro-industries created burdens on agriculture, agro-industries and URELs. In conformity with these findings, Berhanu (2011:20) confirms that the current ethno-nationalist and authoritarian minority regime of Ethiopia has hyper-centralized state with deep hostility to independent private sectors and SHFs for its rent seeking and government-capitalism. Dala-Clayton, Dent and Dubois (2003:160) suggest that good and optimal institution needs to autonomy of SHFs' organizations, local assets ownership, accountability and transparency of leaders and enforceability of rules.

7.6 Resources mobilization-deconstruction and URELs

There are human and other resources for opportunity of agriculture, agro-industry and URELs for regional and national development. However, knowledge-based and efficient management are key unlocking factors for the mobilization and utilization of available resources. The problems in the study region were the absence of responsibilities and commitment of local governments for accessing and using agricultural hardware such as warehouses, irrigation dams and software such as policy and institutions (figure 7.5).

Source: Field survey 2014

Figure 7.5: Unutilized Gotera and GAU warehouse respectively at DMT

Informants asserted that these modern warehouses were non-functional and idle for many years due to unknown reasons. They further suggested that the post-harvest storage

problems of SHFs, agro-industrialists and scale economy agribusiness could be alleviated by such modern warehouses for agriculture and agro-industrial development. However, these informants claimed that the poor governance and management could not conserve the modern storages that were built during the reign of Emperor Haileslasie in 1957. Informants confirmed that abandoning and misusing of facilities built by the old regimes was the typical characteristics of the current ethnic government that tries to build its own legacy by destroying all the good works of the past governments. Informants mentioned many evidences that the disintegration of large and well-organized SHFs' cooperatives like Yitnora famers cooperative, the deforestation of forest development projects of Yeraba forestry project (Figure 7.6).

Source: Field survey 2015

Figure 7.6: Yeraba pre-post deforestation by government firms at DMT

Informants stated that the forest was reafforested and planted during the previous Derg regime at the eastern edge of DMT. The government had the habit of making the previous governments' forest, development projects or infrastructures under destruction, underutilization or useless in many parts of the region and country. It has designed sawmill project for lumber production in DMT prisoners' centre and the deforestation might continue to the rest of the forest areas without reafforestation of the previous governments (Figure 7.7). However, this forest was an important resource for the natural ecological system and rainfall-dependent agricultural country for moderating climate change. Thus, deforestation of the study region has direct and indirect negative influences on URELs and virtuous circle regional development.

There were also many misused and non-functional small and large irrigation and fishery dams such as Geray irrigation-fishery dam and Yedeb river irrigation diversion dam. Paradoxically, the government's development policy is ADLL for changing the livelihoods of 85% the agricultural society in the country. Moreover, SHFs' irrigation cooperative (FIC) sector was without any functional service and small-scale irrigation dams such as Yedeb River irrigation diversion were destroyed and destructed without giving irrigation services for SHFs. The Yedeb river small-scale irrigation diversion dam was constructed by NGO. But the government agricultural extension services, SHFs and their organization PAC (mainly its department FIC) and district agricultural office had not been conserving this agricultural infrastructure in the study region due to poor agricultural management and support services of the government institutions for SHFs (Figure 7.7).

Source: Field survey 2015

Figure 7.7: Non-functional irrigation diversion dam at Yedeb River in Girakidamin

Informants complained that this small irrigation project was constructed for the potential use of about 100 ha of farmland but it had no any function after a year since its construction. Neither the government nor the SHFs' organizations or the NGO managed the dam for alternative agriculture production for SHFs in the study Girakidamin *kebele*.

In the study region, it was found that PACs had their own offices and warehouses for marketing and storage for SHFs as well as the advantages of scale economy. They were also important infrastructures for reducing post-harvest losses (Figure 7.8).

Source: field survey, 2014

Figure 7.8: PACs' warehouses in Girakidamin and Machakel district

These PACs' warehouses were supporting SHFs. However, informants stated that warehouse in Genet was poor wooden construction and stored crops were damaged by intruders and wet. This warehouse had not built for storage of crops but for milling of grain. Informants complained that it was used for crops temporary storage though it did not have better capacity and quality than SHFs private storage. Girakidamin-Machakel warehouse had good capacity and quality than Genet kebele. In general, these warehouses were not enough for harvesting seasons and thus SHFs claimed that the huge modern Gotera in DMT would serve for SHFs wheat and other crops storage since they were not used for other scale economy businesses.

This implies that the previous governments' modern agricultural hardwares and orgwares were without any conservation and function due to lack of incremental development policy and institutional settings. Government officials asserted that the causes of the absence of incremental development policy were due to undemocratic power transfer in the country and the succeeding government had no interest to follow the footprints of the previous political contender government. In conclusion, the mismanagement and poor utilization of available agricultural and agro-industrial resources could be one cause for subsistence and rainfall agriculture, poor agribusiness and URELs. Thus, the overall vicious circle of poverty and bad equilibrium in agrarian society can be the poor utilization of available resources. Politicians, policy makers and concerned bodies need to build democratic assets in political power transfer for incremental development. Similar

to this finding, Tiffen (2006:98) claims that governments in low-income and ABCs need to assist SHFs' development by creating enabling environment such as policy and institution development, agricultural infrastructures and R&D, inputs of improved crop varieties (HYVs) and fertilizer application and capacity building of SHFs and their organizational structures.

7.7 Government businesses and URELs

Government officials and political parties are legally prohibited to direct or indirect involvement of commercial and industrial activities (FNG 1998:85). However, informants claimed that the government authorities owned the three key development factors: political, economic and military powers in Ethiopia. They added that politicians had been working against the set institutional and policy frameworks for private sectors, SHFs and their organizations. These politicians promised for its politically affiliated businesses and enterprises against the private sector agro-industries and SHFs. They asserted that the federal government and its ethnic political parties had engaged in different economic businesses. They further explaned that these political leaders' businesses could access and get any government contracts without legal bid and auction. Based on informants and then my observation, the government businesses involved in different economic activities either as linked with government institutions or independently. In line with this finding, Tegegne (2010: 73, 74) in his empirical study on district capitals (of Limu and Robbe) and their hinterland linkages confirmed that state-owned enterprises are the main cause for weak URLs. The following sub-sections deal about institutionally dependent, independent government businesses and their conflicts with URELs.

7.7.1 Institutionally dependent businesses

The dependent government business institutions refer business institutions that were established along with the government minister or authority institutions for managing and leading the profit. Informants stated that almost all government institutions at different levels had their own businesses institution or enterprise for making profit. They are many types for diversified activities and some examples are: DMT municipality and its Menkorer construction enterprise, Debre Markos university (DMU) and Menkorer agro-

processing enterprise, Ethiopian road authority (ERA) and its business enterprise. In principle, the establishment of DMU was for vision and mission to provide academic development, research and community services, good governance and institutional capacity development for overall development of the country and Africa. However, informants contended that the university had dominantly involved in different profit businesses such as housing businesses, cash and food crops production on about 600ha. It had been doing land grabbing and competition with the surrounding SHFs despite building the capacity and support for the local community.

DMT municipality had Menkorer construction enterprise (MCE) which was dependent government business enterprise. Informants complained that MCE was municipal-profit enterprise working on road and other constructions in multimillions birr contracts such as DMU's sport field construction. It was doing it business in the name of DMT municipality for government businesses while the residents' of DMT were suffering from many problems and challenges: road, tap water and governance (Figure 7.9).

Source: field survey 2014

Figure 7.9: DMT dependent construction enterprise VS DMT road infrastructure

These situations made the general feature of DMT ugly and uncomfortable for the residents' living. However, the municipality's Menkorer construction enterprise had been doing its political affiliated businesses in the name of DMT community (Figure 7.9). Informants further stated that all important government institutions and organizations such as the ministry of defence had their own profit-oriented businesses. They confimed that these government businesses had interconnected networks in order not to compete with non-political affiliated private sectors. I also observed many government business institutions such as Ethiopian road authority (ERA) business enterprise, ministry of

defence business enterprises and DMU's agro-processing enterprise where the researcher is instructing.

In conclusion, finding the Government University as centres of diversified profitable economic businesses for profit was unethical competition with the surrounding community. It was competing with the landless and land shortage SHFs and youths rather than supporting them for its vision and responsibility. These may show that the government institutions have involved in different businesses and they have been dominating private sectors, SHFs, small agro-industries and their associations. This situation has negative influence on URELs for regional development.

7.7.2 Independent businesses and URELs

In this study, the independent government businesses are business enterprises or institutions that are involved in profit-oriented activities. Informants from the government bodies stated that the government independent business institutions were controlled and managed by political leaders in systematic strategies such as chair of the institution board. The next discussion shows some independent institutions that affect other private sectors and SHFs.

7.7.2.1 Agricultural input supply enterprise (AISE)

AISE is one of the government businesses for import-export of agricultural inputs. It has different transactions and impacts with SHFs and their organizations. Informants complained that the government officials formed AISE as the sole importer of agricultural inputs overtaking the legal and institutional responsibilities of SHFs' organizations or unions in the country.

Federal government officials argued that the diversified unions and regional federations could not 'properly' import and supply agricultural inputs to SHFs and their associations. They suggested that the reason why the government had established AISE was for the proper supply and distribution of agricultural inputs in price and spatio-temporal distributions for SHFs in Ethiopia. However, they confirmed that SHFs and their organizations had legal and institutional rights for import-export of agricultural inputs and outputs (Figure 7.2). Before the establishment of AISE, informants asserted that the

union had directly been importing agricultural inputs and other commodities through Djibouti port with fair and lower prices for SHFs. In this period, GAU was profitable, even giving good dividend share for SHFs' agricultural reinvestment and development. Informants argued that GAU had enough structural adjustment, capacity and resources as well as other physical potential opportunities and locational advantages of conducting national and international responsibilities for SHFs with empirical previous experience of import-export advantages of scale economy.

Ethiopian Amalgameted (EAL) was the only Ethiopia's largest private agricultural inputs and outputs supply company with 400 employees. However, it was systematically dispersed its employees and stopped its function. The commercial Bank of Ethiopia sold its headquarter building to government-owned brewery (key informants, 2015). Consequently, AISE had the monopoly as the sole government profit business and distributor of agricultural inputs under the name of liberalized market economy in the country. Informants complained that AISE which is a business share of the government higher officials had regular price increase on agricultural inputs (Table 7.1).

Table 7.1: The main problem of agricultural inputs in the study region

Description	Number of respondents	Percent
Price	190	96.5
timeline	2	1
Accessibility	0	0
Availability	2	1
Other	1	o.5
Total	195	100

Source: field survey 2014

Informants confirmed that fertilizer and selected seed, even lime had increasing prices year to year beyond the purchasing power of SHFs but agricultural inputs spatio-temporal supply were not problems for SHFs in the study region. The increasing price of agricultural inputs was serious problem for most SHFs (98%) and higher inputs price could lead to underutilization and poor production and productivity (Table 7.1). Agricultural extension workers asserted that most SHFs underutilized from the fertilizer blanket recommendation due to their financial problem. In line with this study, Satterthwaite and Tacoli (2006:176) and Assefa (2007:195) suggest that stable and

affordable agricultural inputs need to be available for SHFs at accessible urban centres in poor countries.

In summary, the change of AISCO to AISE did not bring changes to agricultural inputs supply to SHFs in the country. This implies that the government need to give support and capacity for SHFs' organizations for using their advantages of legal and scale economy rather than illegally intervening in their responsibilities. Moreover, the there need to be libral system for alternative sources from private sector and agro-industrialists for SHFs' agricultural input-output availability and efficiency. In line with this study, Tegegne (2007:69) confirms that AISCO was the monopoly importer, wholesaler and retailer of fertilizer in inputs marketing in the Derg regime and there were no other options for SHFs in the Derge regim. Similar with this, Berhanu (2013:1482) confirms that AISE is the government-business enterprise and it is importing fertilizer with the government-owned endowment enterprises of Ambasel in Amhara, Guna in Tigray and Dinsho in Oromia regional states by driving out its private competitors, EAL and Fertiline through different discriminatory methods.

7.7.2.2 Amhara credit and saving institution (ACSI)

Informants asserted that all ethnic regional states had their own government financial institution for serving as micro-institution to SHFs and low-income community. The name and management of these regional ethnic-political institutions were led by the top political leaders of the respective region. These informats pointed out some of the independent micro-financial business institutions and respective regions. They were Amhara credit and saving institution (ACSI) in Amhara regional state, Oromia credit and saving institution (OCSI) in Oromia regional state, Dedebit credit and saving institution (DECSI) in Tigray regional state, Omo micro-finance institution in SPNNs, Benishangul micro-finance institution (BMFI) in Benishangul Gumz regional state and Harar micro-finance institution (HMFI) in Hararie regional state.

Key informants stated that SHFs need financial access during pre-harvest BPLs and post-harvest FPLs as well as for storage and marketing periods. They explained that ACSI was

one branch of Amhara regional state political party businesses called endeavour or Tiret[31] and some of the businesses in Tiret were Dashen brewery in Gonder town, Ambasel agro-processing and trading; ACSI; Zeleke mechanized agriculture in Gonder; Combolcha vegetable and fruit agro-processing and P.Z.D milk processing at Gonder town. They further explained that the shareholders of these all different businesses were the 'so called[32]'Amhara regional state top political leaders: Amhara regional state administrative top politicians, Amhara rehabilitation and development top politicians, Amhara development association and Amhara female association. Similar to Tiret in Amhara regional state, informants confirmed that large businesses in Ethiopia were under government ownership in the form of: politically embedded government-owned, ethnic-political party owned, military-owned and politically affiliated private businesses. In line with this finding, Ebisa, Getachew and Fikadu (2013:13) confirm that the regional governments in Ethiopia are shareholders of the regional microfinance institutions (MFIs) and other many businesses. In line with this study, Berhanu (2013:1476) confirms that Ethiopian government is 'government-capitalism' involving in other profitable businesses by blocking the emergence and development of independent business classes in Ethiopia. As a result, it is Africa's richest party.

Informants and most respondents (91%) stated that the government political and profit-oriented businesses were main challenges and barriers for SHFs' PACs and unions (Field survey 2014). ACSI put preconditions for SHF in order to obtain agricultural input and these preconditions were buying ACSI's coupon (with 25% of the loan down payment for borrowers); organized in-group (3-7 SHFs); the repayment of any unpaid loan and partners' sign on the agreement form (ACSI directive 2014:12). With these preconditions for accessing inputs, ACSI had significant impact on individual SHF and organizational PACs and GAU (Table 7.2).

[32] They are not in actual members of this regional state and most are non-Amhara (informants, 2014).

Table 7.2: Comparison of SHFs' credit access between FSCC and ACSI

Years	%[33] of samples inputs credit from FSCC	% of SHFs other project credit from FSCC	% of samples inputs credit from ACSI	% of samples other project credit from ACSI
2013	85.84	46.24	0	32.76
2014	38.5	65.04	61.5	23

Source: field survey 2014 *the total is greater than 100% due to one SHF can take debit from the two financial system.

FSCC had been increasing tasks on other activities such as animal fattening from 46% to 65% for SHFs' credit service while it had been decreasing agricultural inputs credit service from 86% to 39%. On the other hand, ACSI had been increasing credit and saving services on agricultural inputs while it had been decreasing on other SHFs' projects (Table 7.2). This can imply that ACSI has been increasing inputs credit service while FSCC had been losing its legal responsibilities in agricultural inputs credit service due to the political affiliated business ACSI intervetion.

Informants explained that FSCC had better advantages than ACSI in many ways. Some of the advantages for SHFs were: getting total loan and dividend share; having direct access to PACs within short bureaucracy and services cost and no risk of expropriation of assets during failure of repayment such as in case of death or migration. These situations imply that FSCC has relatively better advantages than ACSI for SHFs though both had higher interest rate and under management of regional politicians. Informants confirmed that the reason for the declining of other credit service for ACSI was due to its higher interest rate for projects and there was no enforcing situation as inputs for SHFs. It had also risk of expropriation of any available assets in times of repayment failure regardless of the reason. The key informants pointed that ACSI made the following problems and challenges on SHFs and their organizations PACs and GAU in the study region in particular and Amhara regional state in general: ridged system for individuals who had no

[33] *The % calculation of table 6.7 was done from the total sample (195 households) of Genet-Girakidamin kebeles.

farmland collateral or colleagues for group; double risk for individual and group repayment failure; greater loss of neighbourhood social capital and synergy as *Deboo* for neighbours group credit system; lengthy bureaucratic procedures and transaction cost in the absence of direct cash (document 2014; field survey 2014 and ACSI directive 2014: 9). Though the constitutional laws explained that land shall not be subject to sale or to other means of exchange except SHFs' usufractuary rights (Constitution1995:98), informants claimed that ACSI had special permission for expropriating or contracting SHFs' farmlands through legal court system, police and other administrative hierarchies during repayment failure in the study region.

ACSI had influences on the SHFs' organizations. The workers in PACs and GAU had given the following free service responsibilities and duties for ACSI: reporting prices, receiving coupons and giving inputs, checking type and amount of inputs in the list with the collected coupons and sending, encouraging SHFs for saving, repaying loans and reporting any inputs price change (ACSI directive 2014:10). This can indicate how heavy the burden on SHFs and organizations PACs and GAU as a free servant for ACSI. Key informants explained that ACSI was designed for systematic elimination of SHFs' PACs and unions for government's economic control and power. Informants claimed that ACSI has 18% interest rate for projects other than inputs and FSCCs had also illegal and higher credit interest rate of 14.5%. This is because the regional government bodies decided the interest rates of ACSI and FSCC. However, the legal proclamation confirms that the interest rate for SHFs and their association shall not explicitly exceed the current loan interest rate of banks (13%) (FNG 1998:950). This implies that government's micro-credit ACSI and FSCC had violated institutional and legal frameworks due to the regional politicians' interest and wrong decision. The main implementing stakeholders for ACSI's agricultural input credit were rural *kebeles* administrators, rural *kebeles* agricultural office, PACs and unions with ACSI office (ACSI directive 2014:11). Key informants from government bodies argued that the reasons why ACSI had taken over financial services of FSCC are inability to perform the task; corruption; best financial collection and efficiency; higher profitability experience and easy access option for technological innovation and dissemination.

The researcher observed most of the interactions and activities of the three organizations: ACSI, Genet PAC and GAU during agricultural inputs credit period May and June in 2014. I observed that complex phases that SHFs should go through and lengthy bureaucracy and financial system. ACSI has rules of 25% saving account from the total loan with 5% saving interest as a guarantee and membership of SHFs with average loan interest rate 16.5%[34] for borrowers (Key informants and document 2014). One borrower farmer of ACSI explained the financial credit system of ACSI as follow. He had borrowed a total of 10,000 birr from ACSI for animal fattening and inputs. Then, 25% of the total loan 10,000 birr was saved in 5% saving interest as membership. Hence, the researcher took the average of the two interests 18+15/2=16.5% as 18% for project and 15% for inputs in the ACSI financial system. However, 25% of 10,000 birr was 2500 birr saving for opening account book. From 2500 birr, 16.5% loan interest on the borrower was 412.5 birr while 12.5 birr for the borrower saving interest 5%. Thus, net profit of ACSI from 25% saving account 2500 birr from the borrower was 412.5-12.5) 400 birr. The interest rate of the remaining principal 7500 birr (1000-250) by 16.5% ACSI interest rate was birr 1237.5 birr. Finally, the total profit of ACSI from this farmer borrower was 400+1237.5=1637.5 birr in that fiscal year of ACSI. Finally, the farmer should pay total repayment of 11637.5 birr within a year. This shows that ACSI had 1637.5 birr net profit from used 7500 birr and unused 2500birr loan.

Informants confirmed that the asset expropriation of ACSI, even the death of the borrower SHFs based on the group system was very complex and challenging for SHFs. They further stated that the reason ACSI had given group credit system was not to lose or pay any cost for achieving 100% successful performance every year on the cost and pains of risky SHFs. As a result, most of the SHFs (87%) in Genet and Girakidamin kebeles had faced critical shortage of agricultural working capital for inputs and other agricultural uses (Field survey, 2014). Most SHFs (80.5%) had again borrowed during peak agricultural season (May and June) and some (65.4%) had faced repayment problem to ACSI and FSCC due to agricultural production failure by unexpected rainfall during harvesting season and market failure during repayment months in January and February in 2014. Consequently, 16.6% of SHFs who failed to repay their debt and their livelihood

[34] 15% interest for agricultural inputs and 18% for any other financial needs of SHFs (informants, 2014).

assets had been expropriated[35] and some 6.2% of SHFs disintegrated their families to different migration areas (Field survey 2014). Most borrower SHFs (80.5%) asserted that ACSI had not given clear information and support services for its credit system while 17% of SHFs stated that they had given information for the total amount of repayment and its system (Field Survey 2014). Informants substantiated that most borrower SHFs understood the interest and other complex financial problems of ACSI after either during repayment failure or at the end of the repayment. This indicates that SHFs are within a confined ACSI's financial system without any other option even their FSCC for agricultural inputs in the study region in particular and Amara regional state in general.

One borrower farmer explained the repayment failure and its consequences on livelihood as follow:

> My husband and I had agreed to borrow 8500birr from ACSI for rearing domestic animals. We signed on the ACSI's agreement form without knowing and understanding: the interest rate of 18% of ACSI, the reductions of 25% of the loan as saving account, other administrative and service costs with repayment criteria. However, we were given only 6935 birr for the requested 8500 birr loan. Unfortunately, at the beginning of the project work, my husband died and the raising of animals almost failed due to many constraints in the absence of household head. Finally, I could not repay the loan and ACSI took my crops, my one remaining ox and my house tin roof with one farmland for two years contracting. As a result, my family has disintegrated into different places and my parents. I am living with only these two small children in this small and dilapidated house.

Informants described that the consequences of repayment failure were family disintegration, poverty and migration to rural areas and larger urban centres like DMT. Interview with one of the homeless children in DMT was conducted on 24/10/1015 (Figure 7.10) and he described his situation as follow,

[35] Expropration is here taking others property either willingly or by any forcing situation without any balanced situation.

My mother and father are divorced when I was grade four. I tried to live with my mother but she could not afford my educational materials and food. Then I came to DMT and end living along the streets in this town. This streetism is better than rural hunger and starvation. Hotels and other residents give food and some cloths.

Source: Field survey 2014

Figure 7.10: Homeless youths in URELs at DMT (6:30AM)

This can show how the extreme rural poverty is a push factor for rural-urban migration in the study region. ACSI financial system and its asset expropriation during repayment failure aggravated the rural poverty, rural-urban migration and urban homelessness in the study region (Figure 7.10).

Informants explained that as a result of ACSI backwash effects and destitution, SHFs had given nick name for ACSI locally called a 'Amenmin[36]'. They described that ACSI's

[36] Is the gradual process for inevitable poverty and destitution as synonymous process of HIV/AIDS infected people (informants,2014).

expropriation and/or confiscation of livelihood assets such as farmland, houses and/or grains of SHFs during debt repayment failure had increased rural-rural and rural-urban migrations. Informants stated that ten SHFs in Girakidamin *kebele* and five in Genet *kebele* migrated to different rural areas such as Benishangul Gumiz regional state, Bure-Wolega in Oromia regional state, Metema and Jawi in Amhara regional state. Informants further added that many SHFs in Ethiopia were in local prisons with inhuman treatment of the police until family members could pay their debt. Similar to this study, Pausewang (2009a:72,75) confirms that SHFs in Ethiopia are challenged by heavy burden of tax and debts without option to escape the debt trap, especially during their unexpected expenses such as family health problems and harvest failure with their obligatory labour contribution in conservation. Moreover, he further argues that the government extension agents have forced peasants to take agricultural inputs in ACSI credit. Consequently, farmers who had grown food crops are starving with high stress and vulnerability every year after their subsistence harvest within financial trap. However, one key informant stated about ACSI's financial benefit as,

> I borrowed 5000 birr from ACSI and I used the money to buy food staffs for my family consumption. In the next repayment year, I sold my one ox and paid the repayment 5900 birr by the interest rate of 18%. Then, I again borrowed 10000 birr from ACSI and bought one ox and other food crops to my family consumption. Next year, I would sell my ox and repay an entire amount.

This case indicates that ACSI used as survival mechanisms for poor farmers. The researcher made a survey for crosschecking the situation with adjacent Tigray and Oromia Regional States. The researcher crosschecked survey from other regional states' politically affiliated micro-credit institutions such as Oromia saving and credit institution (OCSI), Dedebit credit and saving institution (DCSI) from regional and Federal informants. Key informants explained that SHFs' organizations were working without any other political businesses and institutional intervention or competition except AISE. Moreover, PACs and agricultural unions had been covering the financial gaps that will be deducted from their dividend share for poor farmers. Key informants expressed that DCSI with NGO of Relief Society of Tigray (REST) had key supporting SHFs and the community for accessing inputs, poultry, livestock, irrigation, beekeeping within Tigray regional state. Moreover, it was stated that SHFs were advised not to borrow from OCSI

in Oromia regional state and DCSI in Tigray regional state due to their higher credit interest rate 16%. FSCC interest rate was 12% in this regional state. In line with the findings, Feyera's study in Tigray and Oromia Regional States on agricultural inputs system confirms that inputs are supplied by the coordination of SHFs' cooperatives and multi-purpose unions with the support of the ministry of agriculture workers and cooperative development agency. He further explains that parastatal regional institutions and non-governmental organizations have important supports for SHFs, especially during peak seasons in Oromia and Tigray (Feyera, 2013:6,7). Moreover, the para-NGO Tigray development association (TDA) have provided special support to poor SHFs (Feyera, 2013:6). These findings indicate that there are many differences in these two regional states and Amhara regional state. These two regional states were working in accordance to the legal framework of the country.

ACSI with other government interventions in the PACs and unions was found challenges and illegal impositions on SHFs. It enforced SHFs for its credit system and expropriated their assets during repayment failure without any other option in the study region in particular and Amhara regional state in general. These situations show the presence of discrimination and injustice in Amhara regional state under the same institutional framework of the country. ACSI had created lengthy bureaucracy and higher transaction cost as well as increased prices in agricultural inputs provision. The only political-affiliated micro-finance that made SHFs' agricultural organizations PACs and GAU working freely for its business and changing their responsibilities to serve as a bridge between ACSI and SHFs; overtaking SHFs PACs and GAU duties and responsibilities in the country (Table 7.3).

Table 7.3: Comparison of fertilizer prices ACSI, PACs and Oromia regional states

Inputs	Genet and Girakidamin Kebeles		Oromia at Tullu Bollo rural town
	PACs (Birr)/qtin cash	ACSI (birr/qt)	In cash (birr/qt)*
DAP	1285	1476.75	1243
Urea	1168	1343.2	1113

Source: Key informants and documents 2014

OCSI* is Oromia regional state credit and saving institution which is the government ethnic regional micro-financial system as ACSI in Amhara regional state.

ACSI had price increment of DAP 191.75birr and urea 175.2 birr on SHFs from their own organization in the study region. ACSI had price increment of 233.75birr DAP and 230.2birr Urea from SHFs in Tullu Bollo in Oromia regional state (Table 7.3). Informants explained that the prices of DAP (1285 birr per qt) and urea (1168 birr per qt) were the prices of PACs including service cost 21.40 birr per qt. PACs services cost 22.50 birr per qt. The study region SHFs had support from neither from their organizations nor the political affiliated financial business ACSI. The illegal intervention on the responsibilities and tasks of ACSI on the SHFs' organization made such differences. In the same way, Satterthwaite and Tacoli (2006:176) confirm that stable financial resources for SHFs remain limited for providing urban-based demand and consumers.

The other important issue was the paradox of awards for ACSI that won many national and international awards as if it were serving for financial access and development of SHFs (Figure 7.11).

Source: Ermias and his friends (2012:32)

Figure 7.11: Paradoxical national and international awards for ACSI

Government officials argued that ACSI had awarded by international and national organizations for serving SHFs in: creating good and effective financial access and services; good financial strategy for anti-poverty and agricultural development and profit and financial capital. ACSI had 214, 831,771.01 birr in 2011 and 311,289,476.63 birr in 2012 (ACSI annual report 2012:26, 32). These politicians stated that ACSI had been continuing winning international award in 2014 for its good services and alleviating financial problems of the poor and inaccessible SHFs. Different this study finding, OPHI

(2015:5) confirms that 95.3% of rural people are poor in Ethiopia. Therefore, Piet et al (2012:26) suggests that enabling environment for agriculture and agro-processing need to be precondition for reversing poverty into competitive advantages in SSACs.

In conclusion, ACSI was an instrument for exploiting and expropriating SHFs with unfair and institutional violation system in study region in particular and Amhara regional state in general. These impositions and burdens of ACSI on SHFs and their organization PACs and GAU are the direct assertion of the government institutions working against SHFs' agriculture and private agro-industries for the vicious circle URELs. This can show that ACSI has been doing rural people under financial vicious circle. In the study region, ACSI and FSCC as well as the government interventions in the PACs and unions were found challenges and illegal impositions on SHFs. Furthermore, award cannot necessarily be a measure for good performances and results since ACSI had illegally and forcefully overtaking the responsibilities and tasks of SHFs organization and weakening these organizations (PACs and GAU), expropriated poor SHFs assets, increasing impoverishment and migration in the study region. Paradoxically, it was the winner of different international and national awards as best micro-finance institution serving for poor SHFs in remote and inaccessible rural areas. It is possible to conclude that this unique and mysterious financial vicious circle trapping of SHFs is part and parcels of the illicit ethnic-regionalism and defacto discrimination in the ethnic-based behaviour of TPLF-led government in the study region in particular and Amhara regional state in general. It seems that achieving the objectives of ADLI and sustainable URELs for regional development will be illusion since agricultural and rural development is based on unreliable and risky micro financial institutions, malfunctioning actors and illicit practices. This calls the need for reform and transformation of ethnic-based administration to integrated resources-base models regional development.

7.7.2.3 Government Small enterprises

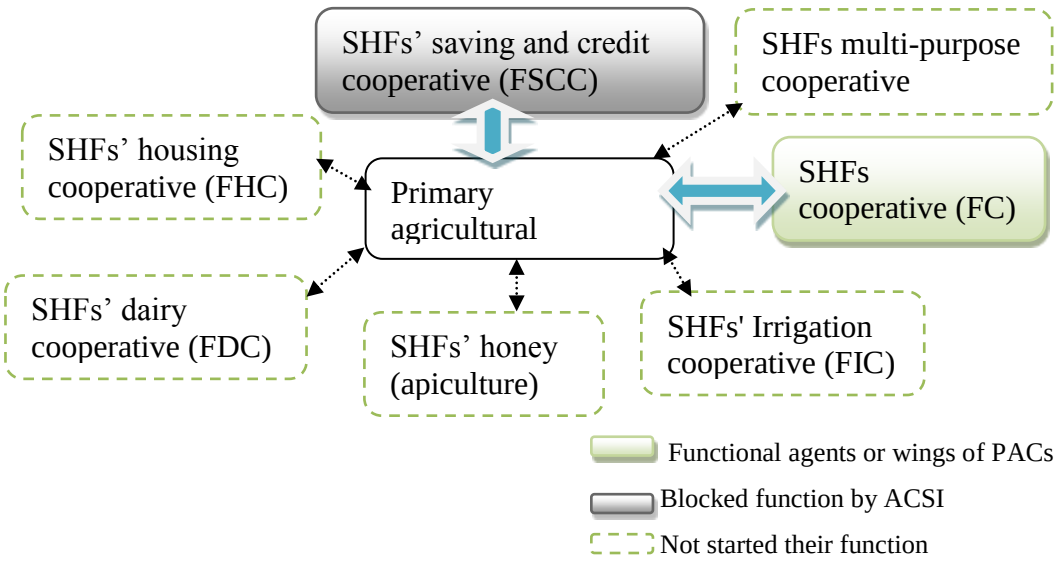
Small government enterprises are independent institutions such Ethiopian seed enterprise (ESE) and Amhara seed enterprise (ASE) for the objective of facilitating development in different dimensions. The government seed enterprises' partnership model in wheat production was found better than the government agricultural institutional system for

SHFs' supports and inputs provision in the study region. ESE had direct inputs supply chain for SHFs as out grower as well as it monitored and avaluted from pre-harvest to post-harvest market (15% incentive). However, informants complained that ESE had assisted only a few selected SHFs and clustered farm plots.

The SHFs organization PACs and GAU had not able to use their advantages of scale economy in different sectors due to mainly lack of enabling environment in financial and taxation system, agricultural inputs-outputs and interventions. These problems were stated as the main objectives of their cooperative GAU.

GAU was one of the SHFs' cooperative societies established by six primary agricultural cooperatives with initial capital of 100,000.00 birr on voluntary basis with SHFs in 2000. Its establishment was based on the constitutional and proclamation legal frameworks of the country (FNG 1998: 942 and constitution 1995:138). Currently it incorporated 54 PACs within seven districts (Gozamin, Debre Elias, Machakel, Sinan, Awabel, Anneded and Basolibon) and it had a total member of 94,228 SHFs (of 82382 males and 11846 females) with a total net capital of 62507949.68birr. It was also registered and licensed as one of the 56 unions in Amhara regional state (Document and informants 2014). GAU was established for performing the following development objectives for SHFs: agricultural inputs for SHFs in appropriate price and period; keeping the advantages of scale economy for SHFs; developing production and productivity; developing agro-processing and agribusinesses; legal and financial services; exploring innovative development and investment strategies; enabling SHFs for industrial technologies and developing infrastructures and services (Informants and document 2014). However, informants argued that GAU was failed to perform its roles mainly due to lack of external enabling environment in hardware, orgware and software for using its scale economy.

SHFs' PACs were sub-unit of GAU and they were established for profit dividend share, using advantages of scale economy, saving and credit services, irrigation development, capacity building, increasing agricultural productivity and efficiency gains in agribusiness (Document 2014). The organizational structure of the Genet-Girakidamin PACs had good structure but most departments were not functional due to the poor government extension services (Figure 7.12).



Source: document 2014 and informants 2014

Figure 7.12: Functional and non-functional categories of PACs in the study region

The PACs' different departments and their accessibility were important opportunities for SHFs. However, informants argued that the government different interventions had resulted in short and long-term decline of: SHFs' organizational PACs services, decline of dividend share and financial system FSCC, increased price of agricultural inputs due to increasing and lengthy bureaucratic structure from government business AISE. Lack of enabling environment in policy, institution and governance made SHFs' organizations not to accomplish their tasks and responsibilities. Consequently, most departments of PACs were not functional and they were structural symbols and potentials in the study Genet and Girakidamin *kebeles* (Figure 7.12). Informants confirmed that only SHFs cooperative (FC) was functional though it had not properly working for SHFs due to many challenges. FSCC was partly working for SHFs due to the government business ACSI and the regional political leaders' impositions. Informants stated that high interest rate 14.5% and SHFs' saving interest rate 5% were decided by top Amhara regional politicians. These impositions of government on PACs made most of the departments not to function their roles. For example, irrigation cooperative (FIC) had not been functional in Genet-Girakidamin though agriculture was based on unreliable and seasonal rainfall. The farmers' cooperative (FC) had problems and challenges of providing affordable agricultural inputs for SHFs due to the political affiliated AISE domination on inputs.

Hence, they suggested that GAU and PACs could not yet play its roles for SHFs who founded from their poor financial source.

The small scale enterprises were doing profits on SHFs. Ethiopian seed enterprise (ESE) and Amhara seed enterprise made profits on SHFs from their SHFs own products. Key informants from the enterprise and SHFs stated that ESE bought one qt wheat at price of 750birr from SHFs during cheap price season in January and February in 2014. It processed and added value on the raw wheat into improved seed. Then, it resold the improved seed on 1350 birr per qt for SHFs in the study region in June 2014. As a result, ESE made average 600birr per qt profit on SHFs. However, PAC and GAU did not have enabling environment for using the advantages of scale economy for supplying improved seed and inputs to SHFs.

7.8 Public and private industrialization

The other conflicting intervention was on industrial sector. A few small-scale agro-industries were staggering to fall due to many intrinsic and extrinsic challenges and problems at DMT. The sample agro-industries: SFI and NOIs provided flour and nigerseed edible oil, respectively for intermediaries and consumption. Informants asserted that bread and edible oil were critical problems in both rural and urban areas in the study region in particular and in Ethiopia in general. The shortage and reduction in size of bread was a day to day complain and reality of the urban community. Hence, these informants claimed that the government had intervened for provision and alleviation of the problems of wheat flour and edible oil through both rural and urban *kebele* administrations.

Industrialists claimed on general principle that government should support the private sector for having good and large warehouses, storing and conserving large amount of edible oilseeds and raw materials with upgrading processing capacity for using scale economies in the study region in particular and Ethiopia in general. Informants stated that the study region within Amhara regional state had faced different agricultural and industrial development exclusions and marginalization from the current TPLF government. As a result, some important industrial establishments are discouraged by the ethnic politico-governance challenges and problems in the study region and DMT. They

further explained that outside the institutional and legal frameworks of the country, the current government had created different ethnic-political challenges and barriers for DMT and its hinterlands development.

They further argued that there were segregation and exclusion of Amhara regional state and people in agricultural and manufacturing industrial development for impoverishment and marginalization since 1991. They empirically explained that industrial establishment had been started by Ethiopian-Russian citizen and Russians for the production of different electrical automobiles (such as small cars, tractors, harvesters, water pumps) that could have multiplier effects in employment, supporting agriculture to agro-processing and agri-business (commercialization of agriculture) development in the region, Ethiopia and the whole Africa. Informants further complained that after starting the establishment, a number of government challenges and barriers had imposed to the extent of interruption the process of construction. One informant stated the situation as follow:

> When the investor came to DMT, almost all urban dwellers were on the welcome at the square for him. I was one of them for his welcome and I heard his speech that he will open at least 500 employment opportunities for the urban people. Everybody talk about 'X' as a prominent leader of Russians in that time and they started the industrial establishment. However, rumour started that the ethnic-TPLF government had not happy and investors were enforced to change the location, to Tigray regional state or in Bisheftu town. Then, the investors stated that they have faced challenges and problems from the government and for the time being, it has stopped since 2009. I am extremely angry and sad for the activities of the current government that has done such development failure to the region and the country.

Source: Field survey 2014

Figure 7.13: Intrupted industrial establishment at DMT

The researcher observed the intrupted industrial establishment at DMT (Figure 7.13). This may imply the absence of endbling environment for agriculture and agro-industrial development in the study region.

On the other hand, informants of the government stated that it was the owners' political and economic problems to overcome the challenges and barriers for its final goal. Other government informants claimed that though there were government influences, it is the investor who knows the challenges and opportunities of investment and overcome these challenges in a better strategy and situational analysis. The researcher was not able to meet the owner investor at the time of this study and other people around the project were not voluntary for the interview since they considered the issue as politically sensitive. However, key informants explained the situation that the main problem and challenge of the industrial project had been the government and its hidden structure. These informants added that it was not only this industry but also many others that were planned to be established at DMT. This could imply that there was no enabling environment for private

industrialization at DMT. In line with this findings, Tegenge claims that the important roles of agro-industries and micro-enterprises as well as partnerships such as cooperative-investors have given little focus in Ethiopia.

GAU had started agro-industrial building at DMT. However, it had faced similar challenges and problems from different stakeholders including the government. Its construction had been interrupted as other industrial development projects. Informants explained that GAU was one of the important organizational infrastructures and adjustments of SHFs for scale economy and agribusiness as well as agricultural industrialization. They further explained that GAU had worked for agribusiness development within its jurisdiction seven districts of Gozamin, Debre Elias, Machakel, Sinan, Awobel, Anneded and Basoliben around DMT as a centre of junction and development. The construction of flour food complex industry at DMT was an essential element for SHFs who had many agricultural and agro-industrial crop produces (Figure 7.14).

Source: Field Survey (2014)

Figure 7.14: Intruppted GAU's food complex industrial establishment at DMT

The challenges and barriers of automobile industry were similar challenges and problems for SHFs organization. Informants stated that GAU food complex industrial construction faced challenges and barriers from the government institutions (AISE, FGRCA, ACSI), local and zonal government agencies for the interruption of the project. One informant stated the problem as follow:

> The GAU import-export of SHFs' produces has overtaken by AISE, ACSI and FGRCA. The discriminative impositions of such unreasonable punishment (3.3 million birr) of GAU, quadrant taxations of SHFs and their organization GAU (land and other

regional taxes, SHFs' union different taxes such as VAT 15%, withhold tax 2% and SHFs dividend tax 10%) and many other challenges caused for the interruption of the construction. Policy and institutional interventions, other unfair and distorted competition many illegal and discriminative actions with government businesses have made barriers effects on the agro-industrial construction different from other regional states in Ethiopia. Moreover, FGRCA made its own payments restriction and report submission centre at a distance of (300 kms) Bihar Dar town from DMT that demand travelling every month. Failure of on time submission for any reason, even delay by hours has penalty of fixed 10,000 birr. All these ethnic-TPLF government burdens and retarding forces caused the interruption of GAU's food complex agro-industrial construction.

Informants at GAU flour industrial project explained that the construction had been planned to be in 2014 but the industrial plant would delay for unknown period due to known and unknown reasons. Informants suggested that the Amhara regional state had planned to establish food complex industry at DMT and it would be the cause for this government influences. However, the government businesses and agro-processors such as Ambasel agro-processing at Gondar town could freely process legally prohibited sesame oilseeds into semi-processed for its export without competition and tax imposition under the name of government political party, BADIN. However, private agro-processors and SHFs association cannot legally process sesame in the country (Figure 7.15).

Source: Ambasel document 2014

Figure 7.15: Ambasel semi-processing sesame for export

Informants asserted that SHFs in Tsehay agricultural union in Gondar town had produced different export items including sesame, white peanut but the SHFs organization had no right for exporting their produces. The political leaders' businesses Ambasel agro-

processing had enforced Tsehay agricultural union and other unions to sell their sesame to this political affiliated agro-processing. Hence, they complained that the party-businesses had taken over the duties and responsibilities of unions and agro-processing, value adding and exporting even the member SHFs produces (Figure 7.15). Similar to this finding, Berhanu (2011:52) argues that party-state capitalism in Ethiopia and Africa could end up in avoidance of private sectors. As result of the challenges and problems of private agro-industries from government businesses, Minga (2013:46) recommends that state-owned enterprises and political party-owned companies should be restructured and privatized with clear principles for avoiding the speculation in unofficial government share market in Ethiopia.

The researcher concluded that the fundamental cause for government's failure for development was that the regime had no any interest and willingness of developing the country but to use all means to indefinitely stay in political power. Any good development opportunities and options in policies, plans, and/or institutional frameworks had been used by the political elites for their own profit-making businesses in distorted and unfair competition such as ACSI, AISE in the study region in particular and Ethiopia in general. Furthermore, the government lacked the institutional qualities of good leadership and consequently, numerous and intensified contradiction between individual and individual, individual and government, group and group, group and government were common both in rural and urban areas in Ethiopia. Informants stated that the functionality and applicability of legal and constitutional frameworks as well as socio-economic activities depended on the willingness and mercy of a few government TPLF elite's parochialism and narrow nationalism. Thus, URELs in particular and development in general have faced critical challenges from the political economy and governance since 1991. In line with this study, World Bank (2015:1) explains that the main development challenges of Ethiopia is lack of addressing the causes of poverty among its population and local governments' accountable and transparent performance. It further contends that the poverty of people in the country is in paradox with large-scale donors support and higher government budget share for pro-poor programs and investments.

7.9 Macro-micro conflicts and URELs

Enabling environment is a broad and confusing phrase and in this study, it refers policy, institution, governance and asset. The macro policy was a decisive factor in guiding the overall development of local and regional levels. This section presents development policy, agricultural development led industrialization (ADLI) and public ownership of assets, mainly land on agriculture and agro-industrial development.

7.9.1 Policy and challenges of URELs

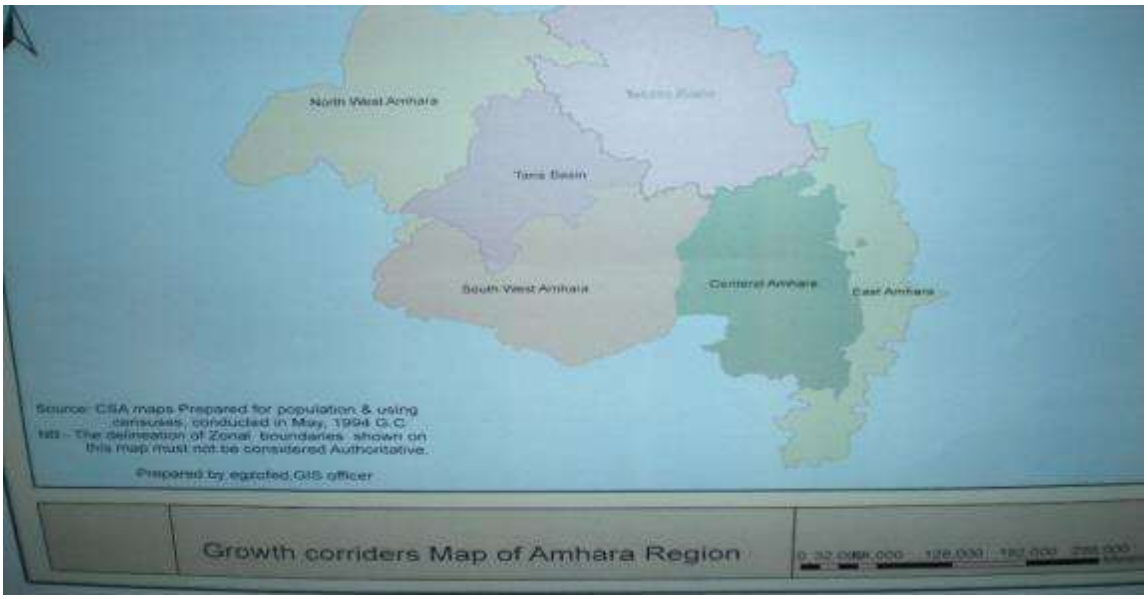
Integrated and reinforced development approaches are important recent development paradigms in ABCs. However, they have not practically implemented in the empirical policy and institutional settings of these countries. ADLI policy of Ethiopia was empirically rural-oriented development paradigm that missed integrated URELs development. The macro-level policy had similar effects on the regional and local development plans and strategies such as the disintegrated development approaches for complementary sectors in Amhara regional state.

The dialectical development philosophy of African countries is confusing and in dilemma. Informants stated that the development paradigm of the current government was confusing since the country has theoretically followed free market policy but practically neither socialism (Marxist-Leninist ideology) nor neo-liberalism, nor welfare economy. They confirmed that the absence of committed government system with direct and indirect external influences left Ethiopia without appropriate and context-based development policies and institutional settings. Informants further argued that the government was one of the main causes for the failure of development, especially agriculture and industrial development in Ethiopia. Empirically, ADLI was discussed from its limitation and adoption of the past European countries development policy and NEPAD policy and it had devastated the country's development towards the poorest country in the world.

URELs have different types and structures of partnerships and stakeholders leading towards agricultural industrialization that need enabling environment and integrated development policy. However, the development derivers: policies, institutional settings,

governance and assets in Ethiopia had lacked integrating and reinforcing development approach for using the natural continuum and complementarity nature of urban centres and their hinterlands through URELs. Ethiopia's comprehensive development policy, ADLI, is an important empirical evidence for substantiating the dichotomy of urban centres and rural areas in institution, governance and development. The comprehensive development policy of Ethiopia, ADLI had no any benefit and support for almost all SHFs (91.5%) and all industrialists in the study region (Field survey 2014). In line with this finding at local level, the failure of ADLI highly criticized by many scholars in chapter two of the literature such as Tegegne (2005:106) and Tacoli (2007:48). Moreover, planning process and implementation of the on-going growth and transformation plan (GTP 2010-2015) was not participatory in any form. Most rural SHFs (95%) and industrialists (90%) had no any participation in GTP and its process of implementation had not yet any benefit for both SHFs (85.7%) and all agro-industrialists (Field survey 2014). Development experts argued that ADLI should be changed in organizational, administrative adjustment and institutional setting for overcoming the current technological backwardness of oxen-driven wood tools and seasonal rain-fed farming in the modern world[37]. In line with this, many scholars (Altenburg 2010:18; Coates et al 2011:12; Desalegn 2008:146; ECG 2011:21 and EEA 2005: 79, 320) also contend that ADLI and its institutional setting failed to bring transformation and development in all dimensions of agricultural industrialization and development in both rural and urban areas in Ethiopia. ADLI has significant influnce on regional and micro level developments. The general Amhara regional state development plan had rural and agriculture-oriented plan based on watershed management (Figure 7.16).

[37] Modern is relatively age of agricultural technological application and production, processing diversification.



Source: Tefera et al (2009:8)

Figure 7.16: The development master plan of Amhara regional state (2010-2015)

The general regional development plan had no any pillar and strategy for linking the rural development with inevitable urbanization and urban economy (Figure7.16). Informants explained that for the same regional development plan, the sectoral Amhara regional state urban sector department bureau prepared its industrial and urban development plan without spatial and functional linkages with their corresponding hinterlands (rural agriculture) for using their mutual interdependence and reinforcing advantages in the regional development. Policy and planning experts argued that in Ethiopia, policy-makers did not understand the root causes of their policy failure and they rather complained for implementation problems. Consequently, experts contended that the regional development dichotomy failed to achieve the desired objectives due to lack of symbiotic, complementary or mutually reinforcing spatial and sectoral linkages through URELs. In line with this study, EEA claims that it is common to hear mismatch and failure of development policy and its implementation from all government levels in Ethiopia. The mismatch situation is stated as, “The development policy of the country is good but its implementation is bad” (EEA 2005:79). Similarly, Tegenge argues that Ethiopian governments lack the knowledge for URLs and integrated development. Bosch et al (2013:4) confirms that government departments are highly compartmentalized structures for linear problem solving tradition and they could not transcend from their jurisdiction.

However, these authors further argue that this traditional approach has not brought any solution for complex and multitude development.

The paradox of theory and reality in the study region was the theoretical availability of institutions but their absence on the ground. The government had some institutional frameworks for empowerment and the participation of the concerned actors. It is stated that people need to have direct participation and involvement in their issues of development affecting their lives with adequate decision power (Constitution 1995:100). However, informants complained that development policies and strategic plans (such as GTP), programs and projects were formulated and implemented top-down without their participation. The overall situation of macro-micro development influences as 'one fit for all' had the implication that enabling environment and structural adjustment is a precondition for agricultural and agro-industrial development for integrated regional development within societal own basic assets of social, economic, physical, natural and human and actors' empowerment. This macro-policy reform is decisive for regional development in the study region in particular and Ethiopia in general with far-sighted policy maker and governance in micro-macro synergy. . In conformity of these study findings, Altenburg, asserted that the main causes of the policy and market failure in Ethiopia are coordination failure of complementary activities and sectors; fragmented structure and political system for truncated URELs. Similar to this study (Altenburg 2011:3)Wijnands et al (2011:38) explain that developing sustainable production linkages of oilseeds production and domestic oil processing by appropriate enabling environment need to be important target for more employment and mutual development in agribusiness. The following discussion focuses on the problems and challenges of public assets ownership on SHFs agriculture and agro-industrialists.

7.9.2 Public ownership of key assets and URELs

Land is the basis of rural livelihoods, especially in ABCs. The right to ownership of rural and urban land as well as of natural resources is exclusively under the ownership of the state and land could not be sold or used as means of exchange and any mortgage (Constitution 1995:98). Hence, land in Ethiopia is a government property and individuals, companies and other organizations have only use right.

Most SHFs (96%) in the study region had mixed agriculture, production of crops and rearing of animals. Almost all SHFs (99%) had produced food crops such as wheat, *teff*, maize and other cereals and some cash crops such as nigerseed, sesame. Agriculture was also characterized by over cropping, little or no improvement in traditional farming practices (Field survey 2014). Some efforts on soil and water conservation and very low level of irrigational production using perennial rivers were due to poor agricultural infrastructures in the study *Kebeles*. Most sample SHFs (98.5%) depended on rain-fed subsistence[38] agriculture for their livelihoods (source of food supply, income, employments). The major staple food and cash crops produced (from largest to smallest) were wheat, maize, *Teff* and some others in Genet kebele while *Teff*, maize, wheat, nigerseed and some others in Girakidamin *kebele* (Document 2014). Though land certificate had given for all SHFs since 2007, most SHFs (91.5%) were unsecured and lacked confidence for their farm lands (Table 7.4).

Table 7.4 The degree of SHFs land tenure security

Description	Frequency	%
highly unsecured	155	79.5
Unsecured	23	11.8
Undecided	7	3.6
Secured	8	4.2
Highly secured	2	1
Total	195	100

Source: Field survey 2014

SHFs were uncertain about their farmland security and most of them felt highly insecure most are highly unsecured (79.5%), and some (12%) were unsecured for their land tenure ownership in the study area (Table 7.4). This has negative impact on their land conservation and production system in the study region. Extension workers and informants stated that short fallowing with crop rotation including legumes crops as chickpeas with manure had not practiced on SHFs' farmlands due to the risk of government ownership and displacement at any time. Consequently, most SHFs (84%)

[38] refer for home consumption and other household expenses.

were not conserving their farmland in sustainable farmland management system by using fertilizing (legumes) crops rotation with proper manure application (Field survey 2014). This implies that land ownership is important obstacle for land management, conservation and agricultural development. Many scholars (Altenburg 2010:18; Assefa 2007:189-193; Ayele 2006:19-20; Coates et al 2011:12; Desalegn 2008:146 and Tegegne 2005: 158, 159) confirm that despite the free-market policy of the country, most means of production and basic assets such as land have been still effective in the form of state and party-affiliated ownerships in Ethiopia. Tegegne (2007:73) confirms that rural land tenure policy has posed problems and threats on farmers and URLs in Ethiopia.

I observed and heard from Machakel's district administrator in Girakidamin *kebele* saying as, "Take farmland if the farmers are not paying ACSI debts and land taxes since land is to the state. We do not give our land for those SHFs who are not loyal for the government." This can imply that SHFs had no any security and right for their farmland. The current government had used as means of political controlling mechanism for SHFs and the government officials use the SHFs' land as if government officials were land owners who could give and take land from SHFs. Hence, the government ownership of land was found one of the retarding factors for agricultural development as tenant-feudal land tenure relationship though the TPLF had used land as a means of political controlling mechanism SHFs and sources of businesses. In line with this study, Tegenge (2007:73) confirms that the current land policy in Ethiopia has greater threat for URLs since individuals have usufruact rights with physical presence as essential criteria. Similarly, Alkire, Conconi and Seth (2014:5) confirm that there is entitlement failure in Ethiopia and farmers have a share of food available with extreme poverty and social discrimination. In the same way, Tacoli (2007:51) explains that policies on land tenure and access are relevant factors for functioning URLs since tenure insecurity has limited mobility and income diversification.

Informants asserted that though the government organized landless youths and near landless SHFs, they had not yet given any farmland. Consequently, there was common conflict between district administrators and landless SHFs or youths around Blue Nile river basin for the production of sesame every year in Genet kebele. I observed the

conflict between landless SHFs (youths) and police at Blue Nile basin in Genet kebele for the production of sesame in June 2014. Informants further explained that there was bloodshed between SHFs and/or youths and investor Bishaw Molla in 2010 in Girakidamin and in that event one police and two SHFs died, much property was destroyed and many SHFs were sentenced to jail. Similarly, the conflict between DMU and SHFs were communal grazing land problem at Yewula rural *kebele* in Machakel.

Landless youths claimed that their fathers and grandfathers had consumed organic agricultural products from new farmland called *Tigat*[39] and then *Teff* was purposively cultivated on new farmland for physiological and health uses. However, they stated that they were landless due to mainly the government's poor land management system though SHFs' problems were multifaceted and diversified such as problems of agricultural inputs including lack of agricultural technology, farmland fragmentation and shortages near to landlessness, absence of land distribution for new generation[40]. Hence, landlessness and near landlessness problems were at severe situation and future threat of agriculture. Informants argued that the problems and shortages of farmland were due to mainly mismanagement, the government land grabbing and leasing to investors by displacing SHFs within increasing landlessness in the area and government unfair land redistribution in 1996. Informants stated that the increasing number of landless SHFs and new generation had raised the question of land redistribution. Apparently, the SHFs were in the state of fear referring and recalling the unfair land redistribution that was conducted in only Amhara regional state in the country in 1996. They further stated that the government's mismanagement and unfair redistribution of farmland was based on three SHFs categories as bureaucrats, neutral and ruling government cadres. Informants claimed that all bureaucrats had been given only one ha farmland while all the government cadres had been given minimum of 3ha regardless of family size and other factors. This farmland redistribution, some SHFs who higher family size for labour and good capacity had been categorized as bureaucrats while incapable and inefficient SHFs had been given maximum farm size. This situation had negatively affected the agricultural production and productivity in Amhara regional state. Similar to this study, Tesfaye (2010:39) confirms that bureaucrats who were Derg regime public officials have

[39] Newly ploughed virgin farmland.
[40] is the youths who need farmland for their new livelihood.

been dispossessed of most their landholdings to have a maximum of 1ha since 1997 land redistribution while the current government cadres and other non-bureaucrats have allowed to hold as much as 3ha regardless any criteria.

The legal framework of the country explains that Ethiopian peasants have to obtain land without payment for use right and protection against eviction from their possession anywhere under the ownership of the government (constitution 1995:98). However, the government was leasing/renting land against increasing number of landless SHFs and new generation in the study region. They empirically complained that fertile agricultural investment areas were given to the ruling party generals and politically affiliated individuals in 2013 by the federal government direct (top-down) order violating the institutional framework and without the knowledge and permission of the Amhara regional state. They claimed that by violating the investment and institutional framework, the federal government had usually been allocating fertile farmlands to agricultural investors regardless of the high local demand in the study region in particular and Amhara regional state in general. Furthermore, they added that the government had been continuing for leasing individual and communal lands for private investors and government businesses by evacuating or displacing as well as forbidding landless SHFs and youths in the study districts of Debre Elias and Machakel (Table 7.5).

Table 7.5 List of agricultural investors in the Genet and Girakidamin *kebeles*

Name of investor	Investment type	investment Kebele	Own capital (birr)	Government loan	Farmland area (ha)
Amanu basazinew	Crop production	Genet kebele	344000	156000	1050
Kerie Tiruneh	Crop production	Genet kebele	690000	2000000	2500
Dires Alemayehu	Crop production	Genet Kebele	600110	399890	3500
D.AH.A.A.S.H.Plc	Crop production	Genet kebele	450000	0	470
A.S.B	Crop production	Genet Kebele	600000	1400000	6400
Fegetm Plc	Crop production	Genet kebele	1100000	0	867
Molla Bishaw	Crop production	Girakidamin	nd*	Nd	150
Biychekin group	Crop production	Girakidamin	Nd	Nd	150
DMT university	Crop production	Amanuel Yewula	Nd	Nd	89.5

Source: Field survey 2014 and East Gojjam zone investment document 2013, Nd* no data

In the SHFs' perspective, over cultivation of the farmlands by more valuable crops had the right measure for their farmland insecurity. Informants explained that government

ownership of land had mainly aggravated the government land grab for leasing to investors and FDI by using its ownership rights. As a result, SHFs' fear and suspicion had increased in Genet, Girakidamin kebeles since the government took their communal (grazing, vegetation and forest), and some individual lands to lease for investors albeit there were many landless youths and households in the study *kebeles* (Table 7.5). In line with this study finding, EIA (2013) confirms that the current government has *strong* commitment to rent and/or lease fertile agricultural lands for FDI and domestic investors with prices depending on location, type of investment and class of land (EIA 2013:28).

Rural *kebeles* administrative informants added landless and near landless SHFs and new generation in Genet and Girakidamin and other rural *kebeles* were not allowed to produce sesame and other agricultural activities in their administrative jurisdiction though they had organized for the government interest of grouping to get farmlands. They further argued that the government had perceived their communal lands (grazing, vegetation and forestlands) as idle or abandoned and underutilized, albeit they had served for many advantages. Hence, it had given long-term contracts that are better than actual purchase of the land for large-scale investors rather than providing for landless farmers in the *kebeles* (Table 7.5). In line with this study, keeley et al (2014:50) explain that the process of land transfer to large-scale commercial agriculture by the federal government has created confusion in responsibilities and weakened the autonomy of regional governments in Ethiopia. They further argue that the large-scale land transfer to commercial agriculture has also negative effects socio-economic and environmental or land degradation issues such as conflicts, loss of access to land, rangeland, and forest and water resources of local people. Similarly, Dessalegn (2011:28, 29) explains that the large-scale land of the government lease (land grabbing) ranges about 3000ha (to Djibouti government for food crops at Bale) to 300000ha or 741000acres (to Indian investor Karuturi for rice and palm oil at Itang and jikaw in Gambella region) (Table 7.6) but SHFs in Ethiopia are landless and shortage.

Table 7.6 Land grabbing under the Federal land Bank in Ethiopia

Region	Land in hectares
Amhara	420000
Afar	409678
BeniShangul	6691984
Gambella	829199
Oromia	1057866
SNNP	180625
Total	3589678

Source: Dessalegn 2011 and MOARD 2009

Informants confirmed that lack of SHFs' land ownership rights and entitlements as a national policy for government ownership had land insecurity and production problems. They further explained that the current situation of the government for large-scale style farming investment had been displacing many SHFs without adequate compensation for loss of their livelihoods. The government ownership of land and other key resources had challenges and fear for SHFs and agro-industrialists linkages and other land transaction. In line with this study, Getnet (2012:25) suggests that the government need to be accountable and empowerment to local communities on their livelihoods instead of simply leasing out their land. He further argues that agricultural investment need to development communities social (such as clean water, education and health access), employment opportunities and technology transfer to local communities. Paradoxically, SHFs were in serious challenges of tenure insecurity, landlessness and land shortage but the government had land grabbing for transnational firms in the country. It had a negative effect for URELs and virtuous circle model of regional development by affecting socio-economic and environmental dimensions of the local areas. The researcher observed that the government had even given communal (forest and vegetation areas, grazing lands and any other uncultivated) lands including some individual lands to government institution DMU near Amanuel town in Yewula rural kebele and private investors of Bishaw Molla and Bichekin group around Girakidamin kebele (Table 7.6). I also observed that these different investors in the study region had no technology and farming system differences from SHFs in the study region. Therefore, the governments' radical transformation from small-scale farming style to large-scale industrial agriculture in contractual (leasing and renting) needs many preconditions for SHFs development in the context of Ethiopia. That was why informants stated that large-scale investors like DMU had faced fierce conflict

from the surrounding community and the community had been appealing to the hierarchical courts (starting from zonal court level, the regional state court and now at the federal level). Informants confirmed that though the surrounding SHFs organized and appealed to hierarchical court system, they had not yet given any justice for their constitutional and legal use rights for private and communal lands. Informants from DMU explained that the university stopped working on this conflicting farmland due to the community opposition and transferred other Blue Nile basin 600ha sesame production investment.

In comparison between the two study districts, farmland grabbing and conflicts, Debre Elias district had higher situation than Machakel district since wider forest and vegetation land had been leased to many investors, mainly sesame production in the Blue Nile river basin in Debre Elias district. Informants claimed that given the current government's policy and large-scale agricultural investment, the number of SHFs being evicted had probably increased under the cover of investment. They pointed out that many SHFs' farmlands had practically been taken and were being taken by the government. This situation of large-scale investors would continue in such situation of selling SHFs' farmlands for *balehabts*[41]. This is because the government had the objective of making money through land leasing at the price of 360 birr/ha/year. Though all SHFs had given land tenure certificate for about 25 years in the study region, they asserted that land certificate had no guarantee for SHFs' land ownership and management for long-term planning and conservation to sustainable production system. They further complained that the government used this land certificate for knowing each SHF's land size and any available extra land to its leasing system in the rural *kebeles* rather than providing land tenure security. This is because the government had been taking SHFs' farmland for investors at any time in rural *kebeles*.

Many landless and near landless SHFs needed land desperately and they asserted that the district administrators demarcated investment potential and farmland areas available for private investors in their jurisdiction. On the other hand, district informants stated that the demarcation and allocation of private investment farmland was the responsibility of regional investment agency by its own survey data with varying leasing price starting

[41] Rich people who can do lease investment.

from 260 birr/ha/year. This undefined and unaccountable duties and responsibilities among different tiers of administration was lack of clear institutional and legal procedure from federal to local *kebeles* and it requires further research. In line with this study, Frehiwot (2015:1) confirms that there are challenges for land transferring from SHFs to large-scale investors. She further asserts that the investment laws have major gaps and problems for the investment projects' sustainability and promoting corporate social responsibilities for affected citizens by the projects.

This implies that the regional government and/or federal government have allocated land for domestic investors and FDI by their own haphazard interest and personality rather than the set institutional and legal frameworks. However, these duties and responsibilities for land and investment were legally and constitutionally set for the regional state governments though the federal government had planned and allocated the large-scale agricultural lands for investors (constitution 1995:108).

Informants confirmed their future land ownership threat, as "The government will sell our farmland with our assets if it could have price." This threat had been creating problems and bad impression on farmer's farmland planning and management system though they had given land tenure certificate. They further claimed that investments needed to strengthen food security and produces through technology transfer, new production system and labour-intensive activities for sharing the benefits to the surrounding community rather than jeopardizing landless and poor farm community in the study region. Therefore, the researcher realized that effective agricultural and agro-industrial development need more effective and sustainable structural adjustment in both landless SHFs and new generation in their organizational and managerial structure rather than private investors in the study region in particular and in Ethiopia in general.

On the contrary, from government farmland lease, the livelihoods of many SHFs and new generation (78.5%) were based on sharecropping and/or renting farmlands in Genet and Girakidamin rural *kebeles* (Field survey 2014 and Table 7.7).

Table 7.7 Farmland size status of sample SHFs in 2014

Description SHFs	Frequency	Valid percent
Landless	30	16.6
Land shortage	121	62.9
Enough farmland	44	22.5
Total	195	100

Source: Field survey 2014

Many landless and near landlessness[42] youths were increasing with rapidly growing rural population (2.6% in the literature) with maladministration of land, ownership insecurity and without technological change (oxen-plough and rain-fed agriculture) for negative impacts on agriculture and agro-industries in the study region (Table 7.7). Informants stated that some adult SHFs had migrated to other far rural places and regional states such as Benishangul Gumz regional state, Ankober, Nazriet, Jawi and other employment opportunity areas (both urban centres and rural areas) in the country. They explained that most of the landless and near landless SHFs were most productive age group (15-35 years) but they had spent their lives on searching job and working underemployment in urban and rural areas. Similarly, Satterrthwaite and Tacoli (2006:1790) claim that the poorest rural migrants usually move to urban centres but ending up the lowest paid urban jobs.

Consequently, many landless and underemployed SHFs were searching non-agricultural employment at small and medium urban centres from Genet-Girakidamin study rural kebeles and the regional state in general (Figure 7.17).

Source: filed survey, 2014

Figure 7.17: Landless, landshortage and unemployed SHFs for urban employment

[42] Is the farm land size less than SHFs' subsistence life (usually less than a ha).

It was common to see group of youth SHFs in urban centres for searching employment and wage in the study region and Amahara regional state. The SHFs' family were dispersed to look for job and sustenance by dropping schools in the study region (Figure 7.16). Urban and rural unemployment was found in a difficult situation and empirically for three low status employment vacancies (that require reading with eighth grade certificate) in (DMU), 1868 unemployed youths were registered (document, 2012). In line with this, it is confirmed in the literature that poverty status of SHFs found at critical stage and SHFs faced socio-economic crisis. In line with this study, it is also asserted that most SHFs had not produced enough food for their own consumption and in many cases; there is a prolonged hunger season for farm households during the pre-harvest periods. The poor situation in rural areas has led high rural-urban migration in search of job and employment though there was excess unemployment and poverty in urban Ethiopia (Altenburg 2010:6; Demese, Berhanu and Mellor 2010:2; EEA 2005:151,162). Contrary to this study, the government land and other labour mobility policies have effectively reduced rural-urban migration through prohibiting land sale; loss of land use rights for those leaving rural areas and registration requirements of urban new migrants (Dosh, Schmidt and Admasu 2012:35).

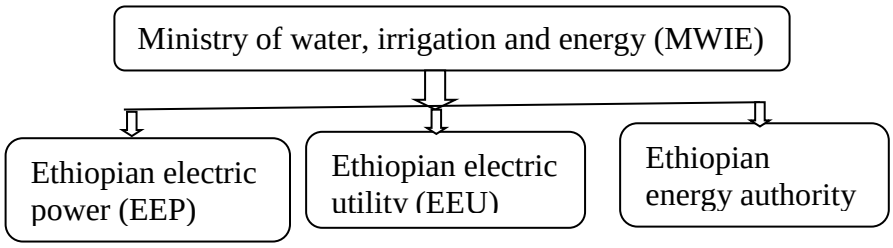
Informants complained that the government had used the ownership of key assets and businesses as a political tool to intimidate SHFs and business owners not to support any opposition groups and to give their support for the regime out of their will. In line with this findings, UNIDO (2013:35) assert that top-down policy design with biased policy, its implementation failure and other illusive government political strategies have resulted in the least industrialized economies and making Ethiopia as one of the poorest countries in SSACs. This implies the presence of paradoxical situation in land governance. There were many landless new generations and near landless SHFs while there were large scale commercial agriculture investors with about of the paradox that suggested that the agricultural transformation could go through reasonable land size (the minimum land size about 3ha per household farmer) with appropriate resettlement pattern and irrigated farming system (Diao et al 2007:3). The following discussion presents the paradox of trade policy and its domestic challenges.

7.9.3 Paradox of foreign-domestic development policy and URELs

7.9.3.1 Energy export-oriented approach and agro-industrial development

Energy is the basis of any development and it is confirmed that sustainable development and energy utility are positively correlated (World Bank 2014:63). Thus, energy challenges had negatively affected all human livelihood assets and development. Therefore, safe and competitive energy supply is key factor for sustainable development. The main infrastructure and precondition for industrial processing was energy and its inputs (raw materials). The following discussion could show the contradiction of export and domestic demand in empirical evidences in the study region and Ethiopia.

The government has institutionalized the electrical energy that is the sole renewable energy source in three sub-sectors (Figure 7.18).



Source: ATINS 2015:13

Figure 7.18: Current institutional structure of energy system in Ethiopia

Accordingly (ATINS 2015:13), the mandates and functions each are states as follow. MWIE is a federal institution responsible for development, planning and management of energy resources as well as for the creation of policies, strategies, programs, laws, regulations, technical support to regional states bureaus and offices and sign international agreements. EEU is the national electricity utility for distribution and sale of electricity. EEP is the national electricity engaged in the generation and transmission of electricity in Ethiopia. EEA regulates all energy activities in Ethiopia including operations in electricity supply sector such as licensing, safety and quality standards, and energy efficiency and conservation programs.

The debate of export-oriented and import-substitution development approach in Africa has no consensus. However, the government had mainly been following export-oriented development approach of the agricultural raw materials (such as oilseeds, horticulture and

flower) and electrical energy. Industrial raw materials and energy were basic industrial essentials. However, the export policy of energy and oilseeds in particular and agricultural raw materials in general had retarding forces of domestic development. This is because they were basis and preconditions for agro-industrial processing in particular and industrialization in general. Informants complain that electrical energy was a critical problem and it was politicised by the government for exporting neighbouring countries (such Djibouti, Sudan) within critical problems of energy for domestic industries. Electric energy was the only source of energy for agro-processing and most domestic uses in Ethiopia and it had faced challenges from policy, institutional and governance. In the study region, informants argued that electric energy problems were so chronic beyond explanation. Some of them were cyclic and suddenly interruptions, volume fluctuation and appliances damages, low power supply and total absence for more than a week or a month at DMT. In line with the finding, Befekadu (2004:22) confirms that exporting raw material means going to underdevelopment and poverty since it is exporting employment, added-value, retarding indigenous and scientific or technological knowledge.

All agro-industrialists claimed that electrical energy supply problem was the first critical problem at DMT. The regular interruption of power (on the average eight days per month), low power supply and irregularity of power with interruption was among the electrical supply problems that crippled NOIs and SFI at DMT (Field survey, 2014). Informants added that during electrical interruption, they had thrown out goods in the processing line since they had no other sustainable power supply strategies such as costly generators. In line with this study, Temam and Mesfine (2013:34) confirm that Ethiopia electric power corporation (EEPCo) has not provided quality services in all dimensions such as quality, reliability, responsiveness, assurance to its industrial customers. They recommend that the corporation should come up with appropriate electrical service delivery standards, proper compliant handling mechanisms, relevant training for its employees, increasing decision-making power of employees and quality improvement programs. Similarly, Staatz (2011:72) confirms that lack of reliable and low cost electrical power severely constrains the development of agro-food industries in SSACs.

Informants revealed that industrial taxation was based on energy consumption and this prevented the industrial freely production development at DMT. They mentioned that energy-industry problems at DMT had the following problems: energy consumption and taxation; technological innovation and change and advantages of scale economy. The technological upgrading of NOIs had critical problem at DMT. Informants asserted that the low and poor energy supply forced the edible oil industrialists to change from higher energy consuming (with higher production capacity) to lower energy consuming (lower production capacity) edible oil machine for alleviating the challenges of energy-based taxation, urban administration voltage counter limit and cyclic interruption with lower power supply (Figure 7.19).

Source: field survey 2014

Figure 7.19: Non-functional higher energy consuming edible oil processor at DMT

As a result, more powerful edible oil processor machine had been put aside or idle for waiting its future energy supply opportunity at DMT. The old and smaller nigerseed oil machine was used for copping the problem in the current NOI (Figure 7.20).

Source: Field survey 2014

Figure 7.20: Low energy consuming edible oil processing

Technological upgrading and industrial transformation of NOIs and other industries had faced severe challenges of energy supply at DMT (Figure 7.20). In the same way, informants (in Ammanuel and Debre Elias towns) complained that they had appealed to energy supply for agro-industrial processing, mainly NOIs to Ethiopian electric power authority since 2010 but there had not yet any response and supply. The researcher observed agro-industrial establishments in both Ammanuel and Debre Elias towns and there were built buildings for NOIs establishment but the basic infrastructure, electric energy had not installed for the electric power supplying to these industrial buildings.

In the same way, electrical engineers and professionals stated that DMT sub-station at Nifasam at DMT was working under its capacity. They stated that the main problems related to power supply for urban centres were: lower electric power generation in the country, poor quality transformers imported from India, the old and improperly arranged

wires with insulators of different capacity, maladministration of the corporation, the inefficiency of the electrical corporation workers with lack of willingness and commitment. On the contrary, informants claimed that like the proverb 'adding fuel on fire', the government had used the industrial energy consumption for tax estimation regardless of type, function, linkages and services, revenues at DMT. Edible oil industrialists complained that the same electric energy consumption-industrial tax system for all industrial activities was not fair without considering differences in gross and net profit income and community services. They further explained that NOIs (average 2.2 qt nigerseed per day) and SFI (processing 240 qt wheat per day) could not have the same criteria of taxation. Informants of concerned bodies confirmed that districts capitals and other urban centres surrounding the study region had different taxation system other than power consumption basis. For example, informants stated that agro-processors in Denbecha town (50 kms away from DMT) tax system were based on total production and gross return with net income. This implies that the uniqueness of DMT agro-industries needs some consideration from policy makers and practitioners.

Federal electric power corporation regional office informants confirmed that all East Gojjam Zone District Towns and DMT industrialists had requested solutions for agro-industrial power infrastructures problems (lower power, interruptions, lack of supply, higher cost) in application formal letters and in person. However, these informants complained that the responsibilities and mandates of all these problems had lied at federal level but this zonal electric corporation office had responsibility of reporting problems and questions or requests of domestic and industrial users to federal level. They added that there had not yet any response for many agro-industrials and household requested related to electric power problems.

Informants also argued that every decision and financial system was only centralized at the federal level (traditional top-down approach) including buying necessary electrical materials for accidentally damaged equipments, filling employment gaps and other office demands for electric energy customers. This is because the collected money from customers at all level of the country had collected and sent to the federal electric power every month without any left over to branch offices in the different regional states. All

the financial sources for the problem of regional and zonal electrical power offices should comeback from the federal level and problems could take many months or years such as the Ammanuel town agro-industrial electric energy supply.

In the study region, most of the food industrialists (80%) explained that the government taxation was the second problem next to problem of electric energy supply while a few of them (20%) state that taxation was the first problem followed by electric energy problem in their industrial works. Different from surrounding towns and the capital Addis Ababa, industrial taxation at DMT which was based on electric kilowatt (KW) consumption had discouraged long period industrial production and power consumption. Most sample edible oil industrialists (70%) had used other options such as using others produces (black colour and lower price 27-35 birr/littre sub-standard edible oils supply) without any known sources from the capital Addis Ababa (Field survey 2014). Hence, they were selling in their shops officially side by side with their output average price of 70birr/littre. I had observed that this low cost edible oil is mostly sold for SHFs and low-income urban people. From this, one can realize that how the risk on public health from consuming this unknown source and processed edible oil has created in the study region.

The domestic users of electric energy also complained that electric energy has many problems such as supply interruption, inefficient counter workers and higher cost. The researcher observed that many DMT dwellers were crying for higher payments of electric consumption. One informant stated that electrical power authority workers were not counted the electrical counter for many months for higher number of KW consumption, the higher rate of calculation and total payment. They further argued that the electricity workers used these high rates of payment for unethical works and corruption from energy consumers and they caused electrical problems for many months accumulation of electrical KW for domestic and industrial users in DMT. Two dwellers who were highly crying at the electrical authority office in DMT were anned for analysis and evidence (Annex-H).

The consequences of electrical energy problems at DMT and other small district capital urban centres such as Ammanuel and Debre Elias had devastating effects on the

ecological system. Most of the rural and urban people had used firewood, roots of plants and leaves with irritating smoking cooking (Figure 7.21).

Source: Field survey (2015)

Figure 7.21: Energy, environment and URELs at DMT

It was common to use leaves in both rural and urban areas at DMT. Informants stated that leaves could be used for backing *Injera*[43] and bread in urban centres of Ethiopia including the capital Addis Ababa. They argued that electric power supply had many problems such as higher cost with wrong prices of kilowatt (KW) readings for lightening let alone cooking and other domestic electrical utility. Furthermore, low power supply for baking and regular interruption for hours or days were pushing factors for using firewood and leaves for *Enjera* baking and other domestic cooking as coping mechanism at DMT. This implies absence of appropriate electrical power supply for industrial and domestic use has negative environmental effects but an opportunity for SHFs market demand. Rural people entirely depended on the biomass supply for urban centre by removing plants from its ecological system for firewood and charcoal, leaves and roots (Figure 7.21). In conformity to this finding, ATINS (2015:5,7) confirms that against the Ethiopian national energy policy document 2013, the major energy consumption in Ethiopia (81%) is heavily dependent on biomass energy (fuel wood, charcoal, wood waste, crop residues, and animal dung including biogas) that has real problem of deforestation and environmental impacts while the electrical energy consumption is little (1%).

The federal government electrical power informants paradoxically stated that the country had excess electrical power 2268 mega watt (MM). However, the electrical energy problem was due to old electrical design networking and sub-stations that had interrupted

[43] food prepared from *Teff* which is stable food crop in Ethiopia.

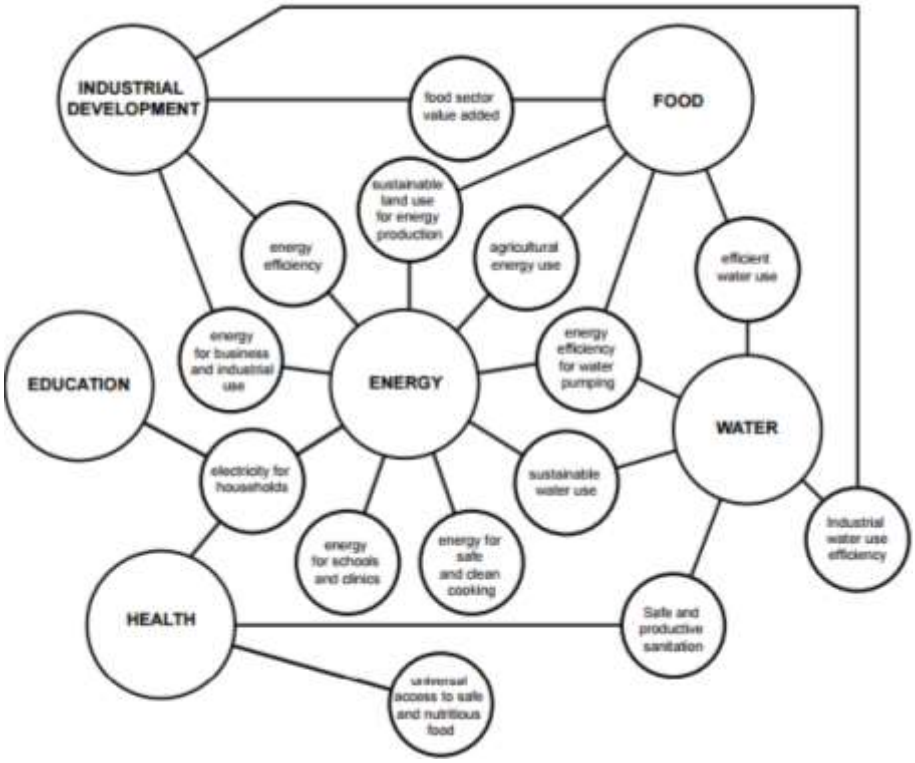
the full electric power flow of consumption in the country. They further explained that the old sub-stations and network systems had failed regular and uninterrupted supply electric power in the country. Then, rehabilitation of these system and upgrading sub-stations was the only solution and it had started in the capital Addis Ababa. The electrical officers stated that the rehabilitation would continue to the whole country. Informants added that the government had been exporting excess electric energy to Sudan (100MW) and Djibouti (50MW). In the future, the country was planning to export power to most of east African countries (Kenya, Uganda and Tanzania) and networking with Europe and Arabian countries based on short and long-term plans (Figure 7.22).

Source: Ethiopia electric power plan document, 2014

Figure 7.22: Electric energy export network reality and scheme of Ethiopia

These informants further explained that the network system construction had been going on to Kenya, Uganda and Tanzania based on the plan for exporting after the completion of Renaissance Blue Nile dam (RBND) (Figure 7.22). On the other hand, electrical engineers argued that Ethiopia had no enough electric power supply for industrial and domestic use with increasing demand for energy-based activities. They further explain that sub-station such as Debre Markos sub-station was working under its potential capacity and suffered from frequent interruption and lower power supply as a result of low power coming from the substation. In line with this study, Alkire, Conconi and Seth

(2014:3,5) confirm that 78% of Ethiopians are electric power deprived and had no electricity. These scholars used electric access as one of the three multi-dimensions and ten indicators that made Ethiopia the second poorest country next to Niger in the world (OPHI 2015:5). It is possible to conclude that the government has preferred export currency rather than domestic development. Whatever the case may be there is a need to address the domestic demands of power before export to other countries. In the positive perspective, energy is the core and the fundamental basis of all development (Figure 7.23).



Source: SEI 2014:5

Figure 7.23: Energy as basis of all sectors and sustainable development

SEI discusses Ethioipia's interest for agricultural intensification and commercialization with the paradox of export focus. Ethiopia is one of the world's poorest countries and its most people lack access to modern energy sources and safe water. The author recommended as "A bottom-up process and nexus approach could help Ethiopia identify interactions and coordinate its targets on access, efficiency and sustainability across sectors." (SEF 2014:5). The debate between industrial and domestic energy shortage

(users) versus availability of excess energy for export (government) in Ethiopia did not be argumentative for the sake of argument. The chronic shortages and unreliable supply of power was an important indicator that the country did not satisfy the domestic demand and development. Water for life and development (energy) has not applicable in Ethiopia. Informants added that the electric power was supplied shifts in urban centres of Ethiopia including the capital Addis Ababa. There was high public complain for the frequent electric power interruption and lower power supply or quality for industrial processing, domestic use and problems of energy associated necessities like tape water (Field survey 2014). Similarly, ATINS (2015:8) suggests for the problem that energy must have independent institution from the political institutional system and interests with clear and well-defined mandate in Ethiopia. In addition, designing and application of the country's trade policy instruments need to enhance domestic production, exports, safeguarding and shielding domestic sectors and industries against external anticompetitive practices (Rogers 2012:19,21).

The government's higher priority for export-oriented (autarky) development than domestic industrial and agricultural as well as ecological development in the study region in particular and the country in general could not transform subsistence agriculture to agricultural industrialization and then to heavy industrial development of Ethiopia. It appears that the government's commitment to transform the country to middle-income country by 2015 was an empty promise and mocking on its own people. There was no logical explanation for electric power exported to other countries (Sudan and Djibouti) while the domestic industries were suffering from lack of reliable power supply. In line with this study, Carucci and Yihenew (2007:99) argue that natural resources in Ethiopia are under stress and land degradation such as loss of precious biodiversity, use of animal dug and crop residues for home energy, reduction of access to clean water affects both food insecure and high potential areas. They suggest that natural resources conservation is a prerequisite for enabling environment and development.

7.9.3.2 Import-export conflict

The Ethiopian major oilseeds are sesame, nigerseed, linseed, sunflower, groundnuts, rapeseed, castor, pumpkin and cottonseeds. Informants stated that oil seeds were the third

most important export items next to leather (hides and skins) in Ethiopia. Informants complained that some oilseed crops such as sesame were not allowed to private domestic industrial processing. These crops were exported through newly Ethiopian exchange commodity (ECX) to international market. Ethiopian oilseeds were organically produced with known flavour and nutritional values in the international markets and they were completive in export-oriented market (EIA 2013:18). However, informants claimed that domestic production linkages of agriculture and agro-industries are at critical problem due to not only market price fluctuation of oilseed crops but also unbalanced government fixed prices on the nigerseed oil in accordance to increasing prices of oilseed crops. For example, selected seed enterprises (ESE and ASE) bought only 9000 qt from Debre Elias by 750 birr. The remaining excess 878364qt of wheat in only Debre Elias district among the study region seven districts in 2014 due to poor agro-processing linkages and government's wrong intervention (by providing imported wheat for the local agro-processor SFI). On the other hand, in August and September 2014, the price of one qt wheat had risen to the average 950 birr in the study region. This price fluctuation of domestic wheat market indicates the lack of sustainable agriculture-agro-industries production linkages and market failure.

Domestic wheat potential called sustainable agricultural and agro-industrial linkages for value adding, reduction for post-harvest losses, sustainable production and market in the study region. Large agro-processors at DMT had opportunity and good prospects for huge agro-processors development and competitiveness if enabling environment for production linkages of agriculture and agro-processing development had given proper policy environment and implementation. Informants argued that lack of enabling environment (policy, institution, governance) caused the market failure in the study region. The government had intervened in the export of industrial inputs of NOIs, mainly oilseeds and fixed the prices of these industrial outputs regardless of the rapidly increasing price, shortage and market failure of oilseeds. The critical problem in Ethiopia was the paradox of export of oilseeds that was highly demanded for domestic processing and consumption while importing huge tones of (palm) oil. In the same way, importing wheat had created a challenge for SHFs and agro-industrialists production linkages in the study region. In line with this study, Tacoli (2007:48) confirmed that small-scale

manufacturing's face uneven competition from cheap imports in Africa. It is asserted that many domestic NOIs (27 large and medium and about 100 microprocessors) are in critical problems of raw material supply and production in the country (CSA 2009). Furthermore, Tegegne (2007:59, 62 and 74) argues that increasing rural agricultural productivity requires urban services support since industrial structure in Ethiopia is agro-industry for production linkages of agriculture. He indicates that agro-industries in Ethiopia are few that have higher imports content rather than domestic BPLs and FPLs. Similarly, Alemayehu (2007:147) confirms that manufacturing sector in Ethiopia imports many of its inputs that makes unsustainable and uncompetitive.

7.10 Research (R&D) and URELs

R&D makes effective, efficient and sustainable in the different dimensions. It is government macro-level project of a nation for different socio-economic and environmental development. However, agricultural and agro-industrial activities were without any research-based system. SHFs had the problems in pre-harvest and post-harvest agriculture. In the five development plan of GTP (2010/11-2014/150, it was expected that agriculture and rural development was possible within a short period by using labour, technology and land resources effectively (MoFED 2010:55).

The researcher interviewed from local to federal level informants on research-based fertilizer-crop type and soil map agronomic agricultural production. Informants explained that the absence of soil map in the region and the country as a whole is critical problem in the application of agricultural inputs, especially conventional fertilizers. Almost all wheat SHFs (99%) had utilized two DAP: one urea ratio under their indigenous knowledge rather than extension workers (DAs) and professionals consultation and blanket recommendation (one DAP: one Urea) in the study region. Informant asserted that the government agricultural management system has no sustainable ratio and their long year experience has better knowhow to improve productivity of wheat.

Based on informants and my empirical knowledge (since I am from farmer family in this study area), there has no any 'modern' inputs application in nigerseed production. I found that the government fertilizer application principle for wheat farm was based on the blanket recommendation and it vary from year to year as one DAP: one Urea ratio before

2013, one DAP:two urea in 2013 and then one DAP: 2.6urea ratio in 2014 in the study region in particular and in the country in general (Agricultural manual, 2014). Paradoxically, agriculture and rural areas are the backbone economy as well as the main government development paradigm and policy (ADLI). However, experts confirmed that SHFs have agricultural production and productivity without scientific research-based system (R&D) and technological progress from oxen-driven and seasonal rain-fed production. Similar to this finding, Janvry (2009:259) confirm that ABCs, mainly SSACs, have low official development assistance (4%) and public expenditure (4%) for research and development (R&D).

Informants at macro-level argued that there has not yet well studied soil map for agricultural production and productivity in the country except currently started soil mapping project for Tigray regional. It is a paradox that the comprehensive development policy of the government was agricultural development-led to industrialization while the country had no soil map for agricultural and agro-industrial development ever since the inception of ADLI. In general, lack of research-based production, integrating and processing system could be considered as one of the factors contributed to the failure of ADLI in the country.

Subsistence and traditional agriculture was due to lack of proper agricultural inputs application, lack of scientific production support for SHFs in pre-post harvest as well as without market linkages with corresponding agro-industries in the study area and Ethiopia. URELs for regional development needed R&D based agriculture and agro-processing for virtuous circle URELs. Hence, the government needed to have scientific research and development such as the proper integration of soil type-farm chemicals (fertilizers)-crop type pattern (agricultural soil map). In line with the findings of this study, Wohimuth (2013:14) suggested that the success of producers, processors and their associations depends on scale of government support and committed concentration of efforts to SHFs in Africa.

Agricultural food crops production had its own rain-fed calendar of preparation, sowing/planting, weeding, harvesting, threshing, and processing and storage. Similar to other food crops, wheat and nigerseed productions had their own production calendar in

rain-fed and/or irrigation systems. Informants mentioned that wheat production had land preparation of November-April; sowing or planting from June to part of July; weeding in August and September; harvesting and threshing from October-December. On the other hand, nigerseed agriculture had some land preparation in February and March; sowing in April-May and harvesting and threshing in October-November. Moreover, SHFs pointed out that both wheat and nigerseed could be produced in autumn season in the wetland production system within short growing period from August-September sowing and December-January harvest and threshing. Furthermore, it was also possible to produce both wheat (locally called *Yemesno Sinde*) and nigerseed (locally called *Fisho Neug*) by irrigation. This implies that there was wheat and nigerseed potential opportunity of harvesting twice or more within a year in the existing resources and technology if research-based development in agriculture was applicable within rich (surface and underground) water potential in the study region.

In the rain fed and traditional agriculture, natural hazards (like snowfall and unseasonal rainfall) had been affecting agricultural practice in the study. The researcher observed that there was unseasonal and damaging heavy rainfall during wheat harvesting season profoundly affected wheat-producing SHFs in Genet and Girakidamin *kebeles* in 2014. I observed that the SHFs in Genet kebele were pointing towards the sky and repeatedly saying ‘God knows, God knows, God knows’ for this unusual and unseasonal heavy rainfall. According to informants, this unexpected heavy rainfall devastated their matured wheat since SHFs had neither modern harvesters nor combiners nor government or their organizations' (PACs and/or GAU) provided support for such emergency case.

SHFs were not able to sell their products for seed enterprises based on their agreement and the risk of unexpected rainfall affected the SHFs. Informants indicated that the enterprises test the produce and almost all wheat produced except 9000 qt in the whole Elias district failed for serving as basic seed for future wheat production. The ESE and Amhara seed Enterprise (ASE) had not bought their wheat seed from their outgrower SHFs in this district (in Giway, Chago and other kebeles) in accordance with their agreement. This indicates that SHFs' agriculture was at risk without any agricultural insurance and mechanism of subsidy in the study region. The total loss of subsistence

agriculture could lead to SHFs' family disintegration and migration to urban centres and other areas. That may be the reason why most urban centres in Ethiopia had large number of non-dwellers and job searching farmers (Figure 7.16).

Informants contended that the pre-harvest losses were due to the SHFs lack of R&D inputs application and poor agricultural extension support services. Different pests such as weeds called 'Yenug Anbessa' in Girakidamin kebele and Dengeza insect (locally called *wollo cricket*) in Genet kebele attacked the most important locally produced nigerseed. Consequently, nigerseed production was found in a critical problem and the prospect of SHFs (97%) and industrialists (70%) at final disappearance in the study region in particular and Ethiopia in general in the near future (Field survey 2014). This indicates that need to have R&D intervention for nigerseed production and its corresponding NOIs were sandwiched between serious challenge of their raw material (nigerseed production) and unfair competition with politically affiliated businesses.

Most respondent (89%) had lost 20-30% of their produces nigerseed while 87% of respondents had lost 10-20% wheat in their pre-harvest season. In the post harvest losses, most respondents (85.5%) have lost 20-30% of wheat and 10-20% of nigerseed (Field survey, 2014). Informants added that in a normal situation and without any chemical application, the average storage and shelf life of wheat was about two months in their storage system while nigerseed could stay more than 1 year in their proper storage system in the study region. In such a situation, the postharvest report of Debre Elias agricultural office (2014) showed that large quantity of wheat was produced in the district but unexpected rainfall affected its quality not to supply for ESE and ASE in better price from domestic market. Similar to this finding, UNIDO (2009b:6) agricultural produces in LDCs have chance of processing 38% with value added of 40 US$ per ton with post-harvest losses of about 40%. Though different findings show difference in pre-post harvest losses, there is huge loss of crops from pre-harvest and post-harvest storage and market failure.

7.11 Regional values and socio-cultural capitals

SHFs and agro-industrialists had many non-working days for their cultural values, mainly due to religious factors. All the sample SHFs in Genet-Grakidamin and agro-industrialists

were Christians and all had commonly many non-working days such as every Saturday, Sunday and many saint days (Field survey 2014). SHFs in Genet and Girakidamin also had special non-working days, locally called *Ye-Mariam Beale* (merry Holy day) for two weeks (14 days) every year in every May when agricultural labour demand was at its peak for preparing farmland and sowing crops in the study region (Field survey 2014).

Informants described that SHFs had more non-working days than agro-industrialists. SHFs on the average had 16 non-working days per month (192 days per annum) while edible oil industrialists on the average had 12 non-working days (144 days per year). Informants state that Saturday and Sunday were constant non-working days for all SHFs and edible oil industrialists. However, SFI agro-industry had about four non-working days per month and 48non-working days per year. Informants stated that the non-working days were only for producers and processors in the religious perspective but all service economic activities were allowed to perform their work at any day and period. This implies that SHFs had been working less than 50% of 365 days of the year. This has a profound impact on labour-intensive agricultural yields in the study region. Agriculture was seasonal and it demanded proper utilization of its season. SHFs needed to balance their cultural and agricultural production for their proper rain-fed production. Similarly, agro-industries (NOIs) needed to have scale economy rather than such so many idle and non-working days for industrial processing.

There were on average eight days electrical power interruption per month and 96 days per year in addition to the non-working days for agro-processing. Another important cultural factor that could affect the livelihood of SHFs is the perception of selling milk as a taboo. Over 97% SHFs in Genet and Girakidamin had the belief that selling milk was not good for the health of the livestock rather giving out free for the needy was more appropriate for the culture (Field survey, 2014). I observed that no one was voluntary to sell milk but they freely invited for my data collectors. This cultural taboo could affect the development of milk yield for commercial level and income diversification of SHFs. All these can imply policy option for production and processing development in the study region in particular and Ethiopia in general.

An expert informant in cultural heritage explained that Ethiopia had rich cultural capital but its people had not known, conserved and used as development opportunities. This informant asserted the reasons for loss and destruction of these valueless cultural capitals as, ‘That is why Ethiopians’ social capital, spiritual and cultural resources, precious and valueless artistic works such as Saint Yared's church music and renowned religious books such as 'Sinkisar', 'Digua' (of mostly the 4th century) were being lost, burnt and robbed and exported or ruined in different ways and strategies’. Within two years (2013- 2015), communities spiritual and social capital of churches were burnt and the destructed in rural *kebeles* around DMT the study region without any legal and institutional protection. Four churches were completely burnt and other 11 churches were partly burnt (Figure 7.24).

Source: Field survey 2014-2015

Figure 7.24: The destruction of cultural and social capital in the DMT hinterlands

Some of the burnt churches were: Danga Eyesus, Yedreban Michael, Debre Medahnit Washa Medihanialem, Debre Medihanit Menkro Mariam, Angata Kidane Mihret, Mislewash Kidus Giorgis, Sendeba Demamo Mariam, Mekane Hiwot Yebrage Hawariat, Sendeba Demamo Mariam) in 2013/14 (Church records 2015 and informants 2015). The bottom line here is that lack of proper management of cultural values and their

destructions could create mistrust and suspicion between the government and local community to participate in local development agendas. Apparently, this would have a detrimental effect on URELs and partnerships.

The paradox of organizational arrangement and management for SHFs and processors was similar to destruction versus construction philosophy. All SHFs in Genet and Girakidamin were members of the new government 'one to five' (one to five) grouping approach (Field survey, 2014). On the other hand, government businesses (AISE, ACSI, FGRCA) were found the main challenges and obstacles for SHFs organizational structure (PACs and GAU) in the study area. Informants claimed that the government hierarchical arrangement of the new grouping (one to five) of SHFs for development was the destruction and threat for their previous social networks. New grouping of SHFs in the name of development had no any advantages of scale economy or network system. They stated that the different levels government grouping had combination of one to five forms on neighbourhood level (lowest group), 80 to 100 SHFs group in village and rural administrative kebele level (at the lowest political administrative unit).

Informants complained that this new SHFs grouping was a source of conflict during (political) evaluation. Furthermore, they claimed that the new political arrangement was also destructing the previous neighbourhood social networks and mutual support systems (such as *Edir*[44]*, Ekub*[45]*, Mahiber*[46]*, Senbete*[47] *and Debboo*[48]*).* They reasoned out that the evaluation was based on political issues rather than agricultural challenges and problems. One informant stated the problems of government's group adjustment as follow:

> The government grouping system (one to five) is for political benefit rather than SHFs agricultural problems. If it were concerned for SHFs and agriculture, it would support SHFs instead of robbing their GAU's capital. Thus, the community use the government grouping and organization as superficial and non-beneficial. It is rather a source of conflict and destruction of the previous neighbourhood social capital and networks such as Debboo. This is because its objective and motive is political rather than developing community's social network and capital for agricultural production.

[44] Is a community-based support system for members, mainly during death and its related problems.
[45] Is a turn-by-turn financial support system for members without interest rate for financial problems.
[46]Is ceremony for spiritual support and strengthening members' belief in the name of saint or Holy days.
[47]Is the societal project for inviting the needy in the churches every month.
[48] Is working in group system in agricultural activities.

Informants asserted that SHFs' livelihoods and agriculture were highly attached to these social networks mainly during peak agricultural seasons. They confirmed that the SHFs' owned formal organization (of PACs and GAU) and their informal community-based organizations (*Edir, Senbete, Mahiber, Ekub and Deboo*) were important for their good neighbourhood relationship and mutual support system for agricultural development in the study region. However, the government had challenged both of their social systems. In line with these findings, Hadingham (2003:22) explained that the participation of grassroots in the grouping model is mainly for political purpose rather than development in Ethiopia. According to this author, the general institutional arrangements of the district level decentralization model starts at *mengistawi Buden* (hamlet-30-60 household), *sub-kebele* (50-100 households), *kebel*/peasant association (150-250 households) and finally district (20-30 *kebeles*).

The social capital among agro-processors had negative indications and they had no any social network and experience sharing. Informants stated that the current government dismantled their industrial national association that had good network and support each industrialist. They claimed that the disintegration of their industrial association at national level resulted in the absence of network and social capital for mutual trust and support among themselves and organizations. In the current situation, they were enemies in the name of competition and they did not have any support and information or experience sharing among them. Consequently, agro-industrialists had social ills rather than social capital among themselves at DMT.

Each of the agro-industrialist stated that its oil quality was better than other agro-industrialist with reasoning that others had mixed with rapeseed, groundnut or other materials. This implies that industrialist had no good social capital due to market failure within unfair competition. This was mostly due to the absence of their organizational system for the advantages of building social capital and scale economy. They are simple retailers only for local market. The consequences of all these industrial challenges and problems had formed bad equilibrium with subsistence agriculture for truncated URELs and cumulative regional development failure. The theoretical framework of this study confirms that development is extremely difficult and a challenge in SSACs because

dictator governments preferred to keep their country in underdevelopment trap within coordination failure and O-ring equilibruim. It is argued that some governments could exacerbate underdevelopment trap of their countries for their hidden politico-economic reasons. In line with this finding, Haynes concludes that the prime cause for SSACs' worst economic poverty is governments who are characterised by dictatorship and personalization of political power for themselves (Haynes 2008:79). As a result, in the literature, the country is the poorest country and food aid supported nations in the world next to Niger. Wheat and edible oil are the two main aid provision foods for many Ethiopians. The next summary presents the main challenges and problems of agriculture and agro-industries for vicious circle URELs.

7.12 Summary and concluding remarks of the chapter

The current government has restructured Ethiopia into nine ethnic-regional states under ethnic federalism since 1991. However, the findings indicate that this ethnic-regionalism had been facilitating misunderstandings, ethnic conflicts and degradation of social capital, cultural and national values. As a result, it created different challenges and problems on agriculture industrialization and URELs for using the advantages of macro-micro and inter-intra regional scale economy. Lack of uniform governance, taxation system, illegal government intervention and impositions, government businesses were some of the main challenges and obstacles for SHFs, agro-industrialists and their network URELs. There were dependent and independent government businesses that directly and indirectly affected agriculture and agro-industries. Some of the dependent businesses were DMT Menkorer construction, DMU business enterprises and ERA construction while some of the independent government businesses were AISE, ACSI and Ambasel agro-processings. The Ambasel agro-processing, ACSI and AISE had empirically been overtaking the legal functions and responsibilities of SHFs' organizations PACs and GAU in the study region. Agro-industries had challenges and problems of governance command and open market systems, energy-based taxation and electric energy supply. The wrong taxation of FGCRA on GAU and its 300 km distant tax centre, non-responsibility intervetions in SHFs and agro-industrialist tasks and responsibilities in agricultural industrialization and URELs in the study region.

The findings indicated that the development policy ADLI had no benefit for both SHFs and agro-industrialists at local level. It was found as the other important factor with its rural-biased institutional setting for rural areas and agriculture with little focuse for agro-industries and URELs. The dichotomy development approach had hardly benefited from the complementary and mutual reinforcing economic sectors. The government by using its public ownership of assets had leased and contracted large-scale farm plot up to 300000 ha for one individual while hundreds of SHFs and farm families were landless and near landless. Most landless and the youth migrated other rural areas and urban centres in search of farmland and employment respectively in the study region.

In conclusion, the government-induced problems, challenges and paradoxes were found the main causes of vicious circle URELs in the study. The conflicts of trade and URELs, ethnic-regionalism and regional development approach, public businesses and private sectors, miceo-macro were paradoxes and problems that were working in cyclic and systemic way at bad equilibrium. The institutional failure of SHFs and agro-industrialists could give empirical evidence that the existence of theoretical institutions does not bring integrative development in ABCs. The real and integrative development needs government's willingness, commitment and accountability for its practical implementation and revision in SSACs. The next chapter presents the theoretical empirical model for overcoming challenges and problems to virtuous circle URELs.

8 Chapter Eight: The Empirical model

8.1 Introduction

There are many academic debates in favour and against integrated and systemic development of URELs approaches and some of them are balanced and unbalanced growth, iceberg and system approaches, sustainable development and economic growth, large scale commercial agriculture and SHFs. However, these debates are for ABCs and LDCs because the MDCs passed the issue of agricultural industrialization.

In MDCs, the challenges of food and agro-industrial processing are on the quality, origin tracing, method of production, long-term health and wellbeing effects, its price and many other issues in relation to legitimacy of food safety in agri-food industries. Agriculture has more cooperative global markets through different processing and packaging technologies (biotechnology, bioinformatics and nanotechnology) with known absolute and comparative advantages in better scale economy (Dennis, Aguilera and Satin 2009:94). The MDCs experience may help for ABCs' adaptation though the wider differences between these advanced economy and beginners need some reconciling knowedge and approach.

The important issue for URELs need to be which economic sectors have more complementary and interdependent nature for reinforcing and mutual development rather than debating on the drawback factors such as problems of big-push simultaneous strategy in ABCs. Furthermore, Bosch et al (2013:3) argue that progressive and development endeavours have been going for one goal of having conducive and sustainable world. They argue that development needs integrated and complementary socio-economic and environmental dimensions. The vertical BPLs and FPLs and the horizontal linakges of organizational and social capital development, organizations, actors and governance are found in truncated situation demanding virtuous circle URELs in the study region. Similarly, Bosch et al (2013:18) confirm that system approach has the capacity to manage complex issues by identifying the root causes of problems using cross sectoral, organizational, governance communication and collaboration for collective intelligence and knowledge sharing in decisions with sense of ownership.

The main contents of this chapter are organized to respond the fourth objective 'exploring empirical model for reversing vicious circle poverty trap to virtuous circle URELs and integrated development'. This is because there needs a new lens and momentum for integrated regional development towards agriculture industrialization in ABCs. Based on the objective, the main contents of this chapter are rationale for developing theoretical empirical model, process of the empirical model development, the empirical model's nature and its departments, applicability or feasibility of the empirical model, opportunities and threats of the model, scope and limitation of the model and summary and concluding remarks. The following section discusses about the rationale for developing the empirical model.

8.2 Rationale for developing the empirical model

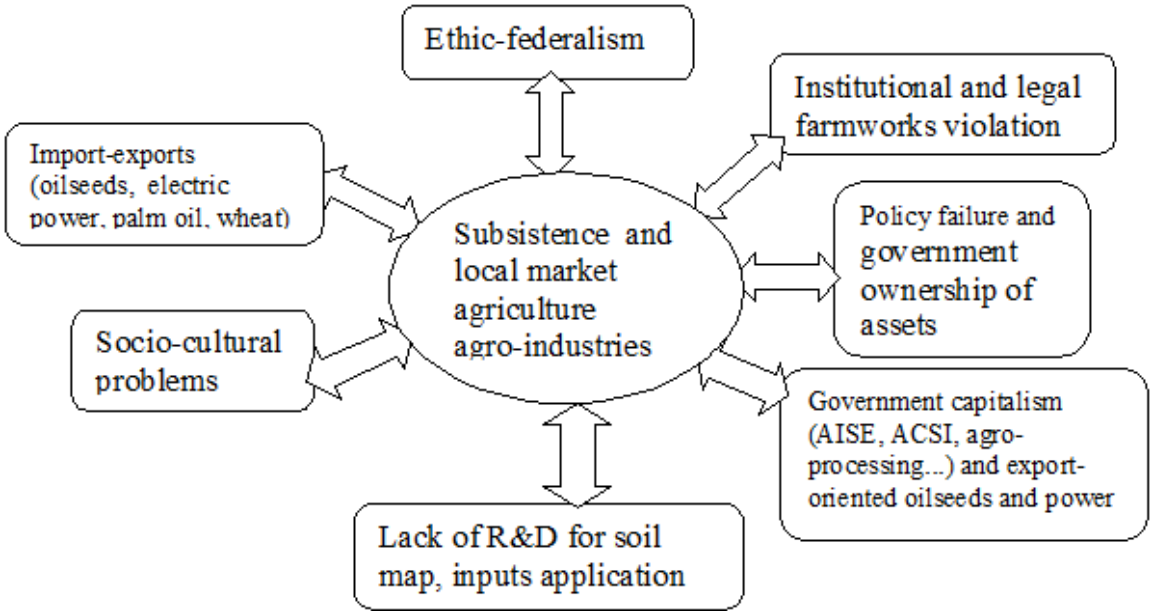
Development knowledge is crisis knowledge since the development model, pathway and patterns of the past (two centuries) have come at the lasting cost of degradation and depletion of the natural resources (forests, surface and underground waters, biodiversity, climate and ecological niche) (Pieterse 2010:1). Furthermore, the key economic sectors agriculture and agro-industries were in critical problem and challenges of policy dichotomy ADLI and coordination failure of urban centre and rural areas, bad equilibrium and vicious circle poverty trap in ABCs. This is because one could not develop in the dichotomy without other mutual and complementary support in vertical and horizontal linkages and vice versa. The bad equilibrium of SHFs and agro-industrialists further formed multiple-equilibria for asserting the reflection of coordination failure and O-ring theories. In line with this study, Dennis, Aguilera and Satin (2009:94) argue that SSACs need different development approach since they have the most extreme poverty, political instability, drought, war and malnutrition.

The theoretical virtuous URELs model need innovative, new policies, strategies and approaches different from the previous development paradigm. The system of agriculture-industry need linkages with special focuss on spill over and trickledown effects as well as scale economy for regional and national development. The regional development theoretical model can serve as platform to link policy-makers, government

departments, development actors and other divergent stakeholders for participation, decision and effective implementation based on the root causes of vicious circle URELs. Coordinating, integrating and collaborating the disintegrated complementary economic sectors, spatial units of DMT and its hinterlands in this study and multi-stakeholders (SHFS, agro-industrialists, the government or policy-makers and development planners) need systemic development approach for resulting virtuous circle URELs friendly with the natural ecological system. Theoretical empirical model would encourage and promote willingness and commitments in the study region in particular and ABCs in general. will also serve as a springboard for further industrialization based on regional context challenges and opportunities. Moreover, it would serve as a basis for exploring further regional, national and international integrated development model for multi-dimensional spatial, socio-economic, politico-governance, environmental and multi-stakeholders in integrated system for overcoming the linear relationship of challenges and opportunites (Figure 8.2). In the same situation, Gust-Bardon (2012:17) claims that indigenous networking structure is a prerequisite for emergence of innovations and sustainable development for regional, national and international integrated system. Similarly, Janvry (2009:253) confirms that finding new opportunity from new challenges in agriculture and agro-industries has significant effect and importance in development. In conformity with this study, it is confirmed that rapidly developing world population (7 billion in 2007 to 9 billion in 2050) within degrading environment need new model for sustainable (green economy and technology in production, consumption and services) development pattern (Pieterse 2010: 90,101 and UN 2011c:V).

The rational for regional approach in development in the context of growing internationalization of world economy is also argued for using favourable conditions of highly context specific and balanced bottom-up and top-down approach closer to concerned multi-actors at grassroots level under decentralized and democratic institutions (Ascani, Crescenzi and Iammarino 2012:19 and Todaro and Smith 2009:567). Moreover, ensuring the three pillars of sustainable development economic, social and environment and their ecological conservation are an urgent need through virtuous circle URELs in a dynamic world (Figure 8.3). The coordination failure between key economic sectors and

poverty traps as consequence of the different leverage points is an indication of coordination failure and O-ring theories in the study region (Figure 8.1).



Source: Field survey results (mainly chapter five)

Figure 8.1: Key levereage points for vicious circle URELs in the study region

The root causes are leverage points for vicious circle URELs in the study region. They include: the form of government ethnic-federalism and ethnic-regionalism without social capital and national strew for the advantages of scale economy; the paradox of foreign trade; violations of set institutions and legal frameworks; lack of key assets ownership; dichotomy development policy and institutional settings; government capitalism; general failure of hardware, software and orgware and absence R&D (Figure 8.1). In line with this study, many researchers (Alemayehu 2004:22; Aynalem and Assefa 2011:181; Befekadu 2004:18; Coates et al 2011: 47-50; CSA 2011:26, 27; Demese, Berhanu and Mellor 2010:3; EEA 2005:230; Eshetu and Mamo 2009:12; Seleshi et al 2007:17; Tegegne 2005:157-8 and Wijnands et al 2011: 42, 92) confirm that the main factors for poor URELs and poverty in Ethiopia are the hidden and unknown managerial system of the current government; the monopoly of government businesses; form of government as ethnic-federalism; poor expertise's support based on R&D for SHFs and industrialists; poor agricultural infrastructures including energy supply, market facilities and financial system; poor land use planning and management; insecure land tenure as state ownership. The explanation of OPHI (2015:5) multidimensional poverty study on Ethiopia also

confirms 86.3% (a total 76 million people) multidimensional poverty index (MPI) poor with poor HDI (0.396) based on education, health and living standard dimensions.

The study region had subsistence and backward agricultural technology and infrastructures such as implements, inputs, irrigation and warehouses. In the same way, agroindustries suffered from problems of industrial technology and infrastructures such as electrical energy supply and utilizing scale economy. Thus, agriculture and corresponding agro-industries were found in coordination failure and O-ring theories reality to the extent of stopping their processing for some agro-industries. Furthermore, the findings indicate that SHFs and agro-industrialists were retailers. Therefore, the important question for model development need be 'how to transform' the vicious circle to the advantages of virtuous circle for using the advantages of scale economy in agricultural-industrialization. In line with this study, Bosch et al (2013:1) argue that all human endeavours are increasing complexity of our world. Furthermore, the increasing complex nature of governments and their businesses have lacked the use of systemic and holistic approach to interventions in poor countries (Bosch et al 2013:1). This implies that integrated development approach through URELs will organize and reorganize sectors and multi-stakeholders in accordance with the demand and requirement of natural ecological system, complementary, reinforcing and sustainable development in new empirical model and momentum for systemic and interdependent development opportunities (Figure 8.3). Therefore, developing theoretical empirical model for the key economic sectors agriculture and corresponding agro-industries has paramount importance and development of virtuous circle URELs and overall development for ABCs. Though developing empirical virtuous circle URELs model could demand more systemic approach, this generalized and new empirical model will show the linear and forwarded approach for integrated regional development for policy makers and development actors in reversing vicious circle to virtuous circle endeavours.

8.3 The process of theoretical model development

Of the three approaches of improving or developing a theory, grounded theory building approach based on empirical data in the context of locality was used in this theoretical model development (Bhattacherje 2012: 24, 28). The overall design and development of

the empirical model for virtuous circle URELs was based on the findings (Figure 8.1 and Figure 8.2).

Source: Field survey finding

Figure 8.2: Linear treands of URELs in the study region

The main findings of the study focused on different challenges and problems, bad equilibrium of URELs, inefficient agriculture and corresponding agro-industries resulting poverty and underdevelopment. The scenarios of challenges and problems on the key economic sectors resulted in disintegrated and bad equilibrium for vicious circle URELs. Then, production and processing were at low efficiencies in bad equilibrium for subsistence and/or local market production and processing. This truncated situation led to poverty and destitution of both urban and rural areas and people in both systemic and linear approaches (Figure 8.2).

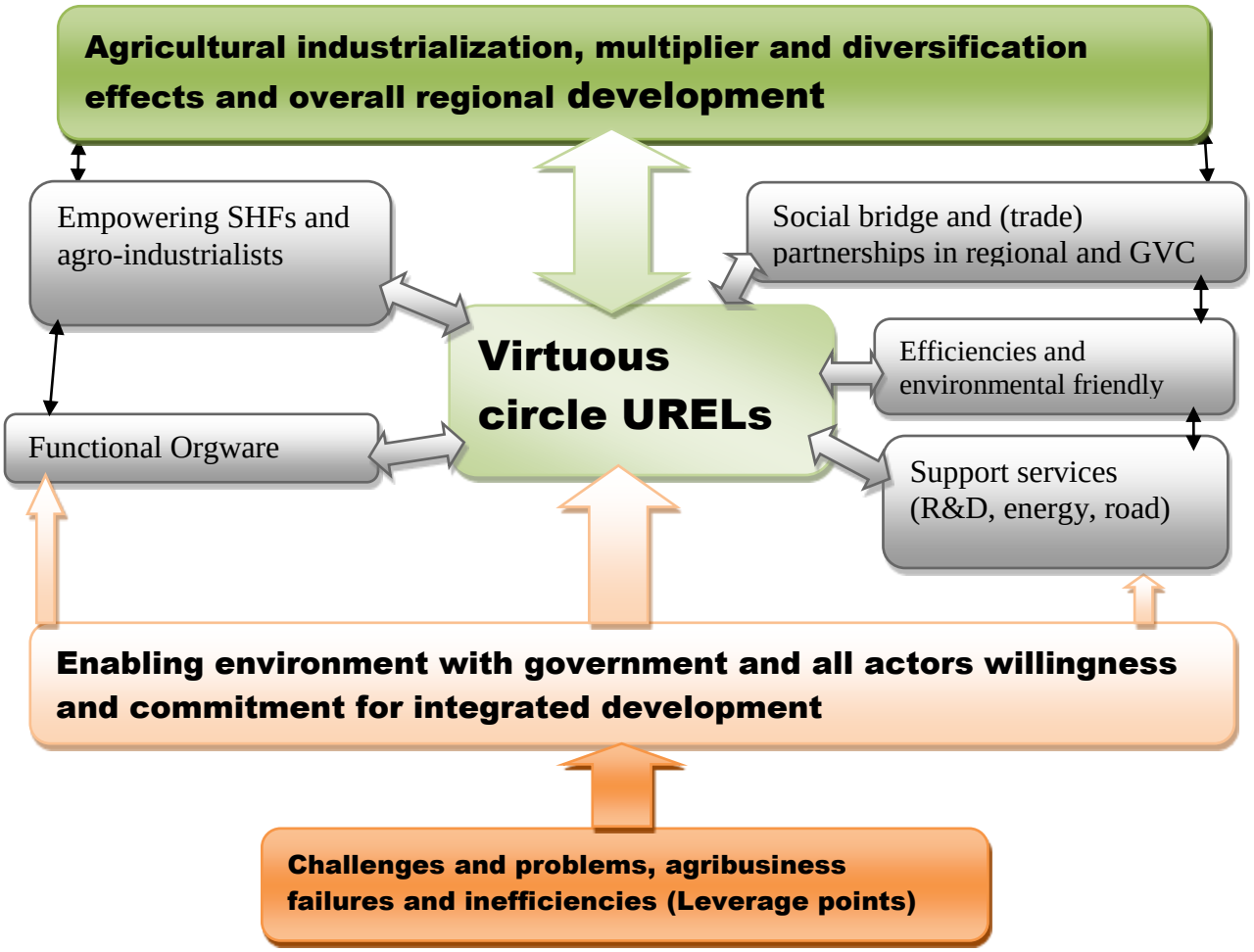
The theoretical framework of coordination failure and O-ring theories has direct reflection for the findings of poverty trap and vicious circle URELs in study region. In the cyclic way of the poverty scenarios, challenges and problems formed vicious circle URELs as well as subsistence and/or local market production and processing and highly inefficient agribusinesses. Thus, disintegrated SHFs and agro-industrialists had less capacity for breaking and escaping from truncated and bad equilibrium URELs. This situation in turn developed multiple equilibrium that had vicious circle in many sectors and places. Because of the bad equilibrium, the options of some processors and SHFs did not develop sustainable alternatives and coping mechanisms. Consequently, some NOIs totally stopped their economic activities and some SHFs and youths were migrating to other areas. Others were in the same situation of survival at subsistence and local market vicious circle URELs. In the linear way, all challenges and problems moved from the origin to final vicious circle URELs. Therefore, the important question was how to overcome these challenges and problems. The following section presents theoretical

empirical model to respond the challenges and problems for bringing sustainable regional development and virtuous circle URELs.

8.4 The empirical model and its explanation

Finding the root causes for more reliable empirical model need longitudinal study. However, the findings indicate that the challenges and problems were mainly the result of lack of enabling environment and other government-induced problems to accomplish effective horizontal and vertical linkages of SHFs and agro-industries. Creating enabling environment (policy, institution, governance and assets owenership), reforming compartmentalized departments that were linear governemt structure such as ministry of agriculture and ministry of industry and modifying some cultural traits such as religious non-working days are prerequisites for overcoming challenges and problems in the empirical model. Enabling environment and cultural values are expected to change the overall system in both linear and systemic way similar to breaking the poverty trapping system of O-ring theory. Similarly, Staatz (2011:72-81) confirms that some of prime movers in transforming the agro-food system in SSACs are enabling environments and arrangement for vertical and horizontal linkages. The horizontal linkages such as organizations PACs and GAU were poor for using the advantages of scale economy and shared skills, working relationships and social capital for SHFs in the study region. The vertical linkages (BPLs and FPLs) had also poor flow of finance, information and knowledge, market and value adding in URELs. As a result, there were poor mutual benefit, financial flow and the vicious circle URELs knowledge transfer without trust and collaboration between SHFs, PACs and GAU and agro-industrialists (Figure 8.1 and Figure 8.2).

The government with key stakeholders SHFs and agro-industrialists have pivotal roles and commitments for creating enabling environment and reversing vicious circle into virtuous circle URELs. The important factors that need to be into account are sustainable development and URELs (Figure 8.3).



Source: The researcher's empirical model based on findings

Note: Orange colour (leverage points as phase one); Semi-orange colour (prerequisite for intervention as phase two), the grey departments integrating approach as phase three and semi-green and green colours for the overall goal of the model in virtuous circle URELs and sustainable regional development as fourth phase.

Figure 8.3: Theoretical model for reversing vicious circle to virtuous circle URELs

The theoretical empirical model is made to have four phases in reversing the vicious to virtuous circle URELs and sustainable regional development. These procedural four phase are:

1. The first phase in the empirical model is identifying and organizing the root causes called leverage points for URELs.
2. The second phase of the model is creating and developing enabling environment with commitment and good willingness of the key stakeholders (government, SHFs and agro-industrialists) for intervention.

3. The third phase is coordinating and collaborating different key stakeholders /departments for integrated and reinforced tasks/development.
4. The fourth phase is the governance and managment of the outcomes of coordination and integration or synergy for virtuous circle URELs and their multiplier effects of sustainable regional development.

In each phase, the different departments of the empirical model need to have dynamism and reform from low equilibrium to good equilibrium level that can perform at integrated and reinforced system of synergy (Figure 8.3). In substantiating the empirical model, Dalal-Clayton, Dent and Dubois (2003:152) argues that commodity chain analysis is important for the identification of actors from production, processing and distribution up to end consumers with evaluation of income and profit distribution at each level. It is claimed that system approach can address the root causes of challenges and problems in trans-disciplinary fields, divergent stakeholders and actors and multi-spatial areas (Bosch et al 2013:1). The following section discusses each of the department's roles in the formation of virtuous circle (Figure 8.3).

8.4.1 Challenges and problems of URELs

The first step for the theoretical model development is identifying the root causes of vicious circle URELs (Figure 8.1 and Figure 8.2). Then, the root causes of the vicious circle URELs are pillars and guiding lines of the system for designing, reforming and creating enabling environment for commitment and intervetion. A change of one component of the theoretical model reversing can change the overall model network and URELs for coordination and good equilibrium, being other things kept constant (Figure 8.4). In line with this empirical model, leverage points are the root causes that are explained as essential part and basis of the whole system. Bosch, et (2013:3) explained that leverage points are points where a small shift on one component can transform big changes in all other parts as a management computer based modelling system of Baysian Belief Network (BBN). Thus, the two key economic sectors have strong forward and backward linkages that can be transformed to virtuous circle and multiplier effects.

In the theoretical framework of coordination failure and O-ring theories, it is possible to reverse bad equilibrium of the existing vicious circle model leverage points into good

equilibrium of virtuous circle model for sustainable regional development. In line with this study, Douglas (2006:147) argues that it is possible to reverse the potential urban and rural regional development areas to virtuous circle mutually reinforcing urban-rural linkages.

8.4.2 Enabling environment and commitment

Enabling environment is the main and prerequisite software development driver that includes policy, institution, governance and assets ownership for cheiving the goal of the theoretical framework in the study region in particular and ABCs in general. It needs to consider dynamism including the recommendations in this study (section 9.4). This software is a foundation for multi-stakeholders' participation and decisions and mutually reinforcing dimesions in systematic approach.

The main challenges of integrated development usually arise from policy and institutional settings, mainly in ABCs that have dichotomy rather than big-push policy and institutional settings. The government has the main responsibility for creating enabling environment in policy, appropriate institutions, governance and assets' ownership for the theoretical model to ground implementation. Enabling environment will create situations for coordination and collaboration of key factors of production and processing in complex inter-dependent relationships for virtuous circle URELs, regional development and global value chain (GVC). In line with this finding, Christy et al (2009:151) and Roepstoff, Wiggins and Hawkins (2011:52) confirm that One of the fundamental roles of the government is providing enabling environment that is the reflection of the rules of law, good governance and economic development, mainly for SHFs. Furthermore, Dang and Pheng (2015:21) argue that coordination failure requires active government intervention to ensure complementary agriculture and agro-industries linkages for working at integrated and reinforced manner in participatory approach to breakout the poverty trap. The assets of natural, manufactured/physical, social, economic/financial, and human need clear policy and institutional setting for virtuous circle empirical model. Dennis, Aguilera and Satin (2009:95-7) also assert that political capital and regulatory frameworks are major drivers for agro-industries. Chirsty et al (2009:150) have also

structured the enabling environments of agro-industries in LDCs into three broad enablers: essentials, important and useful.

The government was also found the main causes and aggravator of most challenges and problems and their associated consequences on the overall value chains, SHFs, agro-industrialists, bakeries and traders in the study region. The findings confirm that the main actors, SHFs and agro-industrialists, in URELs were victimized rather than benefiting from their works and achievements. The existing trade policy of the government was found challenges and barriers on the drivers of the two key economic sectors and the natural environment with a number of paradoxes. Policies and institutional failures, poor governance and public ownership and mismanagement of assets were found the main challenges and problems of URELs in this study. Asset ownership has prominent role in the theoretical model to cheive its goal. For example, the main problem of SHFs was related to land tenure and insecurity with lack of research-based (R&D) agricultural system. In line with the empirical model structure, Christy et al (2009:162) claims that the government is the primary driver for creating enabling environment. The environment can have enforcement of asset ownership rights, duties and responsibilities or co-existence of state and private sectors (PPP), financial access, fair tax system, trade policy, price liberalization, elimination of state businesses and subsidies for competiveness in the two key economic sectors of agriculture and industries in ABCs. In conformity to this study, Kibur (2003:27) confirms that the government has to create enabling environment for key sectors and actors that have strong backward and forward linkages using the opportunity of different agro-climatic zones and agronomic conditions in Ethiopia. It is also claimed that land is one of the most important assets that need proper functioning in regulatory institutions for secured land tenure and property rights (Christy et al 2009:151 and Roepstoff, Wiggins and Hawkins 2011:52).

Therefore, the restructuring and/or avoiding paradoxical and illicit challenges and wrong government interventions to overcome leverage points. Developing agriculture and agro-industrial basis for the advantages of scale economy need to be the main rule of the game with strategic balance of input substitution industrialization (ISI) and export-oriented agricultural industrialization (EOI). The effective implementation of the empirical model

may bring not only virtuous circle linkages but also using the advantages of scale economies as multiplier effects and sustainability. The proper function of the empirical model need the decoupling if possible dysfunctional situation of most government businesses and agents from agricultural and industrial economic activities and interventions. Privatization need be in both assets and responsibilities for SHFs and agro-industrialists. In line with this suggestion, Satterwaite and Tacoli (2006:176) assert that supporting BPLs and FPLs between agriculture and industry in an urban centre are important factor for successful regional development. These authors argue that small and micro-enterprises need to have ensured institutional support for accessing market, basic education and (technical) knowledge to identify local opportunities in their absolute and relative spaces and for having the capacity of responding import competition (Satterwaite and Tacoli 2006:179).

8.4.3 Support services (R&D, energy and hardwares)

Agricultural and industrial infrastructures such as research and development (R&D), agricultural and industrial management expertise support, electrical energy, transport and communication system and storage (or shelf life system) are basic factors in URELs.
Education and training of SHFs and industrialists are part of the empirical model for new partnership (URELs) and the departments for proper functioning. It needs to be in accordance and upgrading their indigenous skill and knowledge. This is because modern agriculture and agribusiness for using the advantages of scale economy need basic knowledge and skill. The government agricultural and industrial management expertise and extension workers need have the capacity to give diversified supports and training with institutional frame on systems of production and processing, complementarity and multiplier effects, different partnerships and virtuous circle URELs for overall sustainable regional and golobal development.

SHFs need further training on modern production on organic farming using manure and compost, crop residues, high yielding varieties (HYVs) and green revolution, soil and water conservation and management for environmental friendly production with the broader natural ecosystem. The following section discusses about sustainable regional development within the natural environment.

The two main empirical problems of agro-industrialists were electric power supply (manufactured asset) and energy-consumption based taxation (financial system) with warehouses 25% storage limitation. There was no other energy source except electrical energy. Nevertheless, electrical energy supply has multitude problems and challenges for not only agribusinesses but also the natural environment and the overall sustainable development. Firewood, leaves, manures (as dung cakes) and crop residues have good demand and urban market as alternative livelihood strategy for SHFs and energy source for urban residents. This livelihood strategy has been leading to the systemic pains of the natural environment, agricultural resources and soil fertility (green and organic farming) in the study region in particular and the country in general. Therefore, sustainable electrical energy supply was one core pillar for the overall failure of agriculture, agro-industries and URELs as well as natural environment of the ecosystem. This is the direct reflection of coordination failure and O-ring theory in systematic approach and the failure of one component can bring the overall system failure in URELs and agribusiness. This implies that all the key components need good attention and enabling environment for the proper functioning of the overall system in a sustainable manner like the natural system of ecology and human physiology.

R&D is a macro level project to micro-macro development. Blanket recommendation-based agriculture without soil map and R&D was a paradoxical empirical evidence for rural-based development policy ADLI in the study region in particular and diversified agro-climatic and agronomic Ethiopia in general. Thus, spontaneous agriculture has subsistence production under vicious circle URELs. In line with study, it is claimed that political environment need have commitment and accountability with fiscal incentive for R&D and innovation for agro-food industries (Dennis, Aguilera and Satin 2009:94).
Infrastructure and financial access are other important infrastructures for SHFs and agro-industrialists. In line with this study, Satterwaite and Tacoli (2006:176) suggest that regionally balanced strategies including satisfactory provision of infrastructures, credit facilities and services, advisory and training services for SHFs and agro-industrialists can lead sustainable URELs. Access to manufactured assets such as road access is other important component for creating conducive environment for agribusiness development

in the empirical model. Both rural *kebeles* (Genet and Girakidamin) had dry weather roads. It is important to interlink all infrastructure elements in value chains of wheat and nigerseed in this study region in particular and the country in general. The government has the pivotal responsibility and duty for such public infrastructural development with other joint institutions. The following discussion presents the orgware of SHFs and agro-industrialists for utilizing and developing bargaining power and scale economy.

8.4.4 Orgware and working relationship

The approach for agricultural development through SHFs' organizational system or spatial clustering of fragmented farmlands to large-scale commercial production is one of the academic debates in ABCs. However, new orgware, especially SHFs is recommended as one important strategy for developing agricultural commercialization and industrialization in ABCs. The author argues in favour of organizational arrangement and utility despite the criticisms of some unsuccessful schemes such as partnership in different forms, orgware based on the empirical findings from SHFs and agro-industrialists in the study region. Organizational system may be an important basis for using their software (education, training capacity, scale economy and R&D) and hardware (post-harvest storages, warehouses, irrigation systems, scale economy and value adding benefits) in the context of Ethiopia.

The horizontal linkages of individual small firms (SHFs' agriculture and corsponding agro-industries) need organizational arrangement and structure for bargaining power and advantages of mass or scale economy in ABCs. Theses linkages can develop social capital, good working relationship, knowledge sharing, collective learning and mutual benefits. Cooperative of SHFs and firms is probably the most appropriate structure individual subsistence SHFs and industrialist who had local market retailing. It is important to develop economic win-win principles through internal catalysists and external elements (NGOs) for running to virtuous circle URELs.

SHFs and corsponding agro-industrialists had multitude dimensions of challenges and problems in the study region. The findings confirmed that SHFs' organizations PACs and GAU were incomplete and functionally weak for linking with agro-industrues. They were rather serving between SHFs and government's businesses in the study region. On the

other hand, the two key and mutually reinforcing economic sectors agriculture and agro-industry had spontaneous linkages without any institutionalizal setting and governance system, even at the macro level. The industrialist's association was dispersed in 1997 and they had no yet any organizational system. SHFs and agro-industrialists had currently fragmented subsistence and or local market products that could not have scale economy. The absence of any partnership between SHFs and agro-industrialists as well as the poor functioning of their associations resulted in truncated URPLs.

The government had not yet given focus and permission for SHFs and agro-industrialists' orgware development though the comprehensive theoretical development policy ADLI was rural-oriented. The existed organizations of PACs and GAU were serving as middle-humans between government businesses AISE, and ACSI and SHFs. Hence, SHFs had not gained benefits and services from these organizations. Therefore, main challenge of SHFs in the study region was lack of organizations that can perform their responsibilities and duties due to internal and external factors. SHFs and industrialists call for their autonomous organizations that are restructured from micro to macro level for the international farmers' alliance and GVC in the empirical model. Self-help and voluntary organizational system as driver for pro-SHFs and industrialists model need to be developed in collaboration with other key stakeholders for organizational scale economy. SHFs expressed the importance of organizational system with individual SHF as 'nobody can climb by its one hand'. It was confirmed in the survey that individual farmers and industrialists highly demanded any organizational or partnership for transforming individual retailing to wholesaling as scale economy. In line with this disintegrated development approach, Bosch et al (2013:3) confirm that fragmented decisions and planning are quick fixes treating asymptoms of the problems without long-lasting solutions for core causes or leverage points. The main challenge and problems were mainly government-induced factors to associations, PACs and GAU through wrong and discrimination-based tax burdens and unfair businesses that need other further research.

In short, among the facilities and infrastructures for regional development, orgware has a key role in organizing and arranging SHFs and agro-industrialists for using advantages of scale economy and integrated development approach. Partnerships such as contract

farming, rent, sharecropping, joint venture or cooperatives are considerable potential opportunities for providing an integrated organizational system into scale (modern) economy for virtuous circle URELs in ABCs with some other further research. The orgware of industrialists has also similar advantages such as support, networking and linkages with domestic and foreign institutions for individual and co-learning. The finding confirmed that SHFs and agro-industrialists had highly demanded producers' or processor organization up to international alliance level for global value chain (GVC). SHFs (98%) and all industrialists needed functional organization based on the existing individual work. That is why the government has established PACs and unions for SHFs though they lacked national organizational structure and disbursed national industrial association in the Ethiopia. The specific type of organization for SHFs and industries need other further research for strong vertical and horizontal linkages.

The vertical and horizontal linkages of SHFs and processors had many implicit and explicit advantages. Some of organizational advantages are scale economy at national and GVC, attracting public attention, technology adaptation, experience and knowledge sharing, consolidating fragmented plots, proper pre-harvest and post-harvest advantages such as access to storages and market, training and financial services like establishing their own banks, value-added for farm products via small-scale agro-processing enterprises (MoFED 2003:45). In the same way, Demese (2007:83) substantiated that agriculture cooperatives are the only means for meaningful agricultural development in Ethiopia where the poorest of the poor live within poor basic services. Bosch et al (2013:3-5) suggest that system approach is recent important development approach for organizing and collaborating all participants and divergent stakeholders together at local, national and global plate level for better decision and implementation. Vorley, Lundy and Macgregor (2009:198) state that organizational structure of SHFs has key advantages of scale economy; improving efficiency; lobbying political system, easy acces for inputs and outputs, mass demand and supply in lower average per unit cost by benefiting value chain actors and users. Thus, the orgware need support services that have presented in the next section.

8.4.5 Empowering Actors (SHFs and firms)

SHFs and agro-industrialists had different questions for empowerment and privatization. Farmers were highly insecured for farmland conservation and long-term land use planning in the study region. SHFs had land use right and they had no right for mortgage or other financial system. The government had the ownership of key assets such as land in Ethiopia and it lacks willingness and commitment for transferring key assets ownership to owners and actors for actual privatization (Altenburg 2010:3).

In political capital, the government has decentralized governance system from federal upto district level. However, the SHFs had administrative burdens from the central and regional governments outside the set institutional framework. The general macro policies such as trade policy were also the main challenge for agro-industries. NOIs had raw material (BPLs) free market comptetion while the government controlled the oil flow. Moreover, by exporting its raw materials and importing cheap palm oil without justifiable reason. In short, the practice of governance is different from the decentralization to district level. Districts of Debre Elias and Machakel had no decentralized power but they had limited responsibilities such as tax collecting and some administrative routine works.

The producers and processors need to have their own organizational and individual development and self-governance with minimal government's intervtions and businesses. The role of the government is to facilitate SHFs and agro-industrialists to exercise their power in local economic development (LED). Thus, the theoretical model with decentralized opportunity may be successed for achieving its virtuous circle URELs. Governance in regional is key its development. Thus, self-govenance though their organizational structure need to be one sector of SHFs, agro-industrialists for integrated development.

8.4.6 Efficient and environmental friendly production

It is not argumentative that agriculture directly depends on the natural environment while agro-industries indirectly and directly linked with the natural environment. Thus, agriculture and agro-industries need to have production and processing friendly with their natural environment since they have systemic known and unknown intimate

interconnection and interdependency. There was a good beginning and potential for compost preparation and organic farming in the study region and this needs further strengthening for environmental-friendly production system. Agriculture can have the opportunity for organic farming that is friendly with the environment from the available sources (manure, crop residues, waste recycling and compost) in the study region. Currently, the sources of organic farming crop residues, manure, animal dung and leaves were SHFs' survival strategies to their financial problems on the pains of the soil fertility and natural environment in the study region. Compared to SHFs' agriculture, the agro-industries (SFI and NOIs) are relatively environmental friendly by using and reusing their products and by-products (*Furishca* and oilcake) for multiplier effects of regional development.

SHFs and agro-industrialists had poor and wider range of TE, AE and EE. Furthermore, they had also wider problems in technology. Agriculture was oxen-driven and wooden material in the absence of R&D for soil map in soil-crop-fertilizer production and rain-feed agriculture, absence of alternative irrigation production and poor resources mobilization. In the same way, agro-industries had been working under capacity for high potential opportunity of transformation in many ways such as increasing efficiencies (TE, AE, and EE), using available resources, obsolete technologies, partnership production in vertical and horizontal URELs in the study region. Trunscated URELs' transformation need SHFs and agro-industrialists new enabling environment for organizational arrangement and partnership leading to use advantages of scale economy. The empirical finding showed that both SHFs and agro-industrialists had high interest for forming partnership model.

In short, the wider gap of efficiencies among sample SHFs and agro-industrialists, poor existing technological situation, absence of complementary and interdependent partnership and linkages of economic sectors with poor resources management are among opportunities for future intervetions friendly with the natural environment and overall ecological system in the study region. The organizational and partnership formation of SHFs and industrialists need strong social bridge. The next section discusses importance of social capital among different actors and stakeholders in URELs.

8.4.7 Social bridge and URELs

Sustainable URELs and social capital are interdependent and reinforcing factors for multi-actors have good partnership and integrated development. Empirically, the value chain of wheat was characterized by poor social capital among SHFs and their organizations PACs and GAU as well as corsponding agro-industrialists. The involvement of other business actors such as AC, AISE and ACSI were the result of poor social capital in the value chain and poor linkages among key actors SHFs, SFI, bakeries and the government in the study region. Agribusiness had lengthy bureaucracy in the absence of social capital among the key actors. Furthermore, the government has new system of one-five political grouping that facilitated the breaking of their previous social bond and capital such as neighbourhood synergy and support systems of 'Deboo'.

In the same way, industrialists had poor social capital for good working relationship. They were complaining and conflicting each other for market failure. The retailing market of NOIs had no the advantages of industrial scale conomy. This situation needs to be changed by developing strong social capital among these key actors for bargaining power and strong partnership with SHFs and their organizations (PACs and GAU). Agriculture-industry partnerships such as outgrower, contractual or clustered and public-private partnership (PPP) or other forms of partnership need to be based on mutual trustworthiness for virtuous circle URELs.

The new empirical model has social capital to address and fill many trust gaps among actors working relationships in any form of partnership. Actors in agribusiness need have form, time and/or place value adding in the process for interdependence and mutual benefit as partnership in virtuous circle URELs. The key actors: SHFs and their organizations, agro-industrialists and the government need to have support system of social capital for sustainable partnership and URELs. They need to realize the fact that the presence of one is the advantages and opportunities of the other in the system. The government need to have with and build social capital in different approaches for playing its roles of support service and capacity building to key actors in the system. Social capital among main actors (SHFs and agro-industrialists) is the core element for virtuous circle URELs and in the theoretical model. However, the government's willingness and

commitment is prerequisite for social capital development among key actors and the overall society. It has intermediary roles using its authority in governance and institutional settings for social capital bridging. This area is one important opportunity for developing Partnership and URELs. The next section discusses the opportunities of social capital and other gaps for developing virtuous circle URELs.

8.5 Opportunities and threats of the theoretical model

There is higher opportunity of reversing the vicious circle to virtuous circle URELs. The empirical model is based on high potential opportunity region in wheat and nigerseed agriculture for sustainable agriculture and agro-industries synergy and regional development. All leverage points, gaps, weakness and potentials in resources and governance can be converted into opportunities of development through enabling environments for for efficienct and comptetive local, national and global scales. The existing situation of large inefficiency range of SHFs and agro-industries; theoretical beginning of decentralized system for regional development approach and privatization policy of the current government; huge natural and human resources-rich urban centres and their hinterlands; the absence of agriculture-industry production linkages; poor social capital of SHFs and agro-industrialists and the higher willingness and demand of these main actors for partnership and URELs could be some of the opportunities for the empirical model feasibility and success. For example, one empirical opportunity in the study region was the least efficient and under capacity of NOIs that were producing less than 11 times (2.22 qt to 24 qt per day) from their actual capacity in the existing situation and resources at DMT.

Based on these existing gaps and opportunities, policy makers and development actors can attempt to use the advantages and multiplier effects of virtuous circle URELs in regional and national inputs (Douglass, 2006:148). The model may create the opportunity to rethink innovative and new urban and rural development paradigm for regional development in globalizing world.

Threats are risks or distracting factors for the emergence of virtuous circle URELs and sustainable regional development. The threats for the model may be reforming ethnic-

federalism and regionalism in Ethiopia. The government's will and commitment can determine the success of the theoretical model in this perspective. The other important threat is the export-orinted energy and agricultural crops development approach of the government. In line with this threat, Coates et al (2011:21) confirm that road transport development is towards access to local producers for export and the huge Blue Nile dam construction for electricity is for export in Ethiopia.This situation has aggravated the problems of socio-economic and environment in the country. Moreover, it may be very difficult for regional based restructuring with enabling environment in decentralization, democratic deepening and institutional setting for URELs in ABCs and SSACs. Furthermore, the government's willingness and commitment for creating enabling environment and working based on R&D, avoiding the illicit structure, personal enrichment and corruption of political elites and their favoured businesses may be more threats for social capital, partnerships and integrated development approaches. Similar to this finding, Alkire, Conconi and Seth (2014:5) assert that though there are no empirical evidences for systemic and illicit abuses and corruption, the findings indicate that the top political elites are corrupted, rent seeking and self-enrichment behaviours in the different government businesses, party affiliated enterprises and/ political affiliated individuals in Ethiopia. In line with development threats, Altenburg (2010:3) and Coates et al (2011:19) asserts that the current Ethiopian government has lacked willingness and commitment for avoiding government businesses and illict structure for integrated development of key economic sectors of agriculture and industry. Formation of good equilibrium and virtuous circle development within reality of coordination failure and O-ring theories in the macro level policy ADLI in Ethiopia in particular and ABCs in general need further research for unlocking and overcoming approaches and strategies. Similar to this study challenges and threats for URELs, Todaro and Smith (2012:161) claim that development in Sub-Sahara African countries is extremely difficult and challenging or impossible as opposed to Southeast Asian countries. They assert that the challenge is government-induced factors and some governments could deliberately do their country underdevelopment trap. These governments think that economic development and the demand for political power have direct relationship for their political power as Machiavelli's principle of 'The end justifies the means.

8.6 Scope of the empirical model

This empirical model has possibility of high applicability in the study region in particular and ABCs, especially SSACs countries in general. However, the empirical model can have more applicability in a systemic approach adapting to the context for many of the external problems such as climate change. Moreover, the multidimensional, multi-stakeholders, multi-scalar and multi-spatial natures of URELs need the coordination and integration of all in a single pot as 'unity strength' slogan in systemic approach for sustainable development.

8.7 Applicability and limitation of empirical model

The empirical model is locally derived from the study region and it needs other further research in other similar study region for more external validity. The challenges and problems (leverage points) of empirical model need an integrated system approach and each actor has its own reinforcing and driving factors for the change of others to good equilibrium and virtuous circle URELs. For the theoretical model to be practical on the ground, there is a need to have structural transformation, readjustment and reinforcing force between complementary sectors, places and actors to reverse the bad equilibrium model into virtuous circle URELs. The enabling environment, willingness and commitment with accountability of government and key actors with participatory decision and interventions are set as prerequisites for the application of the theoretical model. Moreover, the organizational arrangement and partnerships in any form of SHFs and correspondingly with agro-industrialists are other prerequisite for applicability of the empirical model. In such coordinated linkages of different departments with the government in URELs and value chain, there may be scale economy flowing domestically and GVC at competitive stage for virtuous circle URELs.

In general, the possible sustainable bridging of agricultural and agro-industrial development through URELs demand considering both internally induced problems of SHFs and agro-industrialists and externally related factors such as government-induced challenges and problems. Its application need to be supported by R&D department in the empirical model. Finally, the empirical model application need big push investment and

support for infant stages of agriculture and agro-industries at the initial beginning to drive and enter maturation stage in competitive global value chain (GVC).

The limitation of the model is lack of triangulated source of different ABCs' URELs empirical data. Furthermore, the theoretical model is developed based on higher agricultural potential and actual region and it may not be applicable in resource and fertility poor regions. The ethnic-regionalism in Ethiopia may need consideration in other forms of gevernement in ABCs. The theoretical model and its development, importance are concluded in the next section.

8.8 Summary and concluding remarks of the chapter

Based on different academic views and debates on integrated development models and approaches, sustainable development can be achieved only through the integration and coordination of social, economic and environmental dimensions as the three pillars of sustainable development. The theoretical framework coordination failure and O-ring theories confirm the need for integrated and systemic development for good equilibrium and successful development. Thus, integrative development approach has not been argumentative situation and the main question is how to integrate and coordinate key complementary sectors, places and actors.

The rationale for the empirical model is finding new regional development insight and approach for reversing the bad equilibrium and poverty trap into virtuous circle URELs of SHFs and agro-industrialists within a given ecological system. Furthermore, it may vividly show the leverage points and solving phases for policy-makers, development actors and other key stakeholders for coordinating, integrating, complementing and collaborating key economic sectors, multi-stakeholders, social networks in systemic approach for virtuous circle URELs within politico-governance and natural environment. The empirical model can show the root causes of problems and challenges for taking appropriate actions and interventions in multi-dimensional, multi-scalar, multi-spatial and multi-stakeholders issues.

In the process of empirical model development, it was locally derived from the study region and the issues in the empirical model are complex for virtuous circle URELs. The

root causes and their consequences of bad equilibrium URELs and inefficiencies of agriculture and corresponding agro-industries were made as the basis of the new empirical model in a linear and systemic approach. The empirical model is made to have four phases/assumptions: the root causes of challenges and problems for vicious circle URELs, enabling environment, separate departments and their integratopn, the vious circle and multiplier effects. The orgware is highly dependent on social capital for organizational arrangement. The scope of the empirical model is highly likely applicable in the study region in particular and ABCs in general. The limitation of the model is lack of incorporating some external factors such as climate change. In short, the theoretical model is a brief representation of the complex actors, places, scale and dimensions. Thus, it can be further developed by other data such as SWOT analysis.

The theoretical virtuous circle URELs development model has also threats on preconditions in ABCs where governments have hidden and disguised structures for political hegemony rather than development. In general, It focuses the software, hardware and orgware nexus approach for sustainable development. It may influence policy makers and development actors in ABCs. The next chapter presents the overall summary, conclusions and recommendations of the overall study.

9 Chapter Nine: General summary, conclusions and recommendations

9.1 Introduction

URELs have multi-disciplinary, multi-spatial, multi-scalar, multi-stakeholders and actors within complex vertical and horizontal levels linkages. The rationales for conducting this study are little academic studies, many recommendations as a gap for further research, higher poverty in urban centres and their hinterlands, the researcher's previous empirical working papers, micro-macro conflicts, long exposure in the study region and government's lack of formulating enabling environment for URELs.

This study has the general objective to understand URELs in order to bring reciprocal and reinforcing urban-rural integrated development. Based on the general objective, four specific objectives were formulated: examine the status and magnitude of agribusiness and value chain; assess the efficiencies of agriculture and corresponding agro-industries; investigate challenges and problems for URELs. Based on these specific objectives, chapter two discusses the general empirical literature review on URL, URELs, and theoretical framework of the study. Chapter three presents the empirical literature on URLs, URELs, socio-economic and politico-governance on URELs in the context of Ethiopia. Chapter four has presented the philosophical paradigm, methodology of the study, research design and methods, instruments of data collection and methods of analysis within the delimited study region of DMT and its hinterlands seven districts based on regional development approach. The main contents of analysis and discussion chapters are presented in the summary, conclusions and recommendations.

9.2 Summary of the main findings

The summary has the main findings of the study based on the four specific objectives. Thus, the contents of the summary discusses on: status and magnitude of wheat and nigerseed agriculture and agro-industries (SFI and NOIs) in URELs; assess efficiencies of SHFs; root causes for the challenges and problems of agriculture, agro-industries and URELs and finally the theoretical empirical model for virtuous circle URELs.

9.2.1 Findings on the status and magnitude of URELs

i. Policy and institutional settings effects for URELs. The development policy ADLI and its institutional setting had dichotomy focus at macro, meso and micro levels for multidisciplinary, multi-spatial and multi-stakeholders of URELs. The dichotomy plans of the Amhara regional state development plan of agriculture-oriented on watershed and regional state industrial development sector's plan are dichotomy and thus, they had no any linkages for the same regional development. This implies that macro policy and institutional setting has significant effect on URELs and local integrated development. The dichotomy policy and institutional settings lack synergy of complementary sectors and actors. As a result, the existing value chain and agribusiness of SHFs had no any partnership and reinforcing system for agriculture, agro-industries and URELs. Consequently, sample SHFs had huge average losses in pre-post-harvest of wheat (1521qt) and nigerseed (351qt) from sample SHFs. They had poor gross production returns of wheat (18568 birr/ha) and nigerseed (8720 birr/ha) that were not economically feasible. Specifically, nigerseed production had no any vertical (FPLs and BPLs) and horizontal (value chain) linkages, agricultural extension support and weak SHFs' organizational (PACs and GAU) support resulting higher production economic inefficiency (21% EE). In the absence of FPLs, nigerseed SHFs had fragmented marketing system (53% PACs, 36% traders, and 11% local market or assemblers) resulting vicious circle agro-industries and URELs in the study region.

ii. Potential opportunity for developing virtuous circle URELs for sustainable regional and national development. The presence of the partnership model between SHFs and Ethiopian seed enterprise (ESE) on wheat production and Melaku's (2013) nigerseed experimental output on nigerseed productivity (14 qt/ha) asserted the higher agricultural potential and opportunity of the region for virtuous circle agro-industrial development. Both the BPLs, farm management and FPLs of wheat production under government institutional support and under ESE partnership had significant differences in productivity, production and quality of wheat. ESE had partnership with SHFs as outgrower with some market incentives (15% additional from market price) for SHFs in Genet *kebele*. The gross return (185678 birr per ha) and production feasibility (1.6) of wheat farm in the government institutional system

were poor while the gross return (33931 birr per ha) and production feasibility (2.849) of wheat farm in ESE partnership model had good quality and quantity in the study region. This shows that the existing government agricultural management institutions need either institutional transformation or restructuring for mobilizing and utilizing the available and potential human, physical and natural resources.

iii. Mixed agriculture for diversified income sources. SHFs had agricultural livelihood and agriculture was used for survival strategy rather than consolidation or accumulation. This mixed agriculture was characterized by subsistence and rainfeed production. Hence, most SHFs (67%) involved in non-agricultural economic activities, implying that mixed agriculture is not sufficient for SHFs. However, their non-agricultural economic activities were the pains of their own agriculture by removing sources of soil conservation and organic farming (such as selling dung cake and crop residues) and the natural environment such as firewood, charcoal and leave market against URELs. In addition, land use conversion from food crops production to cash trees such as Eucalyptus and *khat* had also been creating other threat for URELs though sawmills had obtained good opportunities in the way for household furniture. In the same way, agro-industrialists had other unrelated additional occupations that shared the time, rigour and finance for industrial weak URELs.

iv. The government's paradoxical development policies and implementations against URELs. In trade policy, imported wheat to SFI while the domestic SHFs' wheat was available in surplus for market and value chain URELs in the study region. The main actors in wheat value chain were SHFs, SFI, the government business agency (consumer association), traders, PACs, GAU and bakeries. It was found that SFI had worked under two economic systems: closed and open economic systems. The government raw wheat supply created disequilibrium and closed market in wheat value chain and hence, local wheat bypassed DMt and its regional multiplier effects. Th SFI was working under closed government market and open market. The value added of SFI under closed and open markets was calculated to 234.44 birr per qt and 206 birr per qt respectively with overall average value added of 220.22 birr per qt and 52852.8 birr per day. In addition, SFI had underdeveloped multiplier effects for animal husbandry, intermediate raw material supply chains for overall cumulative causation and propensity in the study region.

v. Bakeries as the third actors in wheat value chain. Private and public bakeries were important actors of URELs in wheat value chain. Similar to the source SFI, private bakeries were working under mixed (closed and open) economic system at DMT. In closed economic system, the government had decided quantity and market price of input-output of these private bakeries under its own decision framework. However, different from SFI, private bakeries should pass complex and lengthy bureaucracy (at least five phases) in the government closed market system. The very important advantage of bakeries was the additional water (that is 20 kg per qt flour) in the process of transforming flour to dough and the overall gross return of each private bakery (in both closed and open market systems) was 469.075 birr per qt flour, 1875.3 birr per day (from 4 qt). The government closed market system gave the lion share and better profit to each bakery (628.15 birr per qt flour) than other actors (SFI and consumers' association) in wheat value chain. The challenges and problems of private bakeries were similar to agro-industries at DMT.

vi. Consumers association (CA) is the other non-value adding government profit business in wheat value chain. In the name of CA, it is found serving as the government profit business in the closed market system at DMT. Without any value added in wheat value chain, it gained gross profit of 314.15 birr per qt flour and 23121.44 birr per day and about 8416204.16 birr per annum. It had also deficits of 7600 litres in palm oil distribution and supply every month in 03 *kebele*. This implies that CA was not serving for consumers and it had more gross return than SFI agro-industry (234.443 birr per qt flour) in closed market system wheat value chain. Thus, closed market was designed for government's business on the cost of SHFs, agro-industries and bakeries in the study region.

vii. NOIs were also working under closed and open local market. Some of the government's commands and closed system on NOIs were determining nigerseed oil price rather than market, the raw material oilseeds amount as limitation of storage capacity not more than 25% of the industrial capital and sanctions on some domestic oilseeds not to process. Thus, NOIs had 400 birr per qt nigerseed value added and average 888 birr value added per day each NOI at DMT by processing average 2.2 qt per day. They had fragmented marketing linkages and vicious circle URELs. However, they have potential possibility of increasing

their value added from 888 birr per day to 9600 birr per day each NOI by processing 24 qt per day. Similar to SFI, they have multiplier effects for regional and national development by reinforcing with animal husbandry, opening domestic market for nigerseed SHFs, base for further industrialization, employment opportunity mainly family in the overall regional development.

viii. Consequences of challenges and problems have confirmed the theoretical frameworks of coordination failure and O-ring theories on the ground in the study. The macro policy and institutional failure with bad governance for integrated URELs development asserts the truncated agriculture and agro-industries linkages and the overall regional development. The O-ring theory as systemic approach argues that the failure of one component in an integrated or complementary system can have the overall system failure. This theoretical framework has confirmed reality with closing of some domestic NOIs who could not proceed at bad equilibrium level in the study region.

ix. Possible suggestions and alternatives for the bad equilibrium agribusiness of wheat and nigerseed was mainly creating enabling environment (policy, institutional setting, good governance and assets ownership) for mobilizing and utilizing the untapped resources through integrated URELs. Moreover, other government-induced and actors problems need important consideration in agricultural industrialization. The next section presents the findings of efficiencies (TE, AE and EE) of SHFs in wheat and nigerseed agriculture and their corresponding agro-industries SFI and NOIs.

9.2.2 Findings on efficiencies of SHFs and agro-industries

The data were analyzed both in descriptive and econometric model of Cobb-Douglas stochastic frontier analysis (SFA) in the existing situation. This is significant for further development interventions in agriculture and agro-industries. Efficiency measured the individual and average of SHFs and agro-industrialists.

i. Some of the socio-economic and demographic descriptive statistics are listed below.
Sample SHFs had 88% married, the average age of 42.6 years old, most 95.4% in productive age groups with average farm experience of 25 years, average family size of 5.2, most (61%) primary schooling up to grade eight, almost all (98%) mixed agriculture with 88% livestock possession and 5.43 TLU, lacked R&D based agriculture and based

on blanket recommendation, 90.5% financial credit access to ACSI and FSCC, average landholding 1.5 ha per household with unfair and injustice land redistribution in 1997 and land of high irrigation potential opportunity. The average wheat and nigerseed productivity of SHFs were 42 qts/ha and 8 qt/ha respectively in Genet and 36 qt/ha and 10 qt/ha respectively in Girakidamin *kebele*. Based on international poverty measure (1.25 $ and 2.25 $ criteria), SHFs had most (61%) in absolute poverty, 29% in relative poverty and 10% free from poverty in the study region.

The descriptive analysis of agro-industrialists had: all in productive age group and married, average family size of 5.5, *Ekub* as financial access for all, average industrial experience of 14 years, majority (80%) additional employment and all in critical electrical energy problem (average eight days per month without supply). The processing capacities of SFI and NOIs were 240 qt per day and average 2.22 qt per day respectively.

ii. The econometric model results in Cobb-Douglas stochastic frontier analysis (SFA) were explained for agricultural crops and agro-industries. Wheat SHFs' efficiencies were averages of 80% TE, 62% AE and 65% EE with efficiency gaps or ranges of 56% TE, 50% AE and 54% EE. The major nigerseed SHFs efficiencies were average of 49 TE, 13% AE and 21% EE with efficiency gaps of 50% TE, 80% AE and 79% EE. Agro-industries efficiencies: averages of 74% TE, 71% AE and 67% EE with efficiency gaps of 51% TE, 62% AE and 64% EE. The efficiency gaps in all TE, AE and EE were caused by the complex internal and external challenges and problems.

9.2.3 Findings on challenges and problems of URELs

The findings confirm coordination failure and O-ring theories between the two key economic sectors of agriculture and corresponding agro-industries and actors. These key economic sectors had general extrinsic, intermediate and intrinsic challenges and problems without clear-cut boundary in the study region. Some of the findings on these challenges and problems were summarized in the following discussions.

Extrinsic problems of SHFs, agro-industrialists and integrated URELs development were mainly government-induced macro-micro conflicts and institutional violations. The ethnic-regionalism and federal form of government was found one external problem beyond the farmers and processors control. The current government has restructured

Ethiopia into nine ethnic-regional states under ethnic federalism since 1991. This form of government was facilitated disintegration, misunderstandings and ethnic conflicts with degradation of national and regional social capital covered by linguistic and/or ethnic enclaves. It was found that the government was one of the main bottlenecks and problems for agriculture, agro-industries as well as URELs in using the advantages of scale economy for macro and inter-regional synergy. In the current ethnic-regionalism administration, it is found that deliberate and hidden administrative structure without accountability, transparency, dejure-defacto discrimination[49], violating the set institutional and constitutional frameworks on SHFs and their organizations PACs and GAU as well as agro-industrialists were the dominant challenges and problems for agricultural, corresponding agro-industrial and URELs development in the study region. One empirical evidence for such structure was FGCRA that had been levying wrong and discriminatory tax of VAT 15%, withhold tax 2%, dividend tax 10% with 3.5 million birr punishment on the SHFs' organization GAU in the study region in particular and all farmers organizational unions in Amhara regional state in general. The assestment from micro to macro levels confirmed that there was violation and discrimination of such wrong taxation only in Amhara regional state.

Enabling environment (policy, institution, governance and assets ownership) is the prerequisite for all activities in general and the coordinated URELs. However, the absence or lack of enabling environment was the main challenge and problem for integrated URELs development for key economic sectors agriculture and agro-industries. The development policy ADLI and its institutional settings lacked integrated development approach for complementary agriculture and agro-industries. The micro-macro effect of ADLI has shown the dichotomy of Amhara regional state general development and the urban industrial development for one regional development. The paradox of rural-oriented development policy of the country and the absence of change for agricultural development infrastructures and facilities was empirical reality for policy challenges and problems for URELs in the micro level. The government ownership of key assets mainly land was the other challenge and problem for SHFs and it was leasing

[49] Discrimination of an ethnic group from socio-economically and politically against existing legal frameworks.

and contracting large scale farmlands (up to 300000ha) for one private investors while large number of many landless SHFs and new generation were migrating to different urban centres and other regional states in search of farmland and job. Moreover, the consequences of lack of SHFs' land ownership had many disadvantages such as lack of land collateral in any formal bank financial system and other asset ownership advantages as well as mismanagement of farmland. Trade policy and associated regulations created many problems and paradoxes.

Some of the trade paradoxes in Ethiopia were the import of wheat with surplus domestic wheat in the hinterlands for agro-industrialists; export of oilseeds while local NOIs were in serious problems of raw materials; the legal sanctions on of domestic NOIs for not process some oil seeds such as sesame; importing cheap palm oil against market failure for domestic NOIs and exporting electrical energy while serious domestic problems for industrial and domestic uses. Thus, the lack of enabling environment was the main challenge and problem for agriculture, agro-industries and URELs.

The government's businesses (SOEs) need to facilitate the private sectors' participation and development. State-owned enterprises (SOEs) had different types and diversity and they were found the major bottlenecks for agriculture, agro-industries and URELs. These public businesses were named as state owned business enterprises, political party affiliated enterprises, sectoral enterprises and illicit shareholding enterprises. They enjoyed many favouring advantages on SHFs and agro-industrialists. Empirical evidence, the government had closed market system on agriculture and agro-industries for its businesses through CA in wheat and nigerseed value chain in the study region. CA had the lionshare profit without any value added in wheat value chain from the government imported and supplied wheat to SFI. Findings indicate that SHFs were also encouraged and forced by government institutions to be members in ACSI that had higher and illegal interest rate 18% on SHFs violating the legal frame. This political party micro-finance made SHFs under financial vicious circle in debt and loan returning. As a result, consequences of ACSI on SHFs were found the loss of assets: food crops, house roofs (tin), farmlands and finally migration in the study region.

Poor support system for SHFs and agro-industrialists was found as an important challenge and problem for adapting productive technologies, improving capacity building for enhancing efficiency and new working systems. SHFs were traditionally oxen-driven and rain-feed agriculture as well as corresponding agro-industries were obsolete agro-industries within dominant manual processing to the extent of a question of health problem that need further research. Moreover, the absence of R&D and associated soil map was found as one of the problems and challenges of SHFs' agriculture.

The government's poor will and commitment for many challenges and problems as well as missed available opportunities for SHFs, agro-industrialists and the overall integrated system of URELs. The finding shows that the institutional frameworks and most implementations were mismatching and most were haphazardly implemented based on personal interests and willingness in non-transparent and non-accountable manner. For example, lack of SHFs' national level organizational structure, dismantling of the national industrial association, lack of uniform governance and taxation system in the country were some of the evidences for weak capacity and hidden implementations ouside the institutional framework. Poor mobilization and utilization of available resources such as modern warehouses, irrigation dams, many previous government development programs and projects was the other hidden causes for overall truncated URELs and poor agribusiness in the study region.

Lack of sharing lessons and experiences was the other finding in the government institutions. The government had poor prospects and high pessimistic expectation on non-political affiliated private sector economic activities including SHFs and agro-industrialists. The findings also indicate that correcting its failures such as reorganizing industrialists and SHFs based on their demand for national and international associations, for scale economy, solving high domestic demands like electrical energy and oilseeds before exporting, many other government paradoxes had no any change of improvements since the beginning (2011) to the end of this study. The important finding for the current government was its consistency on ethnic and cultural differences as a means of having disintegrated society, destruction of social capital and ethnic regionalism against regional development approach for 'divide and rule' system since 1991. The government view had

still been continueing in forming new ethnic regions, especially in Amhara regional state such as the recent establishment of Kimant ethnic special district in 2015.

There were intermediate challenges and problems like degradation of local social capital such as 'Edir and Ekub'. These informal institutions were means of capacity building in finance and social problems of SHFs and industrialists. Some socio-cultural values of SHFs and agro industrialists such as many non-working days were poor systems to break subsistence livelihood and developing coping mechanisms for challenges and problems.

9.2.4 Findings on the theoretical empirical model

The model is a simplified reflection of the complex, systemic and dynamic world similar to other systems such as social system, ecological system and sustainable development. Moreover, it can be achieved only through the integration and coordination of many factors from leverage points to virtous circle URELs and multiplier effects. It is similar to the vague term sustainable development. Thus, the integrative development empirical model is unquestionable approach for overcoming coordination failure and O-ring economic development theories to sustainable local and regional economic development.

i. The empirical model has the rationale for finding new development discourse in ABCs within a given politico-governance and ecological system. It is based on the root causes (challenges and problems) of vicious circle, inefficiencies and bad equilibrium of agriculture and corresponding agro-industries in the study region.

ii. The theoretical model implementation need four sequential phases to achieve its final goal. The four phases of theoretical model development were: the first phase is identifying and organizing the root causes (leverage points) for vicious circle URELs. The second phase will be developing enabling environment with commitment and willingness of the government and key actors for intervention. The third phase is coordinating, integrating and collaborating all concerned departments from multidimensional perspectives moving towards the virtuous circle URELs. The departments of the empirical model are leverage points, enabling environment, orgware (producer cooperative organizing and managing sector), efficiency and environment (producers and processors within sustainable ecological system), support services such as

R&D (infrastructure and services supply sector), social capital (cultural and social development sector). The final phase is achieving virtuous circle URELs for multiplier effects and sustainable regional development. The model needs systemic rather than linear approach.

iii. The applicability of the empirical model depends entirely on the proper functioning and systemic coordination of the different multi-scalar, multidisciplinary, multi-spatial and multi-stakeholders departments with utilizing available opportunities in iterative way and reducing limitations and threats for overcoming leverage points. The empirical model has high probability of applicability in the study region in particular and ABCs in general because of its triangulated nature of data sources such as micro-macro (local to federal levels), multi-spatial (urban centre and rural areas) and multi-disciplinary fields (agriculture, agricultural economics, industry, urban planning, rural development, sociology, political science).

v. The limitation of the model can be lack of incorporating some external factors such as climate change that directly affects agriculture and URELs in a systemic approach. However, the empirical model has iterative approach based on R&D for adapting and updating in a dynamic environment.

vi. It has also threats on basic assumptions and preconditions in ABCs where dictator governments have hidden and disguised structures for mass poverty as a strategy for long staying political power.

9.3 Conclusions

Though integrated development approach in LDCs is usually debatable in the academic community, it is asserted as key factor for achieving sustainable development and ecological management. It is also supported by the contemporary development and underdevelopment theory of coordination failure and O-ring theories of eclectic theoretical framework of this study. This study has been conducted on the two main and complementary economic sectors of agriculture and corsponding agro-industries through URELs in Ethiopia. The conclusions are made based on the findings and theoretical frameworks in the following ways.

i. The status and magnitude of URELs were poor with low gross return and value adding of both agriculture and agro-industries. BPLs and FPLs of agriculture and agro-industries are complementary and interlinked. The preconditions of pre-harvest agricultural practices are land preparation, seasonal inputs application and farmland management. The provision of agricultural inputs has decisive roles for agricultural output. The failure of one of these elements means failure of the overall output similar to O-ring theory that states the disequilibrium of one component is equal to all the system. It was evident that nigerseed has no any BPLs and FPLs though it is an important crop for export and raw material for NOIs. Thus, agricultural production without any focus and links was one of the factors for its subsistence and poor production in the study region. The overall situation of agriculture is against the rural and agriculture-oriented development policy ADLI of the country. This was because of mainly the absence of integrating complementary and reinforcing policy and institutions.

The findings indicated that the provision of post-harvest agricultural infrastructures such as linking to further value adding processors, modern warehouse and market system are unquestionable requirements for good FPLs of agriculture. However, it was confirmed that agriculture (wheat and nigerseed) had no post-harvest infrastructures and market partnerships. They had also disintegrated local market system and poor interactions with huge pre-post-harvest losses. As a result, SHFs obtained small gross return from the overall production for reinvestment and development of their agriculture. These situations again affected their complementary agro-industries, export traders and URELs in the study region. The vicious circle of agriculture proves the theoretical frameworks of coordination failure and O-ring theories reality.

Industries need BPLs and FPLs in modern way partnership or any other approaches for utilizing the advantages of scale economy in regional, national and GVC. The findings indicated that agro-industries had disintegrated sources of raw materials with problems of sustainability in the study region. Most of the hinterland raw materials had bypassing effect to other regions and countries. Moreover, agro-industries had retailing market system in their FPLs though SFI had both retailing and wholesaling in the study region. As a result, NOIs had poor total gross return value (888 birr per day each) and they had

been working under their capacity (average 2.2 qt per day for their maximum capacity of 24 qt per day). Some NOIs and bakeries totally stopped working in bad equilibrium and vicious circle URELs. Most SHFs and agro-industrialists adapted coping mechanisms by diversifying other employment for survival and a few for consolidations. The paradox of this poor agriculture and processing in vicious circle URELs has pains on the natural environment and agriculture such as the marketing of fuel wood, manures and crop residues for urban energy sources in the study region.

ii. Capacity building of SHFs, processors and their orgware is an important factor for enhancing their efficiencies and effectiveness in their productivity and processing. However, the findings showed that both SHFs and agro-industrialists did not have any support service, consultancy or training for basic knowledge in improving their efficiencies (TE, AE and EE) and orgware. Within vicious circle URELs, they had wider efficiency gap for further development opportunity in the existing situation. Some least efficient SHFs (such as nigerseed 99% EE gap) and agro-industrialists as well as absence of orgware for agro-industrialists and incomplete for SHFs can be potential opportunities of development with some support system even in their existing situation.

iii. The third important question for this study was investigating the reasons why the existence of bad equilibrium and vicious circle URELs. The findings confirmed that lack of enabling environment such as governance in the form of ethnic-federalism and regionalism was one of the main problems and challenges for agriculture, agro-industries and URELs. Ethnic-regionalism created misunderstandings and many bloodshed conflicts among ethnic-based administrative districts, zones, regional states, urban centres and rural areas as well as different ethnic peoples in the perspective of ethnic or linguistic enclaves since 1991 in the country. This situation aggravated the problems of urban centre and rural administrative divides and boundaries, departmental structures, disintegration of people and places without any other integrative mechanism, even for the complementary and reinforcing key sectors and regions for URELs.

iv. The findings confirmed that the set institutions and their implementation were contradictory and different from the formal and legal structures. This situation has negative impacts on agriculture, agro-industries and URELs. As a result, SHFs'

organizational structure, taxation system on SHFs and agro-industrialists and other government interventions and sanctions on agro-industrialists were the results of the hidden and systemic structure without responsible and accountable authority. Moreover, it was evident in the study that the government businesses in different sectors such as AISE, ACSI and agro-industries had direct and indirect favours over SHFs and agro-industrialists and they were bottlenecks and problems for the development of agriculture, agro-industries and URELs.

v. There are many paradoxical and illicit activities in Ethiopia in general and the study region in particular. Some of there are the presence of many landless farm households and new generation but displacing SHFs and leasing large commercial farmlands for individual investors; energy exporting and severe problems in domestic industries; public ownership of assets and asset ownership insecurity of individuals; the export of oilseeds and the import of palm oil against the domestic NOIs; the import of wheat and SHFs domestic wheat market failure were some empirical evidences for government paradoxes. Furthermoe, the findings showed that the problem of electrical energy provision made urban centres as market centres for firewood, leaves and dung cakes that in turn led to ecological destruction. Therefore, the lack of government willingness and commitment with illicit dedevelopment activities are against URELs and overall sustainable development. Diversity-based governance in governace is a challenge and obstacle for regional development approaches similar to the previous lessons of Sudan and Southern Sudan, Somalia, Nigeria and Mali. Thus, any administration based on cultural and racial differences is similar to the mismanagement and degradation of the integrated URELs approach and ecological system for resulting disintegration and depletion of the overall system in coordination failure.

vi. There are also important potential opportunities for integrated regional development in the study region in particular and Ethiopia in general. The opportunities are high potential agro-ecological region with available irrigation potential, high productivity of wheat 60 qt/ha in partnership model with ESE and nigerseed 14 qt/ha Experimental result of Melaku (2013) with better BPLs and FPLs. The partnership model of SHFs and ESE as outgrower confirmed better quality and productivity for high agriculture potentiality of

wheat in the study region. Some of the other potential opportunities of URELs were non-function, underutilized or misused resources such as modern warehouse for post-harvest and food security or agro-industries scale economy advantage, misused and underutilized SHFs' organizations (PACs and GAU), self-help local financial institutions such as *Ekub*, underutilized local governments (*kebele*, district and urban governance), extension agriculture, lack of R&D application and agro-industrial multiplier effects such as animal fattening by *Furishca and* oilcake. The other important opportunity for integrative and comprehensive development is the administrative reform for integrated regional development through URELs framework approach.

Vii. Empirical theoretical model and eclectic theory framework are two different faces of a coin but having the same theme to integrative development approach as virtuous circle URELs. The model has shown direct integration of different departments, infrastructures. The government and key actors of all in broader technological terms of software, hardware and orgware for the overall sustainable regional development. Similarly, the eclectic theoretical framework of coordination failure and O-ring theories has shown the consequences of lack of complementing complementary sectors, places and actors (coordination failure theory) and the outcome of one inefficient component for the destruction or failure of the overall system (O-ring theory and system approach). Thus, the theoretical framework with the findings is the basis of empirical model. The empirical model will serve in integrating the administrative and cultural divides, professional departments and spatial frames to sustainable URELs, regional, nationa or global development. It was evident that agriculture and agro-industries were divided in policy, institution and profession resulting to subsistence and local market levels in vicious circle and bad equilibrium URELs in the study region. This confirms the existence and applicability of the coordination failure and O-ring theories in ABCs.

The general findings lead to the conclusion that the comprehensive development policy of ABCs need integrated development approach for departmental sector ministers (ministry of agriculture, ministry of industry, ministry of water, ministry of energy and mining) with building their implementation capacity. This is because the national development is the result of multi-spatial (urban-rural), multidisciplinary (urban planner,

rural planner, agricultural experts, industrial experts etc) and multi-scalar (micro-macro) and multi-actors (SHFs and agro-industrialists) need to be linked in one comprehensive and integrated development. Empirically, Ethiopia has rural and agricultural-oriented development policy ADLI and only the ministry of agriculture has institutional levels and actors for supporting agriculture and SHFs in the country. However, key partners of agriculture (such as ministry of industry or agro-industries and ministry of water) had no any institutional linkages with agriculture and SHFs or agro-industries. This had resulted in vicious circle or incomplete agricultural production and agro-industrial system in Ethiopia. Hence, the model has integrated and interlinked sectoral issues for overall and sustainable development.

The empirical model is, therefore, supported by theory for its feasibility in ABCs. Enabling environment and government are main derivers of development in the contemporary theory of coordination failure. However, most of the challenges and problems in this study are government-induced. This asserts the grand contemporary theory of development and underdevelopment that governments in SSACs are part of problem and challenge for development. Therefore, the empirical model is based on the theoretical framework that asserts the reality to the extent of closing some domestic NOIs and bakeries that could not proceed at bad equilibrium level in the study region.

The eclectic approach of using the two theories of coordination failure and O-ring theories for bad equilibrium and vicious circle model are important reflection and basis for multi-disciplinary and multi-stakeholders in the study of URELs. Furthermore, most of challenges and problems for URELs are government-induced factors. This does not mean that there need to be command economy but government need to play its active roles as intermediate for linking complementary sectors and actors for playing their virtuous circle URELs. Based on these conclusions, the next section presents some suggestion for improvments on the different software, hardware and software problems in URELs and sustanibale development.

9.4 Recommendations

URELs are recent and complex agribusiness development paradigm that needs the integration of many things for its success. The following recommendations are made for

clarity of the dealers (who), strategic conditions (how) and the tasks (what) with reasons (why) as follow.

i. There were dichotomies and disintegrated development approaches such as policy (ADLI), spatial, institutional setting and departmental professionalism in the study region and Ethiopia. However, natural ecological system and sustainable development can only be obtained and maintained through integration and coordination of the different components in conservative approach. Likewise, rural development can be obtained through not only developing the domains of agriculture but also sustainable linkages of pre-post harvest linkages. Otherwise, the coordination failure and O-ring contemporary theories can appear and be practiced in that regional, national, ABCs or global development. Therefore, policy makers need to create enabling environment (policy, institution, governance and assets) for key complementary and reinforcing sectors and actors for integrated and sustainable development by adapting big push approach.

ii. Most SHFs and agro-industrialists had diversified source of income for survival or consolidation. However, SHFs' economic diversification need be friendly with agriculture and overall ecological system through recycling crop residues on their farmland, using manures for organic farming and other options for sustainable agricultural production in balanced ecological system. Therefore, the concerned institutions need to create appropriate financial access for SHFs and electrical energy supply for biomass urban users for sustainable production and ecological system. The additional works of agro-industrialists need to have linkages with their agro-industries for complementary and reinforcing development with their agro-industrial activities for multiplier effects in regional development like animal fattening, poultry or any other economic activity based on R&D for using the by-products of agro-industries and animal manures for agro-industries raw material production in a cyclic manner. Moreover, agricultural production was based on wrong and generalized blanket recommendation as 'one fit for all' approach. This situation need to be replaced by well-done R&D findings and results in ABCs for appropriate soil map and crop type production pattern and overall agribusiness as these countries' key economy.

iii. It was confirmed that efficiencies of SHFs and agro-industrialists were very poor with higher ranges in all TE, AE and EE (as 99% EE gap for NOIs). Similarly, most of the government implementations lacked practices in accordance with the set institutions and plans. Therefore, capacity building and support services need to be given for government institutions such as agriculture extension workers, industrial sector workers and agribusiness actors (SHFs, agro-industrialists and their associations) for improving their efficiencies and using the advantages of scale economy. Furthermore, political system and governance in both urban and rural areas need use the right person on a right occupation and place principle with accountability and transparency. As a result, SHFs organizations and agro-industrialists system can have their own supporting professionals for better efficiency and accountability.

iv. Diversity is a common feature for all natural system such as ecological diversity and cultural diversity for adaptation system. However, cultural diversity like ethnic-federalism and regionalism in Ethiopia since 1991 had been creating greater problems and obstacles for regional and national or global development. Ethiopia is the poorest country. This is because the social capital, scale economy and any partnership and integrated development approach was deteriorated towards the problem of poor ethnic inter-regional and inter-zonal linkages in the country. Therefore, policy makers and development actors need to harmonize and transform ethnic regionalism into development regions based on developmental factors. Developing social capital and interchanging good cultural values using strategic reform and restructuring approach for integrative and reinforcing development shall be done in the current ethnic-politics of Ethiopia. Political will and commitment need to be central for the government to share experiences and lessons of the consequences cultural diversity on development from African and other countries. Thus, finding and focusing on integration of reinforcing and complementary issues, sectors, areas, socio-cultural bridges, departments or institutions and policies based on the coordination failure and O-ring theories can have sustainable development. The development of one without or on the cost of others lacks sustainable outcome and the appropriate integration of cultural and natural diversity can bring sustainable development and vice versa. Therefore, the government need to restructure and transform ethnic federalism and ethnocratic governance into integrated development

model with new institutional settings and governance for virtuous circle regional and national development. The strategy of reform can use the advantages of complementarity and reinforcement for integrating urban and rural administrative and institutional divides, agricultural and agro-industrial institutional and management system, departments or ministers through different professionals as a committee working together or other option for sustainable regional and national development.

v. The current government had many businesses in explicit and implicit approaches such as SOEs, political party businesses, institutional (dependent) business. They had created problems and challenges on SHFs, agro-industries and the society in the study region and throughout Ethiopia. Furthermore, industrial and agricultural development infrastructures such as electric energy supply, irrigation and input-output balance were critical problems in the study region. Therefore, the government's intervention need to be limited for creating enabling environment and infrastructure provision for facilitating fair SHFs and agro-industrialists' sustainable BPLs and FPLs in agricultural industrialization through URELs and for further industrialization of the country.

vi. It was confirmed that enabling environment and basic production-processing facilities were either absent or problems and challenges in the study region. The development policy of the country (ADLI), sectoral industrial policy and trade policy, institutional settings were problems and challenges for agriculture and agro-industries for UEPLs and integrated development. Therefore, the government need to create enabling environment with rigour and commitment for achieving integrated and sustainable regional development through coordinating and collaborating the diversity of multi-spatial, multi-stakeholders and multi-scalar dimensions. Moreover, the government need not focuse on imports and exports that contradicts the domestic development such as energy export.

vii. The government has the pivotal role in coordinating and integrating all natural and human diversities for development in policy, institution, governance and assets ownership. It has also the traditional and highly compartmentalized departments such as ministry of agriculture, ministry of industry and ministry of energy and mining for linear problems. It needs to identify key integrative sectors and dimensions with clear indicators for restructuring in systemic ways for overcoming bad equilibrium because of

coordination failure and O-ring theories. It also need to have good knowledge for the complex, dynamic and multitude development approach for achieving virtuous circle URELs on the ground. Reorganization and restructuring of SHFs, and agro-industrialists are essential for key economic sectors and agriculture industrialization scale economy. The government need to use challenges and problems, sectoral and departmental dichotomies, development coordination failures and underdevelopment as opportunities and enabling environments for transformation and restructuring to achieve virtuous circle URELs model for sustainable regional development.

viii. Directions for future research

- ❖ Alternative partnerships for integrated development of SHFs and agro-industrialists for better scale ecomy and virctious circle URELs.
- ❖ Mechanisms and criteria for identifying key complementarity and reinforcing (economic) sectors or forms in relation to spatial units for URLs.
- ❖ Mechanisms and options for increasing willingness and commitments of SSACs' governments for creating enabling environment for integrated development approaches.

9.5 Limitations of the study

The main limitation of the study is the complex nature of URELs as vertical and horizontal linkages and multi-disciplinary, multi-stakeholders, multi-spatial (urban-rural areas) and multi-scalar (from local to federal levels) demanding different professionals such as industrial, agricultural economics, development studies, agribusiness and value chain and sociology for detail findings. Though the analysis and discussion have been done in accordance to the development studies integrated approach and perspective, I used strong expressions and words such as discrimination and ethnocratic that are not usually comfortable in the academic community. This is because I have no any other smoothing words or expressions that can show part of dedevelopment facts of the government on its poor SHFs, agro-industrialists and their organizations in Ethiopia similar to mass poverty act of Mubutu Seseko in Congo (Todara and Smith, 2012:161). After the data results and the actual observations of the hidden and illicit government structure for wrong accomplishments that were without responsible and accountable authorities from local to federal levels on the ground, I understand that there is no word

or expression for such ills and worse situations in the study region in particular and Ethiopia in general. Some issues such as the financial flow of PACs and GAU, AISE and ACSI have shallow descriptive analysis though they have strong impact on SHFs, agriculture and agro-industries in URELs. Furthermore, though policy makers need holistic and comprehensive approach for all these intertwined and interdependent socio-economic and environmental issues, this study has focused mainly on production linkages of two agricultural crops (wheat and nigerseed) and their corresponding agro-industries in a delimited regional area. Therefore, many issues are directly or indirectly implied for other further researchers.

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Annexes

Annex-A: questionnaire

University of South Africa (UNISA)

Department of Development Studies

Background information (for SHFs)

The purpose of this questionnaire is to collect data for PhD thesis in the University of South Africa (UNISA) from the Department of Development Studies on problems and possible solutions of agriculture-industry production linkages and agri-businesses. The study is essential for identifying URELs, mainly wheat and nigerseed value chain problems and challenges as well as showing possible way outs. Hence, it is helpful for SHFs, agro-industrialists, value chain stakeholders (such as farmer traders, bakeries) and the government for overcoming the problems and using for developing virtuous circle production and value chain linkages in the region and the country. This questionnaire has five themes: social and demographic background, livelihood assets and production, agriculture-industry linkages, challenges and problems of production, opportunities and possible solutions for problems.

General instructions:

1. Your responses will be treated confidentially only for this academic purpose.
2. You need not write your name on this questionnaire.
3. You can refuse and withdraw from participating and responding as well as
4. You can choose and circle more than one choice.
6. Giving trustworthy and reliable responses serve as guide for the transformation of agriculture to agricultural industrialization in the region and Ethiopia. Hence, your trustworthy response is much demanded for achieving the objective.
5. You can ask any question at any time when you face any confusing items.

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Remark: The researcher thank you in advance for carefully attempting all questions and giving reliable responses for each question.

A. Socio-economic and demographic background of respondents

1. Age of the household head is _____

2. Sex of the household head is ___ A/ Male B/ Female

3. Educational level of household head is __A/ no education

B/ Reading and writing (grade 1, 2, 3…specify___) C/ secondary school (grades 9-12)

D/ above grade 12 (specify the level of education completed)_____

4. Marital status of household head: A/ single B/ married C/ widowed D/ divorced

5. Total number of family is_____Male_____Female

6. Number of family members _____male and _____female.

A/ below 10 years of age: Male_____female_____

B/10-14 years of age: Male_____Female_____

C/15-50 years of age: Male_____female_____

D/51-64 years of age: Male_____Female_____

E/ over 64 years of age: Male_____ Female_____

7. How many of your family members are working:

-full time on farm? Male_____ Female_____

-Number of adult family members (15-64 years of age) working full time on farming male____Female____

-Number of adult family members (15-64 years of age) working part time on farming-Male___Female___

-Number of children (10-14 years) working full time on farming-Male___Female_____ -Number of children (10-14 years) working part time on farming: Male____Female____

8. Do you have family labor shortage? A/ yes B/ No

If yes, for what were specific activities you have encountered labor shortage? A/ land preparation period B/ cultivation period C/ weeding D/ harvesting period

E/ other specify_____

If yes, how do you overcome the problem during peak labor requirement periods?

A. hiring labor B. labor exchange or *Debo* C. renting out farm land D. no solution

E. other specify_____

9. In the past 5 years, was there your family member movement? A/ Yes B/No

-If yes, the kinds of movement A/ Seasonal B/ Permanent C/Resettlement D/ Others specify

-If yes, who has involved in the movement among your families?

A/ Son B/ daughter C/ Wife D/ Husband

-If yes, explain the major reasons for the movement?_____

_____

10. Do you want to live in urban centre? A. Yes B. No

-If yes, explain your reasons_____

B. Livelihood assets and production

1. How many years have you engaged in agriculture?_____

2. Write your land holding size as ___*timad* before land redistribution in 1997, _____timad in 013.

-If there is change of land size, write the reason for the change_____

3. Have you had farmland shortage in 2011/2012? A/ Yes B/ No

-If yes, explain how you have overcome the problem_____

_____

4. The land use pattern or area division of 2012 was: homestead ____*timade(Gemed),* cultivation _____ *timad*, grazing land _____ *timad*, fallow land _____*timad*, forest/tree _____ *timad*, other uses _____ *timad.*

5. Did you rent-in/share-cropping land during in 2011 and/or 2012? A. Yes B. No

-If yes, area of land rented is _____ *timad*

-If yes, the reason to rent-out your land is__ A. shortage of seeds B. lack of oxen

C. shortage of labours D. Others (specify) _____

6. Write the number of your livestock in the table

Livestock species	Number in	
	2013	2014
Oxen		
Cows		
Bulls		
Heifers		
Calves		
Sheep		
Goats		
Horses		
Mule		
Donkeys		
Chicken (Poultry)		
Others		

7. Write the number of farm oxen you have in 2013_____

8. Which one of the following complementary agricultural activities you do not have?

A/ bee-keepings B/ fattening C/ dairy production D/ trees, vegetables and fruits

9. Do you have irrigation agriculture in2011/12? A. yes B. No

-If yes, explain the type and amount of production_____

10. Write the distance of the nearest market centre in Km_____

11. Do you have access to transport system/road? A yes B. No

-If yes, have you transported your produce to any market? A. yes B. No

12. Have you got easy access to health centre? A. Yes B. No

13. Have you faced health problem that affects your agricultural activities? A.Yes B. No

-If yes, explain how do you solve that problem_____

14. Do you have financial problem for your agricultural activity? A. Yes B. No

-If yes, do you have access for credit from financial institutions? A. yes B. No

-If yes, have you had awareness for the amount of interest rate? A. Yes B. No

15. Have you received or got credit? A. Yes B. No

-If yes, for what development activities have you received credit? A. To purchase farm inputs B. To rear livestock C. To fatten livestock D. to upgrade farming tools

E. Others (specify) _____

-If yes, who is the source of credit? A. Bank B. ACSI C. Local money lenders D. SHFs' cooperative/union E. other_____

-If yes, how much was the down payment? _____Birr, interest rate _____ percent

-If yes, describe the problems in repaying loan_____

-If no, what are the main reason___ A. Due to high interest rate

B. Shortage of down payment C. lack of land tenure right for collateral

D. lack of law and regulation for SHFs loan in financial institutions

E. absence of awareness F. Inaccessibility to formal credit institutions

E. Other specify _____

16. If you have saving, how do you save your money? A. in the bank B. on livestock

C. storing some crops like teff C. SHFs saving and credit cooperative/union

D. Amhara saving and credit institution E. micro-credit and saving institution

F. other specify_____

17. Have you got any training on agricultural production and productivity? A. yes B. no

-If yes, explain how the knowledge and skill of training support you_____

_____

18. How many times have you contacted agricultural extension workers in 2012?

A. no any contact B. 1-2 C. 3-4 D. >4

19. By the local indicators, explain the possession of:

A. rich farmer _____

B. medium farmer_____

C. Poor farmer_____

20. Which economical status do you belong to? A. rich B. medium C. poor

21. The main source of household income and livelihood basis is ___ A. agriculture

B. non-agriculture C. both D. remittance

22. How much do you trust your neighbors? A. very highly

B. high C. uncertain D. less E. least

23. What is your relationship with your neighbors?

A. very good B. good C. uncertain D. bad E. worse

24. Do you have any support mechanism with your neighbors? A. Yes B. no

-If yes, which one is the support mechanism? A. working in group as *Debo* B. quality seed exchange C. supporting in animal power as oxen D. financial borrowing and lending E. advice and consultation E. Other specify_____

25. Do you have willingness to form constant functioning group or cooperation for collective action? A. yes B. No

26. Which one do you prefer for efficient agricultural production and productivity?

A. working individually B. working in group as *debo*

C working as agricultural cooperative d. working as joint venture

E. working in partnership with other enterprises as ESE F. other specify_____

27. Do you know the advantages of working in-group such as agricultural cooperatives?

A. Yes B. No

-If yes, mention some advantages_____

28. Have you been a member of social and community based organizations (such as CBOs: *mahiber, Idir, Sembete, Ekub*)? A. yes B. No

-If yes, its use is_____ A. supporting production in time of problem

B. religious strengthening C. having feast and enjoyment D. other specify_____

29. Have you had the experience of formal social organization leadership? A. Yes B. No

-If yes, in which have you participated?

A. Cooperatives B. Kebele C. *Idir* D. *Mahiber* E. Others specify _____

30. Write any changes in agricultural inputs and infrastructures (seeds, fertilizer, chemicals, tools, irrigation and others):

A. within last five years_____

B. within the last ten years_____

C. within the last fifteen years_____

D. Within the last 20 years_____

31. The dominant agricultural transformation has been on___ A. high yielding seed variety (HYVs) B. One season harvest to two season harvest C. oxen-driven to semi-mechanized farming D. Irrigation expansion E. no change F. other specify_____

32. Can you easily adopt new mechanism or technology of farming? A. yes B. No

-If yes, write the new mechanisms or technology you have adopted

_____

33. Do you know the quality indicators of agricultural outputs? A. Yes B. No

-If yes, please mention them_____

-If yes, please explain the quality of your outputs_____

34. Your livelihoods have been ___A.impoverishing B. No change C. improving

35. Are you interested to stay in agricultural economic activity? A. yes B. No

-If no, please explain what economic activity you want to change_____

36. What do you think your futurity? A. very good B. good C. uncertain D. bad

E. worse

-Explain your answer with example_____

C. Agriculture-industry linkages

1. Which of the following is regularly used agricultural input? A. fertilizer

B. selected seed C. herbicides and/or pesticides D. other specify_____

2. If you regularly use fertilizer, which type of fertilizer is dominantly used?

A. conventional B. organic C. both

-If you dominantly use conventional fertilizer, which one is your reason for preferring conventional fertilizer rather than organic fertilizer?

A. absence of training and its application for organic fertilizer

B. shortage of material inputs for preparation of organic fertilizer

C. Rigorous and exhaustive nature of organic fertilizer's preparation

D. the physical environment does not allow for preparing organic fertilizer

E. other specify_____

3. Do you get agricultural conventional fertilizer in appropriate place? A. Yes B. No

-If no, please explain the problem and its reason_____

4. Have you got conventional fertilizer in time? A. Yes B. No

-If no, explain the problem and its reason_____

5. Have you got conventional fertilizer in reasonable price and alternatives?

A. Yes B. No

-If no, explain the problem and reason_____

6. The main problem for obtaining factory produces agricultural inputs is_____

A. supply problem B. Price problem C. access and transport problem

D. absence of timely supply E. other specify_____

7. Have you used factory produce inputs (such as fertilizer and selected seed or HYVs) for all crops? A. Yes B. no

-If no, list the crops that you have used agricultural inputs_____

8. Have you used fertilizer and selected seed or HYVs for oil seeds (sesame, Niger seed, rape seed, flux)? A. yes B. no

-If no, mention the reason _____

9. Fill the amount of agricultural inputs used in the table below (Qt stands for qt)

Year	Conventional fertilizer		Organic fertilizer		selected seeds		labor cost (in birr)			Herbicides and/or pesticides		Miscellaneous
	Qt	Birr	Qt	birr	qt	birr	human	animal	machine	Kg	birr	birr
2014												
2013												

One kg=one liter for liquid

10. Where do you get agricultural inputs? A. cooperatives/union B. government agency C. individual traders D. agro-industrialists E. other specify_____

11. Do you have any relationship with agro-industries such as wheat or oilseed processors? A.Yes B. No

12. Do you have family members working in non-agricultural activities? A. yes B. No

-If yes, which one is the off-farm employment? A. urban wage B. trading C. weaving D. pottery E. tannery F. other specify_____

13. Which activity is not source of income in your family? A. selling crops residue B. selling animal dung C. selling charcoal and firewood D. selling leaves

14. Fill total land use area in *timad* (T), amount of production in qt (Qt) and amount sold in qt (SQt) in the table below

Crops	2014			2013		
	T	Qt	S Qt	T	Qt	SQt
Teff						
wheat						
Niger seed (Nug)						
maize						
Gibto						
Flux (Telba)						
Rape seed (Gomenzer)						
Barley						
Engido						
peace						
beans						
Chickpea						
others						
Total production						

15. Have you had production and productivity variation? A. yes B. No

-If yes, what would be the main reason for the variation? A. seasonal rainfall variation B. inputs use variation C. irrigation variation D. land degradation E. other specify_____

16. Do you have any member of your family who engage in off-farm activity?

A. Yes B. No

-If yes, how many of your family members are working off-farm? Male_____ Female_____ Total_____

-If yes, discuss why your family engage in non-agricultural activity_____

-If yes, write your average household income in the table (in birr)

Year	2014		2013	
activity	Agriculture	Non-agriculture	Agriculture	non-agriculture
Income (in birr)				

17. Have your pre and post agricultural production affected by diseases and/or insects?

A. Yes B. No

-If yes, the remedy you have used for the problem was___A. using traditional system

B. using chemicals C. was no solution D. other specify_____

18. In the last ten years, the pattern of your agricultural production is ____

A. diversified to more crops B. narrowing to a single crop/ monoculture

C. no change D. other_____

-If narrowing to single crop, explain the crop type and reason for selection of such crop_____

19. Have you got any training for 'appropriate' agricultural inputs utilization?

A. Yes B. No

-If yes, explain how the knowledge and skill of training uses for your practical agricultural problems_____

20. Land productivity and production is _____A. improving B. no change C. Decreasing

-If decreasing, explain the reason_____

21. Do you know indicators for land productivity? A. yes B. No

-If yes, your farmland productivity in the current condition is _____A. Underutilized

B. medium level C. maximum production

22. Have you rented/contracted your farm land? A. yes B. No

-If yes, explain the reason_____

23. Which crop type has been increasing in amount and space in your production?

A. wheat B. Gibto C. Nug D. teff E. fruits and vegetables F. other_____

-Explain the reason why this crop type is increasing _____

_____

24. Has Gibto been increasing its production replacing the place of intercropping production of Niger seed and/or maize? A. yes B. No

-If yes, the reason can ___A. quick renewing of farm land

B. high productivity per unit areas

C. changing pattern of feeding

d. agro-processing for strong local alcohol called *Yegito Areky*

E. becoming export-oriented cash crop

F. other specify_____

25. Write the dominant intercropping rotation in your production in 2007/8 and in 2012/2013 _____

26. The dominant crop you usually produce is _____ A. Teff B. Wheat

C. Niger seed D. Maize E. other specify_____

27. Have you had the right to sell your produces anywhere in Ethiopia? A. Yes B. No

If no, explain the reason_____

28. Do you have any production link with agro-industrialists in agro-industrial crop production? A. yes B. no

-If yes, explain the relationship or linkage_____

-If no, will you be voluntary to have links with urban industrialists in such crop production? A. yes B. No

29. What can be the constraints for farmer-industrialist linkages? A. lack of awareness

B. land tenure insecurity C. lack of enabling government environment

D. low capacity of industries E. poor local governance F. other specify_____

30. Which one is more dominant source of your income? A. wheat B. oilseeds

C. selling forest and forest products D. selling residues of crops E. other specify_____

31. Have you produced oilseeds? A. yes B. no

-If yes, your production is for____A. Intercropping land renewal

B. purposively raw material for industries mutual benefits

C. source of cash for immediate problem D. own processing and consumption

D. other specify_____

32. Have you traditionally prepared and consumed local edible oil called *Kinabug*?

A. yes B. no

-If yes, explain your reasons for local preparation _____

-If no, which type of edible oil you usually buy and consume? A. imported palm oil

B. imported liquid oil C. domestically milled oil D. other specify_____

33. Have you known the quality indicators of edible oil? A. yes B. No

-If yes, mention some of them_taste, ____

34. Your preference for buying edible oil depends on_____

A. price B. quality C. quantity D. taste E. other specify_____

35. Who is responsible to supply sugar and edible oil for SHFs? A. government agency

B. trader C. agro-industrialist D. other specify_____

36. Have you regularly produce wheat? A. Yes B. No

-If yes, your wheat production is for ___A. selected seed enterprise supply

B. industrial raw material supply C. local market D. own consumption E. other specify___

-If yes, which species type of wheat do you produce in 2012/2013? A. Kekeba B. Digalo

C. Danfe D. HAR 1685 E. Yudi F. Yerer G. other specify_____

-Write the time when you start producing this type of wheat species

_____and your reason for selecting such species_____

37. Have you traditionally or by grain miller prepared wheat flour and consumed?

A. Yes B. No

-If yes, explain your reasons for local processing and consuming rather than using factory *Fino* flour _____

-If no, do you buy and use factory *Fino* flour? A. Yes B. No

-If you use factory *Fino* floor, which one have you used? A. imported

B. DMT Selam flour C. other domestic fino flour D. other specify_____

38. Write the average amount of wheat and oilseeds you have sold to different stockholders in 2012 and 2013 in the table (in qt).

	local market	local traders	agro-processors	seed enterprises	other region traders	exporters	others
wheat							
Oilseeds							

D. Problems and challenges of production

1. Have you participated in planning and decision making in your development?

A. Yes B. No

2. Have you participated in the national medium-terms development plans of the country (Plan for accelerated and sustained development to end poverty-PASDEP 2005/6-2009/10 and growth and transformation plan or GTP to eradicate poverty for once and for all 2010/11-2014/15) Either directly or indirectly? A Yes B. No

-If yes, explain how you had participated _____

3. Have *kebele* administrators been giving proper managerial service for you?

A. yes B. No

-If yes, describe the supports to your economic activity _____

-If no, explain their main governance service _____

4. How many times do the *Woreda* agricultural bureaus professionals contacted you in 2013? A. No B. 1-2 C. 3-4 D.>4

5. How the different hierarchies of government support your agricultural production and productivity? A. good B uncertain C. bad

6. Does the nearest urban administration give production support for you? A. yes B. No

-If yes, explain the support and services for your production_____

7. Have you been given any agricultural training for linking agriculture-industry?

A. Yes B. No

8. By putting a √ mark, please rate the level of obstacle to your agricultural production

No	Item	Level of obstacle on agricultural activity				
		very high	high	uncertain	low	very low
1	farm land					
2	Fertilizer					
3	Infrastructure (water pump and irrigation)					
4	land tenure security					
5	Rainfall reliability					
6	cultural assets					
7	land conservation					
8	Policy					
9	Institutions					
10	Governance					
11	Government implementations					
12	Energy access					
13	SHFs associations (PACs and GAU					
14	Financial access					
15	Corruption					

9. How much of your pre-harvest crop is damaged on the farm?

A. <10% B. 10-20% C. 20-30% D. 30-40% E. >50%

10. Write the usual causes of pre-harvest damage of your crops_____

11. How much of your post-harvest crop on the average is usually damaged?

A. <10% B. 10-20% C. 20-30% D. 30-40% E. >50%

12. What is the main cause for post-harvest damage of crops? A. lack of proper storage facilities B. Lack of market system C. lack of capable agro-processing

D. other specify _____

E. Support services and enabling environemnt

1. Explain the *kebel* governance services and support for your agricultural activity

_____

2. Which one has not given any support for your production?

A. community-based social organizations (CBOs) B. urban people

D. agro-industrialists E. NGOs F. other specify_____

3. Is there any government law or institution that is a barrier for agriculture?

A. yes B. no

4. How do you perceive the current land tenure policy under the ownership of the government? A . Good B. uncertain C. Bad

-If bad, possible solution__ A. land to SHFs B. land to both government and SHFs C. periodical land redistribution under SHFs' ownership D. other specify_____

5. What is the effect of government ownership of land on production? A. Fear and lack of land use plan B. lack of conservation for sustainability C. lack of collateral for credit

D. lack of producing perennial crops such as forest D. other specify_____

6. Have you known local indicators of land production and productivity? A. yes B. no

If yes, how do you evaluate your production and productivity in the existing situation?

A. underproduction B. medium production C. maximum production

-If underproduction, explain: A. the reasons _____

B. possible solutions_____

7. Do you need electrical energy supply for agricultural activity? A. yes B. No

-If yes, explain energy demand and use in your agricultural activity

_____

8. By putting a √ mark, please rate the level of your satisfaction/dissatisfaction on the following institutions/organizations.

No	Item	Level of satisfaction				
		highly Satisfied	satisfied	uncertain	dissatisfied	highly dissatisfie.
1	Religious organization					
2	CBO (Idir, Ekub, mahber)					
3	Agricultural cooperatives/union					
4	Agricultural extension workers					
5	*Woreda* agricultural sector					
6	NGOs					
7	Agro-industrialists					
8	PPP as seed enterprises					
9	Universities					
10	Your kebele administrators					
10	Urban government					
11	Urban people					
12	Hotels and restaurants					
13	others					

F. Opportunities and possible solutions for challenges and problems

1. Have you been trusted for agro-industrial partnership or other memorandum of agreement? A. Yes B. No

-If no, explain the reason_____

2. If you have agreed partnership or joint venture with industrialist in some fixed price of your produce, will you cancel your agreement for better prices and advantages? A. Yes B. No

3. Do you know the advantages of agriculture-industry linkages? A. Yes B. No

-If yes, which one can be the advantage?

A. Provision of agricultural inputs for high quality production and productivity

B. reliable market for agricultural produces

C. Adding value for further market availability

D. other specify_____

-If yes, what would be the link between agricultural and industrial production for mutual increase and sustainability of production and productivity?

A. contract farming partnership with agro-industries within memorandum of understanding

B. clustering of individual farm plots for economies of scale

C. Simple agreement between individual SHFs and agro-industrialists

D. forming agricultural cooperative and linking in agreement with agro-processors

E. Other specify_____

-If no, explain the reason_____

4. Do you have any threat for your assets and agricultural activity? A. Yes B. No

-If yes, explain it_____

Annex-B: Semi-structured interview for agro-industrialists

A. Socio-economic and demographic background

1. Are you the owner of this industry? A. Yes B. No

- If no, explain the reason why you have not be able to your own_____

2. Household head age_____, sex_____,education level_____Marital status_____, Family size_____

3. Family members age 14-64: Male_____female_____

4. Date of establishment of industry_____

5. Total number of employees in the firm: Male_____Female_____

-Number of full time family employees (15-64 age): Male_____Female_____

-Number of family members working parttime in the industry: Mal____female_____

-Number of employees (10-14 age) working full time in the industry:

Male_____female_____

-Number of employees (10-14 age) working part-time in the industry

Male_____female_____ -

Average monthly income_____

B. Assets and industrial processing

1. Do you have a record document for your industrial main (inputs, production and outputs) processes? A. Yes B. No

2. Physical capitals:

a. Warehouse storage capacity of: raw materials in Qt/litre (ton)_____

,Output Qt/litre or ton_____,Separation and safety of production, RM storage, output (products and by-products)_____, building nature of warehouse and industry_____

-Total amount for start up the project at the time of its establishment and currently_____

3. Market infrastructures_____

-market network with individuals_____

-market network with institutions and organizations_____

-Spatial and population coverage of products and RM_____

-International links_____

4. Upgrading technologies and increasing Quantity-quality of output_____

5. Human development (training or education, capacity)_____

6. Social capital (trustworthiness and reputation) of outputs_____

7. Have you faced financial problem for your industrial activity? A. yes B. No

-If yes, how do you solve your financial problems _____

8. Discussion on capital investment and financial accounts:

-Working capital_____ raw materials storage capital_____ deposit capital_____ other_____

-Trend of circulating or working capital from year to year_____

9. Do you have awareness for the amount of formal financial system interest rate?

A. Yes B. No

10. Do you have (easy) access for financial institutions for credit? A. Yes B. No

10. Have you had credit access? A. Yes B. No

10. Have you faced difficulty in repaying your credit? A. Yes B. No

-If yes, explain the factors for the failure of repaying the loan and its influence on your industrial activity_____

-If yes, fill the amount in the following table

No.	Year/period	Amount of credit (Birr)	Source of credit
1.			
2.			

11. Do you have other economic activity other than industrial activity? A. Yes B. No

-If yes, write the type of other economic activity_____

-If yes, explain the advantages and disadvantages of other economic activity for industrial production_____

-If yes, discuss which economic activity is your main basis of livelihood_____

12. Write your industrial and other economic incomes in the table in 2013

Description	2014	2013
Total industrial income		
Other additional source of income		

13. Discuss your reasons and factors of other economic activity with industrial production

C. Industry- Agriculture linkages (Agri-business)

1. How do you get your raw materials? A. directly from SHFs B. Traders

C. Agricultural cooperatives D. any market E. Other specify_____

2. Discussion on how you get raw materials from the dominant source area or locality

3. the raw material used type, nature of production, marketing character, producers interest of production.....

4. Have you faced difficulty in accessing raw materials? A. Yes B. No

-If yes, explain how you overcome the problem_____

-If yes, explain how you overcome_____

5. Do you have any production linkages in any form of partnership with agriculture?

A. yes B. No

-If no, discussion on the obstacles and barriers of linkages_____

6. How do you evaluate your industrial production? A. under production

B. medium level C. higher-level production

7. Write input type and amount used in its unit of measurement

A. domestic inputs_____

B. imported inputs_____

8. The dominant source of district and sub-districts for raw material_____

9. Do you have any form of production linkages with the raw material source areas?

A. Yes B. No

10. Do you have any support or partnership with your raw material producers?

A. Yes B. No

If no, explain some reasons_____

11. Write the amount of raw material inputs used in each month of 2014

	J	F	M	A	M	J	J	AU	S	O	N	D
Domestic												
imported												

12. Government and industrial sector support and encouragement

13. The current price of raw material (RM) per qt_____birr and output per qt.Lt_____birr

14. Write raw material amount and price used in your industry in this table

Year	Type of raw material	quantity RM (qt or Lt) /day	Quantity of other inputs (any)	Total inputs of raw materials qt/Lt	Quantity output (Qt/Lt)/day	Quantity by-product/day	Toatal output
2014							
2013							

D. Challenges and problems for industrialists

1. Interview on industrialists' participation and benefirts on development policy and/or planning such as

-ADLI and other industrial policy

-urban development plan of DMT town (2010-2020),

-the main medium term development plans of the country: Plan for accelerated and sustained development to end poverty (PASDEP 2005/6-2009/10) and
Growth and transformation plan (GTP 2010/11-2014/15).

2. Have you ever been gained any training on your industrial development and agriculture-industry linkages? A. Yes B. No

If yes, explain its practical use _____

If yes, explain the knowledge and skill you have gained for practical application in your problems_____ _____

3. Discuss advisory or other problem solving strategies from industrial development sectors of DMT town.

4. Interview on industrial change and development within the whole life

5. Discussion on market competition with domestic (such as government owned and party-affiliated businesses such as EFFORT and Ambasel) foreign such as import-export

6. Future short-term and long-term goals and prospect

7. cost of processing, processing efficiency (such as oilcake, powder residue as *furishka*) and value addition or turnover

8. Interview on internal challenges and problems of industrial activities:

-management and employees

-storage capacity for inputs and products

-technological upgrading and future situation

-others_____

9. External problems: government policies and institutional settings,

-Corruption (political, financial and administrative system on raw materials supply, production process and products distribution and marketing)

-financial system problems for access to credit

-Marketing: local, national and global markets on inputs and products

10. Interview on enabling environments such as:

-the political and governance system for industrial sector

-policy and institutional (playing grounds of the game legal ground) proble

-financial system and access (Micro-finance, Amhara credit association, bank)

-assets access and market system

11. Discussion on raw materials source and future sustainability

12. Infrastructures such as

-Electric power supply,

-modern storage,

-financial access,

-Transport and automobile

-demand and price, crisis in production with long days interruption, government energy

-export policy and implementation to other East Africa countries (as Djibouti and Sudan)

-government exporting policy of some raw material crops such as sesame

-agricultural production changes from previous industrial crops to other crops such as Gibto with environmental and climate changes

13. Investment attractiveness and enabling environment for industrial development in the study region and country.

E. Support services and enabling environemnt

1. Have you given training for your industrial development? A. Yes B. No

2. Discussion of participation on development politicies (ADLI, urban and industrial dev policy, GTP)

3. Advantages or benefits and disadvantages of policy (ADLI, industrial policy)

4. Discuss the situation of agriculture-industry production linkages with challenges, problems and opportunities

5. Discussion on raw material changes in quantity, quality, main problems and future expectations.

6. The main challenges and problems of industrial production process

7. Raw materials buying and output marketing with regard to:

-Individuals

-Agricultural cooperatives/unions

-Traders

-local markets

6. The main challenges and problems of marketing and competition of products

7. Challenges and opportunities of:

-Government policy and plan

-Government owned industrial firms, trading institutions such as Ginad, Guna in production and marketing

-Government taxation and your awareness for the system_____

-Governance and administrative services

-institutional, governmental policy problems for agriculture-industry linkages

-Energy supply and interruptions (days in a year 2014) and composition mechanisms

8. Write the whole expenses or prices of the following (birr)

Activity	2014	2013
Electric energy		
Land and other administrative cost		
Labour /salary		
Maintenance		
Telephone and fuel		
Miscellaneous expenses		

9. Discussion on industrial outputs and uses:

-Flour factory (bread, pasty, macaroni, ...by-products uses)

-Edible oil factory (oil, oilcakes, other by-products)

10. Do you know quality assurance of products? A. Yes B. No

-If yes, mention them_____

-If yes, explain the quality standard of your outputs_____

11. Write the main output of your industry (in Quantity) in 2014

J	F	M	A	M	J	J	AU	S	N	D

12. Have ever got quality assurance approval or certificate?

13. Is there any period you have faced difficulty of marketing your products?

A.Yes B. No

-If 'yes' please mention major problems associated with your outputs marketing_____

14. Explain how do you distribute your output for other stakeholders as individuals, institutions (as the DMU university), wholesalers, retailers,in the value chain.

15. Do you know the quality measure of food industrial produces? A. Yes B. No

-If yes, explain some of the quality measure indicators_____

16. Has you perceived that your industry is in minimal and under capacity production level? A. Yes B. No

-If yes, discuss internal problems (raw material, spare parts and skills of employees) and external problems (financial system, foreign exchange policy, globalization and market completion...).

17. Among the different agro-processing units (cereals-based, pulses-based, oilseed-based, vegetables and fruit-based, livestock-based, spices/condiments and miscellaneous), explain why do you prefer this type of agro-processing factory

_____

18. Discuss the whole processes and obstacles of industry: raw material supply, processing, output, distribution to market or consumption.

19. Do you perceive that you have used 'proper' package for outputs distribution in wider areal coverage? A. Yes B. No

-If yes, explain the areal distribution of your products with production and expiring dates

_____

-If no, explain the reason why your products have no manufacturing and expiry dates_____

F. Possible solutions to overcome problems and challenges

1. Discussion on profitability, Opportunities and potentials of agro-industries.

2. Have you had any raw material production linkages with SHFs? A. Yes B. No

-If yes, mention some of the advantages_____

3. If yes for number 2, what is the link between agro-processing industrialists and SHFs for mutual benefit and increasing production and productivity?

A. contract farming partnership within memorandum of understanding

B. clustering of individual farm plots at suitable sites for economies of scale

C. Simple agreement between individual smallholder SHFs and agro-industrialists

D. forming agricultural cooperatives and linking in agreement with agro-processors

E. working as joint venture F. Other specify_____

4. If no for number 2, explain the reason and other mechanism for increasing production and productivity of your agro-industries_____

5. Discussion on partnership with individual small SHFs, clustering small SHFs at 'appropriate' sites or cooperation form of individuals

6. Discussion on the problems of government policy, institutional settings for partnership, contract farming, outgrowing or other mechanisms for economies of scale in production and supply of SHFs and the industry

7. Could you import technological and material inputs easily? A. Yes B. No

-If no, explain the problems and consequences_____ 8. Have you been part of international value chain? A. Yes B. No

-If no, explain the reasons_____

9. Do you have plans to make your industry competitive in global market? A. Yes B. No

-If yes, explain the changes in relation to scale economy, quality, processing and packaging and distribution_____

-If no explain the obstacles_____

10. Have you had links and experience sharing with similar industrial activities? A. Yes B. No, If yes, explain the lesson_____

11. Explain the conducive environment for agro-industrial development

12. Discuss overall problems of industrial development in the town and Ethiopia

13. Do you have any threat for your economic activity? A. Yes B. No

If yes, explain it_____

14. Which one is more serious problem for your industrial activity? A. information B. Corruption C. Capital D. raw material supply E. Other_____

15. linkages and support with NGOs such as UNIDO for support, experience and capacity building

16. Have you had interest to work in-group with other similar industries as cooperative? A. Yes B. no ; Explain your theanswer_____

17. Discussion on advantages of scale economies.

Annex-C: Interview and observation guiding points at (micro, meso and macro)

1. Challenges and problems of URELs.

2. The status and magnitude of agricultural and agro-industrial linkages.

3. Assess the efficiencies of SHFs and agro-industrialists.

4. Access and ownership SHFs and agro-industrialists livelihoods such as land, financial systems for production and processing

5. Enabling environment (policy, institutions, governance and infrastructures as power supply, irrigation, technologies)

6. Organizational structures and possible partnerships of SHFs and agro-industrialists

7. Sustainable agriculture-industry production linkages and value chain development

8. Trade and URELs

9. Prospects for URELs development

10. Other Snowball issues on agriculture, agro-industries and URELs.

Annex-D: Ethical issues

UNISA college of human sciences

APPLICATION FORM FOR ETHICAL CLEARANCE OF RESEARCH PROPOSALS SUBMITTED TO THE COLLEGE OF HUMAN SCIENCES

DETAILS OF THE RESEARCHER(S)

A1 FULL NAMES ANDTITLE OF THE PRINCIPAL INVESTIGATOR

Berhanu Zeleke Gobaw (Mr.)

A2 HIGHEST ACADEMIC AND PROFESSIONAL QUALIFICATION

Lecturer (MA)

A3 TITLE OF PROPOSED STUDY

Development through urban-rural production linkages in Ethiopia: The case study of Debremarkos town and its rural hinterland

Approved

12 May 2014

To: Berhanu Zeleke Gobaw

Debremarkos University

Debremarkos

Ethiopia

Re: Granting permission to conduct study at East Gojjam

Administrative zone

You requested the administration to conduct your PhD study in East Gojjam zone by a letter dated on 12 Febuarary 2014.

Considering the issue of your study, I notify that the administration has given permission to conduct your PhD study here at East Gojjam Administrative zone. It is also noticed that all concerned participants in this zone are requested to cooperate Mr. Berhanu Zeleke Gobaw at any process of his study.

With best regards

Getinet Mengesha Ayele

Date 30/07/2015

Contract for editing agreement

This contract is concluded between Mr. Berhanu Zeleke Gobaw-hereafter called the researcher or the creditor and Yowesef Zewdu-hereafter called the debtor. Both are living and working in Debre Markos tow, Ethiopia.

The contract is concluded in accordance with article number 1675 and the following provisions of the Ethiopian civil code and other relevant international laws.

Now therefore; deciding to be legally bound by the term of this contract we have agreed as follows.

Section one: Duties of the debtor (Mr. Yowesef Zewdu)

The debtor hereby agreed to undertake the following activities to the creditor:

a/ language conceptual editing of the whole about 500 pages thesis

b/ Technical editing of whole thesis

c/He is highly required to deliver to the creditor the full version of the thesis on October 27, 2015.

d/ The debtor agreed to give editing services after final comments from examiners of the thesis without any additional payment..

Section two: Duties of the creditor (Mr. Berhanu Zeleke Gobaw) will pay the required prices:

a/Language conceptual editing 50R per page for a total of 2500R (50*500)

b/Technical editing 20R per page for a total of 10000R (20*500)

C/ The researcher is required to pay to the debtor (Mr. Yewesef Zewdu) a total of 35000R on October 27, 2015 with the future final editing free services from examiners comments and suggestions for the final binding.

Accordingly, in the presence of the witness we hereby made this contract on July 11/08/2015.

The researcher/creditor

Name Berhany Zeleke

Signature

Date 11/08/2015

The debtor

Yosepu Zewdu

11/08/2015

Eyewitnesses:

Names

1. Yihey's Alesu
2. Bizachew Asmare
3. Gizachew Andargie

Signature

Kassa fine

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Annex-E: Bank receipt for capital fight and corruption from Ethiopia to USA

Source: Wondimu, 2013:1

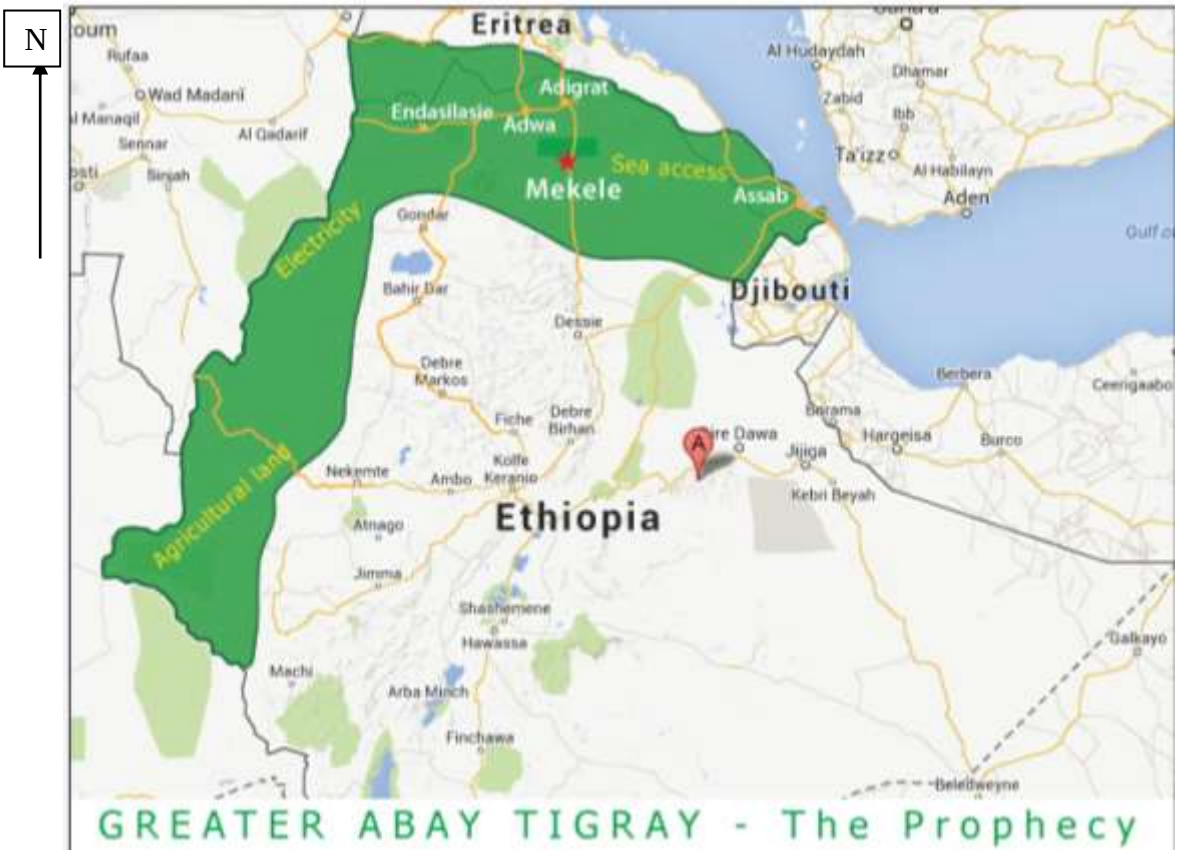
Annex-F: Differences in farmland tax system in different ethnic regional states

Amhara Regional State		Tigray Regional Sta		Oromia Regional State	
Scale (ha)	Birr	Scale (ha)	birr	Scale (ha)	Birr
0.25-0.5	40	0.1-0.5	20	<0.5	15
0.51-1	55	0.51-1	35	0.5-1	40
1.1-1.5	75	1.1-2	60	1.1-2	65
1.51-2	100	2.1-3	95	2.1-3	100
2.1-2.5	130	3.1-4	195	3.1-4	135
2.51-3	170	4.1-5	140	4.1-5	190
3.1-3.5	210	6.1-7	265	=>5	260*
3.51-4	250	6.1-10	350		
4.1-4.5	290	>10	30/ha*		
4.51-5	330				
6.1-6.5	370				
6.51-6	410				
5.1-5.5	450				
5.51-7	490				
6.1-6.5	530				
>6.5	40/0.5 ha*				

Source: Documents (2014) and informants from Amhara, Oromia and Tigray regional states

40/0.5ha* means for every 0.5 ha addition, the tax has increase by 40 birr, 30/ha*means for every 1ha addition, the tax value has increased by 30 birr and 260* is upper limit tax in Oromia Regional State.

Annex-G: The TPLF's vision map of 'Greater Tigray'



Source: Dereje (2011:1) and Ethiopian Multimedia Gallery 2015

Annex-H: Higher cost receipt for domestic electrical consumption in Ethiopian

Source: DMT dewellers 2016