

A situational analysis of agricultural production and marketing, and natural resource management systems in the Ethiopian highlands



RESEARCH
PROGRAM ON
Integrated Systems
for the Humid
Tropics

ILRI PROJECT REPORT

A situational analysis of agricultural production and marketing, and natural resource management systems in the Ethiopian highlands

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HEDBEZ Business and Consultancy PLC, Addis Ababa

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Acronyms

ADLI	Agricultural Development Lead Industrialization
AGP	Agricultural Growth Program
ATA	Agricultural Transformation Agency
AVRCD	World Vegetable Centre
BMI	Body mass index
BoFED	Bureau of Finance and Economic Development
CAADP	Comprehensive African Agriculture Development Program
CBD	Coffee Barry Disease
CIAT	International Centre for Tropical Agriculture
CIP	International Potato Centre
DA	Development agent
DBE	Development Bank of Ethiopia
EAAPP	East Africa Agricultural Productivity Program
ECA	East and Central Africa
ECRA	Ethiopian Customs and Revenue Authority
ECX	Ethiopian Commodity Exchange
EDHS	Ethiopian Demographic Health Survey
EDRI	Ethiopian Development Research Institute
EIAR	Ethiopian Institute of Agricultural Research
ESFRA	Ethiopian Strategic Food Reserve
FAAP	Framework for Agricultural productivity
FARA	Forum for Agricultural Research in Africa

FCA	Federal Cooperative Agency
FDI	Foreign direct investment
FDRE	Federal Democratic Republic of Ethiopia
FMoH	Federal Ministry of Health
FAO	Food and Agriculture Organization of the United Nations
FSS	Food security strategy
FTC	Farmers training centre
GTP	Growth and Transformation Plan
HABP	Household Asset Building Program
HEP	Health Extension program
HEWs	Health extension workers
<i>Icipe</i>	International Centre of Insect Physiology and Ecology
ICRAF	World Agroforestry Centre
ICT	Information and Communication Technology
IDOs	Intermediate development outcomes
IITA	International Institute of Tropical Agriculture
ILRI	International Livestock Research Institute
IPs	Innovation platforms
IWMI	International Water Management Institute
IYCF	Infant and young children feeding
masl	metre above sea level
MDG	Millennium Development Goal
MERET	Managing Environmental Resources to Enable Transition
MoA	Ministry of Agriculture
MoFED	Ministry of Finance and Economic Development
NGO	Non-governmental organization
OARI	Oromia Agricultural Research Institute
PASDEP	Plan for Accelerated Sustainable Development to End Poverty

PDP	Pastoral Development Policy
PHC	Primary health care
PHCU	Primary Health Care Unit
PLRP	Pastoral Livelihoods Resilience program
PSNP	Product Safety Net Program
R4D	Research for development
RDPS	Rural Development Policy Strategy
REDD	Reduced Emission from Deforestation and Degradation
SA	Situation analysis
SD	Standard deviation
SDPRP	Sustainable Development and Poverty Reduction Program
SLMP	Sustainable Land Management Program
SNV	Netherlands Development Organization
SSI	Small-scale irrigation
VAD	Severe vitamin A deficiency
Wageningen UR	Wageningen University

Background

The CGIAR Research Program on Integrated Systems for the Humid Tropics or 'Humidtropics' is a global research-for-development initiative which seeks to transform the lives of the rural poor in the humid lowlands, moist savannas, and tropical highlands in tropical Americas, Asia and Africa. Humidtropics provides a new integrated agricultural systems approach, a single research-for-development plan, and a unique partnerships platform for better impact on poverty and ecosystems integrity.

The humid and sub-humid tropics with 2.9 billion people on about 3 billion hectares of land are critical to global food supplies, central to the maintenance of global biodiversity, and vital to the mitigation of greenhouse gasses. Humidtropics focuses on four action areas in the first tier across the globe, one being the East and Central African (ECA) action area, which includes eastern Democratic Republic of Congo, Rwanda, Burundi, Kenya, Ethiopia and Uganda. Each action area has a number of action sites and within each action site there will be a number of field sites where integrated systems research on productivity, natural resource management, nutrition, market and institutions, and gender will be conducted. Humidtropics functions through research for development (R4D) platforms at action site level and innovation platforms (IPs) at field site level that allow for multi-stakeholder interactions and partnerships to engage in priority setting, identification of entry points and opportunities, research implementation, and for building synergies to achieve impact at scale. The action area in Ethiopia lies in western Oromia National Regional State comprising eight zones, namely western Shewa, southwestern Shewa, Jimma, Illu-Aba Bora, East and West Wollega, Kelem Wollega and Horo Guduru Wollega. It works in two primary Field Sites, Jeldu and Diga, and two secondary field sites, Dedo and Lemo.

It is expected that over the next 15 years, Humidtropics will advance the CGIAR system level outcomes within the action areas by increasing staple food yields by 60%, increasing average farm income by 50%, lifting 25% of poor households above the poverty line, reducing the number of malnourished children by 30% and restoring 40% of these farms to sustainable resource management. These outcomes will be achieved in a phased manner through attainment of intermediate development outcomes (IDOs) covering income, nutrition, productivity/yield, environment, gender and innovation targets. In this way, Humidtropics will serve as a model to other agencies seeking to link agricultural systems research to developmental impact.

The program is being implemented by a partnership comprising the International Institute of Tropical Agriculture (IITA) as the lead organization, International Centre for Tropical Agriculture (CIAT), the International Livestock Research Institute (ILRI), the World Agroforestry Centre (ICRAF), the International Potato Centre (CIP), Bioversity International, the International Water Management Institute (IWMI), the International Centre of Insect Physiology and Ecology (*icipe*), the Forum for Agricultural Research in Africa (FARA), The World Vegetable Center (AVRDC) and Wageningen University (Wageningen UR).

The program is designed to focus on:

- Reducing rural poverty. Agricultural growth through improved productivity, market development, and income generation has been shown to be a particularly effective contributor to reducing poverty, especially in the initial stages of economic development.

- Increasing food security. Access to affordable food is a problem for millions of poor in urban and rural communities and requires increasing global supply of key staples and reducing potential price increases and price volatility.
- Improving nutrition and health. Poor populations spend most of their income on food and suffer from diets that are insufficient in proteins, vitamins and minerals affecting health and development, particularly among women and children.
- Sustainable management of natural resources. Agriculture has a substantial impact on natural resources that must be better managed to supply sustainable ecosystem services, particularly in light of climate change.

The situation analysis (SA) is conducted by the Oromia Agricultural Research Institute (OARI) and HEDBEZ Business and Consultancy PLC in order to describe a broad picture of the agricultural, livelihood, and environmental systems in Ethiopia in general and the Action Area, in particular. It aims to assist determination of the main opportunities and constraints faced by these systems and generate a list of priority interventions.

The two primary objectives of the SA are:

- Broadly characterize key elements of the rural system (development status, production systems, markets and other institutions, and Natural Resource Management (NRM) issues) of relevance to Humidtropics within the target Action Site, and through that, generate information to inform all other program activities in the context of attaining the IDOs, as well as to inform ongoing field site selection.
- Initiate and facilitate engagement with stakeholders and partners as part of the R4D platform development that is needed for the long-term success and scalability of the Humidtropics program.

Methodology

The SA is mainly based on review of the available secondary sources. Accordingly, the major source of data included the Central Statistical Agency which provided the bulk of the time series data on land use, crop and livestock production, agricultural input use, agricultural products utilization, health and nutrition (Ethiopian Demographic and Health Survey), employment, population, livelihood and access to services. The Ministry of Finance and Economic Development is also a major source of data on economic growth and national income. The Ethiopian Customs and Revenue Authority is a major source of import and export quantity and revenue.

Different Bureaus of Oromia provided regional and zonal data relevant for the assessment. West Shewa and East Wollega zones provided zone specific data. Moreover, community level data were collected using key informant interview with experts working with farmers in Jeldu and Diga districts, located in West Shewa and East Wollega, respectively. Furthermore, research reports relevant for the study were reviewed and used to describe the production system, biodiversity, natural resources management, market, investment, programs implemented in the region and stakeholders. Challenges and opportunities were drawn from review as well as the analysis of the secondary data.

Development overview

This section presents a general overview of the socio-economic characteristics, rural development, livelihood, natural environment of the area, infrastructure, ethnic/cultural diversity, policy environment, the institutional contexts and the general stakeholder and partner landscape in the project area.

The section aims to contribute to the development of the intermediate development outcome one (IDO 1): 'Increased and more equitable income from agriculture for rural poor farm families, with special focus on rural women' and also IDO 5: 'Empowered women and youth with better control over and benefit from integrated production systems'.

Socio-economic characteristics

General

Ethiopia, located in the northeastern part of Africa, also known as the Horn of Africa, lies between 3 and 15 degrees north latitude and 33 and 48 degrees east longitude. The total area of the country is around 1.1 million square kilometers. As of 2007, Ethiopia's population has been growing at a rate of 2.6 percent per annum (CSA 2007) which makes the estimated total population of the country 88.4 million by 2015. This rapid population growth can be an opportunity for the country's growth or threat to its development by contributing to natural resources degradation by expanding farmland to marginal areas. It may also exacerbate critical gaps in basic health services, and food and nutrition insecurity (MOH 2008).

Agriculture is the major sector of the Ethiopian economy. It is also the major source of livelihood of more than 85% of the population and major source of export earnings. Hence, development policies and strategies of the country put agriculture as a source of transformation of the economy.

Western Oromia, the project area, lies in humid tropical rainforest area with high rainfall and conducive environment for crop and livestock production. This section describes the overview of the country context, regional (Oromia) and project area (western Oromia) contexts.

Population

Ethiopia is a populous nation with more than 81 million in 2011 of which 37.4% live in Oromia national regional state (Table I). The sex ratio of the population is almost balanced (49.56% female). There are more than 16 million households in Ethiopia with an average household size of five persons. Approximately 25.26% in Ethiopia and 22.69% of the households in Oromia region are female headed.

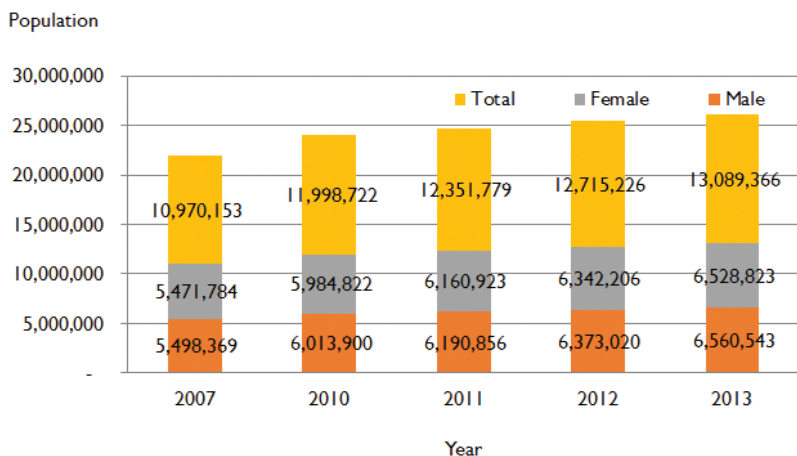
According to the population projection by CSA, the population of the project area reached 13 million in 2013 which is an increase by 19% from the population in 2007. The sex ratio of the population is nearly proportional (Table I and Figure I).

Table 1: Population and household size

Variables	Ethiopia	Oromia	Project area***
Population*	81,320,629	30,393,661	13,008,284
No. of households**	16,144,654	6,081,010	1,661,498
Household size	5.04	5.00	7.8
% female HHs	25.3	22.7	10.0
% female population	49.6	49.6	50.0

Source: *CSA (2008), **WMS (2011) and ***Oromia Bureau of Finance and Economic Development (BoFED) (2014).

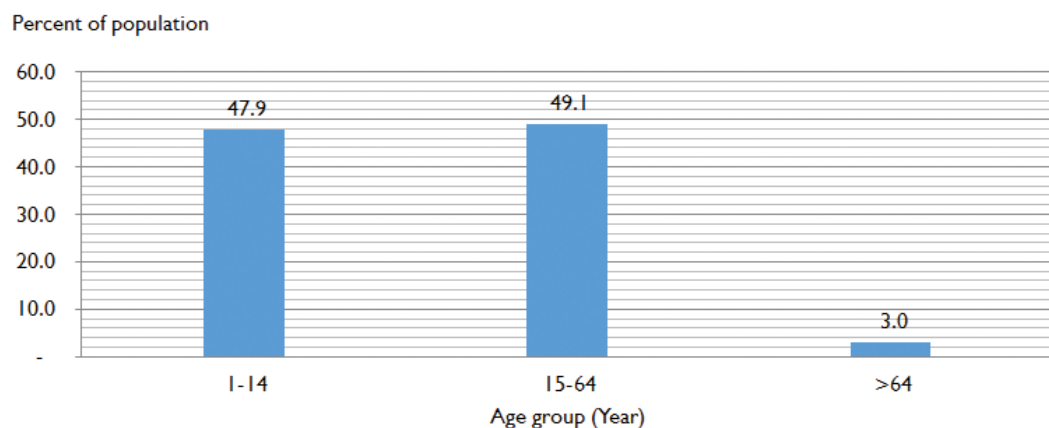
Figure 1: Population distribution in the project area (2007–2013), CSA.



Distribution of population by age group

Approximately 48% of the population of the project site is below 15 years while about 3% is elderly of more than 64 years. This implies that about 51% of the population in the project area is dependent on the labour force for substance and other means of living. In the area, children aged 15–18 also participate in farm activities including herding and hence considered as part of the active labour force which falls in the age range of 15–64 years (Figure 2).

Figure 2: Distribution of population of the project area by age group (%).



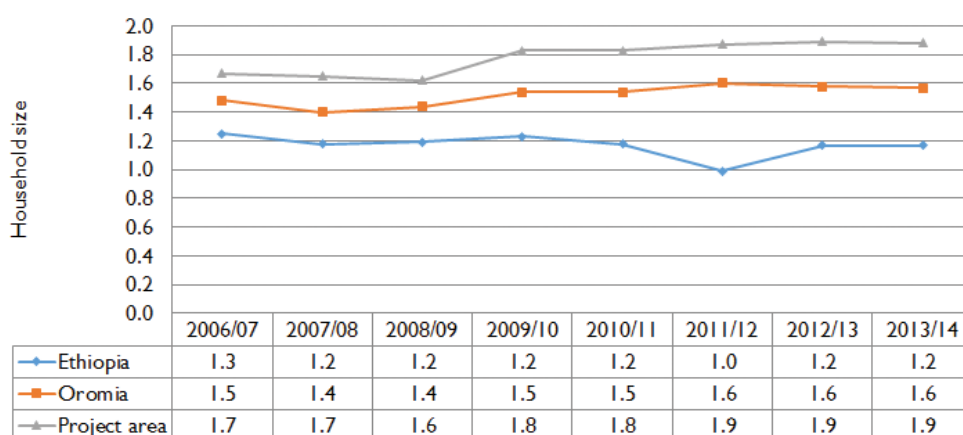
Source: Forecasted by Oromia BoFED (2014) based on 2007 census.

Average holding sizes

According to the CSA data, the land holding in Ethiopia averages around 1.2 ha per household in 2013. This average is about 1.6 ha in Oromia and 1.9 ha in the project area. The data from Oromia Agriculture Bureau also estimates the average land holding in western Oromia at 1.7 ha indicating that the farmers in the project area are endowed with

relatively larger land holding as compared to the farmers in other parts of Oromia. The trend analysis also shows that farm land holding expanded to unused areas resulting in increased land holding in the project area (Figure 3). This has implication on natural resources degradation unless appropriate land management system is practiced.

Figure 3: Average area per household (in ha).



Source: CSA (2013).

Education

Literacy: The literacy and numeracy rate for population aged 10 years and above is shown in Table 2. Study conducted in 2011 shows that, 46.8% of the population of Ethiopia was literate with a large discrepancy between rural and urban residents. Literacy rate in urban areas is about twice that of rural areas (78.0% in urban against 39.5% in rural). This variation might be considered as a clue to difference in accessibility of schools between urban and rural areas and affordability.

There was a clear difference in the literacy rate between male and female population in both urban and rural areas. Literacy rate among male population (56.3%) is found to be higher than that of female population (37.8%). This discrepancy exists in both rural and urban areas. Literacy rate among male population (49.4%) was two times higher than for the female populations in the rural areas (29.8%) while it was about 87.8% and 69.6% for male and female population respectively, in urban areas (Table 2).

Table 2: Literacy and numeracy rates of the population aged 10 by gender between 2004 and 2011

Sex/Residence	Literacy		Numeracy	
	2004	2011	2004	2011
Ethiopia				
Total				
Male	49.9	56.3	87.5	89.0
Females	26.6	37.8	88.0	90.6
Total	37.9	46.8	87.7	89.7
Rural				
Male	43.4	49.4	84.5	85.9
Females	18.7	29.8	83.4	87.3
Total	30.9	39.5	84.2	86.5
Urban				
Male	86.2	87.8	95.9	96.9
Females	64.4	69.6	94.3	96.2
Total	74.2	78.0	95.1	96.6

Source: Welfare Monitoring Survey 2011.

Education level: From among the literate, the majority (47%) in Ethiopia and 51% in Oromia attended only primary school grades one–four, while the remaining second largest proportion (33%) in Ethiopia and Oromia completed grades five–eight (Table 3).

Table 3: Proportion by education level in 2011 (%)

Education level	National			Oromia		
	Male	Female	Total	Male	Female	Total
1–4	44.64	50.15	47.02	48.11	54.84	50.95
5–8	33.97	31.86	33.06	34.64	31.6	33.36
9–10	8.35	7.98	8.19	7.55	6.49	7.1
11–12	2.84	2.4	2.65	2.18	1.26	1.79
Certificate	0.7	1.05	0.85	0.67	0.82	0.74
Certificate not completed	0.31	0.33	0.32	0.39	0.23	0.32
Diploma	2.48	2.38	2.44	2.17	1.98	2.09
Diploma and Degree not completed	1.45	1.14	1.32	1.43	0.88	1.2
Degree	1.63	0.7	1.23	1.17	0.42	0.86
Note stated	3.62	2.02	2.93	1.68	1.48	1.6

Source: Wealth Monitoring Survey (2011) by CSA.

Rural development and livelihood patterns and recent trends

Livelihoods

The livelihood of the Ethiopian population is highly diversified. Agriculture (crop and livestock production) provides a major source of livelihood where 33.3% of the households in Ethiopia and 37.5% in Oromia (urban and rural) cover their consumption needs from agriculture. Income generated from activities which might have negative impact on climate and natural resources (such as sales of firewood and forest products) was source of livelihood for about 20% or households in Ethiopia and 18% of HHs in Oromia. For those involved, paid employment generates relatively good amount of income for the household. Table 1 summarizes the average income generated from different sources of livelihood and the proportion of households involved.

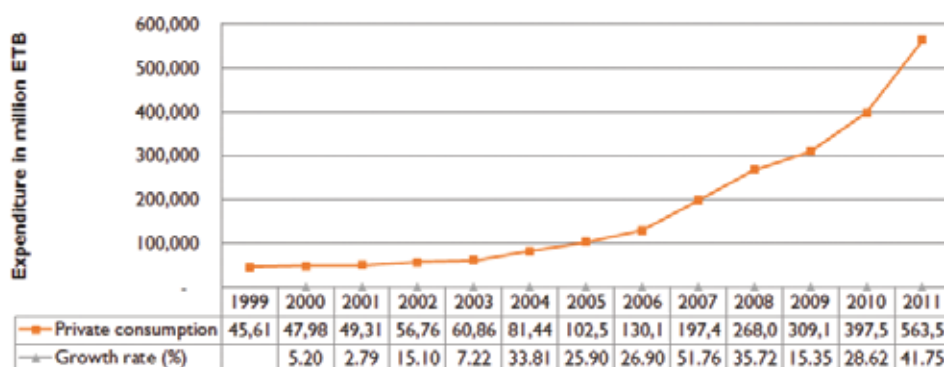
Table 4: Source of livelihood in Ethiopia and Oromia and their share in household expenses in 2011

Source of livelihood	Amount of expenditure (ETB/HH)		% of households involved	
	Oromia	Ethiopia	Oromia	Ethiopia
Agriculture (own production and sales)	8638	7520	37.5	33.3
Non-agricultural enterprises	9177	9392	6.8	7.2
Wage and salary	13,798	13,759	4.0	5.1
Finance (interest, dividend, equb, idir)	3613	5653	0.3	0.5
Transfers (relatives, government, NGOs, social security, etc.)	2399	2467	14.3	16.8
Sales of fixed assets	1027	13,405	0.0	0.0
Free collection (Firewood, water, from Forest and others)	2084	1908	20.3	18.4
Rent (land, machinery, house, other assets)	1854	2179	15.7	16.6
Loan	1396	2136	0.3	0.9
Others	6913	4446	0.9	1.2
Total (average for share of expenses and % for households)	5538	5109	25,454,341	70,894,125

Source: CSA (2012)—Household Consumption and Expenditure Survey.

Household consumption expenditure survey conducted by CSA (2011) shows that the household expenditure has increased significantly since 2006 and reached more than ETB 564,000 in 2011 (Figure 4a). Details of source of livelihood of the households are given in Annex 1a.

Figure 4a: Trend in consumption expenditure (national).



Asset holding

The major assets owned in rural and urban Ethiopia in general and in the project area in particular are productive assets like livestock; perennial crops like trees; coffee, khat, enset, etc.; equipment, furniture, transport facilities and jewels. The proportion of people owning the most commonly owned assets in Ethiopia and Oromia is shown in Table 5 while the list of assets which are owned by smaller proportion of people is given in Annex 1b. Asset ownership is inversely related to level of poverty. Such an association could not be assessed due to lack of data on the value of assets owned.

Table 5: Percentage of households owning common assets in Ethiopia and Oromia in 2011

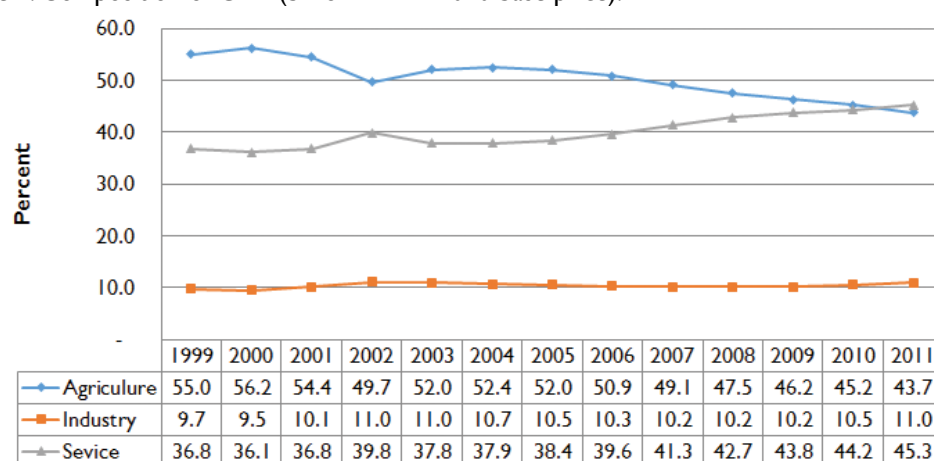
Type	Ethiopia			Oromia		
	Total	Rural	Urban	Total	Rural	Urban
Livestock:						
Cattle-indigenous (except farm animals)	57.1	69.1	12.6	62.8	72.2	18.8
Farm animals	45.2	55.7	6.3	48.1	56.5	8.6
Transport animals	9.9	12.2	1.1	14.4	17.1	2.0
Other draft animals (except farm animals)	24.1	29.5	4.1	26.9	31.7	4.0
Sheep and goat	43.7	52.9	9.7	48.1	55.5	12.9
Chicken	48.0	57.1	14.4	48.9	55.4	18.2
Beehives-traditional	11.0	13.7	1.3	14.7	17.4	2.0
Equipment/furniture:						
Mofer/plough and kenber	51.8	63.8	7.6	54.5	64.3	8.7
Sickle/machid	68.8	81.9	20.6	72.3	82.4	25.1
Axe/"Gejera"	75.3	86.1	35.4	81.1	88.3	47.0
Pick axe or geso	62.3	72.9	23.3	65.2	73.0	28.4
Plough (traditional)	52.2	64.1	8.4	56.5	66.5	9.5
Blanket/gabi	90.4	88.8	95.9	89.4	88.1	95.7
Mattress and/or beds	65.8	58.0	94.9	73.4	68.5	96.6
Wrist watch clock	32.8	29.1	46.5	36.1	33.8	46.8
Telephone (mobile)	25.2	13.6	68.4	25.9	17.3	66.3
Radio/tape/radio	37.8	30.8	63.6	41.8	36.9	64.9
Television	9.9	0.7	44.1	7.3	0.5	39.2

Type	Ethiopia			Oromia		
	Total	Rural	Urban	Total	Rural	Urban
Chair and table (excluding stool and bench)	30.2	24.2	52.2	37.3	33.2	56.5
Jewels (Gold and Silver)	23.9	18.8	42.7	17.7	13.4	38.2
Perennial plants:						
Chat plant (No. planted)	16.1	19.6	3.0	23.8	27.6	5.9
Coffee plant (No. planted)	25.8	30.8	7.2	29.0	32.6	11.8
Other permanent crops, planted	37.2	44.6	9.4	36.3	41.4	12.3
Forestry eucalyptus tree), No. planted	43.2	51.7	11.7	42.8	48.8	14.6

Income levels and trends

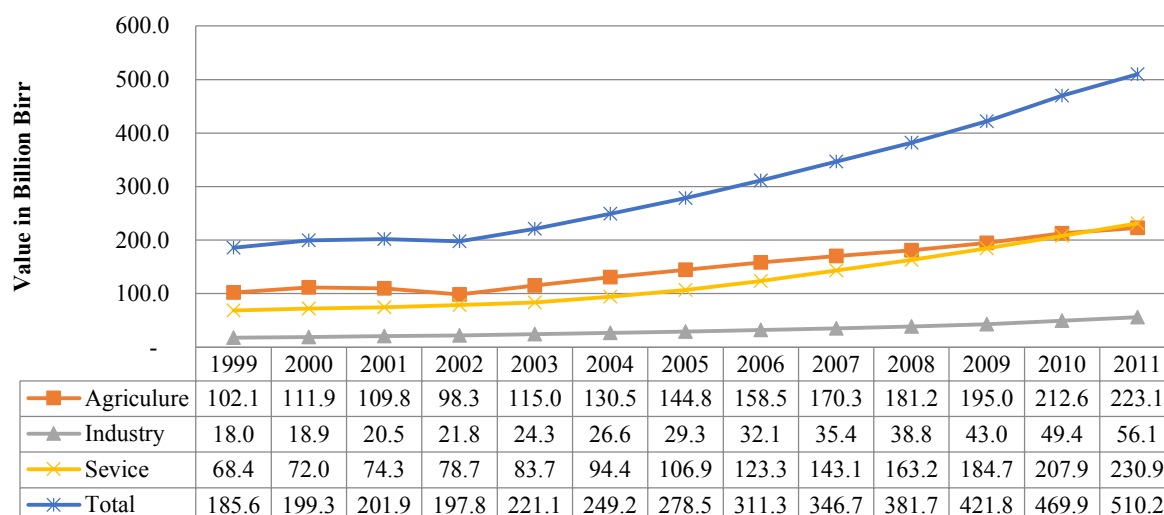
The Ethiopian economy generated about ETB 510 billion GDP in 2011 (Figure 4). It showed an average annual growth of 8.8% between 1999 and 2011. Agriculture remained to be the dominant sector contributing more than 50% of the GDP until 2006. Since 2006, the gap between agriculture and services' contribution to GDP continued to narrow until it was balanced in 2010. In 2011, the service sector started to become dominant contributor to GDP (Figure 5).

Figure 4: Composition of GDP (billion ETB in 2010 base price).



Source: MoFED (2013): National Economic Accounts Statistics of Ethiopia for 2010/11 Base Year.

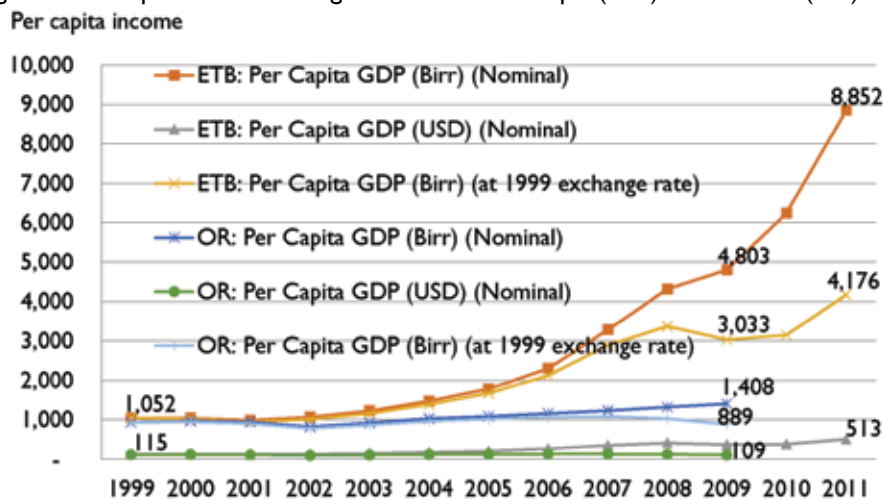
Figure 5: Proportion of GDP (%).



Source: MoFED (2013): National Economic Accounts Statistics of Ethiopia for 2010/11 base year.

Income per capita was as low as USD 116/person per year in 2003. After 2014, the per capita income steadily increased from USD 142 in 2014 to USD 513 in 2011 (Figure 6). The increment was exponential in terms of local currency partly due to devaluation of ETB. Even at a constant exchange rate (considering the 1999 exchange rate as constant), the per capita income has shown significant increase since 2004.

Figure 6: Per capita income during 1999–2011 in Ethiopia (ETB) and Oromia (OR).



Source: MoFED (2013): National Economic Accounts Statistics of Ethiopia for 2010/11 Base Year.

Note: ET is for Ethiopia; OR is for Oromia

There is significant income difference between the per capita income at national level and per capita income of Oromia regional state. The difference in per capita income (at 1999 exchange rate) ranges from 4% in 2001 to 71% in 2009 and averaged at about 36% per annum, showing that the level of income in Oromia is generally low and this amount falls below the money required for minimum subsistence of USD 1.25/ person per day.

Poverty levels and trends

The Ministry of Finance and Economic Development (MoFED 2012) measured poverty using two parameters: income poverty and food poverty. Total poverty compares the per capita income to total poverty line which was ETB 1075 in 1995/96 and ETB 3781/person per year in 2010/11. The food poverty is part of total poverty line which compares real consumption expenditure value to the food poverty line which is measured as income needed to purchase basket of food enough to consume 2,200 kcal/ person per day for a year. The food poverty line was ETB 648 in 1995/96 and ETB 1985 in 2010/11.

According to MoFED (2012) approximately 29.6% of the population was poor in the sense that they were not able to generate ETB 3781 per capita which was a poverty line during 2010/11. The proportion of the population falling below the poverty line was higher (30.4%) in the rural area as compared to 25.7% in the urban area. Income inequality as measured by the Gini coefficient was 0.37 in urban and 0.27 in rural showing higher income inequality in urban area than in rural in 2010/11. The study also shows that the level of total poverty and food poverty is slightly lower in Oromia (Table 6).

Table 6: Poverty head count and Gini coefficient (2010/11)

Type	Total poverty	Food poverty	Gini coefficient
Ethiopia:			
Urban	0.257	0.279	0.371
Rural	0.304	0.347	0.274
Total	0.296	0.336	0.298
Oromia:			
Urban	0.248	0.317	
Rural	0.293	0.333	
Total	0.287	0.331	

Source (MoFED 2012): Ethiopia's Progress towards Eradicating Poverty: An Interim Report on Poverty Analysis Study (2010/11).

Analysis of poverty in Ethiopia shows that total poverty and food poverty declined overtime. The proportion of people living below the total poverty line in Ethiopia declined from 45.5% in 1995/96 to 27.8% in 2011/12, while poverty in the rural areas was higher than that of the urban areas (Table 7). The number of people living below the total poverty line (measured by poverty incidence), the distance from the poverty line (measured by poverty gap) and the level of inequality among the poor (measured by poverty severity) declined by 34.9%, 39.5%, and 39.2%, respectively.

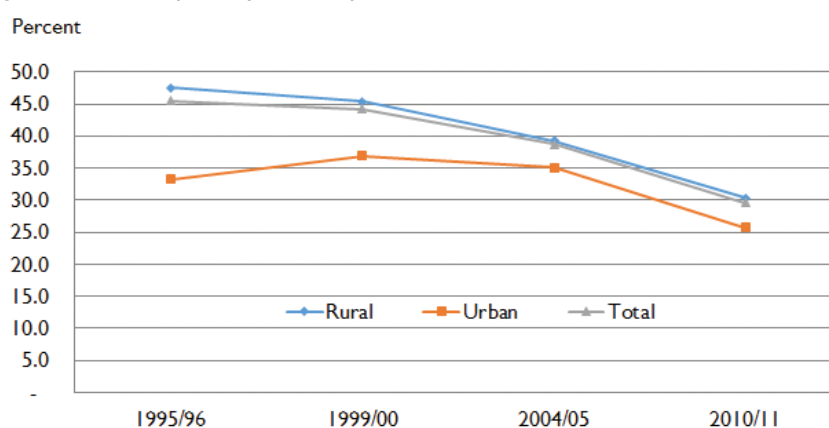
Table 7: Trend in total poverty (head count index)

Year	Ethiopia			Oromia		
	Rural	Urban	Total	Rural	Urban	Total
1995/96	0.475	0.332	0.455	0.347	0.276	0.340
1999/00	0.454	0.369	0.442	0.404	0.359	0.399
2004/05	0.393	0.351	0.387	0.372	0.346	0.370
2010/11	0.304	0.257	0.296	0.293	0.284	0.287

Source (MoFED 2012): Ethiopia's Progress towards Eradicating Poverty: An Interim Report on Poverty Analysis Study (2010/11).

There is a general decline in total poverty in urban and rural Ethiopia. Although the proportion of people below absolute poverty line in rural Ethiopia is higher than that of the urban, the gap in the difference is being narrowed during the last five years (Figure 7).

Figure 7: Trend of poverty in Ethiopia.



Source (MoFED 2012): Ethiopia's Progress towards Eradicating Poverty: An Interim Report on Poverty Analysis Study (2010/11).

There is also a general decline in food poverty in both urban and rural Ethiopia and Oromia. The proportion of people below food poverty line in Ethiopia decreased from 49.5% in 1995/96 to 33.6% in 2010/11. In Oromia, the figure decreased from 41.9% in 1995/96 to 33.1% in 2010/11 (Table 8). In general, Oromia showed less intensity in food poverty as compared to national figure due to its potential responsiveness to development efforts.

Table 8: Trend in food poverty (head count index)

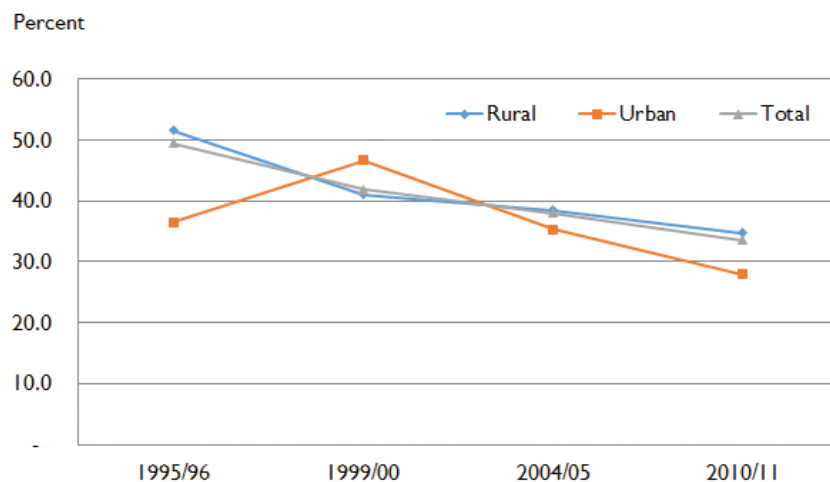
Year	Ethiopia			Oromia		
	Rural	Urban	Total	Rural	Urban	Total
1995/96	0.516	0.365	0.495	0.427	0.345	0.419
1999/00	0.411	0.467	0.419	0.367	0.491	0.380
2004/05	0.385	0.353	0.380	0.371	0.352	0.369
2010/11	0.347	0.279	0.336	0.333	0.317	0.331

Source (MoFED 2012): Ethiopia's Progress towards Eradicating Poverty: An Interim Report on Poverty Analysis Study (2010/11).

The government of Ethiopia implements different rural and urban development policies. These policies affect income and poverty as well as food access. Increase in price of food especially in 1999/2000 negatively affected urban food poverty resulting in increase in the proportion of urban population falling below food poverty line. Unemployment also plays similar role. The recent urban development efforts such as organizing the youth into small and micro-

enterprises and food price stability contributed to decline in food poverty. Although food poverty has declined, the urban poverty has shown faster decline as compared to rural poverty (Figure 8).

Figure 8: Tend of food poverty in Ethiopia.



Source (MoFED 2012): Ethiopia's Progress towards Eradicating Poverty: An Interim Report on Poverty Analysis Study (2010/11).

Food security

Food security is assessed in two ways: number of months of food security as perceived by the respondents and food balance sheet. Table 9 shows that about 52% of the food insecure households in Ethiopia faced food gaps for less than 4 months in 2014 while this proportion was about 50% in the project area. In 2004, the proportion of food insecure households was 31.1% in Ethiopia, 36.3% in Oromia and 27.4% in the project area. In 2011, the proportion of food insecure households declined to 21.2% in Ethiopia and 16.4% in Oromia. The proportion of households facing food gap was higher in the rural areas than in the urban areas.

Table 9: Proportion of food insecure households (%)

No. of food insecure months	Ethiopia					Oromia			Project area
	2004	2011			2004	2011		2004	
		Total	Rural	Urban		Total	Rural		
<1	8.6	17.8	16.4	29.8	7.3	23.7	23.1	29.0	8.1
2-3	43.7	46.3	47.3	37.4	40.2	40.7	40.0	46.6	41.7
4-6	32.8	27.4	28.3	19.5	34.6	27.0	28.3	16.6	31.5
7-9	5.6	4.7	4.8	4.4	7.3	4.3	4.6	1.7	4.4
10-12	5.5	2.7	2.4	5.3	7.8	3.4	3.3	4.2	7.1
Not stated	3.8	1.1	0.8	3.6	2.8	0.8	0.7	2.0	7.3
Total food insecure	31.1	21.2	24.2	10.1	36.3	16.4	17.7	10.2	27.4

Source: CSA's WMS (2003 and 2011).

Food balance sheet

Food balance sheet was computed by comparing national food supply and food utilization using statistical data of the Food and Agriculture Organization of the United Nations (FAO) in 2011. The domestic food supply was computed by aggregating food production, import, stock available and deducting export. Food utilization aggregates food consumption, food used

for processing, livestock feed, seed, waste and other uses. If the balance is negative, then there was food deficit. Table 10 summarizes the supply and utilization of major food categories while the details of the food balance sheet and nutrition intake of the country in 2011 is given in Annex 2. The data shows that there was 11,000 metric tonnes of food deficiency in 2011.

Table 10: Summary of food balance of Ethiopia in 2011 ('000 metric tonnes)

Food type	Domestic supply	Utilization	Balance
Cereals—excluding beer	18491	18493	-2
Starchy roots	6227	6229	-2
Sugar crops	2500	2500	0
Sugar and sweeteners	580	580	0
Pulses	1907	1907	0
Tree nuts	68	68	0
Oil crops	528	528	0
Vegetable oils	335	334	1
Vegetables	1697	1699	-2
Fruits—excluding wine	757	757	0
Stimulants	101	101	0
Spices	140	141	-1
Alcoholic beverages	822	822	0
Meat	714	714	0
Offal	133	134	-1
Animal fats	48	48	0
Eggs	39	39	0
Milk—excluding butter	3625	3629	-4
Fish, seafood	23	23	0
Infant food	1	1	0
Grand total	38736	38747	-11

Source: FAO Statistical Data 2014 (data for 2011); <http://faostat3.fao.org/download/FB/FBS/E> (Accessed Dec. 13/2014).

Health and nutrition status

The nutritional status of calorie intake per person per day was computed by FAO using the national food balance and the population. Table 11 shows the average per capita calorie, protein and fat intake per day. The calorie intake shows an average deficiency of 95 kcal/ day per person. The constituents of nutrition intake based on national food balance sheet are given in Annex 2.

Table 11: Nutrition status of the Ethiopian population (per person per day) in 2011

Food type	Calorie (kcal)	Protein (gr)	Fat (gr)
Vegetal Products	1979	54.2	18.9
Animal Products	126	7.7	8.3
Cereals—excluding beer	1353	36.5	6
Grand Total	2105	61.9	27.1

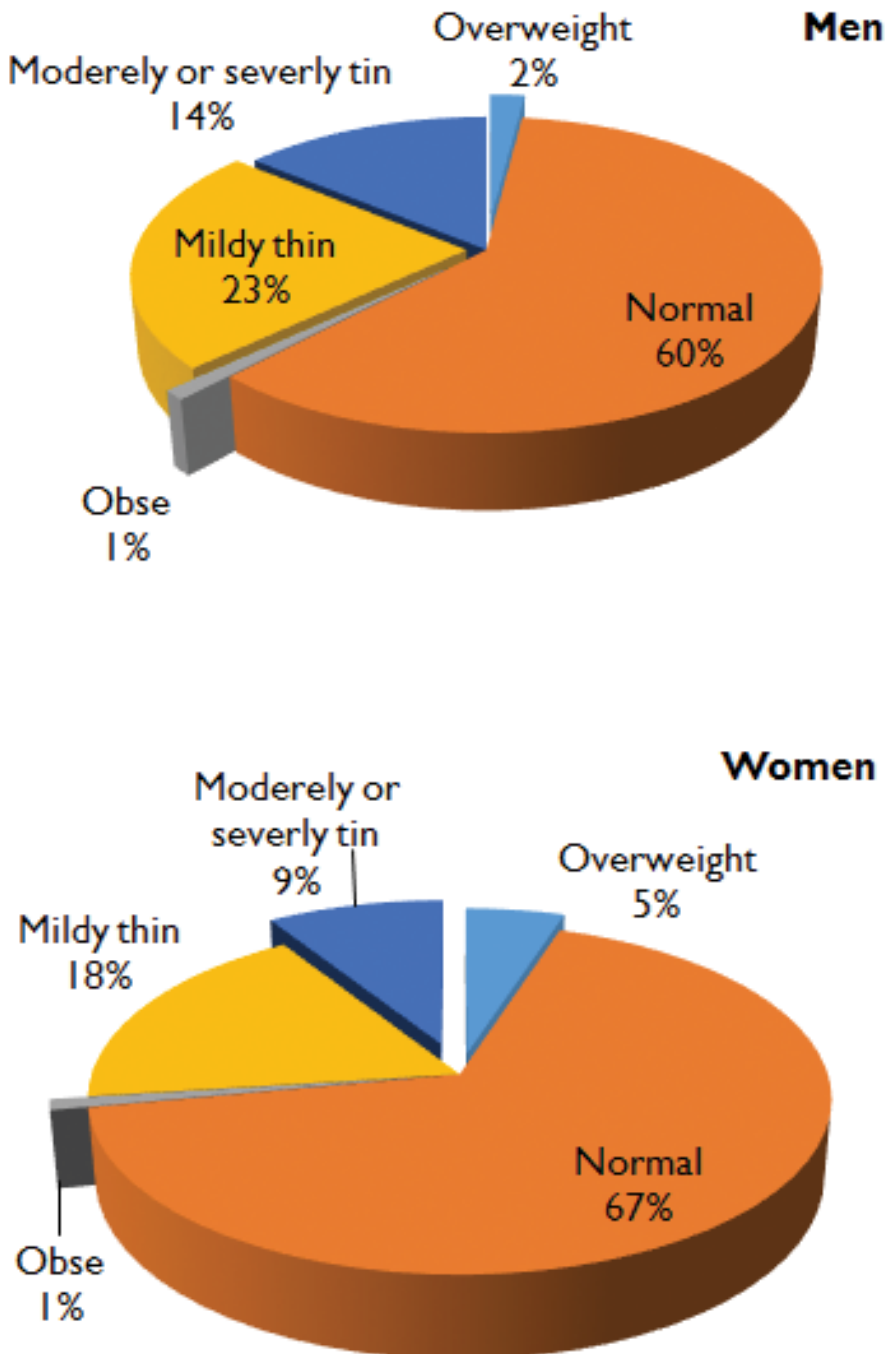
Source: FAO Statistical Data 2014 (data for 2011); <http://faostat3.fao.org/download/FB/FBS/E> (Accessed Dec. 13/2014).

Nutrition status of men and women

According to the welfare monitoring survey (MoFED 2011), 67% of Ethiopian women of reproductive age (15 to 49 years of age) have a normal nutritional status with body mass index (BMI) ranging between 18.5 and 24.9 kg/m²,

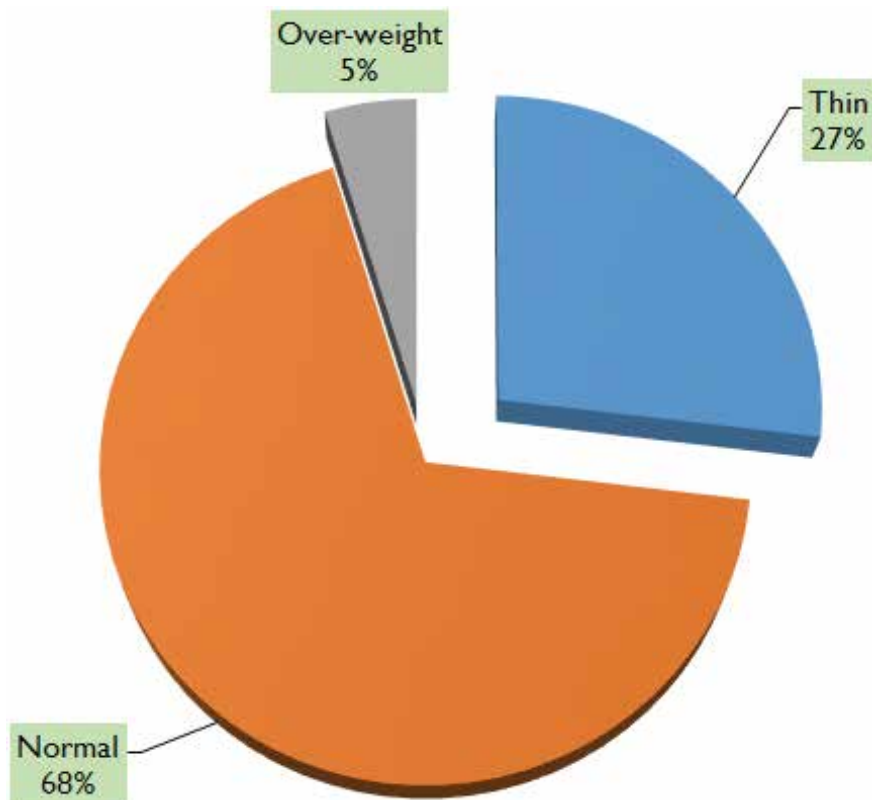
while 27% of women (9% moderately/severely and 18% mildly) are thin or undernourished with a BMI less than 18.5 kg/m² and 6% are overweight or obese with a BMI 25 kg/m² or above. Similarly, 60% of men have normal nutrition status, 37% are thin and 3% are overweight (Figure 9). The situation of women of reproductive age group in Oromia is similar to the national context (Figure 10). There exist some differences between the urban and rural women in their nutritional status where about 30% of rural women and 20% of urban women are thin while about 15% of urban women and 2.6% of rural women are overweight (Annex 3).

Figure 9: Proportion of men and women aged 15–49 by body condition in Ethiopia.



Source: CSA (WMS 2011).

Figure 10: Nutritional status of women aged 15–49 years (% based on body mass index) in Oromia.



Feeding practices of children under five years of age

Early initiation of breastfeeding is important for both the mother and the child. Early suckling stimulates the release of prolactin, which helps in the production of milk, and oxytocin, which is responsible for the ejection of milk and stimulates the contraction of the uterus after childbirth. The first liquid to come from the breast, known as colostrum, is produced in the first few days after delivery and provides natural immunity to the infant. It is recommended by WHO and UNICEF that children should be fed colostrum immediately after birth and continue to be exclusively breastfed up to six months even if the regular breast milk has not yet let down.

The Ethiopian Demographic and Health Survey (EDHS) in 2011 shows that 97.5% (95.2% urban and 97.8% rural) of children are breastfed for some period of time, of which 51.5% children started breast feeding immediately after birth within an hour as it is recommended (Table 12).

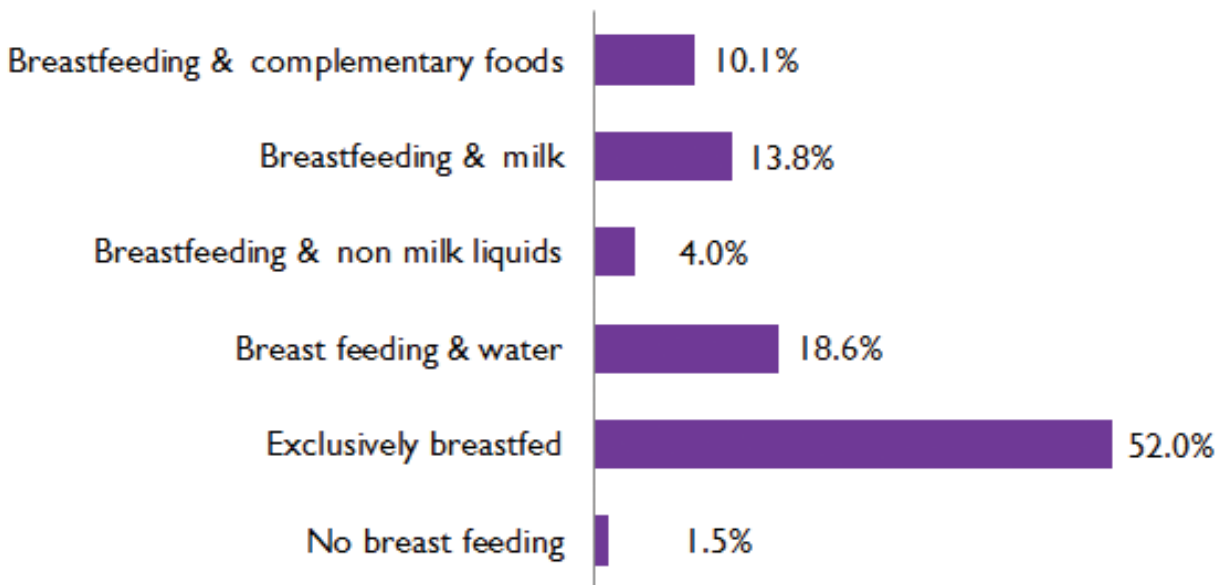
Table 12: Initiation of breast-feeding (% of children among last-born children born in the past two years of the survey)

Initiation of breast-feeding	Ethiopia			Oromia
	Urban	Rural	Total	
Ever breastfed	95.2	97.8	97.5	98.0
Within 1 hr of birth	57.1	50.6	51.5	52.6
Within 1 day of birth (includes within 1 hr)	83.2	79.7	80.2	83.6
Started pre-lacteal feed	24.2	27.5	27.1	21.9

Source: CSA (EDHS 2011).

UNICEF and WHO recommend that children be exclusively breastfed during the first 6 months of life and that children be given solid or semi-solid complementary food in addition to continued breastfeeding from age 6 months until 24 months or more, when the child is fully weaned. Exclusive breastfeeding is recommended because breast milk is uncontaminated and contains all the nutrients necessary in the first few months of life. In addition, the mother’s antibodies in breast milk provide the infant with immunity to disease. As it is shown in Figure 11, only 52% of the children were exclusively breastfed up to 6 months of their age.

Figure 11: Proportion of children up to 6 months of age by feeding practices.



Early supplementation is discouraged for several reasons. First, it exposes infants to pathogens and thus increases their risk of infection, especially by diarrheal disease. Second, it decreases infants' intake of breast milk and therefore suckling, which in turn reduces breast milk production. Third, in low resource settings, supplementary food is often nutritionally inferior.

Appropriate infant and young child feeding (IYCF) practices include timely initiation of feeding of solid and semi-solid foods from age of 6 months and improving the quality of foods consumed as the child gets older, while maintaining breastfeeding (WHO 2008).

WHO has established guidelines with respect to IYCF practices for children of age 6–23 months. Breastfed children of 6–23 months should receive animal-source foods and vitamin A-rich fruits and vegetables daily (PAHO/WHO 2003). Since first foods almost universally include a grain- or tuber-based staple, it is unlikely that young children who eat two or fewer food groups will receive both an animal-source food and a vitamin A-rich fruit or vegetable. Therefore, four food groups are considered the minimum acceptable number of food groups for breastfed infants (Arimond and Ruel 2003). Breastfed infants of 6–8 months should be fed meals of complementary foods two–three times per day, with one–two snacks as desired; breastfed children 9–23 months should be fed meals three–four times per day, with one–two snacks (WHO 2008).

Definition of food groups:

- infant formula, milk other than breast milk, cheese or yogurt;
- foods made from grains, roots, and tubers, including porridge and fortified baby food from grains;
- vitamin A-rich fruits and vegetables;
- other fruits and vegetables;
- eggs;
- meat, poultry, fish, shellfish, and organ meats;
- legumes and nuts.

Non-breastfed children of 6–23 months should receive milk products at least twice a day to ensure that their calcium needs are met. In addition, they need animal-source foods and vitamin A-rich fruits and vegetables. Therefore, for

non-breastfed young children, four food groups are considered the minimum acceptable number. Non-breastfed children should be fed meals four–five times per day, with one–two snacks as desired (WHO 2005). Meal frequency is considered a proxy for energy intake from foods other than breast milk. Therefore, for non-breastfed children feeding frequency indicators include both milk and solid or semi-solid foods (WHO 2008).

EDHS (2011) survey shows that only 4.8% of youngest children of 6–23 months living were fed in accordance with IYCF practices (Table 13). More than 96% received breast milk or milk products during the 24-hour period before the survey, and almost half of the children (49%) were fed at least the minimum number of times. Five per cent of children were fed according to minimum standards with respect to food diversity (four or more food groups). Older children and children in urban areas were more likely to be fed according to the IYCF practices than younger children or rural children (Annex 4 for detailed results).

Table 13: Feeding practices of children aged 6–23 months who are living with their mother (%)

Feeding practices	Ethiopia			Oromia
	Urban	Rural	Total	
Breast milk, milk, or milk products	96.4	95.7	95.8	95.7
4+ food groups	12	3.6	4.8	6.1
Minimum meal frequency*	52.2	47.9	48.5	55.9

* Note: For breastfed children, minimum meal frequency is receiving solid or semi-solid food at least twice a day for infants of 6–8 months and at least three times a day for children of 9–23 months.

Nutrition status of children-under-five (stunting, wasting and underweight)

The three commonly used anthropometric indices (*stunting, wasting and underweight*) are expressed as standard deviation (SD) units from the median for the reference group. Children who fall below minus two standard deviations (-2 SD) from the median of the reference population are regarded as moderately malnourished, while those who fall below minus three standard deviations (-3 SD) from the median of the reference population are considered severely malnourished.

- The height-for-age index provides an indicator of linear growth retardation and cumulative growth deficits in children. Children whose height-for-age Z-score is below -2 SD from the median of the WHO reference population are considered short for their age (*stunted*), or chronically malnourished. Children who are below -3 SD are considered severely stunted. Stunting reflects failure to receive adequate nutrition over a long period of time and is affected by recurrent and chronic illness. Height-for-age, therefore, represents the long-term effects of malnutrition in a population and is not sensitive to recent, and/or short-term changes in dietary intake.
- The weight-for-height index measures body mass in relation to body height or length; it describes current nutritional status. Children with Z-scores below -2 SD are considered thin (*wasted*) or acutely malnourished. Wasting represents the failure to receive adequate nutrition in the period immediately preceding the survey and may be the result of inadequate food intake or a recent episode of illness causing loss of weight and the onset of malnutrition. Children with a weight-for-height index below -3 SD are considered severely wasted. The weight-for-height index also provides data on overweight and obesity. Children with more than +2 SD from the median weight-for-height are considered overweight, or obese.
- Weight-for-age is a composite index of height-for-age and weight-for-height. It takes into account both chronic and acute malnutrition. A child can be underweight for his/her age because he or she is stunted, wasted, or both. Weight-for-age is an overall indicator of a population's nutritional health. Children with weight-for-age below -2 SD are classified as underweight. Children with weight-for-age below -3 SD are considered severely *underweight*. Figure 12 was prepared based on EDHS (2011) and interpreted as follows:

Height-for-age (stunting):

Nationally, 44% of the children under age of five were stunted, and 21% of children were severely stunted. In general, the prevalence of stunting increases as the age of a child increases, with the highest prevalence of chronic malnutrition

found with children of age 24–35 months (57%) and lowest in children under age of six months (10%). Male children were slightly more likely to be stunted than female children (46% and 43%, respectively).

Weight-for-height (wasting):

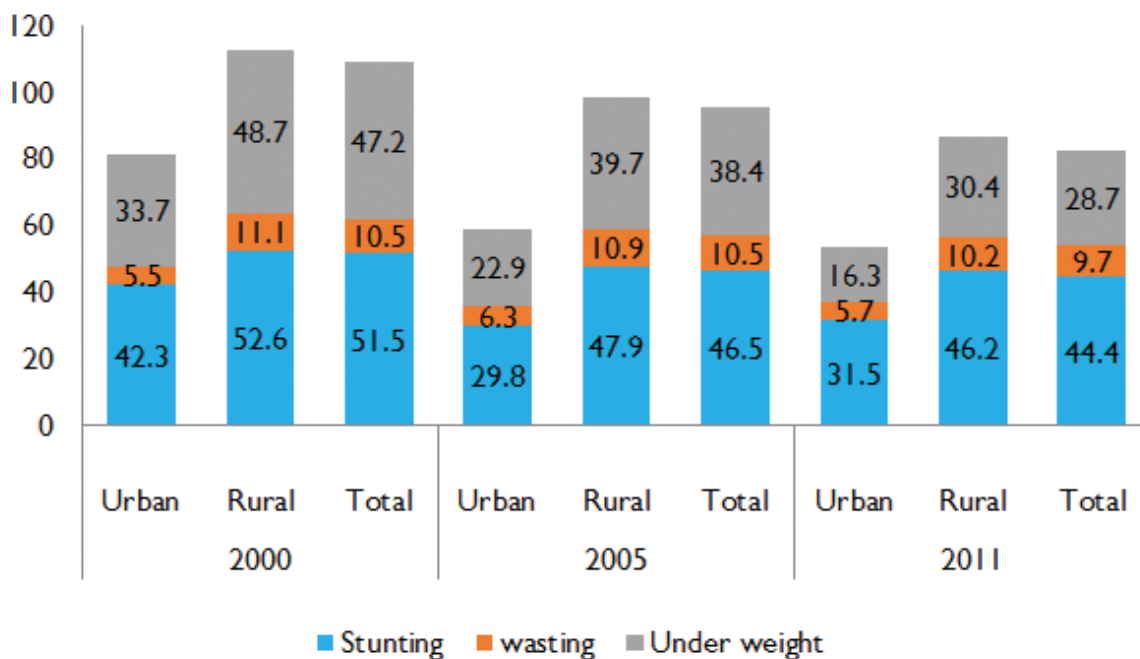
Overall, 10% of Ethiopian children were wasted, and 3% were severely wasted. Wasting, or acute malnutrition, was the highest in children of age 9–11 months (19%) and lowest in children age of 36–47 months (6%). Male children were slightly more likely to be wasted (11%) than female children (8%). Ten per cent of children in rural areas were wasted, compared with 6% in urban areas.

Weight-for-age (underweight):

As shown in Figure 12, about 29% of children under age of five were underweight (have low weight-for-age), and 9% were severely underweight. The proportion of underweight children generally increased with each age cohort. The proportion of underweight children was the highest in the age of 24–35 months (34%) and lowest among those under six months (10%). This may be explained by the fact that foods for weaning were typically introduced to children at older age, thus increasing their exposure to infections and susceptibility to illness. This tendency, coupled with inappropriate or inadequate feeding practices, may contribute to faltering nutritional status among children in these age groups.

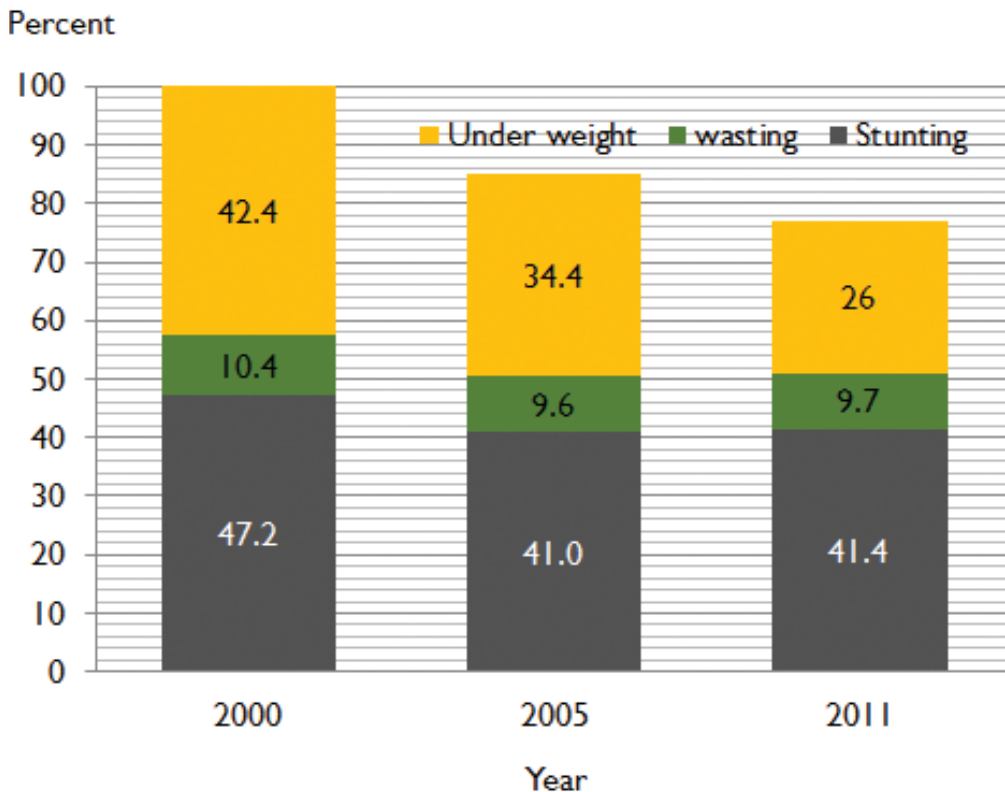
Figure 12 also shows a downward trend in the proportion of children stunted and underweight over the three EDHS surveys. Stunting prevalence decreased by 12% (from 58% to 46%) between 2000 and 2011. The decline in the proportion of stunted Ethiopian children shows improvement in chronic malnutrition over the past eleven years. A similar pattern was observed for the proportion of children underweight which dropped by 20% from 2000 to 2011. The prevalence of wasting in Ethiopia remained constant over the last 11 years.

Figure 12: Trends in nutritional status of children under five years of age in Ethiopia.



Similar findings were reported for Oromia region where there was a significant improvement in underweight children and some improvement in stunting children in the past eleven years. But almost similar results were observed on the proportion of wasting children (Figure 13).

Figure 13: Nutritional status of children under five years of age in Oromia.



Micronutrient intake:

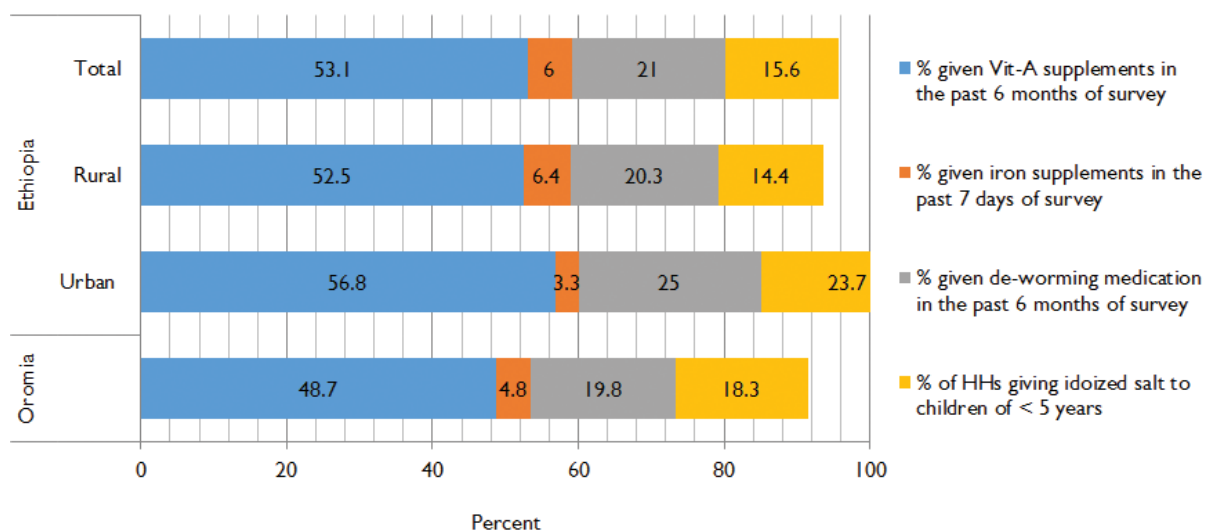
Micronutrient deficiency is a major contributor to childhood morbidity and mortality. Children can receive micronutrients from foods, food fortification, and direct supplementation. Vitamin A is an essential micronutrient for the immune system that plays an important role in maintaining the epithelial tissue in the body. Severe vitamin A deficiency (VAD) can cause eye damage. VAD can also increase the severity of infections such as measles and diarrheal diseases in children and slow recovery from illness. Vitamin A is found in breast milk, other milks, liver, eggs, fish, butter, red palm oil, mango, papaya, carrot, pumpkin, and dark green leafy vegetables. The liver can store an adequate amount of the vitamin for four to six months. Periodic dosing (usually every six months) of vitamin A supplements is one method of ensuring that children at risk do not develop VAD.

According to the findings of EDHS (2011), more than half of the children of age 6–59 months (53%) received vitamin A supplements. Children in urban areas are slightly more likely to have received vitamin A supplements (57%) than those in rural areas (53%). Similarly, at the regional level (Oromia) the proportion of children (6–59 months) that received vitamin A supplements were about 49%.

Iron supplementation coverage is generally low in Ethiopia. Only 6% of the children aged 6–59 months were given iron supplements in the seven days preceding the survey. Rural children were twice as likely as urban children to have received iron supplements during the same period (6% compared with 3%).

Ninety-four per cent of households reported that they consumed salt at the time of the interview and only 15% of these households used iodized salt. Urban households are more likely to consume iodized salt (23%) than rural households (13%). In Oromia region about 18% of the households consumed iodized salts.

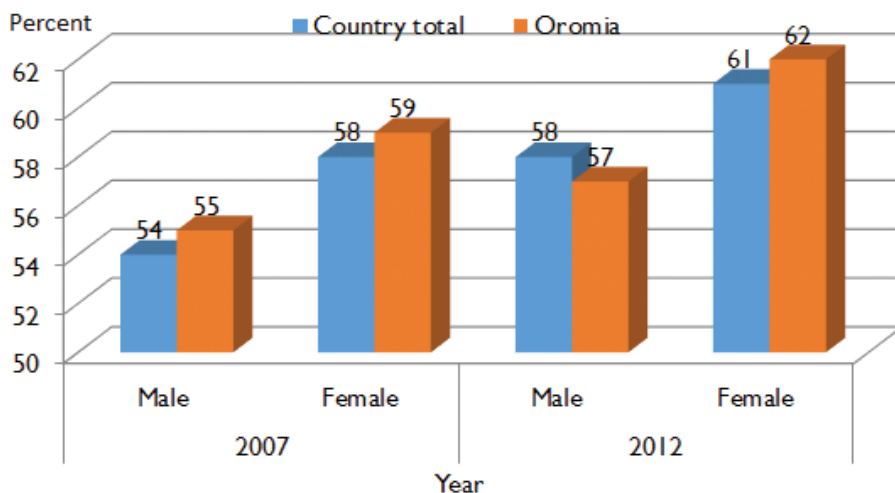
Figure 14: Micro-nutrients intake of under five children (age from 6 to 59 months) in Ethiopia and Oromia.



Life expectancy at birth

Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. As it is depicted in Figure 15, the life expectancy of Ethiopian people has remarkable improvement in that the life expectancy of males increased from 54 years in 2007 to 58 years in 2012 and that of females increased from 58 years in 2007 to 61 years in 2012. Similar improvement has been observed in Oromia region.

Figure 15: Life expectancy in Ethiopia and Oromia.



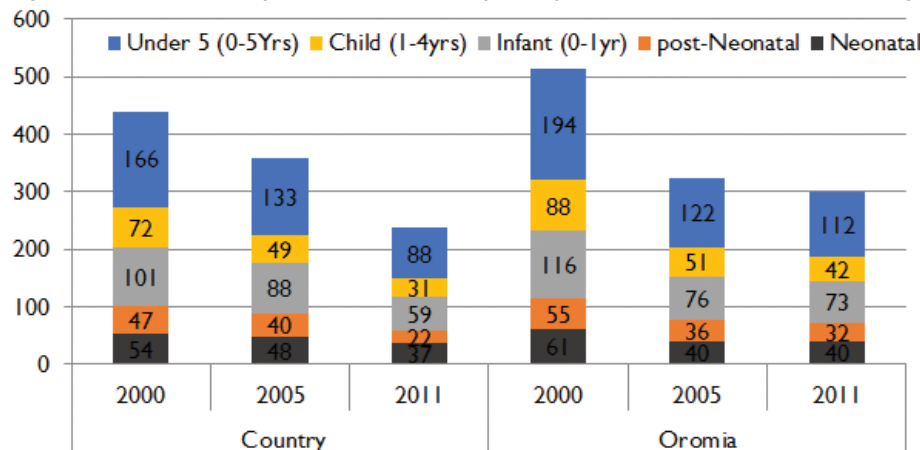
Source: CSA (2007 Census and 2012 Inter Censal Population Survey).

Child mortality

Trend in Child mortality can be examined by comparing data from EDHS surveys conducted in 2000, 2005, and 2011. Infant and under-five mortality rates obtained by these surveys evidence a continuous declining trend in mortality. Under-five mortality decreased from 166 deaths per 1000 live births in the 2000 to 88 in 2011, while infant mortality decreased from 97 per 1000 live births in the 2000 to 59 in the 2011. On the other hand, even though neonatal mortality rate decreased from 49 per 1000 live births in 2000 to 39 per 1000 live births in 2005. Since 2005, it has remained stable at 37 deaths per 1000, as reported in 2011. The child mortality trend in Oromia region shows that

under-five mortality, neonatal mortality and postnatal mortality rates during 2000 and 2011 were higher than the national rates. Likewise, child mortality and infant mortality rates were higher than the national at all survey times (2000 005 and 2011). However, the trends show that there are remarkable improvements (i.e. decline in mortality) over time (Figure 16).

Figure 16: Trends in early childhood mortality rate per 1000 of each childhood category.

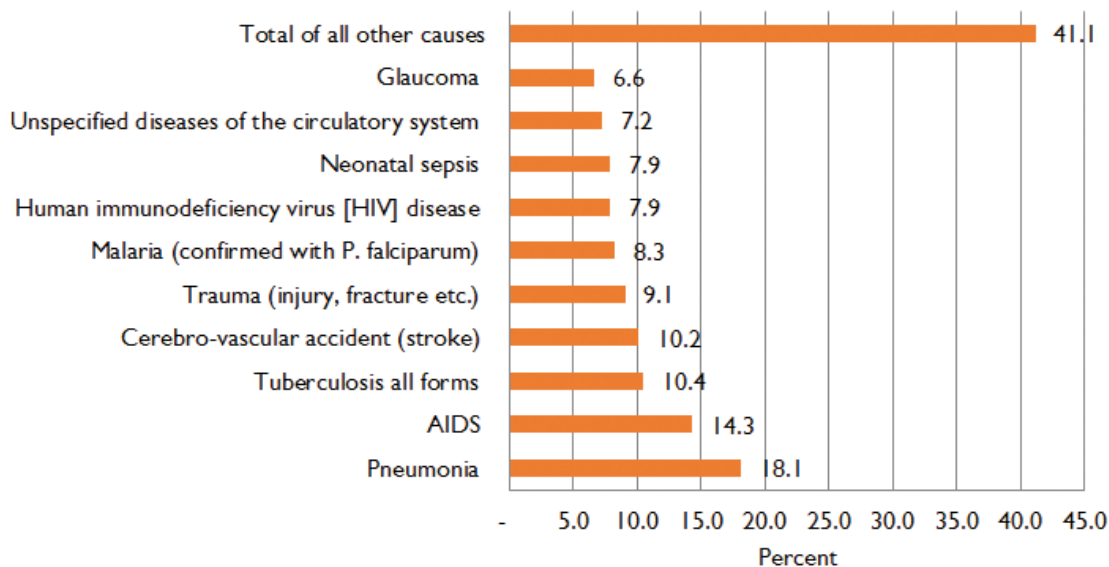


Source: CSA; EDHS—2011.

Leading causes of mortality

According to the Federal Ministry of Health (FMOH) report, in 2005 EFY (2012/13) pneumonia (accounts for 18 % of the total deaths), AIDS (14%), and tuberculosis (all forms 10.4%) were the leading causes of mortality (Figure 17).

Figure 17: Top 10 causes of mortality in 2012/13 in Ethiopia (%).



Source: Health and health related indicators, FMOH report 2012/13.

Access to maternal health services

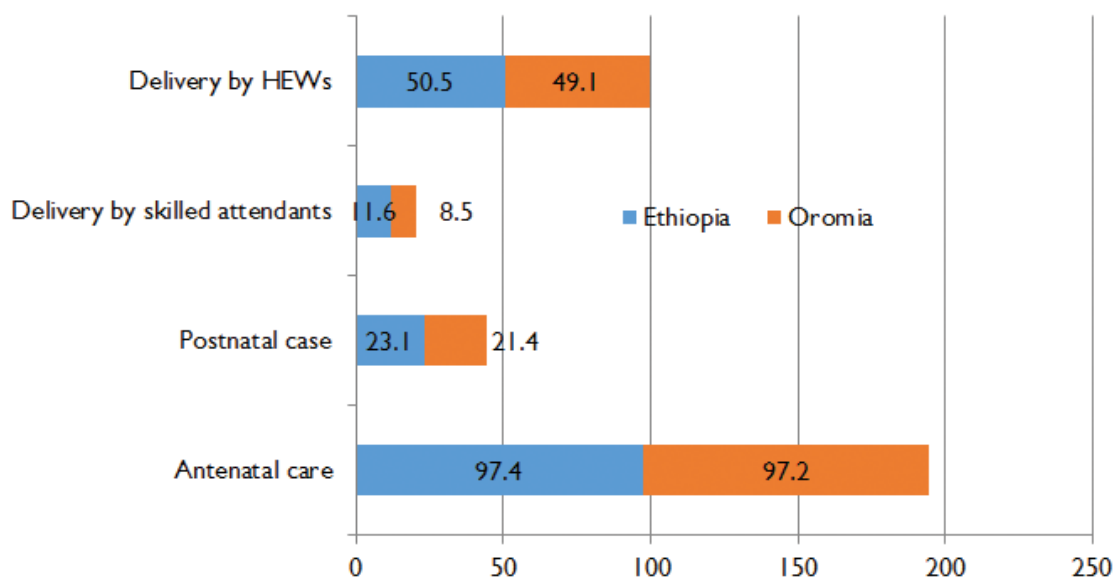
All women should have access to most important maternal health services like delivery assisted by skilled health personnel, antenatal and postnatal cares during pregnancy and childbirth to ensure prevention, early detection and management of complications.

Delivery assistance by properly trained health personnel with adequate equipment is key to reducing maternal deaths. It is the single most important proved intervention that plays a great role in reducing the maternal mortality rate and is one of the Millennium Development Goals (MDG) indicators to track national effort towards safe motherhood. In addition, the proportion of births attended by skilled personnel at the given facility is a measure of the health system's function, accessibility, and quality of care. 'Skilled attendant at birth' has been proposed as an intermediary, process or proxy indicator for monitoring progress towards the reduction of maternal mortality, which is highly correlated with maternal mortality levels. However, only 11.6% (for national) and 8.5% (for Oromia region) of women gave birth with the assistance of skilled personnel.

Antenatal care coverage is also an indicator of access and use of health care during pregnancy. The antenatal period presents opportunities for reaching pregnant women with interventions that may be vital to their health and wellbeing and to their infants. Receiving antenatal care at least four times increases the likelihood of receiving effective maternal health interventions during antenatal visits. This is also one of the MDG indicators. In recent years, access to antenatal care services has been improved and thus most of pregnant women getting the services. For instance, in the year 2012/13 about 97% (both national and Oromia region) of pregnant women has got antenatal services at least one time during their pregnancy.

Postnatal care service is also one of the important maternal health services targeted to give care for the mothers and the newborns during the post-partum period (within the first 42 days after delivery). In the year 2012/13, only 23% (national) and 21% (Oromia) of mothers who gave births were visited at least once within 42 days after their birth. This shows the utilization (accessibility and acceptability) of postnatal care service and the health seeking behaviour of Ethiopian mothers is very poor (Figure 18).

Figure 18: Access to maternal health (skilled delivery, antenatal care and postnatal care) services.



Employment

The Ethiopian active labour force engages in different means of livelihood. Agriculture provides major employment opportunity both in urban and rural areas. The labour force survey conducted by CSA shows that 76.2% of the population (aged above 10 years) were employed during 2013 (55.5% in urban and 81.6% in rural). If the age category increases, the employment rate will rise. The rate of employment is relatively high in Oromia (Table 14). In Ethiopia in general as well as in Oromia, more men are employed than the women.

Table 14: Employment rate in Ethiopia in 2013 (% of total population aged above 10 years)

Level	Ethiopia			Oromia		
	Total	Male	Female	Total	Male	Female
Total	76.2	82.7	69.8	79.4	85.4	73.2
Urban	55.5	65.6	46.6	59.3	69.0	50.1
Rural	81.6	86.9	76.3	83.0	88.2	77.5

According to CSA (2013), urban unemployment in Ethiopia in 2013 was 10.5% for male and 23% for female active labour force (Table 15). Urban unemployment is higher than rural unemployment due to the fact that agriculture absorbs the labour force more in rural area than in urban environment.

Table 15: Unemployment rate in Ethiopia in 2013 (% of active population)

Level	Ethiopia			Oromia		
	Total	Male	Female	Total	Male	Female
Total	4.5	2.7	6.5	3.0	1.7	4.6
Urban	16.5	10.5	23.0	13.6	8.6	19.5
Rural	2.0	1.1	2.9	1.5	0.7	2.5

Source: CSA (2013)—Labour force survey.

Assessment of paid employment shows that the agricultural sector is the major source of employment where about 4% of the urban and 42% of the rural paid labour during 2013 was in agriculture (Table 16). Compared to national statistics, agriculture in Oromia provides employment to a higher proportion of paid workers. Education and construction sectors are the second and third major sources of paid work, respectively, both in Ethiopia and Oromia. Table 18 displays the proportion of paid employment in 2013.

Table 16: Employment of paid labour by sector in 2013 (%)

Sector	Ethiopia			Oromia		
	Total	Urban	Rural	Total	Urban	Rural
Agriculture, forestry and fishing	16.4	3.9	42.2	25.0	6.7	47.1
Mining and quarrying	1.1	0.9	1.5	0.8	0.8	0.7
Manufacturing	9.4	11.6	4.8	8.9	11.7	5.5
Electricity, gas, steam and air conditioning supply	0.6	0.8	0.1	0.8	1.3	0.1
Water supply; sewerage, waste management	1.1	1.3	0.5	1.0	1.3	0.7
Construction	10.6	10.4	11.2	9.4	9.9	8.8
Wholesale and retail trade; repair of motor vehicles and motors	4.3	5.4	1.9	4.3	5.0	3.5
Transportation and storage	4.4	5.9	1.5	4.0	5.3	2.4
Accommodation and food service activities	3.8	5.1	1.2	3.0	4.8	0.8
Information and communication	1.2	1.6	0.3	0.8	1.1	0.4
Financial and insurance activities	3.0	4.1	0.6	2.1	3.5	0.4
Real estate activities	0.0	0.1	0.0	0.0	0.0	0.0
Professional, scientific and technical activities	2.9	3.7	1.3	2.7	3.9	1.1
Administrative and support service activities	2.9	3.8	1.0	2.4	3.5	0.9
Education	15.8	14.5	18.4	15.1	16.6	13.2
Human health and social work activities	5.2	6.1	3.4	4.7	5.5	3.7
Arts, entertainment and recreation	0.6	0.8	0.2	0.4	0.5	0.3
Other service activities	4.0	4.6	2.8	3.7	4.5	2.8
Activities of households as employers	5.5	6.8	2.7	4.1	4.2	4.1
Activities of extraterritorial organizations	0.5	0.7	0.1	0.4	0.6	0.3

Source: CSA (2013)—Labour Force Survey.

As shown in Table 17, about 28% of the employees in Ethiopia and 31% of employees in Oromia earn less than ETB 500 per month. The proportion reaches 42% in the rural area. The next largest proportion of employees also earn between ETB 500 and 1000 per month. This means, 68% of employees in the rural area and 44% in the urban area earn less than ETB 1001 per month. This low pay rate is one of the causes of poverty and food insecurity.

Table 17: Percentage of employees by salary/wage

Salary/Wage (ETB/month)	Ethiopia			Oromia		
	Total	Urban	Rural	Total	Urban	Rural
<500	27.7	20.6	42.4	31.1	22.8	41.2
501–1000	24.0	23.3	25.5	24.4	23.5	25.5
1001–1500	17.4	17.5	17.3	16.9	16.8	17.1
1501–2000	11.0	12.6	7.8	10.8	13.1	7.9
2001–2500	6.2	8.1	2.4	5.6	8.2	2.4
2501–3000	4.5	6.1	1.3	4.6	7.6	1.0
3001–3500	2.7	3.8	0.5	1.7	2.5	0.8
3501–4000	1.6	2.2	0.4	1.1	1.8	0.2
4000+	3.5	4.9	0.6	1.8	2.6	1.0
Not stated	1.2	0.9	2.0	1.9	1.0	3.0
Average	1,539	1,666	907	1,322	1,422	1,008

Source: CSA (2013) Labour Force Survey.

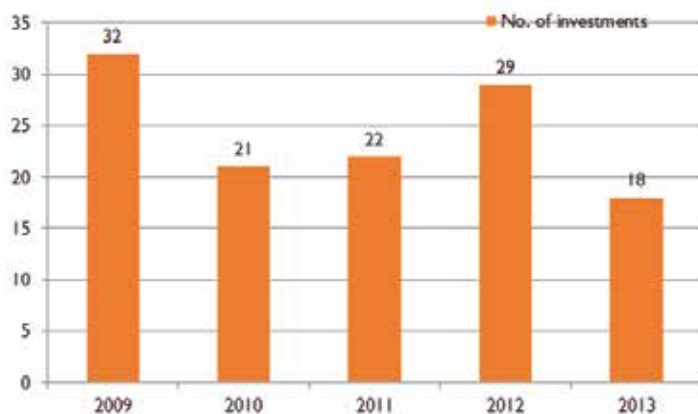
Labour use in agriculture

Smallholder farmers use labour from different sources in agriculture, while commercial farms employ the whole labour force needed for farming. The major source of labour for smallholder farmer is the family labour. Wage workers and exchange labour also provide labour. Exchange labour helps to overcome peak labour requirement of the households by distributing the family labour over time since the household works for the work done by friends or other fellow farmers.

Levels and recent trends in private investment in agriculture

The government of Ethiopia encourages investment in agriculture. In the project area, investors received certificate to invest in coffee production, crop production (cereals, oil crops, fruits and vegetables production, floriculture, dairy farms, cattle fattening). During the last five years, 122 private investors received license of investment in the project area. The distribution of the investment during the respective years is shown in Figure 19.

Figure 19: Number of investment in agriculture in the project area.



Source: Oromia Investment Commission (2014).

Natural environment of the area

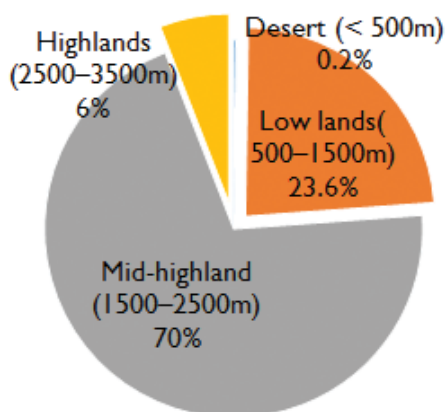
Agro-ecology/climate

Oromia National Regional State occupies central part of Ethiopia. It extends from 34° 07' 37"E to 42° 58' 51"E longitude and 03° 24' 20" to 10° 23' 26"N latitude. It shares international borderlines with Sudan and Kenya, and regional borderlines with Afar, Amhara, Benishangul Gumuz, Somali, SNNPR and Gambella National Regional States. The project area that occupies the western and some part of central portion of Oromia extends from 07° 13' 17" to 10° 23' 26"N latitude and 34° 07' 37" to 41° 34' 55" E longitudes. This area is located in the wettest tropical, sub tropical and temperate climatic zone.

West Oromia is served by major rivers like Abay in the north and Ghibe River in the east, Gojeb and Baro Rivers in the south. It covers an area of about 101,355 km² accounting for about 27.9% of the Oromia's land surface. It comprises Kelem Wellaga, East Wellaga, West Wellaga, Horo Guduru, Jimma, Ilubabor, West Shewa and South West Shewa zones. West Oromia is characterized by highlands, mid-highland and lowlands. The area ranges in elevation from less than 500m at the Sudan border to over 3500m. The highland plateaus mainly embrace the Jimma-Ilubabor highlands, the Guduru highland of East Wellaga, the Welel highlands of West Wellaga, and Shewa highlands of central Oromia while the lowlands include the Abay gorge, the Baro, Ghibe, Didessa lowlands and the lowlands bordering the South Sudan.

As it is indicated in the Figure 20, the high plateau, which is found over 2500m of elevation, covers about 6% of the total area of the project area. Areas that are found between 1500 and 2500 masl (metre above sea level) (are called mid highland), including low plateaus account for about 70% of the total project area whereas, the lowlands cover about 23.6% of the total area and ranges in elevation from less than 500 to 1500 masl. There is also a very small desert area which is found in Kellem Wellaga zone nearby Sudan border accounting for about 0.3% of the project area. Generally, these varied topographic features are the cause of climatic variation in the area and they are the base for rich plant genetic resources and diverse agricultural products of the project site.

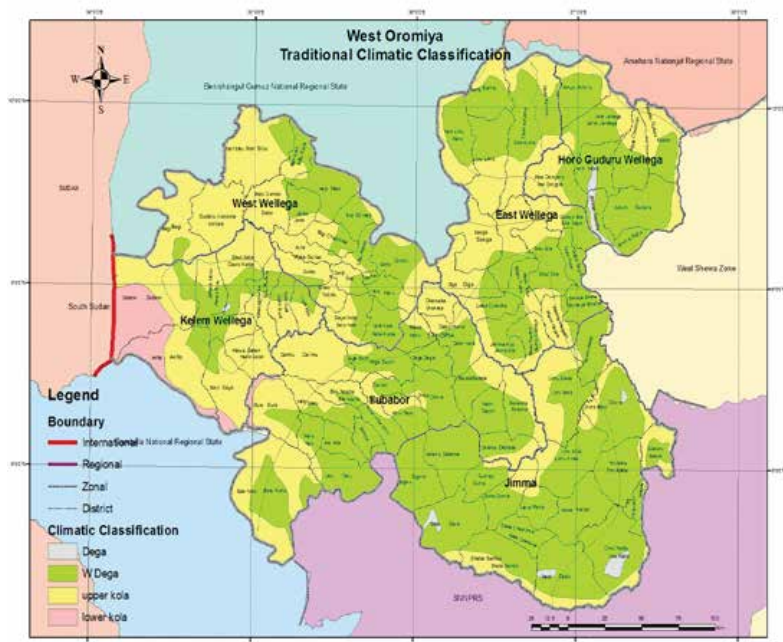
Figure 20: Major agro-ecological zones.



Source: Source: BoFED 2013: Statistical abstract 2013, 12th edition.

Traditionally, climatic conditions are also classified as Dega (elevation higher than 2500m), Woina Dega (1500–2500m) and Kola (from less than 500 to 1500 masl). As it is shown in Figure 21, the major part of western Oromia is found in the Woina Dega and Kola agro climatic zones.

Figure 21: Climatic classification of western Oromia (the project area excluding West Shewa and Southwest Shewa)



Source: BoFED (2013)—West Oromia Atlas.

Temperature and rainfall

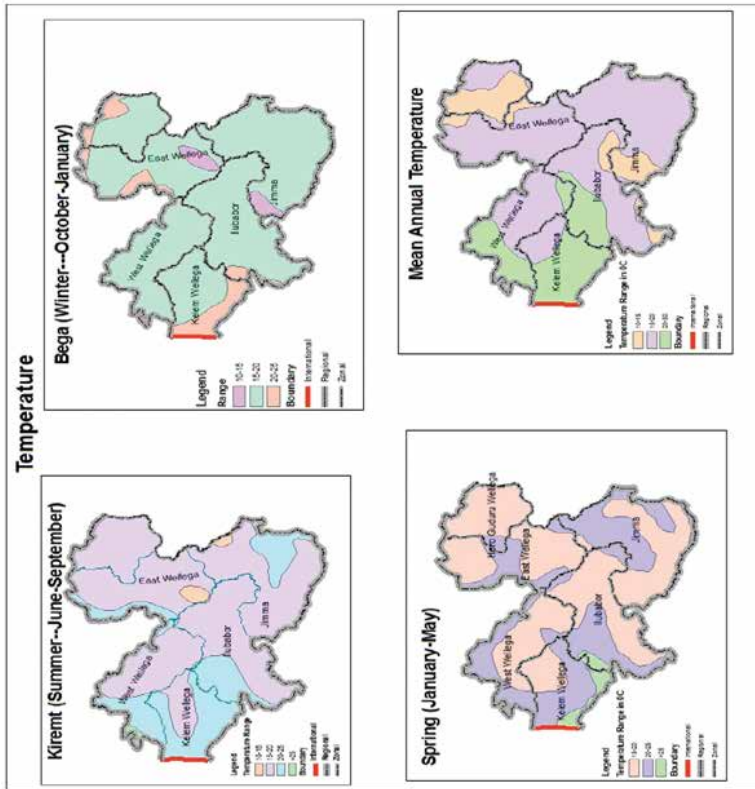
The temperature of the area varies from 15°C in the highlands of Guduru, Gecha and Shewa highlands to more than 25°C lowland areas. As about 94% of the project area is found in the tropics, the daily range of temperature is high, while annual range is small. The solar radiation is intense. In both highlands and lowlands, day temperature is high, while night temperature is low. Most of project areas (70%) fall under temperate thermal zone (15–20°C) which has an altitude of 1500–2500 masl. The areas falling in the altitude of 500–1500 masl fall under warm temperate thermal zone, with mean annual temperature of 20–25°C. The extreme portions of Kelem Wellaga, which are below 500 masl have a mean annual temperature of above 25°C being characterized as hot areas while the high mountain ranges of Guduru, Welel, Ilubabor, Jimma and Shewa fall in cool temperate temperature zone (10–16°C). In general, over 76% of the project area falls under a temperate thermal zone that has a moderate temperature (10–12°C).

However, even though the sun rays are high in the tropics, there is a slight temperature difference in different seasons. In summer (June–September) there is high humidity and high cloud cover, which reduces the mean seasonal temperature (10–15°C). This is a period of high rainy season. In western Oromia, except the valley of Dabus, Baro, Abay, Didessa and some associated lowlands of the project area (which experience a mean temperature of above 25°C), the rest areas of the sub region (western Oromia) have a mean seasonal temperature range of 15–20°C while West Shewa and Southwest Shewa have low mean seasonal temperature of 10–15°C during this period.

In winter (October–January) the angle of the sun rays is low due to apparent shift of the sun to the south hemisphere and most part of the project area experiences a mean seasonal temperature of less than 20°C. The map of western Oromia (Figure 22) shows the temperature range during the different seasons.

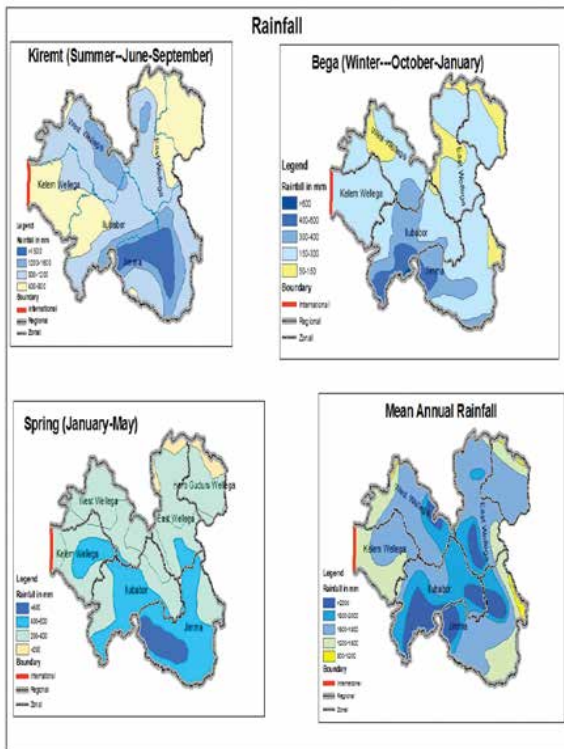
Rainfall: The mean annual rainfall gradually decreases towards northeast and west. The project area in general and West Oromia in particular is a region of heaviest rainfall in Ethiopia. It is the wettest part of Oromia, where the mean annual rainfall ranges between 800 and 2000mm. The spatial variation in the mean annual rainfall distribution in area is determined by the direction of moisture bearing winds and elevation. The amount of rainfall decreases in all directions from the highlands of Ilubabor towards the highlands of other zones of the project area. However, the highlands of Ilubabor, Jimma, East Wellaga and West Wellaga experience mean annual rainfall of over 2000mm. The amount of rainfall also varies from season to season with long and heavy rain in summer and short and moderate rains in winter.

Figure 22: Temperature during different seasons in the project area.



Source: BoFED (2013)—West Oromia Atlas.

Figure 23: Rainfall patterns of western Oromia in different seasons.



Source: BoFED (2013)—West Oromia Atlas.

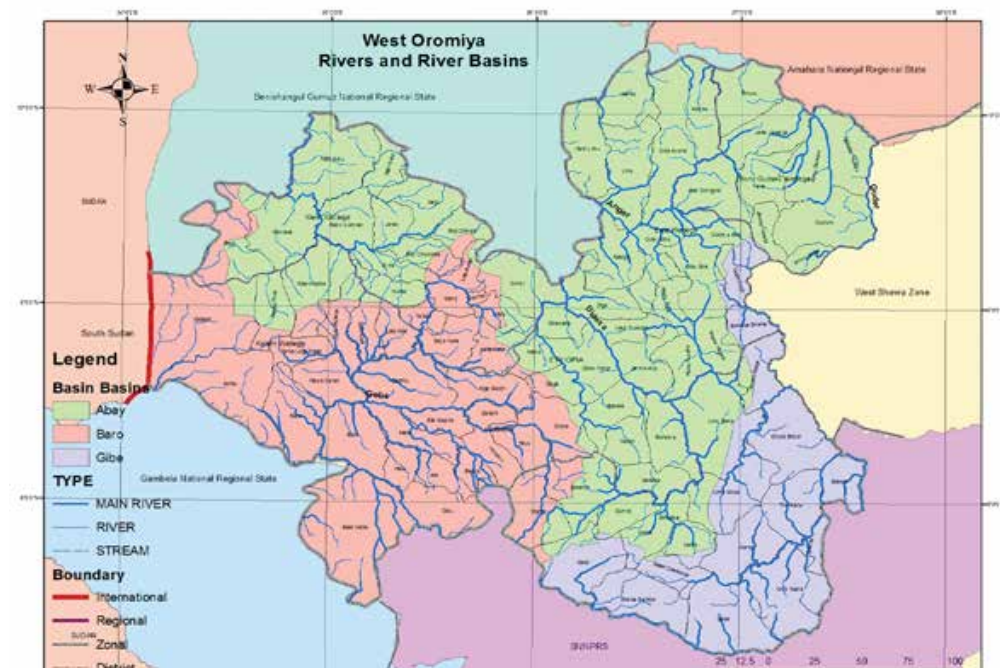
In summer (June –September) most of the project area experiences the maximum rainfall of more than 1600mm. In this period, Didessaa and Fincha’a plains receive a seasonal rainfall of 400–800mm and high plateaus of West and East Wellaga and West and Southwest Shewa zones experience a mean seasonal rainfall of over 1200mm. In winter

(October – January) most of the project area receive mean seasonal rainfall of less than 400mm. The mean annual rainfall also falls below 150mm in some areas like Abay gorge, lower Dabus and Didessa rivers. Moreover, in spring (March, April and May) the project area receives moderate rain that ranges from 200mm to 600mm. In this period, highlands of Gera, Sigmo, Satema, Gomma, southwestern Jimma and Seka Chokorsa receive over 600mm of mean seasonal rainfall and the highland of Ilubabor, Kelem Wellaga, West Shewa, Southwest Shewa and larger portion of Jimma get rainfall of 400–600mm. The rainfall in the lowlands of the project range between 200–400mm. Figure 23 shows the rainfall patterns in western Oromia.

Major landforms, drainage and watersheds

West Oromia can be sub-divided into three main catchment areas. These are, the Abay catchment (36,651 km²) covers about 46% of the total area of the project site, the Baro catchment area (25,414 km²) covers about 2.1% of the total area and the Baro catchment area (25,414 km²) covers about 22.1% of the total area. The flow of the rivers in west Oromia is affected by its geographic settings: Abay drains northwesterly direction, Ghibe drains in south, while Baro drains in southwestern direction. Again, west Oromia can be sub-divided into a number of small river basins, from which the Didessa basin is the biggest (15.4%), followed by Baro basin (14.0%) and while Guder basin (1.5%). Figure 24 shows the maps of major rivers in the area.

Figure 24: Rivers and basins western Oromia (excluding west and southwest Shewa zones).



Source: BoFED (2013), West Oromia Atlas.

Major land use: The term 'land use' implies the way the people allocate the land for their satisfaction of needs. Farming, grazing, national parks and sanctuaries, construction spaces, etc. are some of the major examples of land uses. According to the report of BoFED (2013) the project site has an area of 101,355 km². This land is identified as cultivated land (29.6%) and 55.4% of the area is covered by forest, shrubs, grasses, swamp, water and rocks. The remaining proportion is being used for different purposes (residential areas, roads, etc.).

Soils

Soils vary from locality to locality as different soil types are formed basically based on parent materials, climate, vegetation, altitude, latitude and interaction among these factors. There are about 10 major soil types in West Oromia as shown in Figure 25. The major type of the soil in the area is Dystric Nitosols, which accounts for 60% of the soils. This soil type has uniform profile and stable structure as well as deep rooting volume. Moisture storage capacity

of these soils is high since it is porous, have low base saturation and available P contents. The second common soil type is Orthic Acrisols which accounts for 13.5% of the soils. They have limited agricultural potential, because these soils found mainly on sloppy terrain, their chemical content is poor, pH is less than 5.5 and P contents are very low. Dystric Cambisols accounts for 6.5% of the soil, which the third common soil type in the area. These soils have low agricultural value and found on sloppy area that has shallow and stones or rock outcrops.

Figure 25: Percentage of soils in western Oromia—the project area.

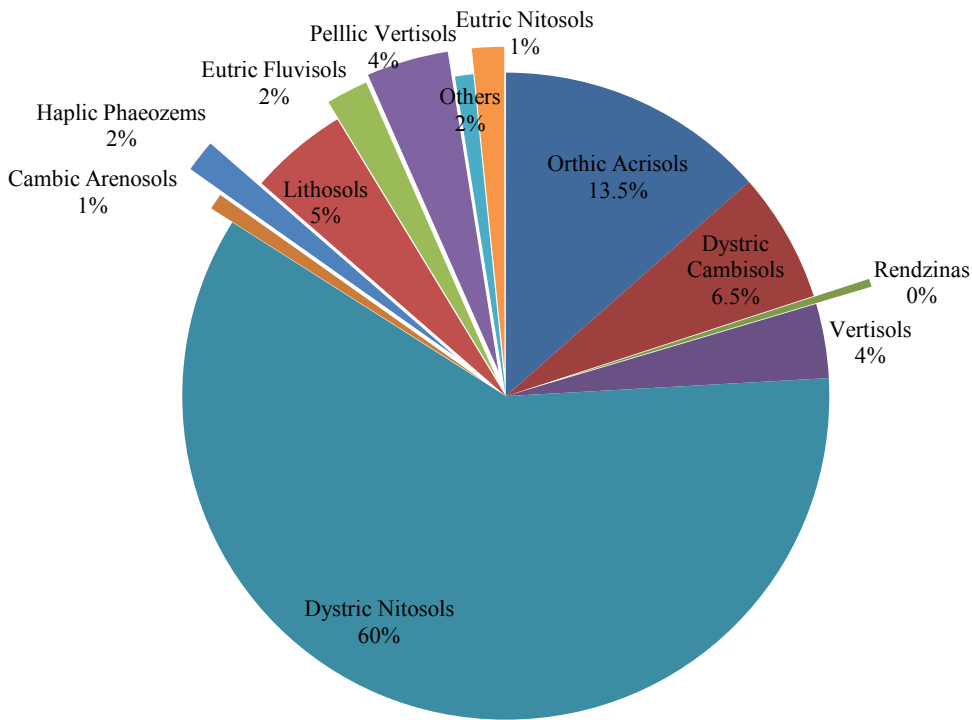
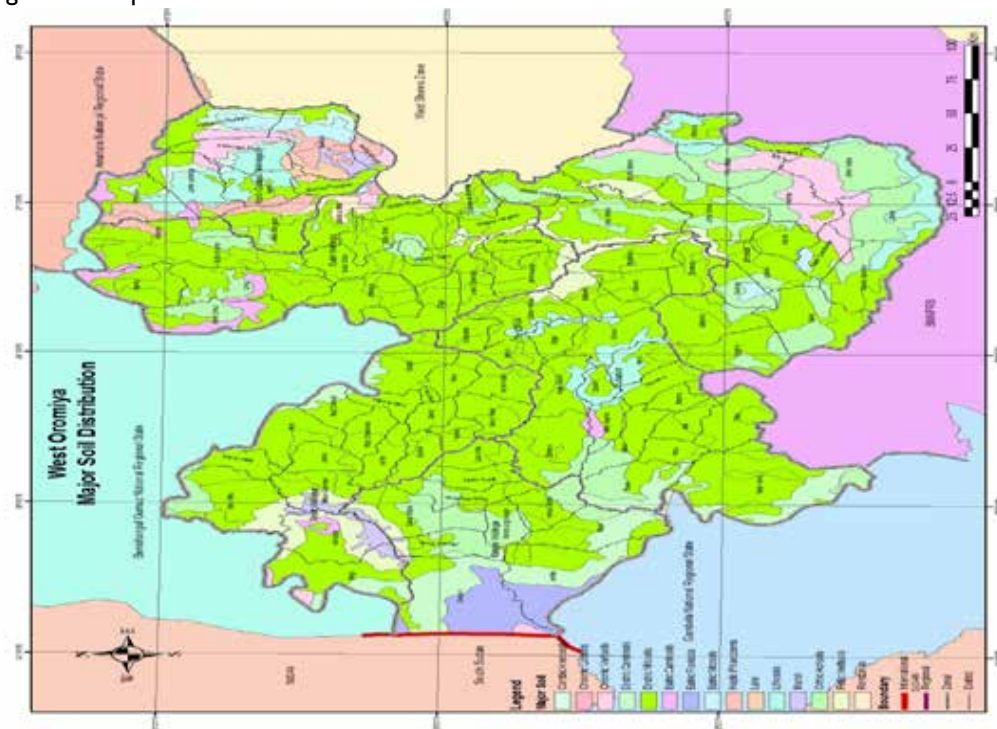


Figure 26: Map of soils in western Oromia.



Source: BoFED (2013): Western Oromia Atlas.

Infrastructure

Health facilities

Potential health coverage can be estimated through the expected catchment populations to be served by type of health facilities. For example, one specialized referral hospital is expected to serve five million people, one regional hospital for one million people, one zonal/district hospital is expected to serve up to 250,000 people, one health centre for 25,000 persons and one health post for 5000 people. This is a bit theoretical and does not take account of geographic barriers. Taking geographical factors in to consideration to estimate the proximity of villages to health facility is complex. Hence, it has been taken as a standard to estimate the potential health coverage of a certain locality by using functional health facility to population ratio along with geographical proximity through either 10 km radius or two hours walking distance needed to reach the health facility. Proximity is an important proxy indicator of equity in service access.

According to the MoH (2012), facility to population ratio was established (nationally) as follows: one hospital for 675,031 people, one health centre for 26,416 people and one health post for 5342 which are served beyond the expected numbers. Moreover, in Oromia region and in the project areas, all types of the health facilities are serving more than the standard number of people except the health posts in the project area (Table 18). This implies the need for additional health facilities expansion/construction to reach at least the minimum standard.

Table 18: Health facility to population ratio in 2012/13

	Population	Hospital		Health centre		Health post	
		Number	Ratio	Number	Ratio	Number	Ratio
National	85,729,000	127	1:675,031	3245	1:26,416	16,048	1:5342
Oromia	31,948,000	41	1:779,220	1215	1:26,295	6368	1:5017
Project area	13,008,284	12	1:1,084,024	442	1:29,431	2725	1:4774

Source: Health and Health related indicators, MOH 2005 EFY (2012/13).

Ethiopia developed a Primary Health Care (PHC) program to access health services near to the community through Health Extension Program (HEP) at the Primary Health Care Units (PHCU); health centres and health posts as the principal means to achieve the target of health service coverage. The program aims to reduce disparities and improve equity in access to health facilities. This will be complemented by strengthening hospitals at various levels and other complementary services through referral lineages. As the standard, there should be two Health Extension Workers (HEWs) in every health posts and one HEW is expected to serve 500 households or 2500 people. To fulfill this standard; about 34,850 HEWs are assigned to the health posts throughout the country. As it is shown in Table 19, at all levels (national, Oromia region and project area), the standard HEW to people served is achieved.

Table 19: Number of HEWs working in health posts in 2012/13

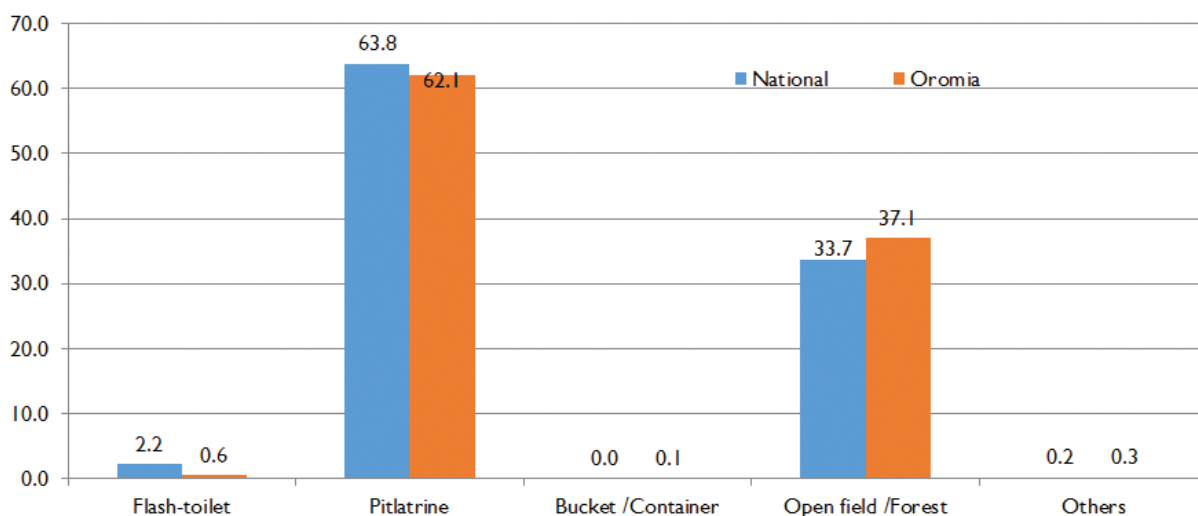
	Population	Number of HEWs	Ratio
National*	85,729,000	34,850	1: 2460
Oromia*	31,948,000	14,121	1: 2262
Project area**	13,008,284	5939	1: 2190

Source: * Health and Health related indicators, MoH (2012/13). ** Statistics Abstract, July 2012, Oromia BoFED.

Access to sanitation facilities

Ensuring adequate sanitation facilities is another MDG that Ethiopia shares with other countries. At the household level, adequate sanitation facilities include an improved toilet and disposal that separates waste from human contact. A household is classified as having an improved toilet if it is used only by members of one household (that is, it is not shared) and if the facility used by the household separates the waste from human contact (WHO and UNICEF 2010). As shown in Figure 27, about 64% of the households in Ethiopia and 62% in Oromia possess pit latrine. About 34% in Ethiopia and 37% in Oromia use open defecation in 2011.

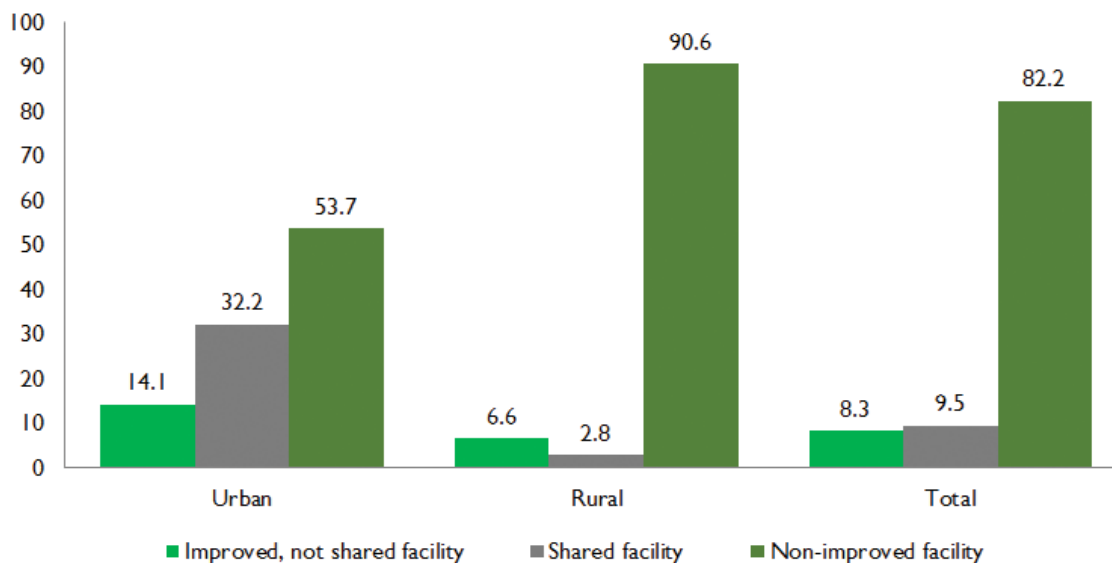
Figure 27: Latrine coverage in Ethiopia and Oromia in 2011.



Source: CSA (2011):Wealth Monitoring Survey.

According to EDHS (2011), only 8% of the households in Ethiopia (14% in urban areas and 7% in rural areas) use improved toilet facilities that are not shared with other households. One in ten households (32% in urban areas and 3% in rural areas) use shared toilet facilities. The large majority of households i.e. 82% use non-improved toilet facilities (91% in rural areas and 54% in urban areas). The most common type of non-improved toilet facility is an open pit latrine or pit latrine without slabs.

Figure 28: Proportion of households access to sanitation facilities. =



Source: CSA (2011)—EDHS in 2011.

Access to electricity

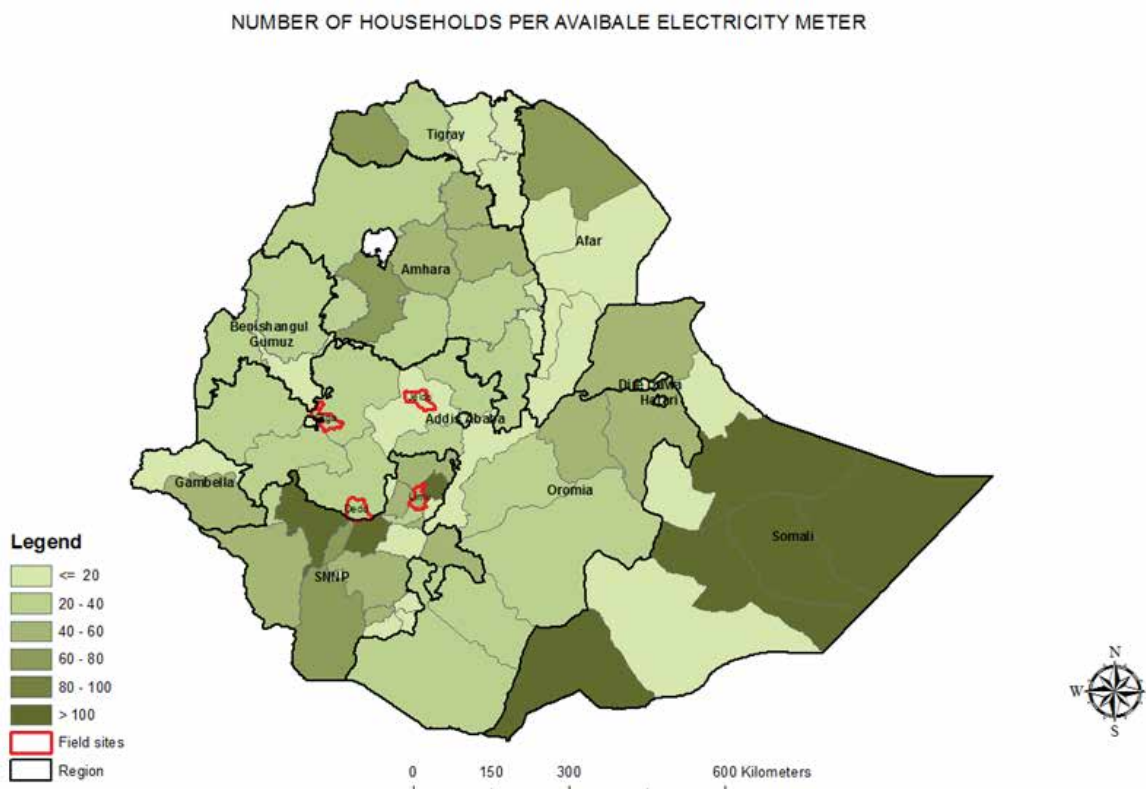
As shown in Table 20, only about 9.3% (national) and 7.6% (Oromia) of households have access to private electricity and 13.5% (national) and 11.6% (Oromia) of households have shared electricity. This makes the total households having access to electricity about 23% (national) and 19.2% (Oromia). Figure 29 shows that the project area falls in areas where about 20–40 households are served per available electric meter.

Table 20: Distribution of households (% coverage) by source of energy for lighting

Sources of energy for lighting	National	Oromia
Electricity (private)	9.3	7.6
Electricity (shared)	13.5	11.6
Electrical battery	13.0	5.4
Kerosene	52.3	63.5
Candle/wax	0.1	0.1
Firewood	11.2	11.3

Source: CSA, Welfare Monitoring Survey 2011.

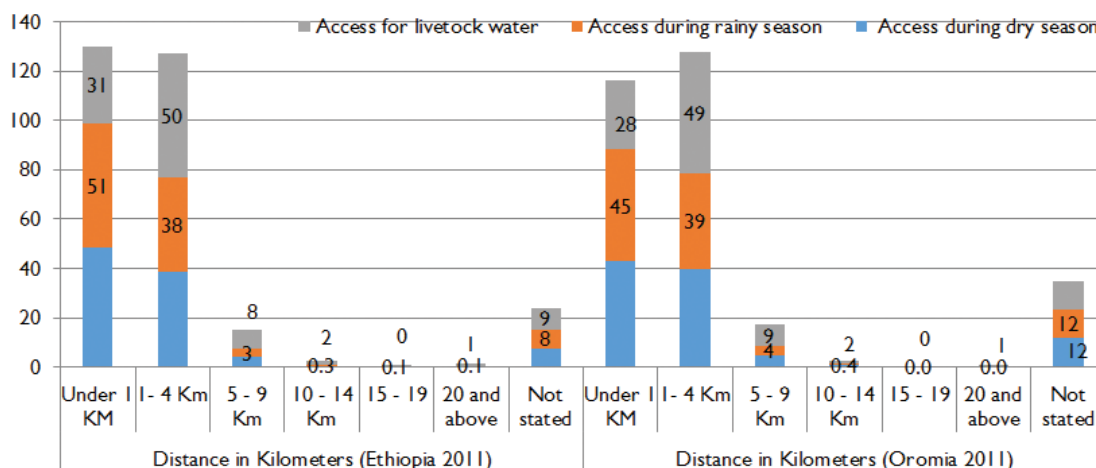
Figure 29: Number of households per available electricity meter.



Access to clean water

Safe water is a precondition for health and development and it is also one of the basic human rights that everybody should access. Despite continuing efforts by governments, development partners and civil societies, tenths of millions of people do not have access to safe water from improved water sources in Ethiopia. According to WHO's standard, access to water supply is estimated with either the distance to the water source within 1km radius or 20 minutes for waking to water source (single trip). As shown in Figure 30, only about 48% of the households in Ethiopia and 43% of the households in Oromia have access to drinking water supply sources within 1 km distance during dry seasons. The percentage slightly increased in the rainy season (Figure 30). In the project area, clean water stands at 54% (65% in urban and 40% in rural).

Figure 30: Proportion of population accessing drinking water (%).



Access to road and transport

Access to transportation in terms of the availability of road infrastructure and distance from residences to the roads is an important factor determining access to services like health, market, education, etc. In 2011, about 29.5% (national) and 23% (Oromia) of the people had access to all weather roads within 1km distance (Figure 31). While 36.5% (national) and about 30% (Oromia) of the people had access to dry weather roads within 1km distance.

Regarding transportation facilities, about 43.4% (national) and 45.4% (Oromia) had access to public transport across residences within 5 km distance, while only 24.4% (national) and 21.3% (Oromia) had access to public transport cross country within 5 km distance (Figure 32).

Figure 31: Proportion of people accessing all weather and dry weather roads (%).

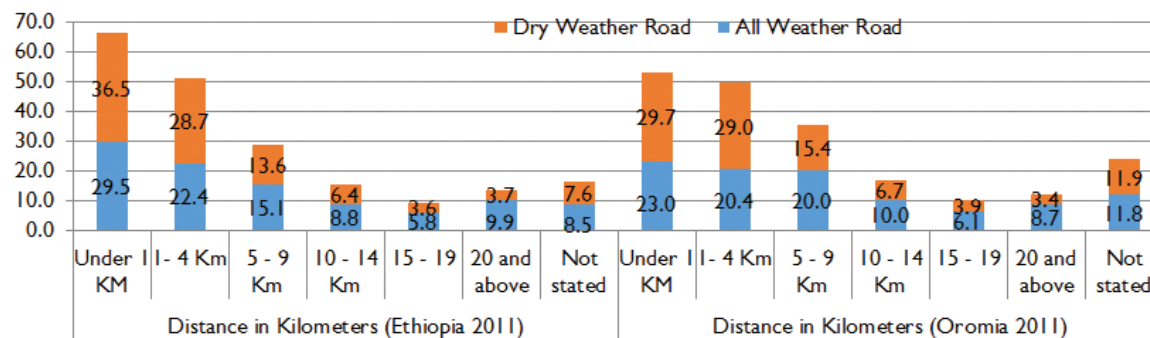
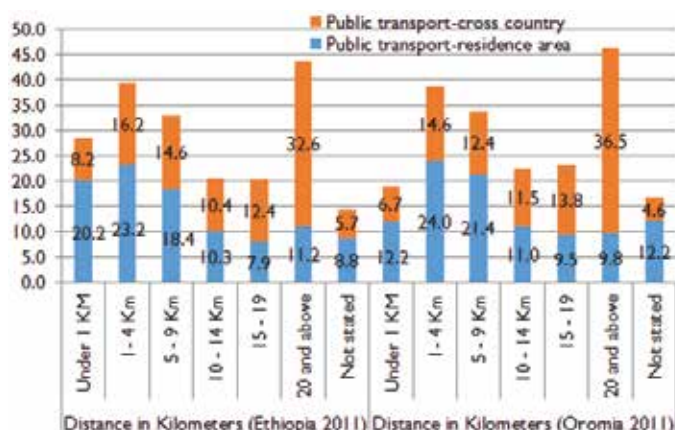


Figure 32: Proportion of people accessing public transport (%).



Access to market

According to the Wealth Monitoring Survey of 2011, only 15.4% of the households in Ethiopia and 15.5% in Oromia have access to food market within less than 1 km distance. About 4% of the households travel more than 20 km to reach food market while the majority travel between 1–4 km in Ethiopia as well as in Oromia (Table 21). Access to livestock market is a more serious problem in Ethiopia where fewer people have access to livestock market in less than 1 km and more people travel longer distance to reach livestock market compared to the time needed to reach food market. Figures 33 and 34 also show the map of time taken to travel to smaller towns and bigger towns. The people in the project area travel mainly 3–10 hours to reach towns.

Table 21: Access to market for agricultural products (%)

Market for	Distance in kilometers (Ethiopia 2011)							Distance in kilometers (Oromia 2011)						
	< 1	1–4	5–9	10–14	15–19	≥ 20	Not stated	< 1	1–4	5–9	10–14	15–19	≥ 20	Not stated
Food market	15.4	33.3	21.6	10.7	6.5	3.7	8.8	11.5	29.8	25.6	11.3	6.8	3.5	11.6
Livestock market	6.3	19.4	23.8	18.4	12.5	9.9	9.7	4.4	15.5	26.3	19.6	13.1	9.3	11.9

Access to source of information is also vital to get market information in the nearby market or distant markets. It appears that telephone as source of information is accessed by the majority of the households where about 46% of them (in Ethiopia) and 40% of them (in Oromia) travel only less than 1 km to reach telephone station in Ethiopia (Table 22). With expanding cell phone coverage in the country, the proportion of households accessing information could be higher than what is reported here.

Figure 33: Travel time to towns of 25,000 people.

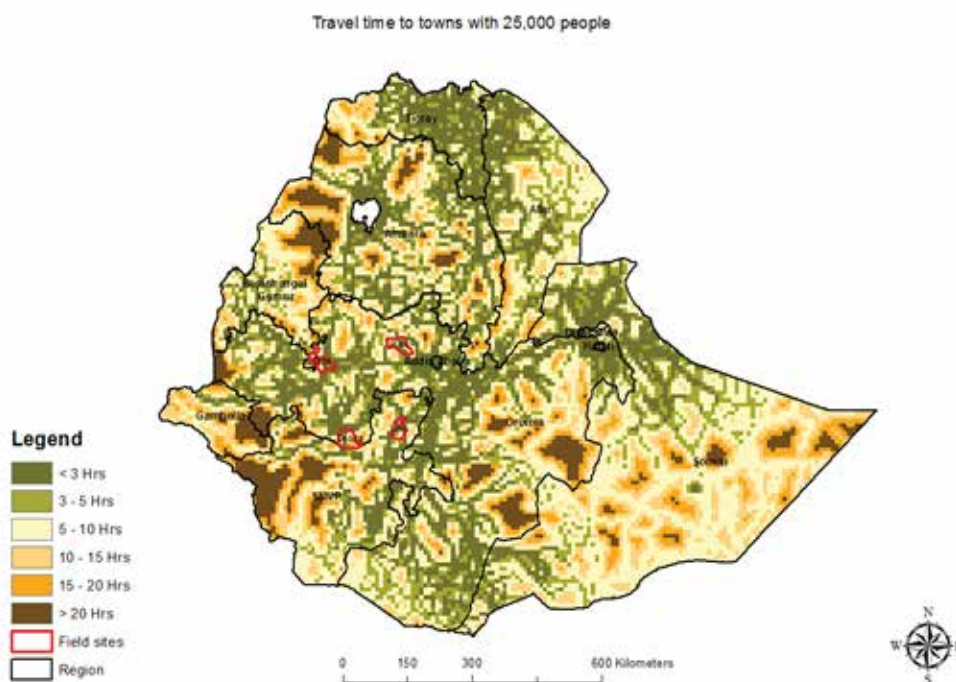
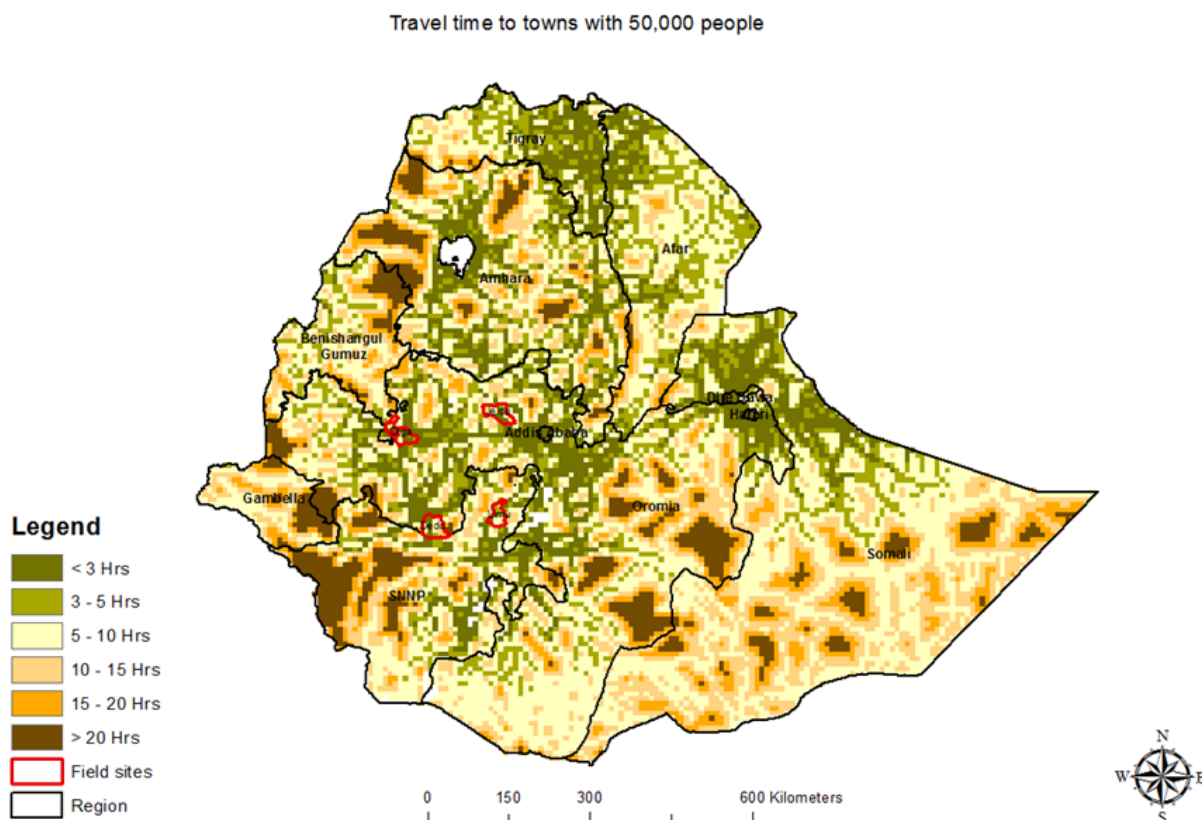


Table 22: Access to information (%)

Source of information	Distance in kilometers (Ethiopia 2011)							Distance in kilometers (Oromia 2011)						
	< 1	1–4	5–9	10–14	15–19	≥ 20	Not stated	< 1	1–4	5–9	10–14	15–19	≥ 20	Not stated
Telephone service	45.9	17.8	11.9	6.8	4.4	6.4	7.0	40.0	12.9	13.5	9.0	6.2	9.7	8.8
Post service	10.5	27.4	17.3	12.0	7.9	17.8	7.2	6.8	17.7	18.0	15.1	7.7	23.9	10.9
Internet service	39.4	31.6	6.4	2.2	2.5	13.6	4.4	12.0	26.8	15.0	4.6	4.2	26.0	11.4

Figure 34: Travel time to towns of more than 50,000 people.



Ethnic/cultural diversity

Different ethnic groups live in Oromia in general and in the project areas. The dominant ethnic group (90%) is Oromo (Table 23). The other ethnic groups like Maho lived for long time with Oromo. The proportion of Amhara, Tigre and Gurage increased in the area due to resettlement program in western Oromia. The different ethnic groups have different cultural practices but co-exist without any significant conflict.

Table 23: Ethnic composition of the people in the project area

No	Ethnic group	Percent
1	Oromo	90.4
2	Amhara	6.6
3	Maho	0.2
4	Gurage	0.7
5	Tigre	0.2
6	Others	2.0

In terms of agricultural development, settlers have better access to infrastructure and facilities like water supply, education and health since the settlement program was implemented as a package including budgets for such services. The indigenous people got access to these facilities gradually and slowly. Settlers also had good opportunity to access agricultural inputs and technologies which enabled them to increase crop and livestock production and expand their livelihood to other enterprises like fattening of livestock and commercial crop production (such as sesame).

Policy environment

Rural and agricultural development policy environment

Since May 1991, starting from the Transitional Government, Ethiopia entered into a new economic system in which the new economic policy aimed at reorienting the centrally controlled economy into a free market economy. The Rural Development Policy and Strategy issued in 2002 remains a key instrument for developing a free market economy, in a way which would ensure rapid and sustainable development, extricate the nation from dependence on food aid, and make the poor the main clients of the fruits of economic growth by ensuring agriculture-led and rural-centred development. Trade and industry is expected to grow faster in alliance with agriculture and agriculture accelerates trade and industry development by supplying raw materials, creating opportunities for capital accumulation and enhancing domestic markets. The directions for agriculture and rural centred development were outlined as follows:

- Extensive utilization of human labour;
- Proper use and management of land, water and other natural resources;
- Agro-ecology based development approach;
- Integrated approach to development;
- Targeted interventions for drought-prone and food insecure areas;
- Encouraging the private sector;
- Agricultural technical vocational education and training and
- Agricultural development led industrialization.

The policy was set as an outward orientated strategy that was developed and directed to diversify the country's export commodities and ensure the socio-economic development. Agricultural Development Led Industrialization (ADLI) strongly relies on the assumption that agriculture develops only with improvement in the productivity of peasant farmers and pastoralists, and large-scale farms, if established, particularly in the lowlands. Moreover, ADLI in agriculture is designed to contribute to the economic growth in two ways: supply side and demand side. On the supply side, it provides export products, food and industrial raw materials. While on the demand side, it aids industrial expansion by providing markets for domestically produced goods. Thus ADLI's development priorities in agriculture are to attain satisfactory growth and effectiveness.

According to MoFED (1993) ADLI's agricultural development strategy is viewed in three sequential phases which are focusing on improving traditional agriculture, introducing small scale irrigation and employment of rural labour force. These phases are:

- *Phase I:* major improvements are needed in traditional agricultural practices in which the use of improved seeds would be crucial;
- *Phase II:* introduction of small-scale irrigation schemes, expansion of agricultural infrastructure and modern technological inputs, such as fertilizer, pesticides, etc. are emphasized; and
- *Phase III:* employment of the expanding rural labour force in non-agricultural activities, thereby increasing holding sizes for the remaining rural families.

The first and the second phases of the strategy for agricultural development are expected to bring about increases in output and productivity, and it is only the third phase that is expected to ensure sustained agricultural development by addressing the problem of rural unemployment. After the first two phases of the strategies are successfully implemented, the third level will be attained i.e. when accelerated industrial growth is successfully implemented (MoFED 1993).

The national strategy for industrialization to be led by agricultural development puts agriculture at the forefront of Ethiopia's development process. The strategy of ADLI is reflected in Ethiopia's poverty reduction strategy—the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP) which is launched in 2006 states that the key challenge for reducing poverty and providing the foundation for long-term growth is to ensure rapid and sustained increase in land and labour productivity. In PASDEP the central theme is accelerated, market-based agricultural development, focusing on Ethiopia's 13 million smallholder farm households, which produce around 96% of country's agricultural output.

PASDEP was developed from Sustainable Development and Poverty Reduction Program (SDPRP) and it is the first five-year plan to attain the minimum level goals and targets set to align with the MDGs. The main objective of PASDEP was to pave the groundwork for the attainment of the MDGs by 2015 through accelerated, sustained, and people-centred economic development. Among the eight Pillar Strategies developed under PASDEP, the major emphasis was on greater commercialization of agriculture and enhancing private sector development, industry, urban development and a scaling-up of efforts to achieve the MDGs.

The latest five-year development plan for Ethiopia i.e. Growth and Transformation Plan (GTP) was developed in 2010/2011 and founded on the experience and practices of PASDEP. GTP is an advanced strategy, intended to sustain rapid and broad-based growth path witnessed during the past years to eventually end poverty. GTP strategy in relation to agriculture include the shift to produce high value crops, a special focus on high-potential areas, facilitating the commercialization of agriculture, and supporting the development of large-scale commercial agriculture where it is feasible. The focus of the government effort to promote agricultural growth is to strengthen rural capacity, including agricultural extension, training, and research; to support farmer cooperatives; to invest in rural infrastructure such as roads and water resources development (particularly in food insecure areas); and, to a lesser extent, to facilitate linkages between private investors in agriculture and smallholders. In this regard, the basic sectoral directions of the plan were:

- Enhance the capacity and extensive use of labour,
- Proper utilization of agricultural land,
- Taking different agro-ecological zones into account,
- Linking specialization with diversification,
- Integrating crop, livestock, marketing and natural resources development,
- Agricultural research, extension etc. undertakings, and
- Efficient agricultural marketing system.

Currently, the government of Ethiopia is preparing the country's next five-year development plan (2015/16–2019/20), which is Growth and Transformation Plan–II (GTP–II). The areas of focus in GTP–II is expected to be similar to the former GTP (2008/10–2014/15). Hence, agriculture development partners need to align their development objectives and activities with the coming GTP–II.

NRM/environmental policy and strategy

Natural resource conservation and sustainable utilization is among the top priority development agendas of the Government of Ethiopia. It is expected that, sustainable natural resource management reinforces increase in production and productivity of the agriculture sector by ensuring the opportunities to adopt sustainable land and water management systems. In this regard, conservation and utilisation of water resources got a high priority through watershed management initiatives, water harvesting, irrigation development and increased water use efficiency. In this strategy, the prevention and reversal of arable and rangeland degradation as well as rehabilitation of damaged agricultural areas and prevention of further deterioration of those areas through better soil fertility management,

introduction of soil conservation measures, reforestation and appropriate conservation agriculture methods got due attention. As Land degradation impedes agricultural growth, increases poverty and vulnerability, and contributes to social tensions as well as threatening biodiversity of the country. Thus, to solve the problems the government took various actions that have been undertaken through different initiatives such as Managing Environmental Resources to Enable Transition (MERET) to more sustainable livelihoods, Productive Safety Net Programs (PSNP) and the national Sustainable Land Management Project (SLMP).

The environmental policy of Ethiopia, approved in 1997, aims at guiding sustainable social and economic development of the country through the conservation and sustainable utilization of the natural, man-made and cultural resources and the environment at large. The policy lists specific objectives encompassing wide range of environmental issues to be addressed through the adoption of the policy. It also provides overarching environmental guiding principles that should be adopted to harmonize the environmental elements in sectoral, cross-sectoral and other policies. The policy clearly outlined the sectoral environmental policies, relevant to environmental management among others are: (i) soil husbandry and sustainable agriculture; (ii) forests, woodlands and trees; (iii) genetic, species and ecosystem biodiversity; (iv) water resources; (v) energy resources; (vi) human settlement, urban environment and environmental health; and (vii) environmental and social impact assessment (ESIA).

Food security strategy

The Government of Ethiopia has put in place policies and strategies that address both chronic and transitory food insecurity. These are the Rural Development Policy and Strategy (RDPS); the Food Security Strategy (FSS); the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) and the Pastoral Development Policy (PDP) as well as women and youth-related policies.

The FSS, adopted in March 2002, is basically derived from the country's rural development policy with the aim of increasing domestic food production; ensuring access to food for food deficit households; and strengthening emergency response capabilities. The strategic document also reveals that soil, water, and vegetation are the main asset base of both the farming community and economy of the country, without which the achievement of food security is unlikely. Water and natural resource conservation based agricultural development is considered as a centrepiece of the strategy. It has also given due attention to the problems of environmental degradation, population pressure, and land shortage particularly in moisture deficit highland areas of the country. Accordingly, water harvesting, proper land utilization and environmental rehabilitation are identified as the top priority areas of intervention. These help to combat drought and famine, which are induced by negative environmental manifestations such as desertification and land degradation. The strategy apparently considers the importance of conservation, rehabilitation and restoration of natural resources as an entry point to change the existing embarrassing livelihood situation of rural household economy.

Generally, the Federal Food Security Strategy revolves around three pillars: Increase supply or availability of food; Improve access/entitlement to food; and strengthening emergency response capabilities. The detailed aspects of the strategy are highlighted as follows:

- The agricultural production in mixed farming systems that aims to enhance supply or availability of food through increasing domestic food production where soil moisture availability is relatively better. It is expected that subsistence farming will be transformed into small-scale commercial agriculture through provision of household based integrated and market oriented extension packages.
- In chronically food insecure areas, however, where there is severe moisture stress, soil degradation and farmland scarcity, it will be a difficult task to ensure household access to food only through own production. Thus, a set of comprehensive asset building mechanisms should be in place to augment production-based entitlement.
- Pastoral communities depend on livestock for their livelihood. Increases in livestock and human population, however, put pressure on rangeland, resulting in soil erosion and deforestation. Vulnerability of pastoral communities to livelihoods shocks is increasing. In this areas, the Food Security Strategy places emphasis on

livestock development, strengthening livestock marketing, agro-pastoralism and voluntary sedentarization.

- As stipulated in the FSS the government planned to do everything in its capacity to promote micro and small-scale enterprises through initiating industrial extension services, development of the necessary infrastructure, encouraging competitive marketing of inputs and outputs and utilizing tax incentives for selected commodities to shift the consumption patterns.
- The other focuses of the FSS is to enhance food entitlements of the most vulnerable sections of society through supplementary employment income support schemes, targeted programs for the disadvantaged groups and nutrition interventions.
- Improving the emergency response capabilities in the country is also another component of the FSS. So far a range of interventions were envisaged including: strengthening the early warning system; increasing the capacity of the Ethiopian Strategic Food Reserve (ESFRA), and improving the quality of relief distributions. Continuous effort is also made to strengthen the early warning and response capacity of the Government, including through a new livelihood-based needs assessment methodology for which baselines have been prepared for the country as a whole.

Investment policy of Ethiopia

According to the Ethiopian Investment guide (2012), the Government of Ethiopia has recognized the role of the private sector in the economy and revised the investment law three times for the last twenty years (1992–2012) to make it more transparent, attractive and competitive. Major positive changes regarding foreign investments have been introduced through Investment Proclamation No.280/2002 and Regulations No.84/2003. As a result of the implementation of the policies and strategies, agricultural and industrial production, investment and export trade are growing steadily from year to year both in terms of variety and volume. Moreover, due to the investment-friendly environment created in the country, the inflow of Foreign Direct Investment (FDI) has been increasing over the last twenty years. Accordingly, out of the total investment projects licensed between 1992–2012, FDI's share is about 15.71%. However, the overall trend of investment in 2009/10 both the total number of projects and capital invested declined.

The Commercial Code of 1960 provides the legal framework for undertaking business activities in Ethiopia. The constitution, in accordance with Article 40, ensures the right of every citizen to the ownership of private property, including the right to acquire, use and dispose of such property. The Investment Proclamation (2002) guarantees investors against measures of expropriation or nationalization, and specifies advance payment of compensation 'corresponding to the prevailing market value of a private property earmarked for expropriation or nationalization for public interest. This Proclamation also gives a foreign investor the right to own a dwelling house and other immovable property necessary for his investment. The government may expropriate property for public interest, strictly according to the law and only after making adequate compensation.

The Investment Proclamation of 2002, as amended in 2003, and the Regulations on Investment Incentives and Investment Areas Reserved for Domestic Investors of 2003, as amended in 2008, constitutes the main legal framework for both foreign and domestic investment in Ethiopia. The Council of Ministers Regulations No.84/2003, as amended in 2008, specifies the areas of investment eligible for investment incentives as follows:

- *Custom duty:* To encourage private investment and promote the inflow of foreign capital and technology into Ethiopia, the following customs duty exemptions are provided for investors (both domestic and foreign) engaged in eligible new enterprises or expansion projects such as agriculture, manufacturing, agro-industries, construction contracting, etc.
 - 100% exemption from the payment of customs duties and other taxes levied on imports is granted to all capital goods, such as plant, machinery and equipment and construction materials;
 - Spare parts worth up to 15% of the total value of the imported investment capital goods, provided that the goods are also exempt from the payment of customs duties;
 - An investor granted with a customs duty exemption will be allowed to import capital goods duty free any time during the operational phase of his enterprise; and

- Investment capital goods imported without the payment of custom duties and other taxes levied on imports may be transferred to another investor enjoying similar privileges.
- *Income tax exemption:* If an investor is engaged in new manufacturing, agro-processing, the production of agricultural products and investment areas of information and Information and Communication Technology (ICT) development:
 - Exports 50% of his/her products or services, or supplies 75% of his/her products or services as production or service input and the exporter will be exempted from income tax for 5 years. Under special circumstances, the Board may grant income tax exemption up to 7 years and the Council of Ministers may pass a decision to grant income tax exemption for more than 7 years;
 - Exports less than 50% of his/her products or services, or supplies his/her products or services only to the domestic market will be exempted from payment of income tax for 2 years; and
 - Exports, through the expansion or upgrading of his/her existing enterprise, at least 50% of his/her products or services and increases, in value, his/her products or services by over 25% will be exempted from income tax for 2 years. For each case mentioned above, the length of the tax exemption period may be extended for one additional year when the investment is made in relatively under-developed regions of the country. However, investors who export hides and skins after processing below crust level are not eligible for income tax exemption. Investors who invest in priority areas (textile and garments, leather products, agro-processing, etc.) to produce mainly export products will be provided land necessary for their investment at reduced lease rates.

There are also other non-fiscal incentives given to all investors/exporters to encourage them to participate and contribute for the economic development of the country. These are:

- Investors which invest to produce export products will be allowed to import machinery and equipment necessary for their investment projects through suppliers credit;
- Investors which invest in areas of agriculture, manufacturing and agro-industry will be eligible to obtain loan up to 70% of their investment capital from the Development Bank of Ethiopia (DBE) if their investment is sound to be feasible; and
- The government of Ethiopia will cover up to 30% of the cost of infrastructure (access road, water supply, electric and telephone lines) for investors investing in industrial zone development.
- When the business enterprises suffer losses during the income tax exemption period it can carry forward such losses, following the expiry of the exemption period, for half of the tax exemption period.

Market policy

Ethiopia follows a free market economic policy where demand and supply determines prices. Quota system in commodity marketing was abolished and government intervention in crop product sales abandoned. However, government controls marketing of exportable commodities like coffee and sesame through the Ethiopian Commodity Exchange system. In this case, farmers are required to sell the products in primary commodity markets and hoarding of, for example, coffee is illegal.

The rural development policy and strategy also encourages market development, rural infrastructure development to enhance market linkage, expansion of telecommunication system to enhance market information flow, value addition to production and transformation of smallholder agriculture through commercialization.

General stakeholder and partner landscape

Wider look of institutional landscape

The general stakeholders in agriculture and rural development in Ethiopia are the government sector offices. The federal ministries and regional bureaus play crucial roles in planning and funding the development endeavors. Sectoral ministries/bureaus of agriculture; water, irrigation and mining, livestock development, land administration and

management agency, livestock disease and marketing, cooperative development agencies, etc. are major agencies for implementing as well as monitoring and evaluation of government and donor funded programs.

Ministry of Agriculture (MoA) together with its development allies are implementing agricultural programs to realize the GTP in agriculture. The MoA and agencies like the Ethiopian Institute of Agricultural Research (EIAR), Agricultural Transformation Agency (ATA); Federal Cooperative Agency; and other Ministries like Ministry of Federal Affairs implement national policies, strategies to meet agriculture sector goals mainly to reduce poverty; increase productivity; improve dissemination and adoption of technologies; coordinate rural and agricultural development efforts of partners participating in extension services; create access to inputs (improved seed, fertilizer, pesticides); credit and market. These institutions also work on improving agricultural systems and create awareness on the management and conservation of natural resource. MoA is also responsible for coordinating relief and disaster management programs. The EIAR and RARIs are mandated for technology generation and pre-extension and demonstration tasks at different agro-ecological conditions of the country. The Ministry of Federal Affairs is mandated to coordinate pastoral and agro-pastoral areas to reduce poverty by engaging in agricultural activities to ensure food security.

ATA is an initiative of the government of Ethiopia established in 2011 with a primary aim of promoting agricultural sector transformation by supporting the existing structures of the government, private-sector and other non-governmental partners to address systemic bottlenecks and achieve growth and food security and contribute to the achievement of the GTP targets.

Non-governmental organizations (NGO) like Netherlands Development Organization (SNV), Menschen fur Menschen, Plan International, World Vision Ethiopia, SG2000, Techno-Serve, etc. also implement rural development and livelihood improvement projects in the area. These organizations work on different programs and projects including food security, water and irrigation, NRM, marketing and value chain, capacity building, innovation and extension capacity building, creating access to finance, etc. by aligning their program interventions with government agenda and community problems. Research based projects are also implemented by CGIAR in the area.

Community is also major stakeholder in planning and implementing development projects. Grassroots problem analysis, identification of development interventions is done with the community members and kebele level administration. Currently, the kebele administration is closely working with the district administration and line departments to plan and implement projects in their area. They also serve as the government wing for the realization of all government policies.

In most kebeles, there are kebele development committees which involve representatives from school, health post, agricultural extension, kebele leaders and the kebele cabinets and representatives of the farmers, youth and women's association.

Cooperatives and microfinance institutions are the major stakeholders providing access to credit and inputs. Oromia Credit and Saving Share Company is the major microfinance institute operating in the project area, providing credit and saving services to farmers in the rural area. Investors which are licensed to invest in agricultural development have access to bank credit. However, microfinance institutions operate in limited area and lack of access to credit is reported as a major constraint.

Institutional landscape at project areas

One of the main purposes of this diagnosis was to identify stakeholders in the Woreda who are working in the areas of natural resource management, livestock and crop production. Characterizing the existing stakeholder interaction, challenges and opportunities are essential to establish IPs around important issues. The following actors and their roles were identified in Jeldu Woreda.

1. Government line departments

The government departments include the administration offices at different levels that are responsible for administrative issues and facilitation of development initiatives to align with the government development agenda and strategies. These offices are key strategic stakeholder of projects. At Woreda level, the administration office coordinates development projects in the Woreda. Important sector offices for partnering include:

- *Office of Agriculture and Rural Development:* With its several departments, it provides extension services to farmers on improved crop and livestock production, as well as natural resource management. By default, it could play a crucial role in terms of facilitating a learning and practice alliance.
- *Cooperative Promotion Office:* Working in parallel with the office of agriculture, this office identifies potential commodities/sectors for which a cooperative is feasible (in terms of income generation and market) and based on the feasibility it promotes and helps farmers to establish cooperatives.
- Agricultural input and output marketing agency.
- *Agricultural Research Institutes:* Adaptation and scaling up of improved crop varieties and livestock technologies, training and dissemination of knowledge and information for farmers and agricultural experts, and introduction of beehives. OARI (Bako and Holeta Agricultural Research Centres) and EIAR (through Holeta and Jimma Agricultural Research Centres) become important partners.
- Small and micro-enterprise development agency.
- Oromia Seed Enterprise—responsible for seed multiplication and seed quality testing.
- Oromia Water Works Construction—for small-scale irrigation development.

2. Private enterprises/associations

- *Licensed veterinary practitioners:* Although they are few in number, they supply the drugs and give treatment to livestock. Despite their importance there is a tendency to avoid travelling to lowland areas to give treatment. These businesses operate on individual interest basis, hence work needs to be done to incorporate them in the bigger circle and magnify their role.
- *Saving and credit institutions:* Oromia Saving and Credit Share Company, Walko Saving and Credit Microfinance Institute, and Busagonofa Saving and Credit Microfinance Institute provide credit services.
- *Cooperatives:* Marketing cooperatives provide potential for enhancing market participation for smallholder farmers.
- *Traders:* Wholesalers and retailers are the major players for input and output marketing.
- *Brokers:* Although not that strong in the livestock market, they sometimes play a crucial role in the market value of some livestock, according to experts from the Woreda office of agriculture.
- *Farmers:* Play crucial role in testing improved technologies, sharing indigenous knowledge and experiences, providing feedback and facilitating farmer to farmer learning platform.

3. NGOs

NGOs operating in the project area include the Hunger project, Hundee, Hope 2020 and could be potential partners to engage in development activities.

Opportunities, risk and constraints to enhance services

Table 24: Opportunities, constraints and risks for service development

Service	Opportunities	Constraints	Associated risks
Health	<ul style="list-style-type: none"> - Workable policy framework and high priority in the GTP - Availability of special budget for MDG targeted areas - High commitment of government bodies - Encouraging health system strengthening interventions - Multi-sectoral coordination in the health system - Better human resource development - High involvement of private sectors and engagement of many partners - Better expansion of infrastructures (health facilities, electricity, telecom, roads, etc.) - Implementations of different reforms - Health extension program - Encouraging research and development activities done by different stakeholders 	<ul style="list-style-type: none"> - Most of the health programs are donor dependent - Budget constraint - Inefficient use of the available resources 	<ul style="list-style-type: none"> - Epidemics like Ebola, Cholera, and Malaria - Budget cuts from donors
Nutrition	<ul style="list-style-type: none"> - Agriculture-centred Rural Development Policy and Strategy - National nutrition strategy and high priority in the GTP - Many nutrition projects/initiatives - Better use of new agricultural technologies that helps to increase productivity - Food Security Program (2010 to 2014) puts nutrition a core task - Multi-sectoral approaches to integrate interventions on nutrition and food security - Nutrition as a basis for multi-sectoral coordination in the health system and food security programs. 	<ul style="list-style-type: none"> - Poverty - Budget constraint for the program implementations - High inflation in food price - Highly dependent on the rain-fed agricultural productions - Poor land use and management that hinder productivity 	<ul style="list-style-type: none"> - Drought - Market price fluctuations - Risks associated with crop production - Risks associated with marketing
WASH	<ul style="list-style-type: none"> - Favourable policy (water resource management policy that includes water supply, sanitation, irrigation and hydropower resources) - One of the priority areas of the GTP and development programs to achieve the universal access plan - Engagement of many development partners - Multi-sectoral approaches to integrate interventions - The presence of policy frameworks - One of the MDG targeted area - Better expansion of infrastructures (schools, colleges, electricity, telecom, roads, etc.) 	<ul style="list-style-type: none"> - Low coverage of drinking water supply and sanitation - Poor knowledge and practices on WASH - Budget constraint for the program implementations - Inefficient use of funds - High demands for investments - Quality of the education at all levels 	<ul style="list-style-type: none"> - Disasters
Education	<ul style="list-style-type: none"> - Increased access to education facilities - High involvement of private sectors; engagement of many partners - Capacity building and good governance package 	<ul style="list-style-type: none"> - Budget constraint for the program implementations - Inefficient use of funds 	<ul style="list-style-type: none"> - Budget cuts from donors

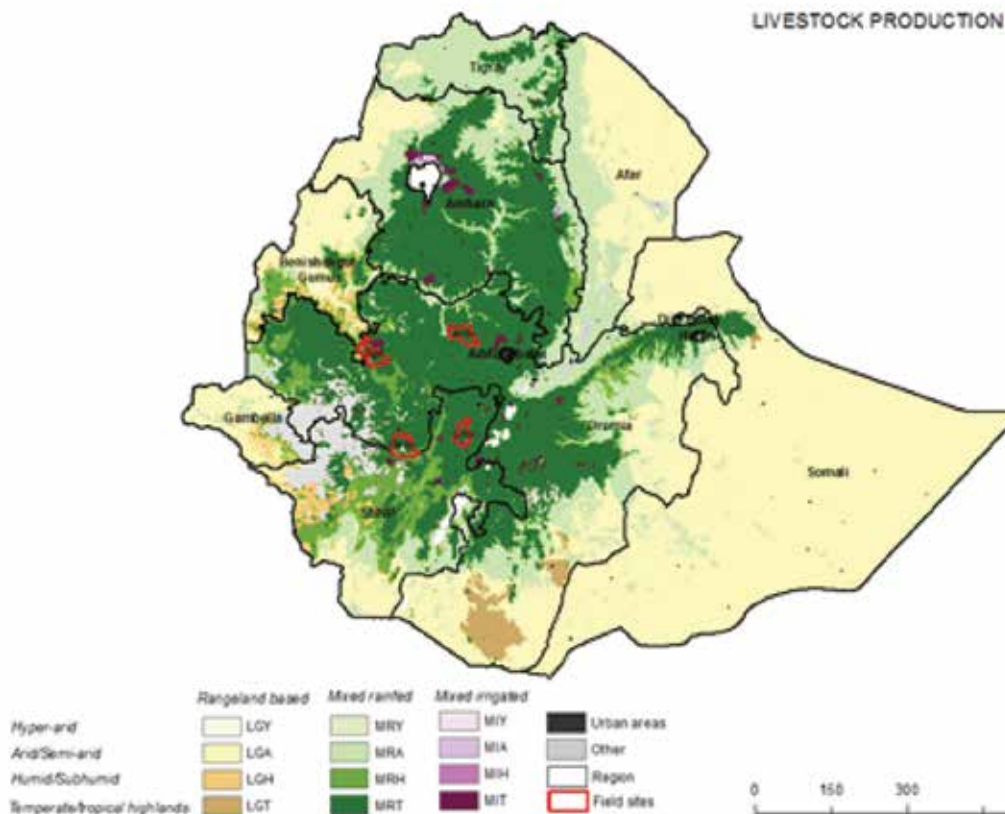
Agricultural production systems

The Intermediate Development Indicator that this section will help to address is IDO 3: ‘Sustainably intensified pro-poor food systems in the humid and sub-humid tropics deliver improved farm level productivity to all farming families in equitable ways’ and also IDO 5: ‘Empowered women and youth with better control over and benefit from integrated production systems’.

Mixed production system

The main production system in the project area is mixed production of crop and livestock. The two enterprises are mutually complementary where livestock provides traction power for land preparation, manure for soil fertilization, transport service for input and output and power for threshing of crops. Crop also provides feed for livestock. As shown in Figure 35 the climate of the study area is dominated by temperate/tropical highland and to a certain extent humid/sub-humid climate. Mixed crop and livestock production is a common feature of agricultural production in these areas.

Figure 35: Map showing distribution of production system by altitude range.



There is association between farming systems and altitude. Length of growing period determines the cropping system (Figure 36).

Table 25 displays the altitude range where major crops are associated with livestock production. Sesame is commonly grown in the low land area while barely is commonly grown in highland areas. Other crops like sorghum and maize are lowland to mid-altitude crops while wheat and teff are mid-altitude and highland crops.

Figure 36: Length of growing period.

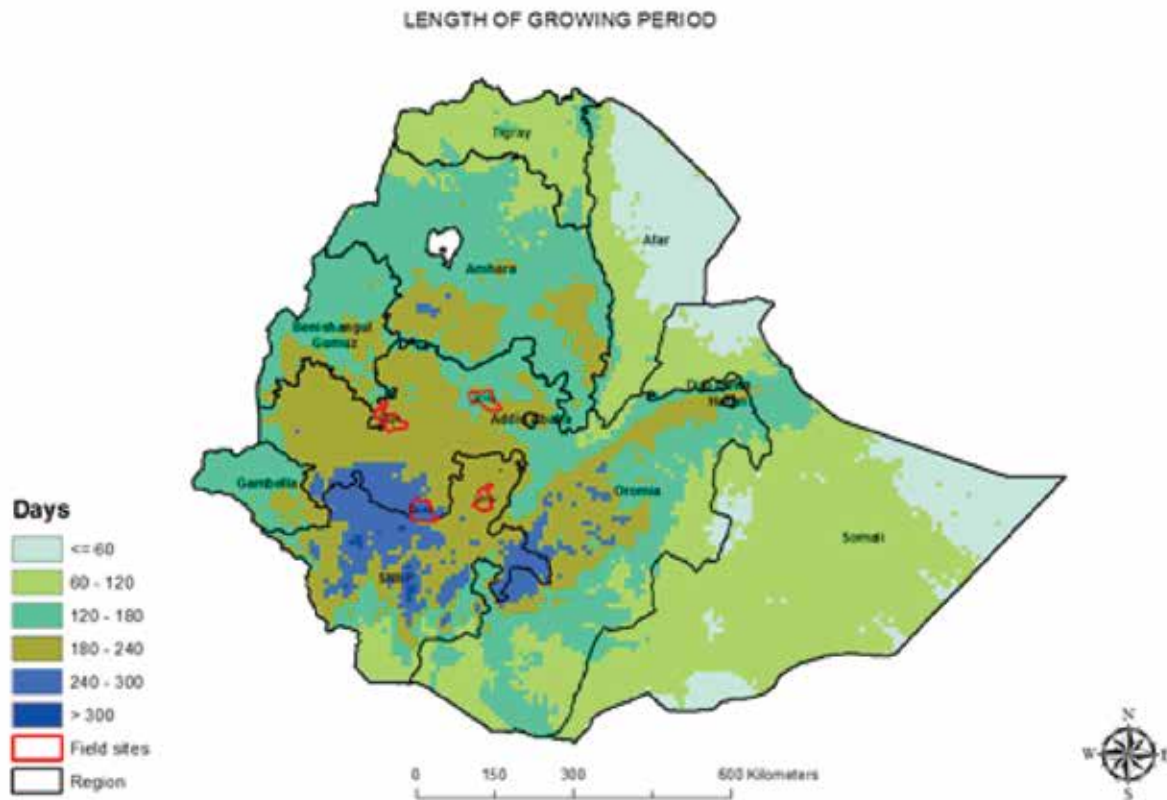


Table 25: Association of farming system and gradients

Dominant farming system	Lowland (500–1500 masl)	Midland (1500–2500 masl)	Highland >2500 masl
Livestock	[Green bar]		
Sesame	[Red bar]		
Sorghum	[Olive bar]		
Maize	[Blue bar]		
Wheat		[Purple bar]	
Teff		[Dark green bar]	
Barely			[Grey bar]

Livestock of different breeds are reared in all altitudes, though goat population density is high in the low land (Figure 37) while sheep population density is high in the highland areas (Figure 38) and cattle and chicken population density is high in the mid-altitude of the project area (Figures 39 and 40).

Figure 37: Goat population density.

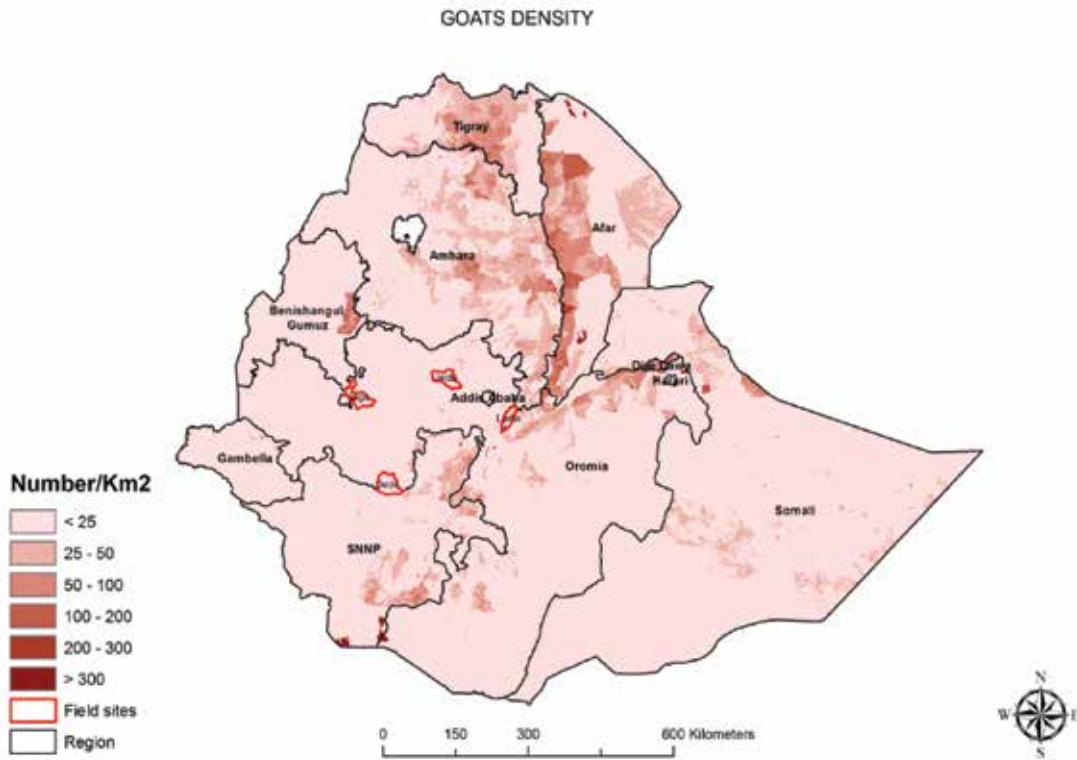


Figure 38: Sheep population density.

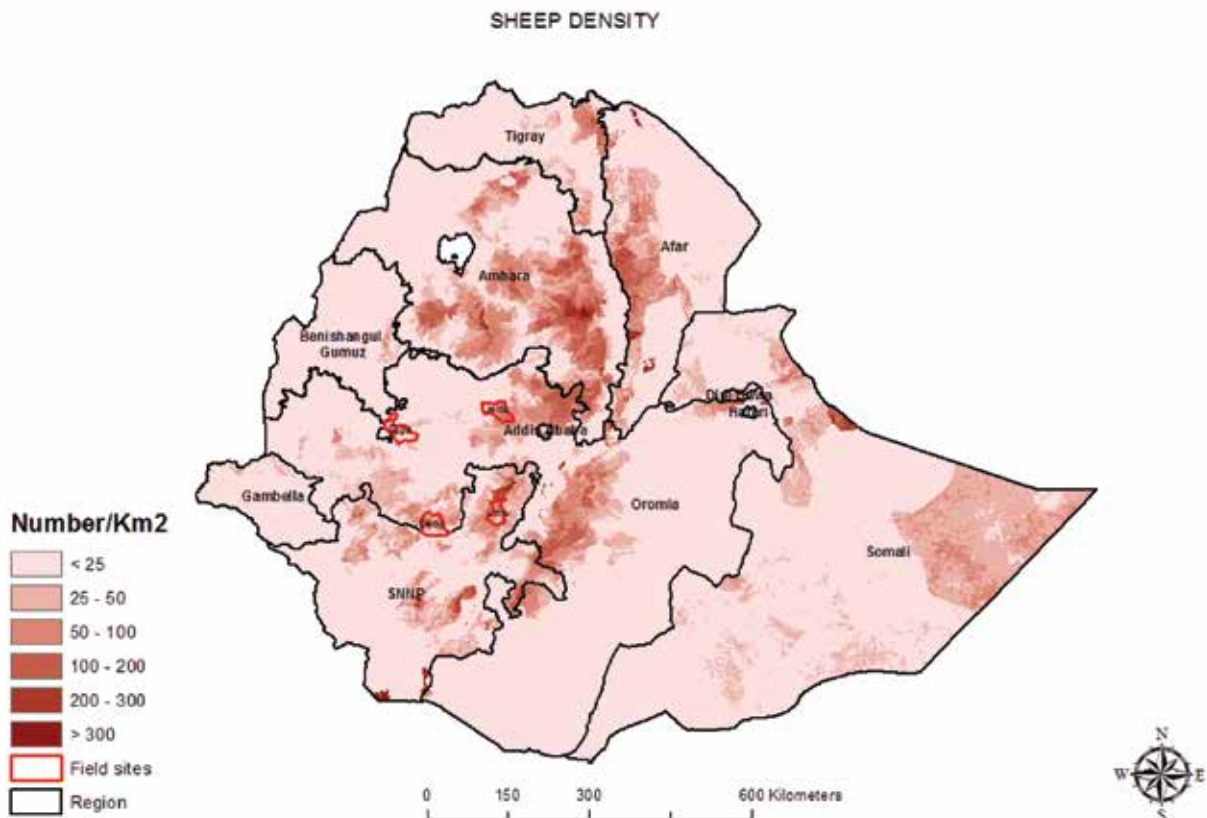


Figure 39: Cattle population density.

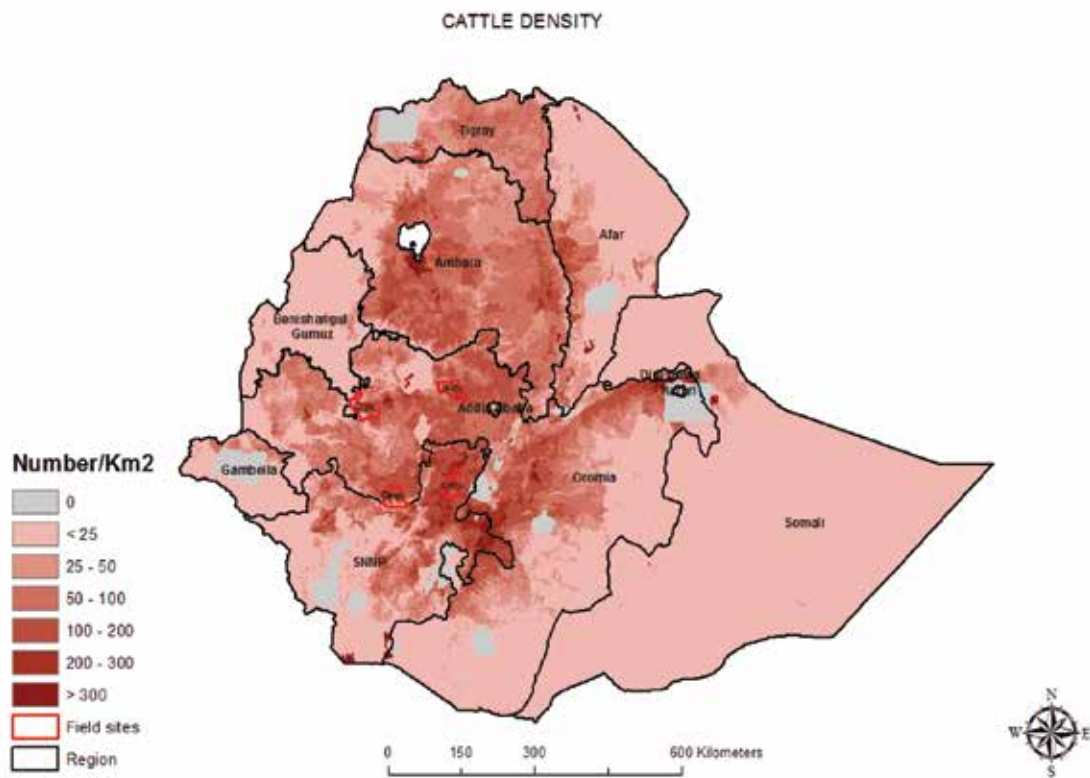
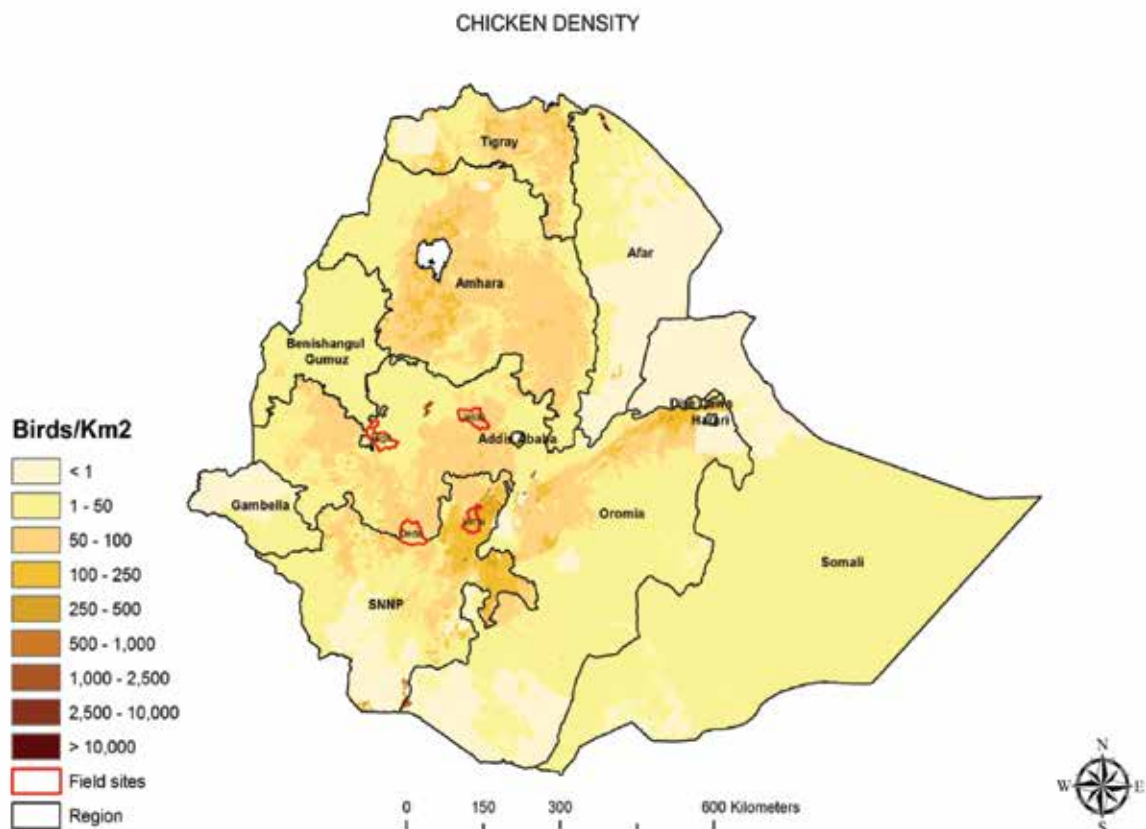


Figure 40: Chicken population density.



Western Oromia, the project area is also characterized by mixed production system where perennial crops like coffee, fruit trees and forest co-exist. The trees are used as shade for crops and also for honey production. Some crops like spices are well associated with crops. Tree leaves are also used as livestock feed especially during dry seasons. Hence, there exists an integration of crops, livestock and trees which is essential for maintaining the agro-ecology and reduces the impact of climate change.

Crop production

A variety of crops are grown in the project area. Cereal crops like maize, wheat, barely, teff, sorghum, millet, pulses, vegetables, oil crops like sesame, root crops, and fruits are commonly grown. This section describes the area allocated to the major groups of crop, production and yield. Production and yield are appropriately computed for individual crops as presented in Annex 9 and 10. Here, the data gives an overview of the relative importance of classes of crops as discussed below. Some specific data will also be presented for the most common crops in the area, namely maize, wheat, teff and sorghum.

Area, output and yield

Cereal crops are allocated larger cultivated area occupying more than 70% of the area cultivated per household (Table 26). The majority of farmers (95% in Ethiopia, 98% in Oromia and 99% of the farmers in the project area) involve in the production of cereals. Pulse crops are the second important group in terms of share of land allocated (7.6% in the project area, 11% in Oromia and 13% in Ethiopia) and number of farmers producing them (56% in the project area and 59% in Ethiopia (Annex 8).

Table 26: Average area and allocation by crop in 2013/2014

Crop type	Area per holder (ha)			% of area allocation		
	Ethiopia	Oromia	Project sites	Ethiopia	Oromia	Project sites
Cereals	0.73	0.86	0.73	72.1	72.3	71.1
Pulses	0.21	0.23	0.14	12.8	10.9	7.6
Oilseeds	0.22	0.25	0.23	6.0	5.8	8.6
Vegetables	0.03	0.03	0.02	1.2	1.2	0.9
Root crops	0.03	0.04	0.02	1.5	1.3	0.9
Fruits	0.02	0.02	0.02	0.5	0.4	0.6
Others	0.08	0.13	0.11	6.0	8.1	10.4

Cereal crops are also major sources of food in Ethiopia in general and in the project area in particular. Table 27 shows the average quantity produced per household while Annex 9 displays the quantity of individual crops produced per household. The production of these crops only slightly increased (on average) between 2007 and 2013 (Table 28).

Table 27: Average production in the project area (tonne/HH)

Crop type	Ethiopia	Oromia	Project sites
Cereals	1.6	2.1	2.1
Pulses	0.3	0.4	0.3
Oilseeds	0.2	0.2	0.3
Vegetables	0.1	0.1	0.1
Root crops	0.6	0.7	0.3
Fruit crops	0.1	0.1	0.1
Others	0.2	0.2	0.2

Table 28: Trend of production in the project area (tonne/HH)

Year	Cereals	Pulse	Oilseeds	Vegetables	Root crops	Fruits	Coffee	Others
2007	2.2	0.4	0.2	0.1	0.3	0.1	0.2	0.1
2008	1.6	0.3	0.2	0.0	0.2	0.1	0.2	0.2
2009	1.5	0.2	0.2	0.1	0.2	0.1	0.2	0.1
2010	1.5	0.3	0.2	0.1	0.2	0.1	0.2	0.1
2011	1.9	0.3	0.2	0.1	0.2	0.2	0.2	0.1
2012	1.9	0.3	0.2	0.1	0.2	0.1	0.2	0.1
2013	2.1	0.3	0.3	0.1	0.3	0.1	0.1	0.1

Maize, wheat, teff and sorghum are dominant cereal crops in the project area in terms of the proportion of crop land allocation and number of farmers growing them. Thus, a closer assessment of area allocated to these crops and yield may be necessary. Table 29 summarizes the area allocated to these four major crops grown in the project area and the proportion of growers. Teff and maize lead in terms of proportion of crop land allocation while maize is the most commonly grown by the largest proportion of farmers in the region.

Table 29: Average area allocated to major cereals and proportion of growers

Crop	Average area (ha/HH)			% area allocated (of all crops)			% of producers (of all crops)		
	Ethiopia	Oromia	Project area	Ethiopia	Oromia	Project area	Ethiopia	Oromia	Project area
Teff	0.46	0.56	0.39	24.3	24.7	26.1	46.9	45.7	59.4
Wheat	0.34	0.43	0.17	12.9	14.8	6.4	33.7	35.8	32.6
Maize	0.23	0.28	0.30	16.1	19.2	26.9	62.5	70.5	79.2
Sorghum	0.35	0.32	0.26	13.5	11.8	13.0	34.0	38.5	43.9

The average yield of cereals was about 2.4 tonnes/ha in 2013 while pulses averaged at 1.7 tonnes/ha in the same period. Table 30 shows the trend of yield of groups of crops while Annex 10 shows the details of yield per ha of individual crop.

Table 30: Trend of productivity of crops in project area (tonnes/ha)

Year	Cereals	Pulse	Oilseeds	Vegetables	Root crops	Fruits	Coffee	Others
2007	1.7	1.2	0.6	3.6	7.2	9.8	0.9	8.2
2008	1.6	1.2	0.6	3.2	7.1	7.9	0.7	4.3
2009	1.7	1.4	0.6	2.9	7.5	7.7	0.7	3.7
2010	1.9	1.5	0.7	6.8	7.8	7.9	0.7	4.8
2011	2.1	1.5	0.7	3.8	7.5	8.0	0.7	5.7
2012	2.2	1.5	0.8	4.0	13.1	6.3	0.2	3.5
2013	2.4	1.7	0.7	5.3	12.9	6.0	0.7	3.4

Maize yield averaged at 3.53 tonne/ha in the project area which is slightly higher than the other areas in Ethiopia and Oromia and is higher yielder than the other cereals (Figures 41 and 42). Since 2008, the yield of these four crops has increased.

Figure 41: Yield of major cereals (tonne/ha) in 2013.

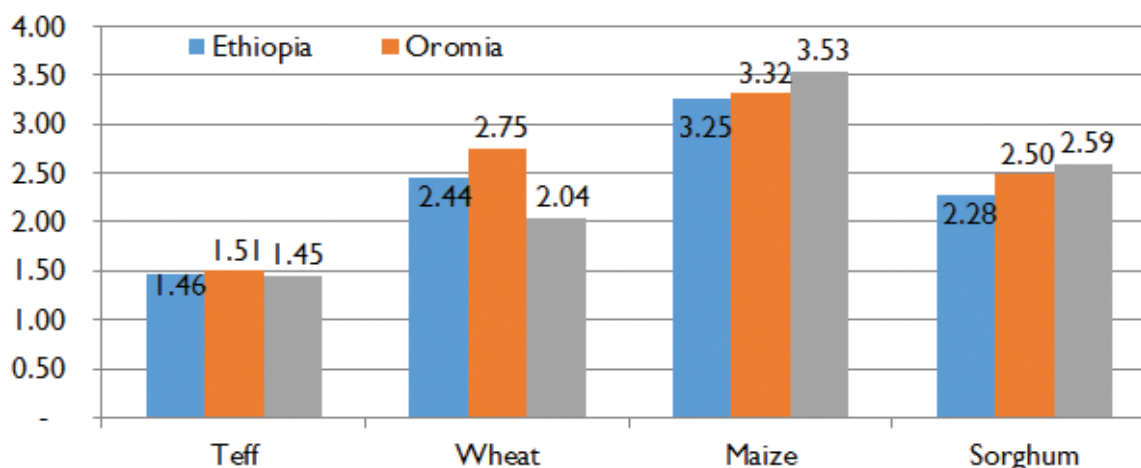
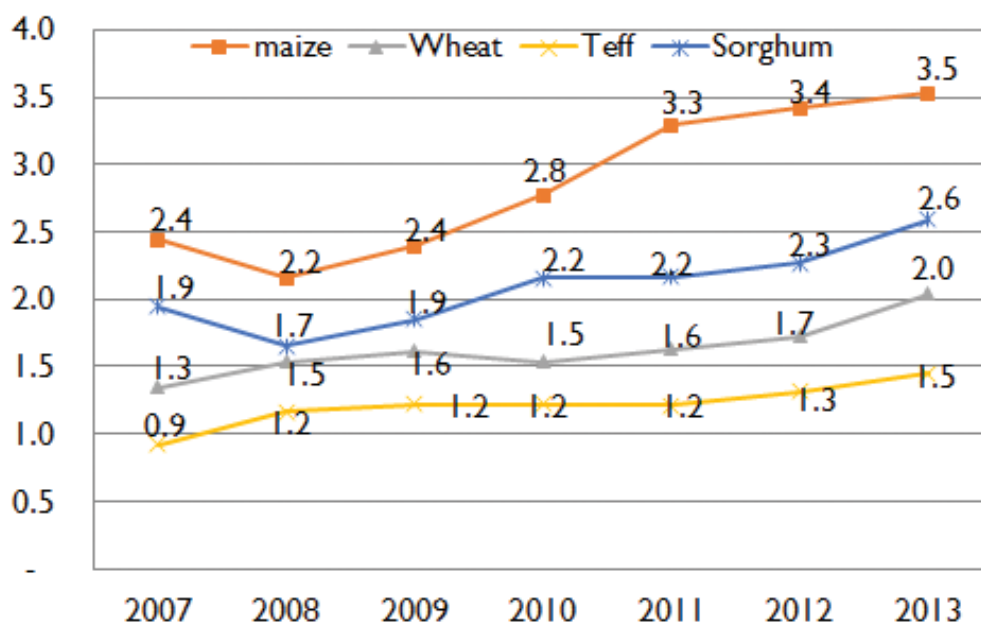


Figure 42: Trend in yield of dominant cereals in the project area (tonne/ha).



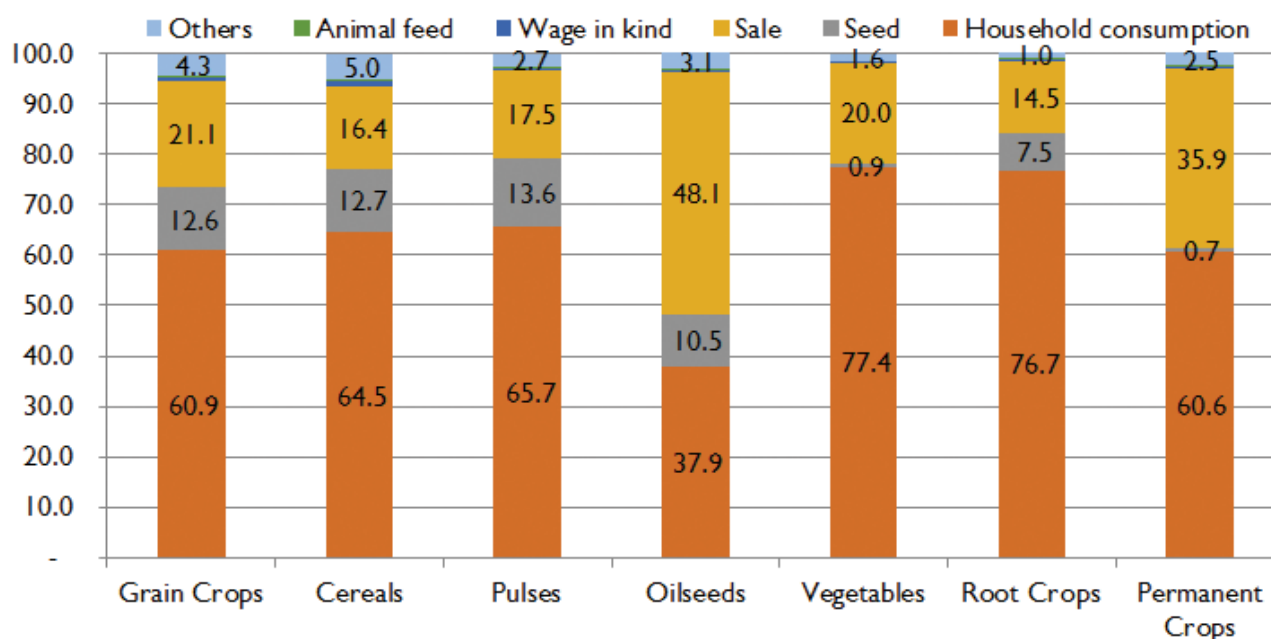
Utilization of crop output

Grain is produced by smallholder farmers to meet different purposes. The major objective is meeting the consumption requirement of the household. Overall, about 61% of grain produced is consumed. Of the grain, about 65% of cereals and 66% of pulse is consumed. Figure 43 also shows that about 77% of vegetables (especially grown as garden plants) are consumed. Proportionally, oil crops are the least in terms of the proportion of production allocated for consumption.

The second most important objective of crop production is sales. Food crops and cash crops are sold to generate cash needed by the household. About 48% of oil crops and 36% of perennials (especially coffee) are sold. About 16% of cereals (especially teff and wheat) and 20% of vegetables are also sold. Other purposes of crop production include production of seed for future production; livestock feed and use it to barter with labour (pay wage in kind).

The trend of agricultural inputs utilized for specific crops such as maize, wheat, teff, sorghum and vegetables also indicated in Annex from Annex 29–49.

Figure 43: Utilization of crops in project area in 2013/14 (%).



The trend of consumption and sales of crops show that the proportion of grain consumed and sold is not changed during 2007–13 indicating not much shift from subsistence to commercial farming. On average, 66% of cereals, 66% of pulses, 34% of oil crops, 79% of vegetables, 76% of root crops and 62% of perennial crops have been consumed per year (Table 31). The average proportion of crops sold ranged from 13% (root crops) to 51% (oil crops) per year (Table 32).

Table 31: Trend in consumption of crops in project site

Year	Grain crops	Cereals	Pulses	Oil seeds	Vegetables	Root crops	Permanent crops
2007	63	67	66	32	83	77	62
2008	62	67	67	32	79	77	62
2012	62	66	66	33	78	75	62
2013	61	64	66	38	77	77	61
Average	62	66	66	34	79	76	62

Table 32: Trend in sales of crops in project site

Year	Grain crops	Cereals	Pulses	Oilseeds	Vegetables	Root crops	Permanent crops
2007	19	15	16	52	15	15	38
2008	20	14	16	53	15	14	34
2012	21	15	18	52	21	10	34
2013	21	16	18	48	20	14	36
Average	20	15	17	51	18	13	36

From among the major cereals produced in the project area, maize and sorghum are the most commonly consumed (71% of the production) indicating that they are used more for consumption than the other purposes (Figure 44). On the other hand, teff is mainly produced for consumption (56% of the production). Utilization of these four major cereals in the project area has not changed since 2007 (Figure 45 and 46).

Figure 44: Utilization of major crop products in project site in 2013 (%).

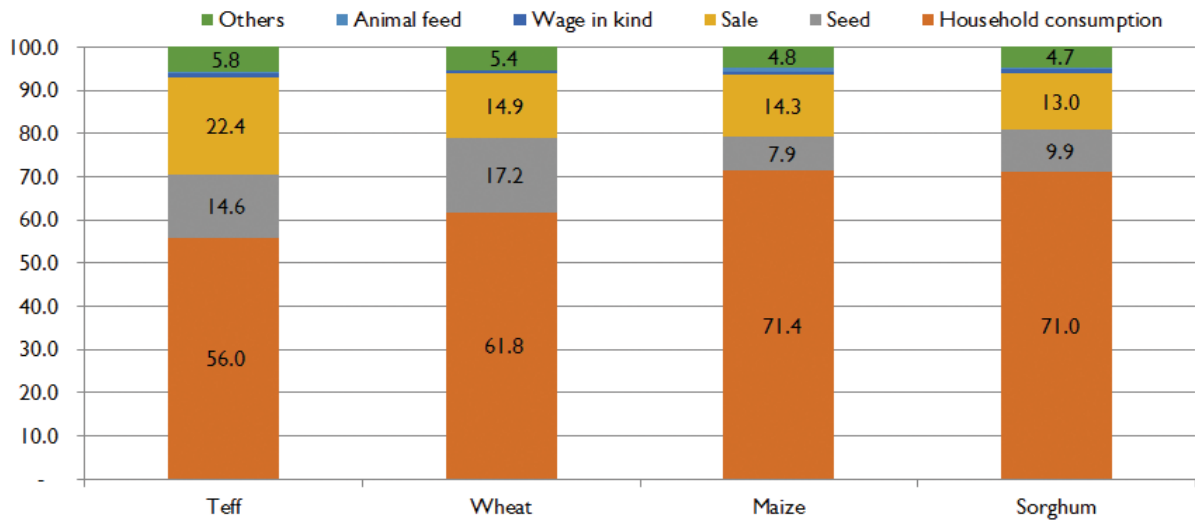


Figure 45: Trend in consumption of major crop products in project area

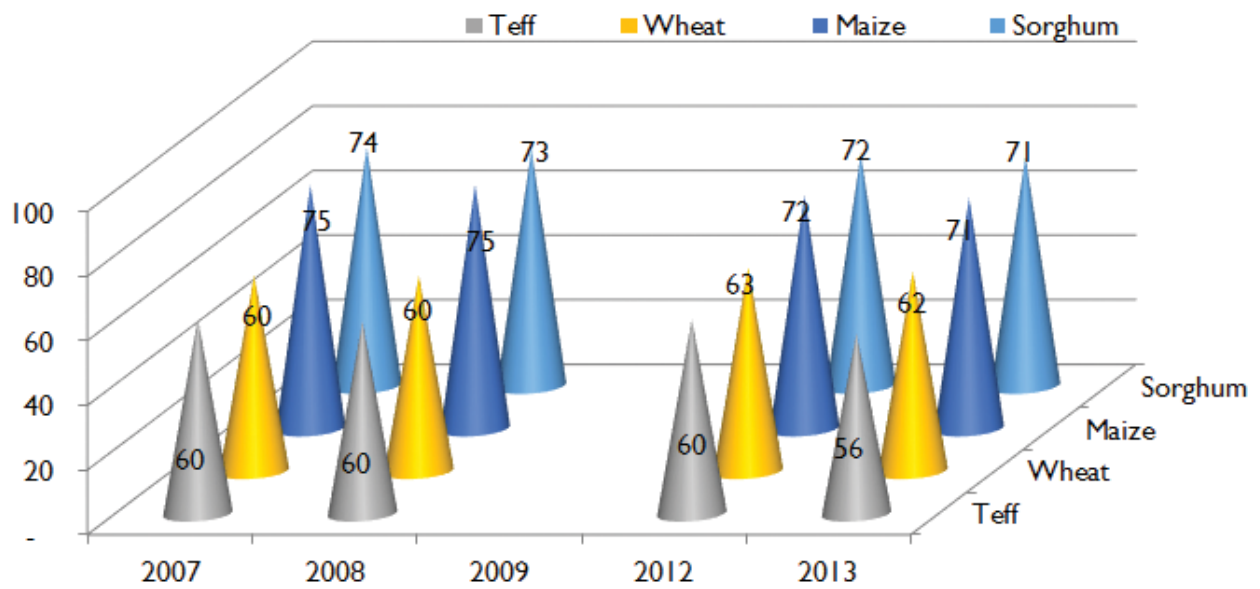
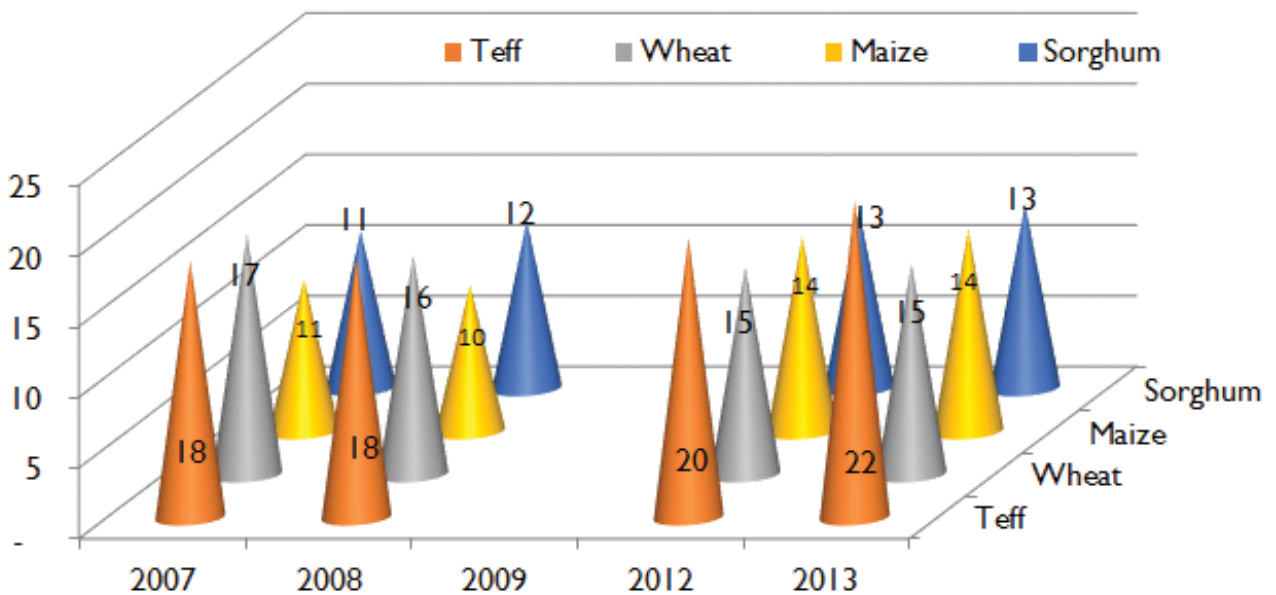


Figure 46: Trend in sales of major crops (%).



Crop pests

The major pests and diseases affecting crop production in the project area include stalk borer, rust, termite, and Coffee Berry Disease (CBD). The other biotic and abiotic factors damaging crops and the proportion of crop damaged are listed in Table 33. It appears that 79% of the crop area was damaged by pests in 2011 where the major damage was made in vegetables field. Too much rain, frost and flood, weed and predators are major causes for the damage. There was no data on crop diseases as well as the magnitude of the crop damage, which should be further established through specialized research.

Table 33: Proportion of crop area damaged by pest (%)

Cause of damage	All crops	Cereals	Pulses	Oilseeds	Vegetables
All damage	79	21	64	12	48
Frost or floods	23	4	12	2	5
Locust	4	1	-	-	-
Shortage of rain	2	0	-	-	-
Too much rain	40	5	10	1	5
Wild animals	3	0	-	-	-
Birds	11	2	3	0	-
Hailstone	11	2	3	0	2
Pests	5	1	3	0	1
Weeds	15	3	5	1	-
Others	34	6	16	3	13

Crop production technologies and services

Access to agricultural services

The major agricultural services in the country and the project area include agricultural extension, veterinary service and input supply service (fertilizer, improved seed and pesticides). Farmers access these agricultural technologies from different sources. According to farm management survey of CSA (2011), the majority of the farmers (57%) access the agricultural extension service within 4 km while 78% of them access it within 10 km (Table 34).

Table 34: Access to agricultural services (%)

Services	Distance in kilometers (Ethiopia 2011)							Distance in kilometers (Oromia 2011)						
	<1	1-4	5-9	10-14	15-19	≥20	Not stated	<1	1-4	5-9	10-14	15-19	≥20	Not stated
Agricultural extension	11.6	45.5	21.0	7.1	2.5	2.2	10.1	9.0	45.4	19.3	7.0	2.9	3.4	13.1
Veterinary	9.1	32.7	27.4	11.6	6.2	2.5	10.5	6.4	30.0	27.4	13.6	7.5	2.5	12.6
Fertilizer supply	8.4	33.8	25.5	10.5	6.8	5.7	9.4	6.0	30.8	27.6	10.3	8.0	6.9	10.4
Improved seeds supply	8.3	32.5	24.7	11.6	6.4	6.7	9.8	6.7	27.1	26.3	12.6	8.2	8.8	10.4
Pesticides	7.6	28.2	23.7	13.0	8.9	8.1	10.5	5.7	26.6	25.0	13.1	9.2	7.6	12.9

Agricultural extension service is provided by development agents (DAs) who are stationed at farmers training centres (FTCs). The government pursued a strategy of establishing one FTC per rural kebele to provide extension services, farmers training and demonstration at the FTCs. In the project area, among the 3004 farmers associations (kebeles), only 2194 (73%) have FTC. Among the FTCs, only 63% are functional. However, 73% are reported to be ready to offer training. In 2013, 8026 DAs (12% female) were working at the FTCs in the project area. There were 740 supervisors indicating a ratio of about 1 supervisor per 10 DAs to supervise. The number of farmers covered by extension service has increased since 2007 both in Ethiopia, Oromia and the project area (Figure 47). However, the trend of extension package per farmer declined since 2007 (Figure 48).

Figure 47: Number of farmers covered by extension service (all crops).

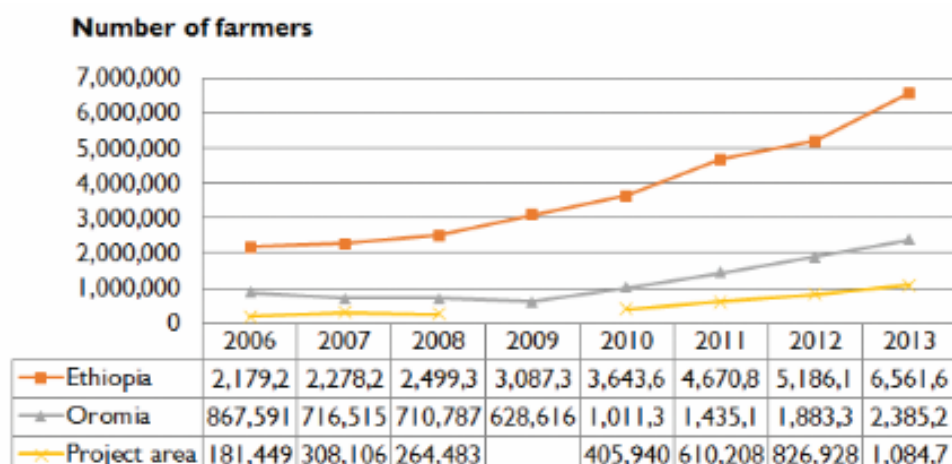
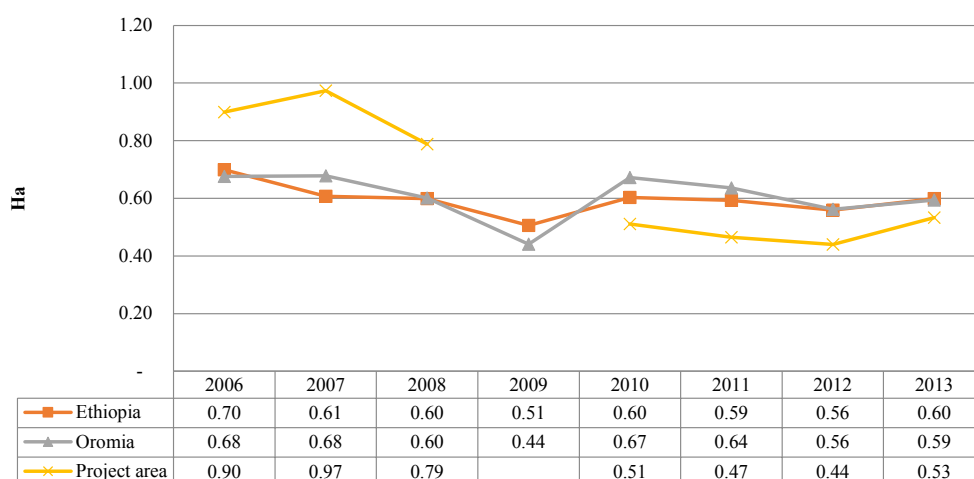


Figure 48: Trend of area covered by extension package per farmer (ha)



Fertilizer use

The major services provided to the farmers as extension package is supply of fertilizer, improved seeds and pesticides (chemicals). As shown in Figure 49, the area covered by fertilizer increased since 2006. Moreover, the quantity of fertilizer used increased during the same period (Figure 50).

Figure 49: Trend of area covered by fertilizer, all crops (ha).

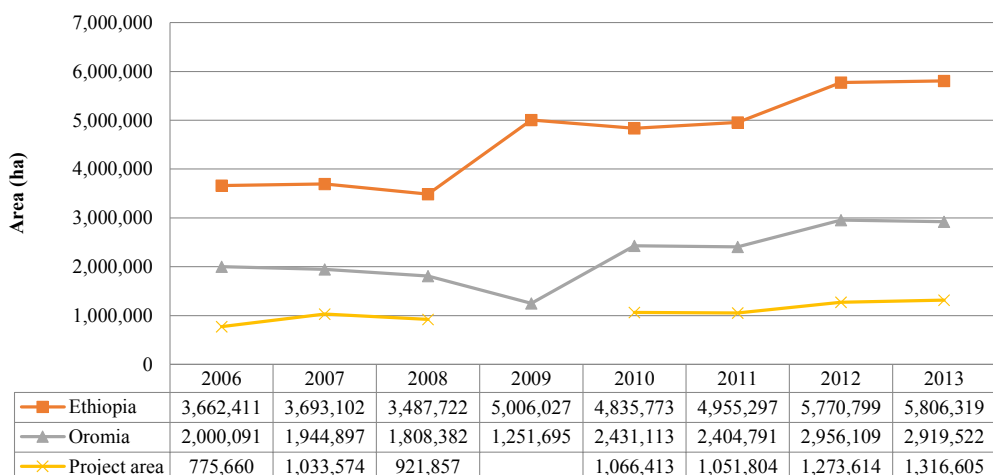
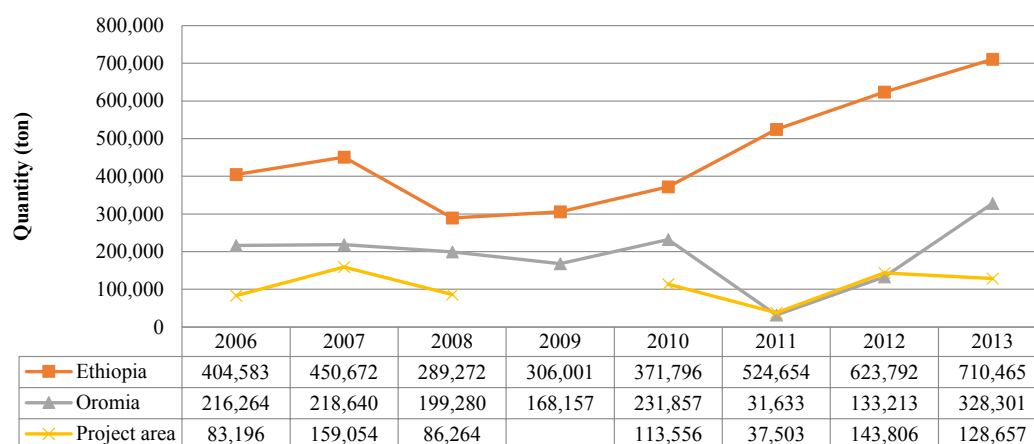


Figure 50: Trend of quantity of fertilizer, all crops (ton)



Some farmers applied only DAP while some farmers applied only urea (Annex 10a). Other farmers applied combination of DAP and Urea. As shown in Table 35, the average crop area where both urea and DAP are applied during 2013 was larger in the country, in Oromia and the project area alike. Fertilizer application rate is lower than the recommended rate of 100 kg urea and 100 kg DAP (Table 36). The rate of fertilizer application fluctuated and there is neither increasing nor decreasing trend (Table 37).

Table 35: Average area covered with fertilizer in Ethiopia, Oromia and project area in 2013 (ha/HH)

Crops	Ethiopia			Oromia			Project area		
	DAP	Urea	DAP and Urea	DAP	Urea	DAP and Urea	DAP	Urea	DAP and Urea
All crops	0.48	0.26	0.60	0.64	0.33	0.69	0.55	0.18	0.66
Cereals	0.49	0.28	0.58	0.61	0.32	0.67	0.54	0.27	0.65
Pulse	0.15	0.07	0.09	0.21	0.08	0.12	0.18	0.11	0.13
Oilseeds	0.14	0.14	0.09	0.17	0.16	0.10	0.08	-	0.05
Vegetables	0.05	0.04	0.10	0.08	0.09	0.11	0.01	0.06	0.02
Root crops	0.05	0.03	0.06	0.08	0.04	0.09	0.07	-	0.07

Table 36: Average quantity of fertilizer used in Ethiopia, Oromia and project area in 2013 (kg/ha)

Crops	Ethiopia			Oromia			Project area		
	DAP	Urea	DAP and Urea	DAP	Urea	DAP and Urea	DAP	Urea	DAP and Urea
All crops	37	16	94	47	21	105	39	10	102
Cereals	37	17	89	45	20	100	37	12	100
Pulse	11	4	15	15	5	16	14		15
Oilseeds	8	8	16	8	10	14	2		10
Vegetables	5	3	24	8	6	20	2	3	3
Root crops	6	2	12	8	3	17	7		13

Table 37: Trend of quantity of fertilizer use (kg/ha)

Year	Ethiopia			Oromia			Project area		
	All crops	Cereals	Pulse	All crops	Cereals	Pulse	All crops	Cereals	Pulse
2006	110	105	131	108	105	106	107	107	112
2007	122	122	114	112	110	89	154	149	160
2008	83	115	98	110	107	81	94	92	24
2009	61	58	35	134	115	-	-	-	-
2010	77	102	100	95	93	78	106	104	85
2011	106	85	101	13	12	77	36	34	65
2012	108	108	89	45	100	75	113	113	97
2013	122	122	50	112	113	85	98	123	88

Improved seeds

Improved seeds of cereals and pulse are supplied to farmers through cooperatives, research stations, and private seed suppliers. The area covered by improved seeds has been increasing overtime especially since 2009 (Figure 51). However, the quantity of improved seeds used by the farmers has not shown as much increase as the area covered (Figure 52).

Figure 51: Trend of area covered by improved seeds, all crops (ha).

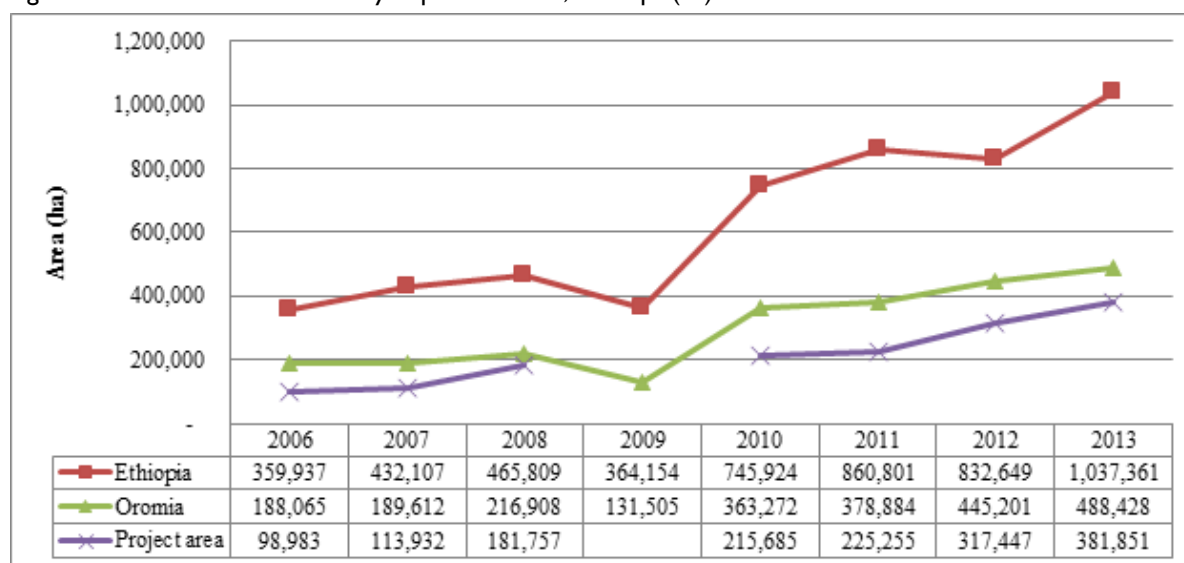
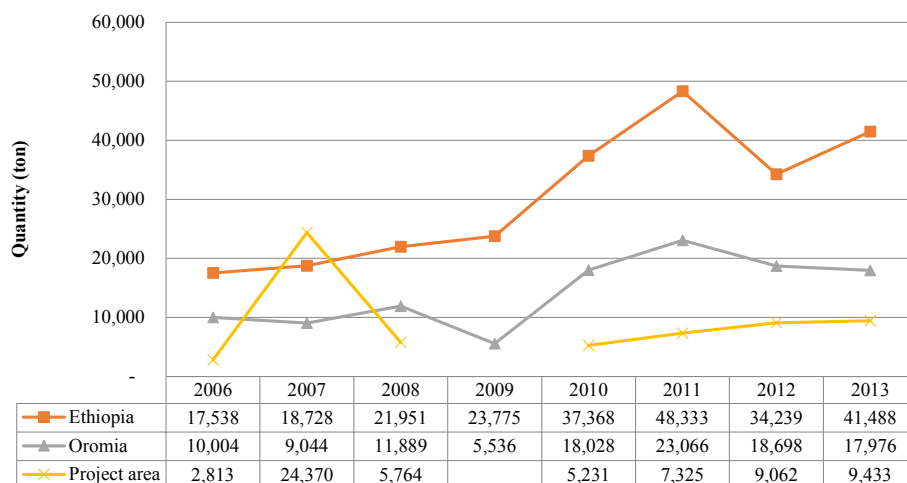


Figure 52: Quantity of improved seeds used by the farmers.



The intensity of improved seed use does not show much change over the last seven years (Table 38). The seeding rate of cereals averaged at 50 kg/ha while that of pulse was about 100 kg/ha in Ethiopia and Oromia. The project area exercised lower seeding rate for cereals and higher for pulses. Obviously, the major crops grown in the project area is cereals and perhaps, the farmers are more skilled in determining the seeding rates of cereals.

Table 38: Quantity of improved seed use (kg/ha)

Year	Ethiopia			Oromia			Project area		
	All crops	Cereals	Pulse	All crops	Cereals	Pulse	All crops	Cereals	Pulse
2006	49	50	94	53	55	101	28	30	44
2007	43	44	103	48	48	106	214	212	
2008	47	47	100	55	56	107	32	34	24
2009	65	68	110	42	44	84	-	-	-
2010	50	52	115	50	52	104	24	26	
2011	56	58	99	61	64	133	33	100	
2012	41	42	96	42	43	106	29	30	
2013	40	41	86	37	38	113	25	26	
Average	49	50	100	49	50	107	55	65	34

Pesticides

Crop pests are among the major causes of crop pre-harvest losses in Ethiopia in general and in the project area in particular. Cereal crops like maize and sorghum are affected by stalk borer while teff is affected by rust and coffee by CBD. Termite is a major pest in western Oromia affecting crop productivity. Some of these pests are controlled through improved cultural practices and crop rotation while nearly all of them are controlled by chemicals using pesticides.

Figure 53: Trend of area covered by pesticide (all crops) in '000 ha.

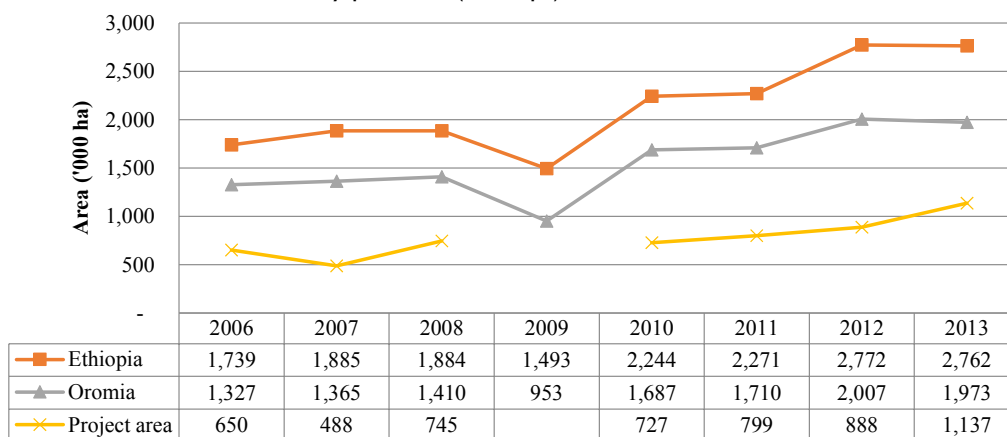


Figure 54: Trend of number of farmers using pesticide (all crops).

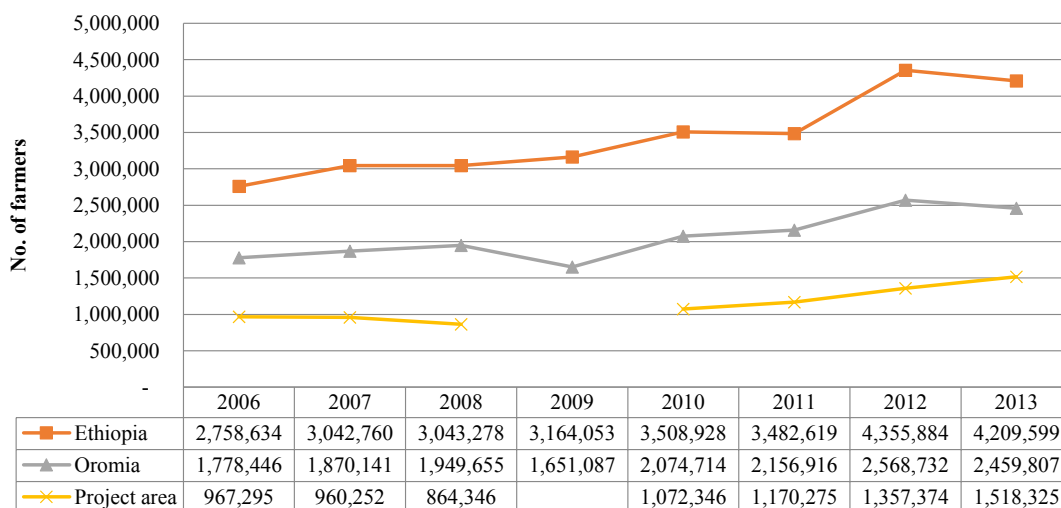
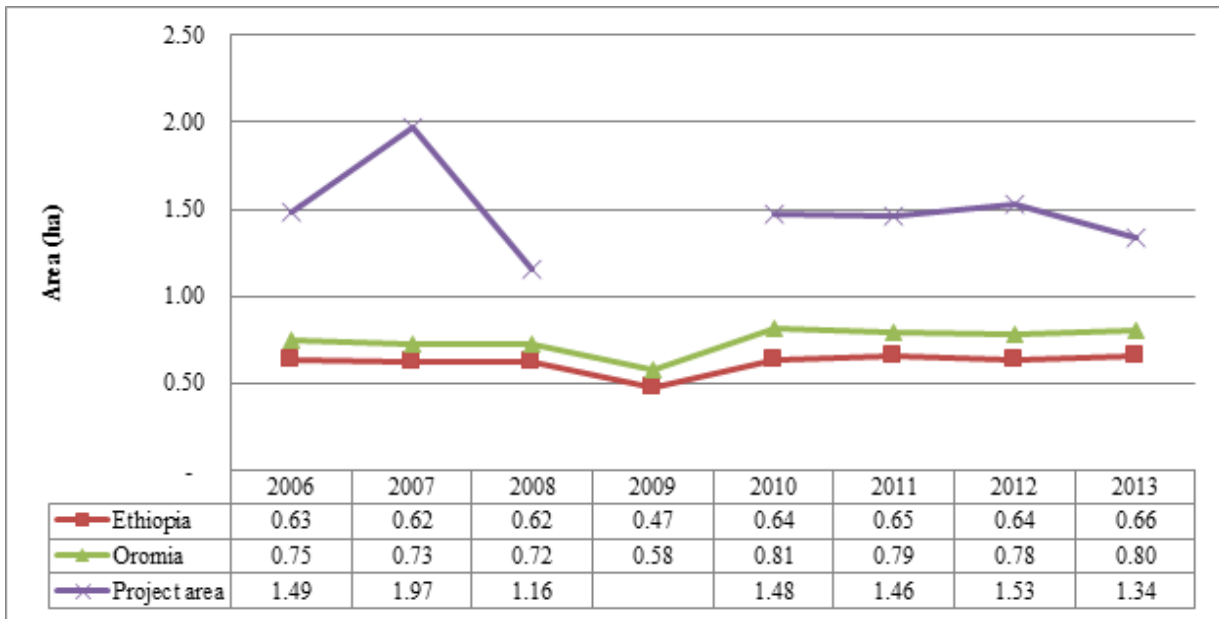


Figure 55: Trend of area covered by pesticide (all crops) in ha per farmer,



Livestock production

Livestock number

Different livestock breeds are reared in the project area. Cattle are the most dominant livestock type in Ethiopia, Oromia and the project area (Figure 56). The livestock population is increasing overtime (Table 39).

Figure 56: Number of livestock (in million).

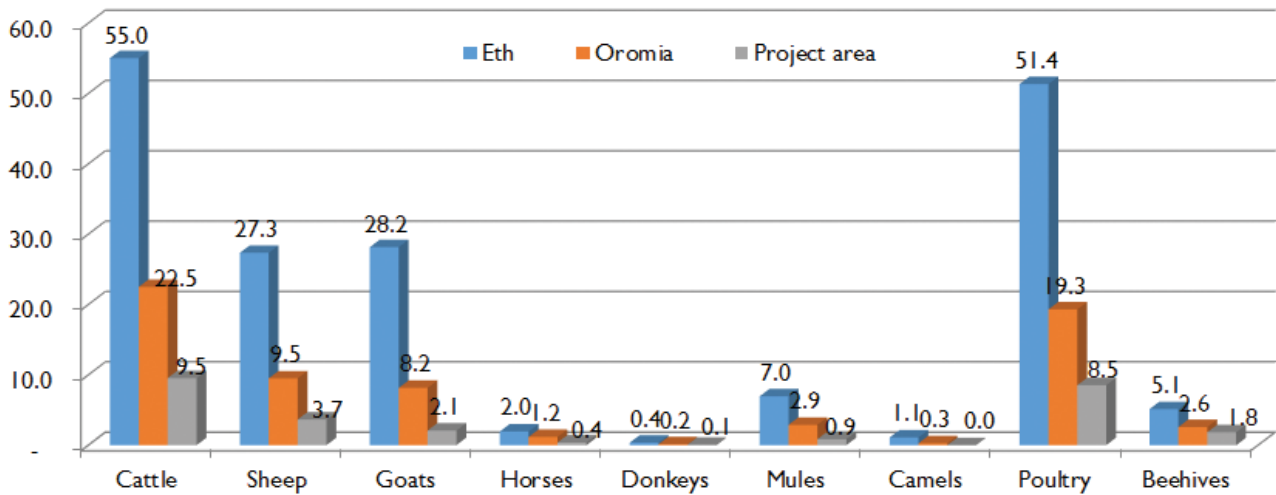


Table 39: Trend in livestock population

Year	Ethiopia			Oromia			Project area		
	Cattle	Shoats	Draft animals	Cattle	Shoats	Draft animals	Cattle	Shoats	Draft animals
2006	43,007,315	42,040,891	7,082,311	19,663,215	15,051,836	3,391,905	8,128,755	5,034,781	1,005,553
2007	47,570,675	47,826,700	8,734,447	21,410,978	17,087,373	3,937,823	8,049,310	4,970,772	1,012,428
2008	49,297,898	46,901,440	8,342,321	22,453,335	16,537,980	3,993,968	8,295,794	4,896,464	990,066
2009	50,884,005	47,940,625	8,883,600	22,475,349	16,798,886	4,225,829	na	na	na
2010	53,382,194	48,295,950	9,725,391	22,958,489	16,346,735	4,300,858	9,696,015	4,989,048	1,204,834
2011	52,129,017	46,834,489	9,748,483	22,481,530	15,845,914	4,381,272	9,587,001	5,127,156	1,258,771
2012	53,990,061	49,549,996	9,920,948	22,354,053	16,303,406	4,335,982	9,499,441	5,317,634	1,273,262
2013	55,027,280	55,511,265	10,370,486	22,505,219	17,644,636	4,503,918	9,540,063	5,744,830	1,315,556

Source: CSA (different issues).

Milk production

In 2013, the country produced about 2.9 billion litres of milk; Oromia produced 1.25 billion litres and the project area produced 386 million litres of milk. The trend of milk production shows a decline in Ethiopia and Oromia relatively faster than it declined in the project area (Figure 57). The major difference in the trend of milk production seems to be related to differences in milk yield which shows a relative increase in the project area while it declined for Oromia and the country (Figure 58).

Figure 57: Milk produced (million litre).

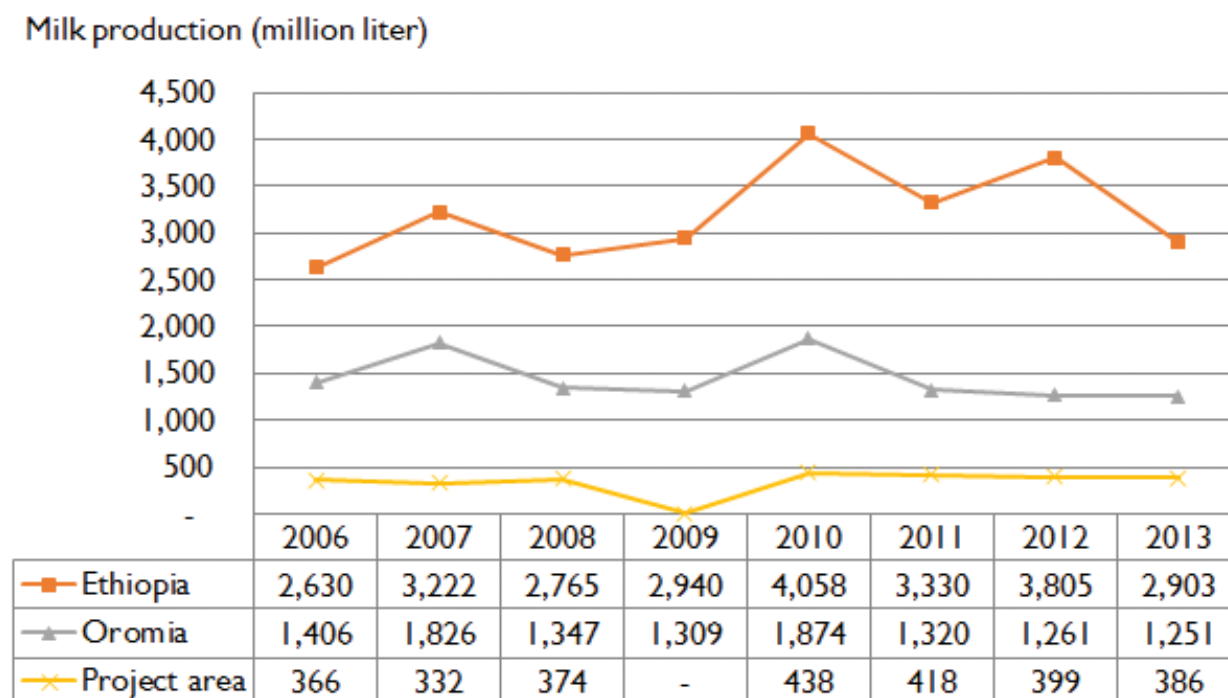
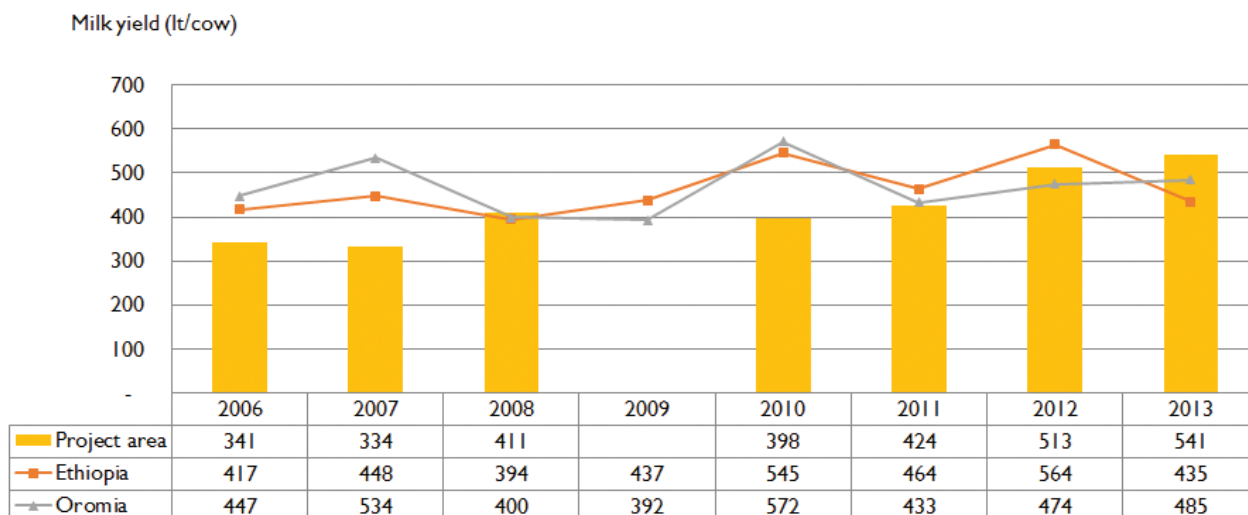


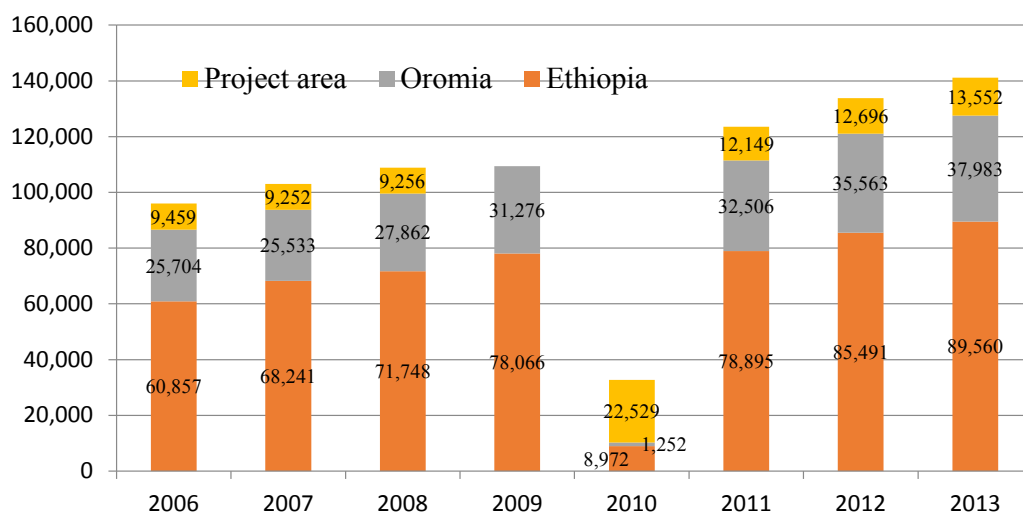
Figure 58: Milk yield (litre/cow).



Egg production

Egg is an important source of animal protein for rural people. There is also increasing egg production since 2006 (with an exception of 2010) in Ethiopia in general and in Oromia and the project area, reaching 89.5 million for the country, about 38 million for Oromia and 13.5 million in the project area (Figure 59).

Figure 59: Trend of number of egg production (in '000').



Livestock product utilization

Major livestock products like milk products, butter, cheese and arera, mutton and goats' meat and egg are consumed. Skin is used at home as sleeping mat or grain or honey container. Milk is further processed into butter, cheese and arera and also consumed. Beef, sheep hair, butter, and hides and skins are also largely sold (Figure 60). There is no change in the trend of the proportion of livestock products consumed (Figure 61) and sold (Figure 62).

Figure 60: Utilization of livestock products in the project area in 2013/14 (%)

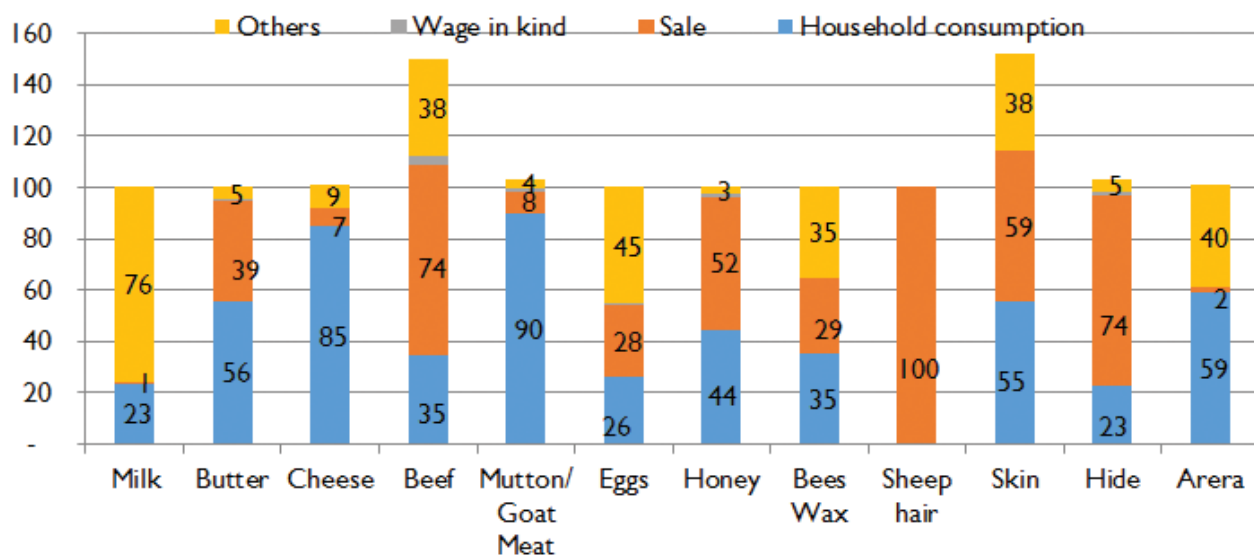


Figure 61: Trend in consumption of major livestock products (%)

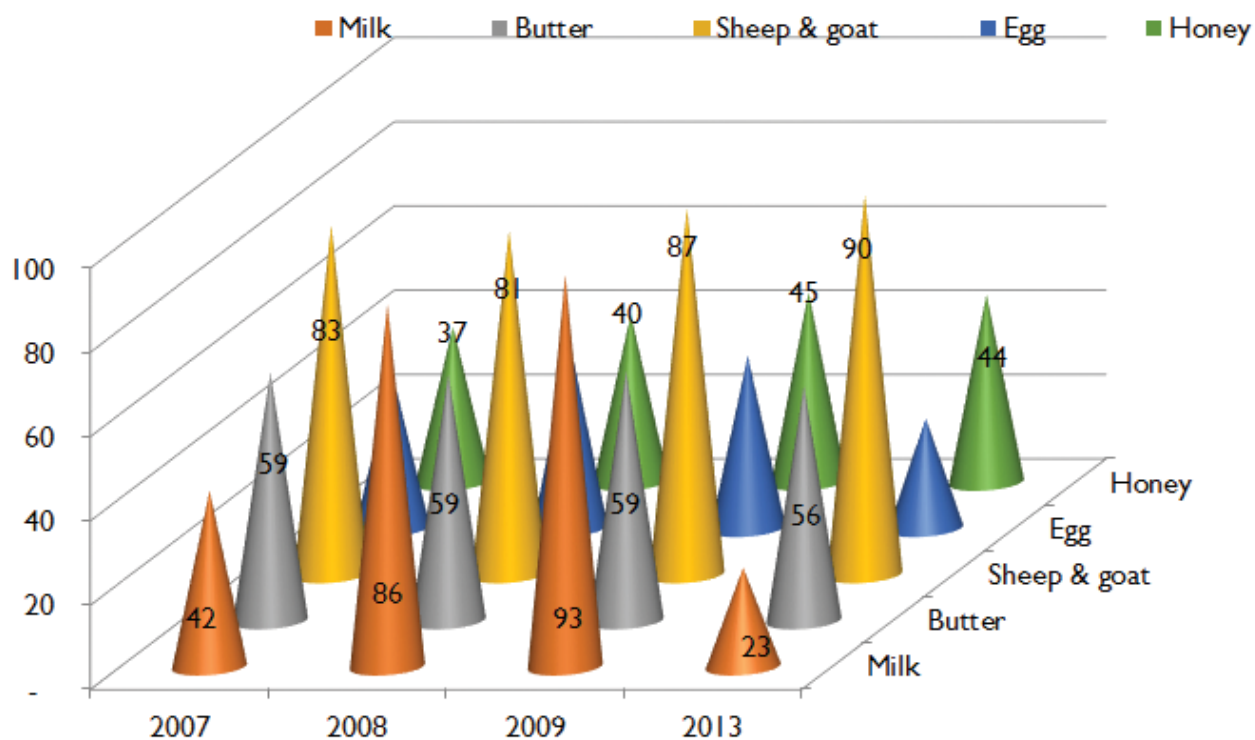
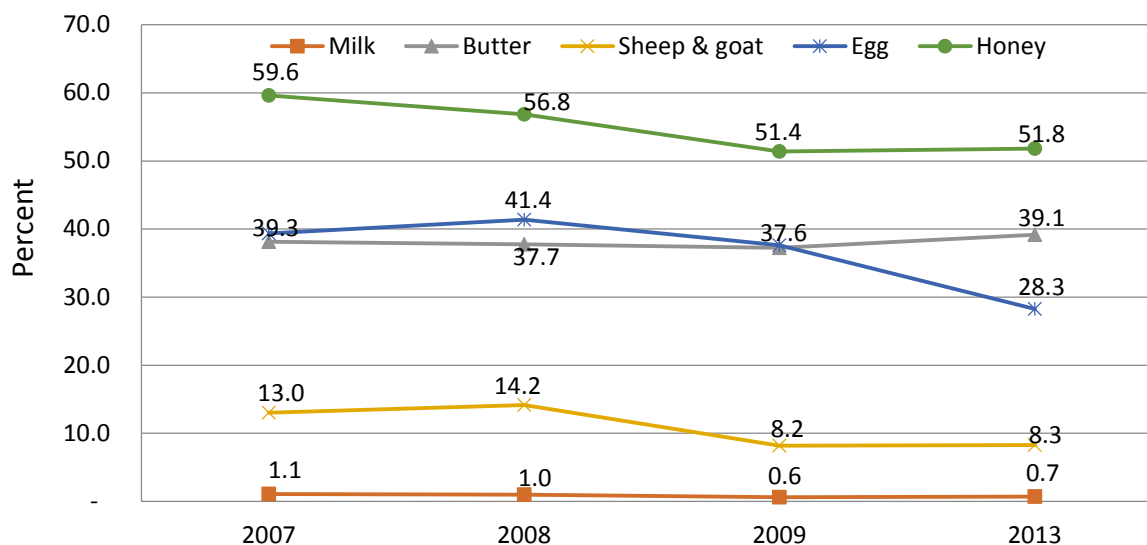


Figure 62: Trend in sales of major livestock products (%).



Livestock technologies/inputs

The major livestock inputs considered are veterinary services (drugs and vaccination), and feed as discussed below.

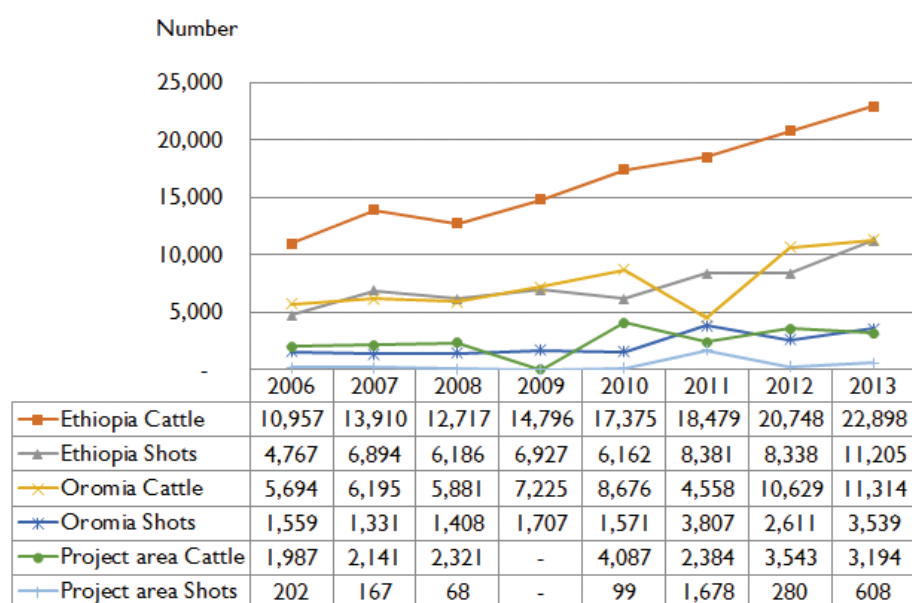
Vaccination

As shown in Table 40, millions of livestock in Ethiopia and thousands in the project area are infected by disease. The number of sick animals shows variation in different years without a clear trend of increase or decrease. Government and development partners, like NGOs and donors, allocate funds for vaccination against preventive diseases. The number of animals vaccinated increased overtime since 2006 (Figure 63).

Table 40: Estimated number of diseased livestock ('000 heads)

Year	Ethiopia			Oromia			Project area		
	Cattle	Shoats	Draft animal	Cattle	Shoats	Draft animal	Cattle	Shoats	Draft animal
2006	5625	8541	631	2817	3500	374	1675	1219	165
2007	7085	11,270	721	3440	4298	405	2082	1706	196
2008	9254	13,540	1004	4483	4655	556	2368	1539	250
2010	8960	12,059	1132	4358	4238	586	2384	1419	338
2011	8979	9793	1282	4558	3782	689	2556	1377	297
2012	9053	9401	1253	4095	3183	612	2465	1510	283
2013	8371	11,265	1143	3742	3456	566	Na	Na	Na

Figure 63: Trends in vaccinated livestock.



Livestock feed

Green fodder is the major source of livestock feed in Ethiopia. Crop residue is also used by large proportion of livestock holders (Table 41). Hay and crop by-products are also fed to the animals, especially for dairy cows, poultry and animals fed for fattening. Improved livestock feed is not commonly fed to the animals. Moreover, the time series data does not show a significant shift in the proportion of farmers changing type of feed they use for livestock (Table 42).

Table 41: Proportion of livestock feed in Ethiopia, Oromia and project area in 2013 (%)

Type of feed	Ethiopia	Oromia	Project area
Green fodder	57.13	65.48	78.84
Crop residue	29.29	25.28	15.74
Improved feed	0.23	0.21	0.06
Hay	7.24	2.95	1.61
By-product	1.17	1.27	0.38
Others	4.94	4.81	3.38
Total	100	100	100

Table 42: Trend of livestock feed proportion in project area

Year	Green fodder	Crop residue	Improved feed	Hay	By-product	Others
2006	81.6	13.3	0.1	1.0	1.0	3.1
2007	81.8	13.1	0.1	1.1	0.8	3.1
2008	81.4	13.3	0.1	1.3	0.6	3.4
2010	79.9	14.7	0.1	1.2	0.7	3.4
2011	80.7	13.9	0.1	1.3	0.4	3.6
2012	79.6	15.1	0.1	1.3	0.3	3.5
2013	78.8	15.7	0.1	1.6	0.4	3.4

Gender roles in access and control of income and assets

Due to socio-cultural barriers, there exist huge gender imbalance between men and women. Women and child girls are the most disadvantaged in rural areas regarding access to resources, income, education and other services. For instance, the Ethiopian MDGs report (2012) indicates that gender disparity broadens as it goes to the higher education level and improved from 0.85 in 2006/07 to 0.93 in 2011/12 in primary education and from 0.59 in 2006/07 to 0.83 in 2011/12 in secondary education. Moreover, in 2011/12, gender parity at tertiary education was 0.39 and even much lower at 0.25 at graduate school level. With regard to unemployment in urban area, the report also shows about 16.1% of male and 29.6 of female young people (aged between 15–29 years) were unemployed in 2011/12.

Even though the gender division of labour in rural Ethiopia varies in terms of farming systems, cultural settings, location and the different wealth categories, female farmers generally perform up to 75% of farm labour, representing 70% of household food production in Ethiopia (USAID 2013). However, though these women are capable of undertaking successful productive activities, they often fail to have access to and control over means of production and income obtained from the activities/benefits. In Oromia regional state, though 75% and 62% of the MHHs indicate that their land is registered and they are certified for their registered land respectively, they witnessed that only 31.8% of the female spouses are registered for their land with their names written on the certificates (Rorisa and Debebe 2013). This implies that from the certified lands in the region, more than 68% of the MHH considered women as shareholders for the land the household has.

Although the situation is improving especially among the young people in terms of opportunities for equitable access and control over household assets and income, men still play major roles in decision-making on issues affecting the household. Women and girls participate in productive and reproductive activities, leading to them being overburdened with farm and household chores. Assets like land, livestock and household properties are often named as under the man's ownership. In order to enhance gender equity, government and civic organizations are making efforts. According to Accelerating Ethiopian Agriculture Development for Growth, Food Security, and Equity (2010) document, gender mainstreaming is a comprehensive approach to change the way of thinking and action to address the underlying causes of gender inequalities in the society, in all sectors and at all levels. Women's empowerment through gender mainstreaming into agricultural and rural development is central to undertaking initiatives aimed at improving production and the distribution of food and agricultural products, raising levels of nutrition, and enhancing the living conditions of rural populations. In order to address the root causes of persistent poverty and food insecurity among rural women and the families they support, there is a need to achieve three main strategic objectives: Promote gender-based equity in the access to, and control over, productive resources; Enhance women's participation in decision- and policy-making processes at all levels; and Promote actions to reduce rural women's workload and enhance their opportunities for remunerated employment and income.

Description of recent programs/projects

Regional programs like Eastern Africa Agricultural Productivity Program (EAAPP) are regional initiatives intended to serve as a vehicle for implementing the agricultural productivity agenda in eastern Africa countries. The overall goal of the program is derived from the MDGs, Comprehensive Africa Agriculture Development Program (CAADP), and Framework for African Agricultural Productivity (FAAP). The overall goal of EAAPP is to contribute to enhanced sustainable productivity, value added, and competitiveness of the sub-regional agricultural system (see also Annex I, section 1.2). EAAPP is being implemented in all regional states of Ethiopia and Dire Dawa and Addis Ababa city administrations.

As it is stated before, agricultural development is central to the Ethiopian government's poverty reduction strategy and the main source of economic growth. Thus, the government of Ethiopia with development partners and allies developed initiatives and programs that help to improve the livelihood of people. The major agricultural development initiatives are Agricultural Growth Program (AGP), EAAPP, Pastoral Livelihoods Resilience Program (PLRP), Productive Safety Net Program (PSNP), Household Asset Building Program (HABP) and SLM. PSNP and HABP

operate in chronically food insecure woredas of Ethiopia, while SLM and AGP are being implemented in high potential areas. The project area does not benefit from PSNP and HAPB programs. Moreover, the government along with its partners, has developed a number of other programs/projects intended to address poverty reduction, productivity improvement and livelihood improvement, strengthen agricultural extension service provisions, capacity building and small-scale irrigation, tackle climate change threats and reduce exposure to chronic food insecurity and shocks.

Currently, there are different development programs/projects being implementing in Oromia by government and other partners. These are AGP, EAAPP, Small-Scale Irrigation (SSI) project, SLM II, PSNP (APLII and APLIII), HAPB, Termite control project, Cattle genetic improvement project, etc.

NGOs, like SNV, Menschen für Menschen, Plan International, World Vision Ethiopia, SG2000, Techno-Serve, etc. also implement rural development and livelihood improvement projects in the area. These organizations work in different programs and projects including food security, water and irrigation, NRM, marketing and value chain, capacity building, innovation and extension capacity building, creating access to finance, etc. by aligning their program interventions with the government agenda and community problems. Research-based projects are also being implemented by the CGIAR in the area.

Main opportunities, risks and constraints of the production systems

Table 43 summarizes the opportunities, constraints and risks in the production and marketing of crops and livestock in the project area.

Opportunities: The major opportunities revolve around conducive climate and soil for production, favourable policy climate, expanding rural infrastructure, existences of development programs, existing demand for agricultural products and increasing price of products which stimulate farmers to increase production, continued capacity building for farmers and government staff involved in extension services.

Constraints: The major constraints are pests and diseases, shortage of improved agricultural technologies and associated high price of fertilizer and improved seeds, lack of research-based input use rate such as fertilizer and seed rate, limited or lack of irrigation technology to increase productivity and reduce reliance on only rain for production, lack of appropriate livestock improvement technologies, gender inequality, limited skill in increasing production efficiency, lack of credit for production and marketing and gender inequality.

Risk: The major risk associated with crop production includes heavy rainfall which also involve hail and storm damaging crops, increased land degradation caused by interrelated factors, such as population pressure, expansion of farm land, over grazing, deforestation, firewood collection, cultivation of steep slopes and poor agronomic practices. Increasing soil acidity and salinity, pests and disease of crops and livestock, perishable nature of crops (especially fruits and vegetables), livestock products like milk and butter also pose challenge to production and marketing of agricultural products. Traditional barriers are major risks to bringing about change and improving gender equality. Numeracy also aggravates the situation. Malaria is also a major disease affecting labour use.

Table 43: Opportunities, constraints and risks for crop and livestock production

Activities	Opportunities	Constraints	Associated Risks
Crop production	Policy support for crop production	Shortage of agricultural inputs	High rain fall
	Good rain fall distribution about six months	High cost of inputs	Crop disease like (MND) and pests
	Farm land availability	Lack of fertilizer at recommended rate for different crops	Soil and water erosion/ flood
	Favourable climate	Lack of capacity of the farmers to purchase the required inputs	Wild animals are major causes of pre-harvest loss
	Rich experience of farmers	Lack of irrigation technology as well as skill in irrigation use	High post harvest loss
		Limited access to credit	Increasing soil acidity and salinity
Livestock production	Policy support for livestock production	Livestock disease	Livestock pests and diseases
	Favourable climate for livestock	Lack of sufficient veterinary services	
	Availability of water and communal grazing lands	Not sufficient artificial insemination service	
		Lack of knowledge and credit to invest in livestock as an enterprise	
		Lack of improved breed	
		Lack of dependable input supply system including feed and drugs	
		Feed shortage	

Markets and institutions

The intermediate development indicator that this section will help to address is IDO 6: 'Increased capacity for integrated systems to innovate and bring social and technical solutions to scale, as well as IDO 2: 'Increased consumption of diverse and quality foods from sustainable food systems by the poor, especially among nutritionally vulnerable women and children'.

Agricultural marketing systems in Ethiopia/Oromia

The structure of the national agricultural market system in general and Oromia region in particular can be viewed in terms of the marketing channel, type and role of market participants, market infrastructure, and finance. The agricultural marketing channel involves producers, product collectors/assemblers at farm level, local traders, brokers/agents, and wholesalers in the transitory or terminal markets such as Addis Ababa, Ethiopian Grain Trade Enterprise, processors, retailers, consumers and exporters.

Producers: Crop producers are largely smallholder private farmers and commercial farmers, as well as state farms. Agricultural products are supplied to local markets from local supply and imports through commercial imports or food aid. Producers sell to local traders, village collectors, wholesalers, cooperatives/unions, and consumers.

Middlemen/Agents: Brokers specialize in bringing the buyers and sellers together. They sell the products of producers to wholesalers or that of wholesalers to other wholesalers, processors or retailers. They also disseminate price and other market information and play a leading role in influencing agricultural products trade and price formation in towns mainly in Addis Ababa. A study by Gebre-Madhin et al. (2003)¹ revealed that the brokerage institution is critical to market performance in the Ethiopian grain market and that it enables traders to circumvent the commitment problem of long-distance trade with unknown partners. In the absence of standardization, public information and legal contract enforcement, brokers act as inspectors and guarantors of each transaction especially in grain and vegetable marketing. Brokers are permanently located in the central market of Addis Ababa and are easily identifiable to all traders who come in and out of the market. Thus, they are natural repositories of information, regarding market flows, the behaviour of market participants, and the outcomes of past transactions. Their permanent presence in the central market ensures the continuity of a reputation transmission mechanism. In addition, their continuous presence implies that, in the event that a falling out between partners occurs during a long-distance trade, the broker can be contacted to mediate and resolve the dispute.

Traders are wholesalers or retailers: Wholesalers are the major actors in the grain and vegetable marketing channels. Wholesalers could be regional wholesalers who supply the product from surplus areas or farmers, assemblers or other traders who sell the product to central markets. Wholesalers located in deficient areas purchase the product in bulk from wholesalers in the surplus areas or central markets and sell in their respective areas. In the case of grain trade government parastatal such as the Ethiopian Grain Trade Enterprise is also considered as wholesaler. Nowadays,

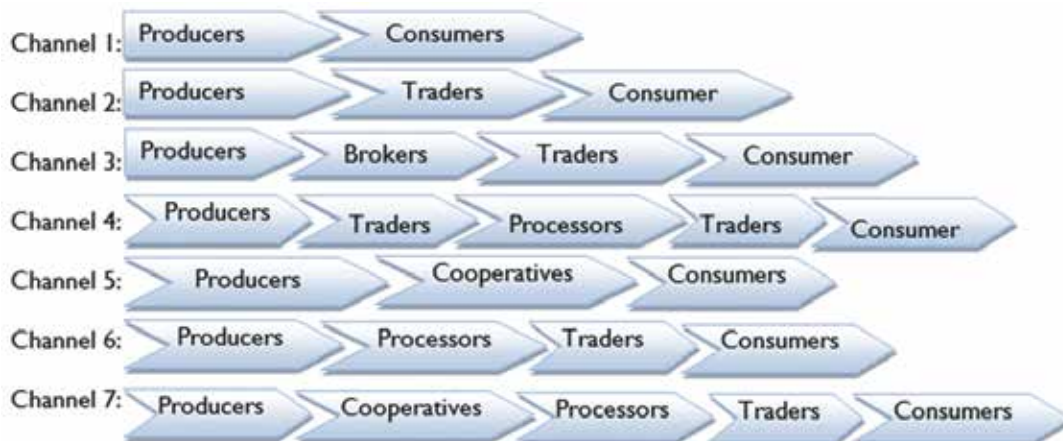
1. Gabre-Madhin, E.Z., Amha, W., Tafara, E., Schluter, J., Teshome, T. and Kilkile, G.. 2003. *Getting Markets Right in Ethiopia: An Institutional and Legal Analysis of Grain and Coffee Marketing*, International Food Policy Research Institute: Washington DC, USA.

cooperatives and cooperative unions serve also play the role of wholesalers when they collect and sell in bulk and act as retailers when they distribute traders in smaller quantities to consumers.

Retailers: The retailers in markets are traders who buy products from wholesalers and producers and sell to consumers at convenient locations and times in various forms and quantities.

In the project area, cereals, pulses, oil seeds and vegetables are supplied to the markets in local and nearby towns mainly from the surrounding rural areas of Oromia region. Farmers are the major suppliers. The wholesalers in these towns collect grains such as teff, wheat, barley and pulses, fruits and vegetables from the producers and sell to the consumers or to other traders in different parts of the country including Addis Ababa. For instance the Nekemte town market gets grain (teff, wheat, barley, maize and sorghum) from East and West Wollega zones and West Showa zone. Teff, wheat and barley are mainly supplied from Horro Guduru and Gedo areas, while maize and sorghum are mainly supplied from low land areas (Abay and Hangar valleys) in East Wollega zone by traders. Similarly in Jimma town grain is supplied to market from rural collection centres. However, white teff is supplied to the market in Jimma by wholesalers from different parts of the country, mainly from West and East Shewa and Addis Ababa. Role of traders is of paramount in grain marketing. Figure 64 presents some of the common grain marketing channels in Ethiopia.

Figure 64: Typical market channels of grain in selected towns of Oromia region.



Processors: Processors include grain mills, food processors, brewery, malt industry, bakers, meat processors, leather factories, juice processors, cooking oil, etc. owned by private and government to process agricultural products and sell their products to traders or consumers. **Cooperatives:** Agricultural marketing cooperatives and consumer cooperatives involve in buying and selling of agricultural products. They stabilize product price by competing with traders as a result of which traders push the producers' price up. They also protect consumers by stabilizing retail prices of products. Some cooperative unions also started to participate in the processing of agricultural products like grain, milk, oilseeds, etc.

Institutions involved in agricultural marketing issues

There are several institutions which have stake in agricultural marketing. Semi-autonomous government agencies such as the Ethiopian Commodity Exchange (ECX) and Oromia Market Development Agencies, private institutions such as agro-processors, traders and exporters, and cooperatives are the key players of agricultural marketing of agricultural products.

ECX

ECX has the vision to revolutionize Ethiopia's tradition bound agriculture through creating a new marketplace that serves all market actors including farmers, traders, processors, exporters and consumers. The ECX is a unique partnership of market actors, the members of the exchange, and its main promoter, the government of Ethiopia. ECX aims to bring

integrity, security, and efficiency to the market. ECX creates opportunities for unparalleled growth in the commodity sector in Ethiopia and linked industries, such as transport and logistics, banking and financial services, and others. ECX started its operation in April 2008. As of July 2011, the physical presence of the ECX consists of 55 warehouses in 17 regional locations. It has grown from trading 138,000 tonnes in its first year to 508,000 tonnes in its third year, with nearly equal shares of coffee and oilseeds and pulses. The value of the ECX rose 368% between 2010 and 2011 to reach USD 1.1 billion. As of November 2010, the trading floor in Addis Ababa, handled 200 spot contracts in such commodities as coffee, sesame, navy beans, maize and wheat. It was assessed in July 2011 that total membership equaled 243 with total clients, who trade through members, numbered about 7800. Farmer Cooperatives represented 2.4 million smallholder farmers, which make up 12% of the membership.

ECX provides market information through media and audiovisual price displayers provide product quality assessment and warehousing services. It is envisaged that ECX reduces the risk high transaction costs and improve market efficiency.

Oromia market development agency

The agency was established by the Oromia regional state with the aim to stabilize grain prices and reduce volatility in the sector. It facilitates wholesale and retail marketing of grain in Oromia, located on the western suburb of Addis Ababa. The agency broadcasts also grain price information on radio to create awareness by the market actors including the producers.

Agricultural marketing cooperatives

Cooperatives act like wholesalers and sometimes as retailers. They buy from farmers (often members), sort or process, pack and sell to consumer cooperatives, institutional consumers or traders, and sometimes also export. Export of agricultural commodities such as honey, coffee, oilseeds and vegetables is done by some cooperative unions. Consumer cooperatives purchase products from unions and sell to the consumers. The government motivates cooperatives and their union due to their role in price stabilization which is necessary for the producers as well as for the consumers. According to the Federal Cooperative Agency (FCA 2013), a total of 16,447 primary cooperatives involve in marketing of agricultural products like grain, coffee and livestock. The cooperatives principally serve about 6.2 million members (19% female) by purchasing produces from members, selling agricultural inputs to members and also providing dividend on profit to members. The cooperatives operate with a capital of ETB 2.7 billion. About 34% of the cooperatives are found in Oromia (Table 44). Some 7129 consumer cooperatives also serve the urban poor by marketing agricultural products and industrial goods at reasonable prices.

Table 44: Primary cooperatives involved in agricultural products marketing

Type of Cooperatives	No of coops	Members			Capital in ETB
		Male	Female	Total	
Ethiopia:	16,447	4,994,472	1,201,668	6,196,140	2,705,378,184
Crop and livestock production and marketing/ multipurpose	11,076	4,423,621	901,359	5,324,980	1,906,949,709
Coffee	223	91,388	4,594	95,982	213,092,872
Livestock	2203	58,585	18,642	77,227	87,905,707
Consumer	2945	420,878	277,073	697,951	497,429,896
Oromia:	7129	1,905,777	180,715	2,086,492	924,650,691
Crop and livestock production and marketing/ multipurpose	5483	1,792,546	130,895	1,923,441	762,084,051
Coffee	55	3,663	475	4138	7,099,011
Livestock	340	11,129	3832	14,961	27,156,272
Consumer	1251	98,439	45,513	143,952	128,311,357

Source: Federal Cooperative Agency (2013).

Primary cooperatives encounter several constraints including managerial and financial problems. In order to overcome some of these problems and strengthen their opportunity for market participation, primary cooperatives are organized into unions. According to the FCA (2013), about 2412 cooperative unions were organized to involve in agricultural marketing in Ethiopia. The unions have about 1.9 million members and ETB 555 million (Table 45). The unions also involve in processing of agricultural products like milling, bakery, and coffee roasting. Some of the unions also export agricultural products and market agricultural inputs.

Table 45: Cooperative unions involved in marketing of agricultural products

Type of cooperatives unions	No of unions	Members			Capital in ETB
		Male	Female	Total	
Crop and livestock production and marketing/multipurpose	1817	1,822,300	530,263	2,352,563	496,531,745
Livestock	272	17,049	3858	20,907	14,690,258
Consumer	323	69,725	45,186	114,911	44,039,792
Total	2412	1,909,074	579,307	2,488,381	555,261,795

Source: Federal Cooperative Agency (2013).

Agro processing manufacturing industries

According to the Ministry of Trade and Industry (2014), there are 455 large and medium scale agro-processing factories with about ETB 4 billion capital and ETB 7.4 billion production capacity. However, the industries operate below capacity at a rate of 67.4%. The industries produce largely for local markets (97.4% market outlet) and use more of domestic inputs (only 11.2% of imported inputs used). About 22% of the large and medium scale agro-processing industries in Ethiopia are located in Oromia having 44% of the registered capacity and having 56% of the production capacity. However, the industries in Oromia are performing less efficiently at 55.5% (Table 46).

Table 46: Number of large and medium scale agro processing manufacturing industries in Ethiopia

Sr. No	Descriptions	Ethiopia	Oromia
1	Number of Industries	455	103
2	Capital in '000 ETB	4,006,871	2,265,156
3	Annual Production Capacity in '000 ETB	7,402,129	3,298,345
4	Utilization of production capacity (%)	67.41	55.33
5	Output market share		
	Local (%)	97.43	97.65
	Export (%)	2.57	2.35
6	Imported Inputs (%)	11.24	6.77

Source: Ministry of Trade and Industry (2012): Accessed on 21 December 2014.

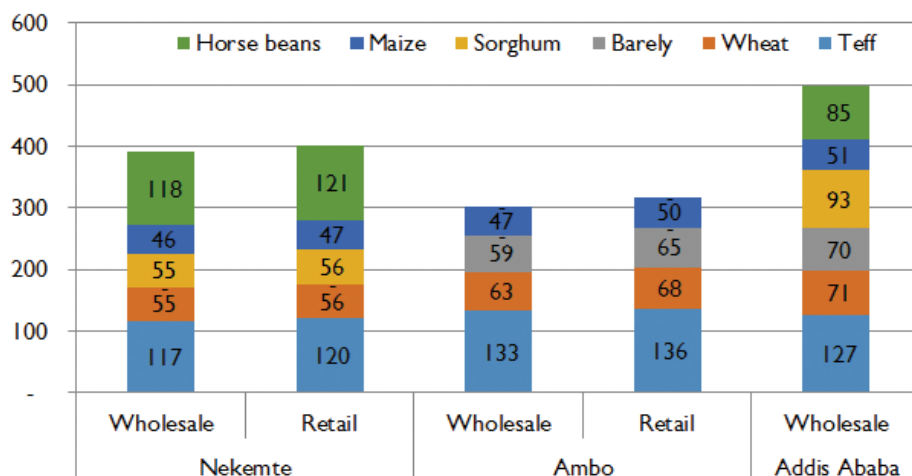
Traders

A large number of private traders involve in local marketing and export of agricultural products. Although data on the number of traders and scope of their operation was not available to the research team, it is understood that traders (wholesalers and retailers) handle the largest share of agricultural commodities in Ethiopia.

Grain prices

The grain price depends on the supply and demand of the product. As the product flows from sources of production to consumer centres, the price increases. For example, *teff* is transported from East Wollega or West Shewa (also through Addis Ababa market) to Ambo market. Hence, the wholesale and retail price for these products is higher in Ambo during 2012/13. The project area (symbolized by Nekemte market), is not also major supplier of pulses. It receives the product from other markets, including Addis Ababa. Hence, the price of horse beans (pulse) is the higher in Nekemte. For other products like maize, wheat and sorghum, the project area is the major supplier and hence, the price at Nekemte is the least of the three market centres. In all markets, retailers' price is higher than that of the wholesalers (Figure 65).

Figure 65: Price of grain in sample project area and Addis Ababa in 2012/13.



Source: Ethiopian Grain Trade Enterprise.

Grain price increased through time, especially starting from 2007. The rate of price increment was higher for *teff* as compared to maize. The trend of price increment in Oromia is similar to that of Ethiopia in general (Figures 66 and 67).

Figure 66: Average unit price of major crops in Ethiopia (ETB/kg).

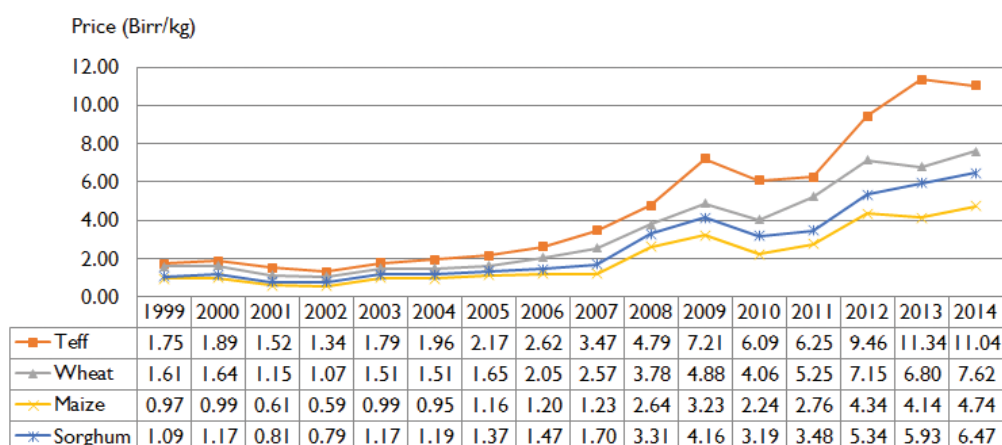
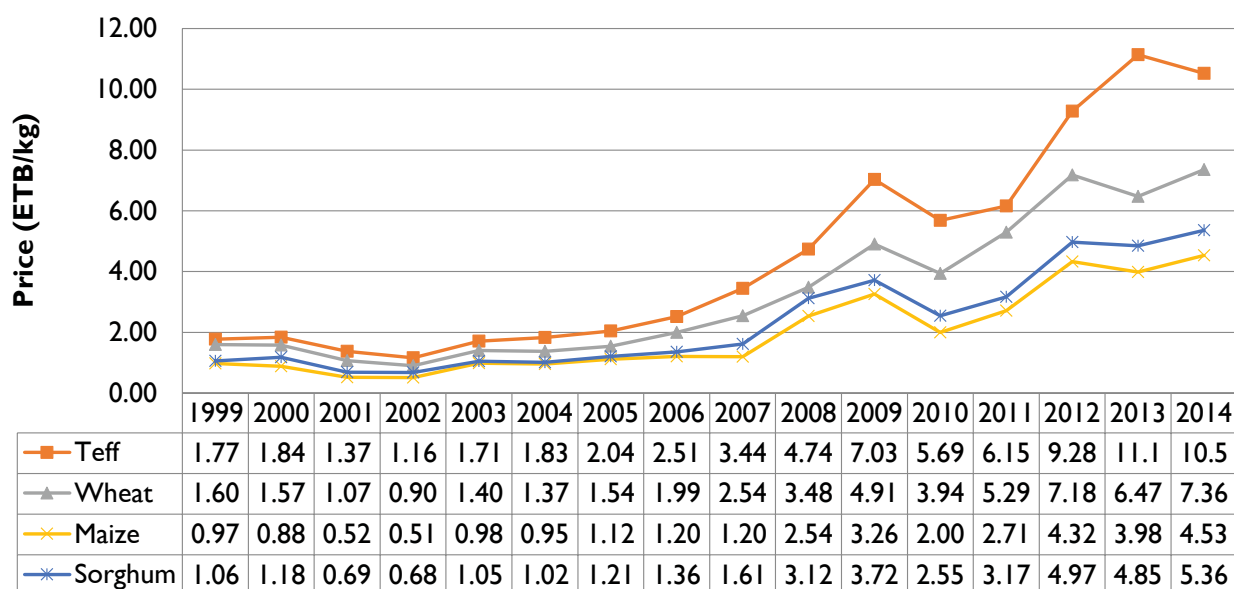


Figure 67: Average unit price of major crops in Oromia (ETB/kg).



Agricultural exports

Crop products export

In 2013, Ethiopia generated about USD 2.5 billion from export of commodities. Crop products export accounted for 74% of the export earning of the country (Table 47). Coffee leads the export revenue taking 23% of the share, followed by oilseeds (19.2%), vegetables and fruits (13.1%), pulse (8.6%) and flower (6.4%). Export of cereals is insignificant since Ethiopia is a net importer of cereals to fill the food gap in the country (further discussed under imports).

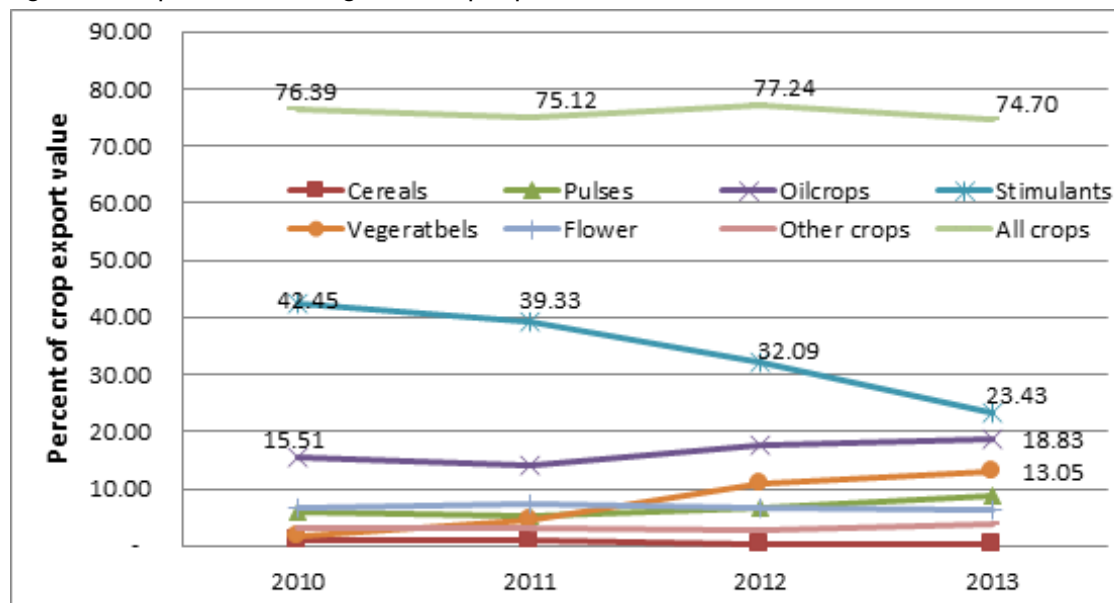
Table 47: Free-on-board value of exports over the last four years

Type of crops	Value in USD over four years				Proportion in total export earnings (%)			
	2010	2011	2012	2013	2010	2011	2012	2013
Cereals:	20,795,985	25,631,349	7,860,430	9,920,401	0.97	1.01	0.29	0.38
Wheat	-	3081	155,577	9608	-	0.00	0.01	0.00
Barley	28,800	7720	8217	12,460	0.00	0.00	0.00	0.00
Maize	9,811,182	14,778,203	-	-	0.46	0.58	-	-
Sorghum	7,202,022	6,549,480	2,512,923	894,833	0.34	0.26	0.09	0.03
Teff (Injera)	2,453,443	3,284,288	4,315,923	7,876,846	0.11	0.13	0.16	0.30
Millet	6904	24,634	10,713	41,639	0.00	0.00	0.00	0.00
Oats	63,090	101,376	98,114	204,748	0.00	0.00	0.00	0.01
Others (Brade, flour, cake, etc.)	1,230,545	882,567	758,962	880,267	0.06	0.03	0.03	0.03
Pulses	125,068,790	134,225,153	186,392,279	222,791,394	5.82	5.28	6.80	8.60
Oil and oil crops:	336,646,461	365,056,312	484,033,424	497,910,039	15.68	14.36	17.66	19.22
Oil crops	332,991,159	362,081,214	481,925,853	487,854,104	15.51	14.24	17.58	18.83
Semi processed oils crops	3,655,302	2,975,099	2,107,572	10,055,935	0.17	0.12	0.08	0.39
Stimulants:	911,507,733	999,813,767	879,656,044	607,100,584	42.45	39.33	32.09	23.43
Coffee	676,642,646	836,284,642	878,958,233	606,340,399	31.51	32.89	32.06	23.40

Type of crops	Value in USD over four years				Proportion in total export earnings (%)			
	2010	2011	2012	2013	2010	2011	2012	2013
Tea	843,030	1,326,556	697,812	760,185	0.04	0.05	0.03	0.03
Khat	234,022,057	162,202,569			10.90	6.38	-	-
Spices	26,618,718	36,946,208	30,927,117	29,221,920	1.24	1.45	1.13	1.13
Vegetables	36,947,675	117,317,423	299,313,129	338,104,878	1.72	4.61	10.92	13.05
Fruits	6,161,576	6,409,713	7,207,188	7,761,881	0.29	0.25	0.26	0.30
Cotton	23,307,925	21,833,606	22,674,051	39,315,890	1.09	0.86	0.83	1.52
Flowers and related	139,101,832	187,865,265	184,442,305	165,136,263	6.48	7.39	6.73	6.37
Other agricultural products	14,162,458	14,685,757	14,817,970	18,235,896	0.66	0.58	0.54	0.70
Total crop	1,640,319,153	1,909,784,553	2,117,323,938	1,935,499,146	76.39	75.12	77.24	74.70
Total export earning	2,147,314,405	2,542,304,496	2,741,297,676	2,591,041,909	100.00	100	100	100

The proportion of export earnings from crops declined from 76.4% in 2010 to 74.7% in 2013 (Figure 68). Export earnings from stimulants (coffee and khat) declined from 42.5% in 2010 to 23.4% in 2013 while the export earnings from other crops (except cereals) increased over the same period.

Figure 68: Proportion of earnings from crop exports.



Livestock and livestock product exports

Ethiopia exported about 135,486 tonnes of livestock and livestock products during 2013. About 77.15% of these exports were live animals, while the remaining percentage was the export of livestock products. Goat meat, honey, and hides and skins lead the quantity of livestock products exported (Table 48). The trend of quantity of livestock exported has not shown clear tendency to increase.

Table 48: Quantity of livestock and livestock products exports during the last four years

Type of livestock and products	Quantity exported in tonnes				% of quantity export			
	2010	2011	2012	2013	2010	2011	2012	2013
Type of live animals								
Cattle	51,239.1	97,842.5	63,707.3	68,967.8	44.20	58.30	45.57	50.90
Sheep	3099.3	7722.8	11,151.7	10,924.6	2.67	4.60	7.98	8.06
Goats	204.3	1096.8	1014.5	1298.8	0.18	0.65	0.73	0.96
Camels	37,264.0	32,186.7	40,766.3	23,304.0	32.15	19.18	29.16	17.20
Horses and Mules	275.7	79.3	-	6.7	0.24	0.05	-	0.00
Other live animals (reptiles, etc)	2272.8	0.9	1.6	2.5	1.96	0.00	0.00	0.00
Subtotals	94,355.3	138,929.0	116,641.4	104,504.3	81.40	82.78	83.43	77.13
Livestock products:								
Bovine meat	913.0	2907.3	837.5	123.3	0.79	1.73	0.60	0.09
Lamp/sheep meat	1735.9	2401.1	2091.1	1319.1	1.50	1.43	1.50	0.97
Goat meat	7949.3	12,306.2	11,549.2	11,986.2	6.86	7.33	8.26	8.85
Offals of sheep, goat and horses	3030.2	1041.0	1275.9	1172.2	2.61	0.62	0.91	0.87
Bones and others	69.5	532.4	370.3	367.3	0.06	0.32	0.26	0.27
Fish and others related meat	849.5	824.8	926.9	770.1	0.73	0.49	0.66	0.57
Milk and related	2594.6	1979.3	2196.5	2273.4	2.24	1.18	1.57	1.68
Poultry and egg	243.3	227.0	204.0	159.7	0.21	0.14	0.15	0.12
Honey	615.2	728.6	726.7	8827.7	0.53	0.43	0.52	6.52
Wax	310.5	358.0	347.6	341.4	0.27	0.21	0.25	0.25
Hides and skins	3251.4	5589.2	2643.1	3641.4	2.80	3.33	1.89	2.69
Sub totals	21,562.4	28,895.0	23,168.6	30,981.8	18.60	17.22	16.57	22.87
Totals	115,918	167,824	139,810	135,486	100	100	100	100

Export of livestock and livestock products generated about USD 363.2 million in 2013, of which 49.9% was from export of live animals, while the remaining 51.1% was generated from livestock products (Table 49). This indicates that exporting livestock products generates more value per unit of quantity exported. Export value of hides and skins, and goats meat have the lead at 27.9% and 17.3% of the value of livestock and livestock products exported.

Table 49: Free-on-board value of livestock and livestock products exports during the last four years

Type of livestock and products	Value in ('000 USD) during the years				% of export value			
	2010	2011	2012	2013	2010	2011	2012	2013
Type of live animals								
Cattle	75,139.29	136,092.37	94,694.13	112,829.77	30.41	34.58	27.36	31.15
Sheep	5185.15	14,192.85	23,966.94	26,521.35	2.10	3.61	6.92	7.32
Goats	295.34	1555.31	1816.17	2510.25	0.12	0.40	0.52	0.69
Camels	43,263.34	35,845.80	58,894.69	38,849.22	17.51	9.11	17.01	10.73
Horses and mules	234.49	14.94	-	4.85	0.09	0.00	-	0.00
Other live animals (reptiles, etc.)	4089.53	11.33	41.40	45.61	1.66	0.00	0.01	0.01
Subtotals	128,207.15	187,712.60	179,413.33	180,761.04	51.89	47.69	51.83	49.90
Livestock products:								
Bovine meat	2,430.03	8655.18	2247.19	164.24	0.98	2.20	0.65	0.05
Lamp/sheep meat	6942.85	10,766.57	10,172.54	6744.40	2.81	2.74	2.94	1.86
Goat meat	31,342.03	56,000.72	58,541.52	62,471.79	12.69	14.23	16.91	17.25

Type of livestock and products	Value in ('000 USD) during the years				% of export value			
	2010	2011	2012	2013	2010	2011	2012	2013
Offals of sheep, goat and horses	7126.45	1691.79	2629.42	3234.24	2.88	0.43	0.76	0.89
Bones and others	1263.92	2081.60	2437.94	1167.64	0.51	0.53	0.70	0.32
Fish and others related meat	445.04	418.75	471.02	391.68	0.18	0.11	0.14	0.11
Milk and related	292.95	266.25	363.74	278.02	0.12	0.07	0.11	0.08
Poultry and egg	493.50	512.70	485.83	384.46	0.20	0.13	0.14	0.11
Honey	2106.45	2409.38	2687.15	3021.35	0.85	0.61	0.78	0.83
Wax	1517.74	1886.36	2219.45	2538.13	0.61	0.48	0.64	0.70
Hides and skins	64,883.95	121,207.14	84,494.52	101,063.07	26.26	30.79	24.41	27.90
Sub totals	118,844.92	205,896.43	166,750.33	181,459.02	48.11	52.31	48.17	50.10
Totals	247,052	393,609	346,164	362,220	100	100	100.00	100

Agricultural imports

Import of crop products

Despite its potential for crop production, Ethiopia has not been able to produce sufficient food for its growing population. Hence, it has been importing grain; cooking oil and other processed food to feed its population. As shown in Figure 69, the country imported about two million tonnes of crop products in 2013 at cost of USD 1.34 billion. The money spent per year increased since 2010.

Import of cereal crops account 77% of crop product imports, while import of wheat alone account for 62% of the quantity of grain imports. Table 50 shows the quantity of crop products imported and the share of each product. In terms of value, cereal crop import accounted for 50.7%, while wheat alone accounted for 34% of the import value of grain (Table 51). Import of edible oil accounted for 29% of the crop product imports, while fruits and fruit-product imports accounted for 16.8%.

Figure 69: Imported quantity and value of crop products.

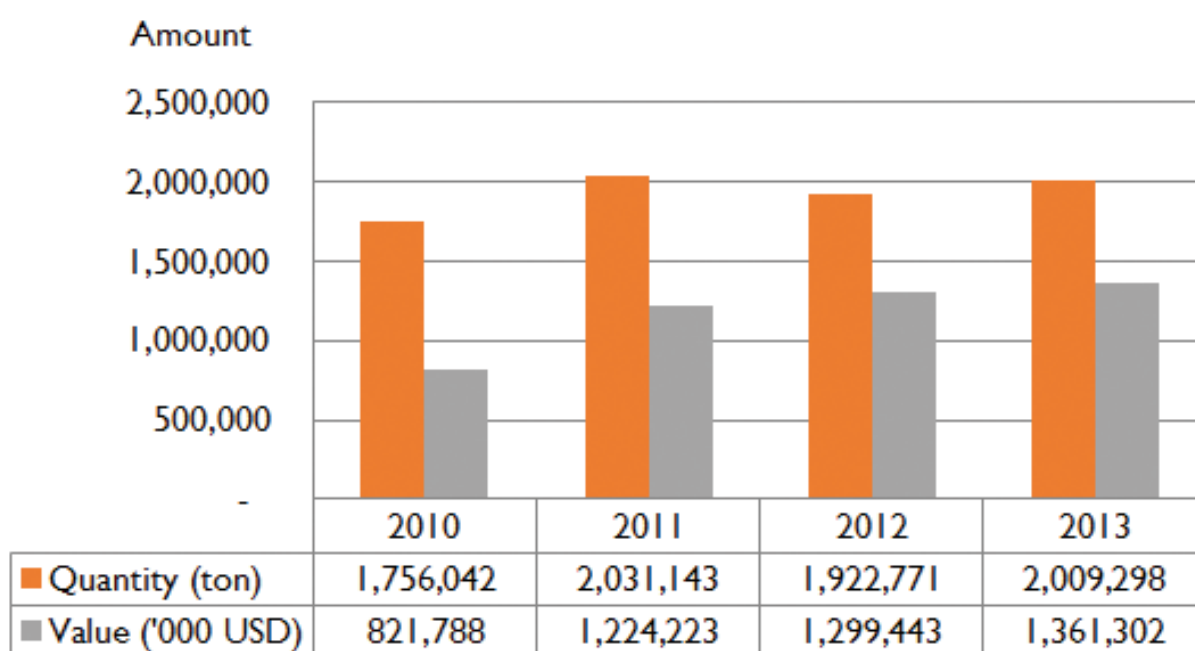


Table 50: Quantity of crop products imported and proportion

Type	Quantity in tonnes				Proportion in total crop product import (%)			
	2010	2011	2012	2013	2010	2011	2012	2013
Cereals:	1,260,764.5	1,341,349.2	1,245,167.9	1,548,899.3	71.8	66.0	64.8	77.1
Wheat	1,056,864.8	1,121,911.6	991,560.8	1,252,149.9	60.2	55.2	51.6	62.3
Barley	34,347.1	34,684.8	55,158.0	38,503.1	2.0	1.7	2.9	1.9
Maize	10,975.9	27,137.7	12,315.8	8804.7	0.6	1.3	0.6	0.4
Rice	43,247.7	81,816.4	122,883.6	153,760.5	2.5	4.0	6.4	7.7
Sorghum	113,260.0	33,790.1	3720.0	45,040.0	6.4	1.7	0.2	2.2
Millet	2.7	-	0.2	1.3	0.0	-	0.0	0.0
Oats	325.1	311.6	573.7	230.9	0.0	0.0	0.0	0.0
Processed foods from cereals	1741.1	41,697.0	-	-	0.1	2.1	-	-
Pulses	51,304.1	41,100.6	32,803.6	21,078.5	2.9	2.0	1.7	1.0
Oil and oil crops:	246,046.5	275,293.2	324,359.4	38,595.1	14.0	13.6	16.9	1.9
Oil crops	636.2	5206.8	455.0	2,277.3	0.0	0.3	0.0	0.1
Processed edible oils	245,410.3	270,086.5	323,904.4	36,317.9	14.0	13.3	16.8	1.8
Stimulants:	189.6	107.8	172.9	90.2	0.0	0.0	0.0	0.0
Coffee	157.8	92.2	151.6	67.2	0.0	0.0	0.0	0.0
Tea	31.8	15.7	21.3	23.0	0.0	0.0	0.0	0.0
Spices	1,153.1	1,243.9	1,487.1	1,700.2	0.1	0.1	0.1	0.1
Vegetables:	5,446.0	2,816.8	293,669.7	3,592.8	0.3	0.1	15.3	0.2
Fruits	12,810.7	258,609.6	17,535.8	389,116.5	0.7	12.7	0.9	19.4
Flowers and related	2.8	505.5	582.2	596.7	0.0	0.0	0.0	0.0
Other agricultural products	178,284.3	108,732.8	6,755.7	5,627.3	10.2	5.4	0.4	0.3
Total	1,756,042	2,031,143	1,922,771	2,009,298	100	100	100	100

Source: Computed based on raw data of Ethiopian Customs and Authority (ECRA) (2010–2013).

Table 51: Value of crop products imported and share of its parts

Type	Value in million USD				% of total value of crop product imported			
	2010	2011	2012	2013	2010	2011	2012	2013
Cereals:	400.7	588.7	535.5	689.5	48.8	48.1	41.2	50.7
Wheat	303.5	417.6	335.4	472.7	36.9	34.1	25.8	34.7
Barley	21.6	26.0	36.6	29.9	2.6	2.1	2.8	2.2
Maize	8.0	33.9	10.7	8.3	1.0	2.8	0.8	0.6
Rice	25.8	51.4	76.4	89.6	3.1	4.2	5.9	6.6
Sorghum	40.0	15.1	0.9	31.3	4.9	1.2	0.1	2.3
Millet	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Oats	0.4	0.3	0.7	0.4	0.0	0.0	0.1	0.0
Processed foods from cereals	1.3	44.4	-	-	0.2	3.6	-	-
Others	-	-	74.9	57.4	-	-	5.8	4.2
Pulses	34.5	29.2	33.5	17.6	4.2	2.4	2.6	1.3
Oil and oil crops:	258.4	403.0	508.9	398.0	31.4	32.9	39.2	29.2

Type	Value in million USD				% of total value of crop product imported			
	2010	2011	2012	2013	2010	2011	2012	2013
Oil crops	1.6	16.9	74.9	6.5	0.2	1.4	5.8	0.5
Processed edible oils	256.8	386.1	434.0	391.5	31.2	31.5	33.4	28.8
Stimulants:	0.6	0.5	1.4	0.6	0.1	0.0	0.1	0.0
Coffee	0.5	0.4	1.2	0.5	0.1	0.0	0.1	0.0
Tea	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Spices	1.2	1.3	1.7	1.9	0.1	0.1	0.1	0.1
Vegetables	3.9	3.7	178.0	2.9	0.5	0.3	13.7	0.2
Fruits	9.0	186.1	14.8	228.9	1.1	15.2	1.1	16.8
Flowers and related	0.1	4.8	7.5	5.5	0.0	0.4	0.6	0.4
Other agricultural products	113.2	6.7	14.3	16.5	13.8	0.5	1.1	1.2
Total	821.8	1224.2	1299.4	1361.3	100.0	100.0	100.0	100.0

Source: Computed based on raw data of ECRA (2010–2013).

Import of livestock/product

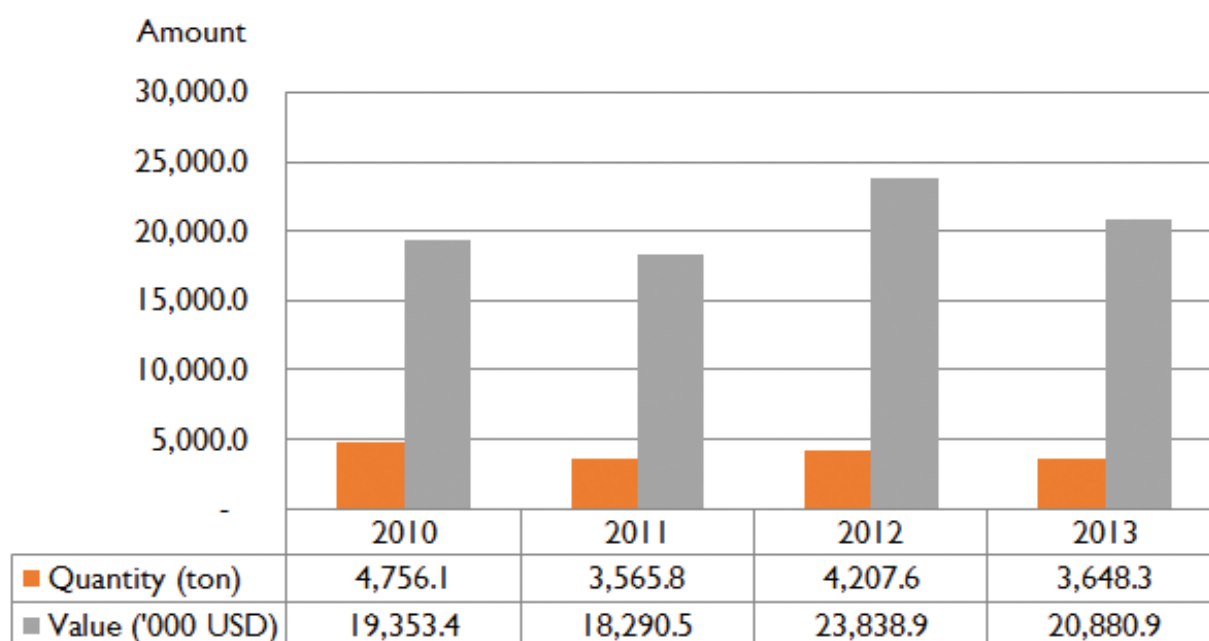
Ethiopia also spent about USD 21 million for the import of livestock and livestock products. The value of imported live animals accounts for 36.2% of the total livestock.

Table 52: Value of imported livestock products and their proportion

Type	Value ('000 USD)				% of import value in total livestock value			
	2010	2011	2012	2013	2010	2011	2012	2013
Type of livestock:								
Cattle	-	427.1	113.6	983.5	-	2.3	0.5	4.7
Sheep	-	380.3	-	-	-	2.1	-	-
Goats	6.3	222.3	-	-	0.0	1.2	-	-
Horses and mules	0.3	55.5	71.8	12.2	0.0	0.3	0.3	0.1
Chicken, geese, etc.	563.3	400.2	748.3	1176.0	2.9	2.2	3.1	5.6
Other live animals	66.0	385.3	3713.7	5380.6	0.3	2.1	15.6	25.8
Subtotals	635.8	1870.8	4647.3	7552.3	3.3	10.2	19.5	36.2
Livestock products:								
Bovine meat	215.6	168.8	202.7	205.3	1.1	0.9	0.9	1.0
Lamb/sheep meat	24.8	51.2	80.1	12.6	0.1	0.3	0.3	0.1
Swine meat	138.1	128.8	-	-	0.7	0.7	-	-
Fish and others meat	1349.7	429.7	2073.6	1893.6	7.0	2.3	8.7	9.1
Other livestock meats and products	-	2169.2	-	-	-	11.9	-	-
Bones and others	-	-	951.2	-	-	-	4.0	-
Poultry and egg	153.2	144.0	129.8	129.5	0.8	0.8	0.5	0.6
Milk and related	16,811.0	13,303.1	15,732.8	11,019.8	86.9	72.7	66.0	52.8
Honey	17.9	24.9	21.3	60.8	0.1	0.1	0.1	0.3
Wax	7.4	-	-	7.0	0.0	-	-	0.0
Sub totals	18,717.6	16,419.7	19,191.6	13,328.6	96.7	89.8	80.5	63.8
Totals	19,353.4	18,290.5	23,838.9	20,880.9	100.0	100.0	100.0	100.0

Source: Computed based on raw data of ECRA (2010–2013).

Figure 70: Imported quantity and value of livestock and livestock product.



Source: Computed based on raw data of ECRA (2010–2013).

Import of agricultural inputs

The major inputs for crop production are land, labour, seed, fertilizer, pesticides, farm implements and irrigation facilities. Most of these inputs are provided by the farm household (land, labour, traction power, local seeds and farm implements). These inputs are also purchased from the local market when the farmer does not have them in stock and have the capacity to purchase. Local inputs are supplied from different sources: fellow farmers who either sell or lend these inputs, traders, cooperatives, seed enterprises, research centres and development programs funded by the government, NGOs or international organizations. Private sectors supply these inputs through market, NGOs, government extension system, or development programs.

Improved agricultural inputs such as seed and farm implements used for farming, NRM and irrigation are also provided locally by the research system, private sector and the market. Inputs like improved seeds, fertilizers and pesticides are imported. Moreover, livestock inputs like feed pre-mix, forage seeds, breeds of animals, vaccines and drugs are also imported.

Ethiopia imported about 7292 tonnes of maize seed in 2013 which was much less than the imported quantity in 2012 (Table 53). Fertilizer is the major crop input imported every year since 2010, which accounts for 98% in 2013 and 2010, while it was 99% of the quantity imported in 2011 and 2012.

Table 53: Quantity of agricultural inputs imported

Type of inputs	Quantity (tonnes)				Percentage			
	2010	2011	2012	2013	2010	2011	2012	2013
Maize seed	45,156.6	28,532.6	100,821.3	7292.1	0.08	0.05	0.10	0.01
Vegetable and other seeds	23,025.1	12,668.4	22,125.0	18,683.4	0.04	0.02	0.02	0.03
Forage and related seeds	208.4	1080.3	1510.4	361.2	0.00	0.00	0.00	0.00
Fertilizer	56,650,666	58,446,374	96,516,117	58,408,725	98.29	99.06	99.13	98.32
Pesticide, insecticide and herbicides	915,051	510,377	721,481	970,543	1.59	0.87	0.74	1.63
Totals	57,634,108	58,999,032	97,362,054	59,405,604	100.0	100.0	100.0	100.0

Source: Computed based on raw data of ECRA (2010–2013).

Ethiopia paid USD 368 million in 2013 and USD 669 million in 2012. The highest proportion import value was spent for fertilizer imports, followed by import of pesticides which accounts 17% of the value of agricultural inputs (Table 54).

Table 54: Trend of value of inputs imported in millions (USD)

Type of inputs	Value (million USD)				Percentage			
	2010	2011	2012	2013	2010	2011	2012	2013
Maize seed	1.97	2.15	0.76	2.51	0.67	0.57	0.11	0.68
Vegetable and other seeds	3.85	2.88	3.86	4.90	1.30	0.76	0.58	1.33
Forage and related seeds	0.10	0.04	0.07	0.08	0.03	0.01	0.01	0.02
Fertilizer	246.01	337.59	612.87	298.16	83.35	89.34	91.60	80.87
Pesticide, insecticide and herbicides	43.21	35.20	51.53	63.02	14.64	9.32	7.70	17.09
Totals	295.14	377.87	669.10	368.68	100.00	100.00	100.00	100.00

Source: Computed based on raw data of ECRA (2010–2013).

Main opportunities, risks and constraints for markets

Table 55: Opportunities, constraints and risks for crop and livestock products marketing

Type of inputs	Value (million USD)				Percentage			
	2010	2011	2012	2013	2010	2011	2012	2013
Maize seed	1.97	2.15	0.76	2.51	0.67	0.57	0.11	0.68
Vegetable and other seeds	3.85	2.88	3.86	4.90	1.30	0.76	0.58	1.33
Forage and related seeds	0.10	0.04	0.07	0.08	0.03	0.01	0.01	0.02
Fertilizer	246.01	337.59	612.87	298.16	83.35	89.34	91.60	80.87
Pesticide, insecticide and herbicides	43.21	35.20	51.53	63.02	14.64	9.32	7.70	17.09
Totals	295.14	377.87	669.10	368.68	100.00	100.00	100.00	100.00

Natural resource management and the environment

The Intermediate Development Indicator that this section will help to address is IDO 4: 'Improved management of natural resources is essential for sustaining increases in farm-level productivity and the provision of other ecosystem services'.

Soil and forest degradation

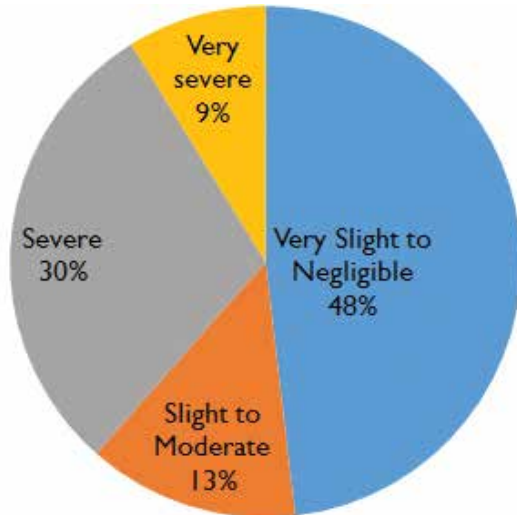
Soil erosion

Natural resources, agriculture and human activities are highly interrelated in Ethiopia in general and at the project site in particular. Due to continued use of land resources and increasing population, more land is put into cultivation, trees are cut for construction and the supply of energy for cooking and heating, and wet areas and pasture areas are converted to farming. Natural resource degradation is the result of both natural processes and human factors in the development process. For instance, soil degradation is the result of water and wind erosion, salinization, alkalization, and chemical, physical (such as traditional cultivation practices) and biological degradations (humus mineralization rates that are primarily governed by temperature and soil moisture conditions). Moreover, land clearing for agriculture, increasing demand for fuel wood and construction material, settlement within forests, logging and the expansion of wood trade contribute to deterioration of forest resources, reduction of biodiversity, incidences of soil erosion and land degradation. The topography of the project site—steep slopes, high erodibility of the soil, sparse vegetation cover and high rainfall—are the major causes of soil erosion in the area. Due to these factors, the intensity or the severity of soil erosion differs from area to area and the rate of degradation is classified in to four levels (none to slight, moderate, high and very high) as elaborated below (BoFED 2013).

- *None to slight soil loss rate (0–15 tonnes/ha per year):* Almost all lower highlands or plain areas of the project area experience slight soil loss due to dense vegetation cover and relatively low slope angle or plain area. From such areas, about 0–15 tonnes of soil particles/ha will be removed away by water annually. This area accounts for 48% of area of western Oromia (Figure 71).
- *Moderate soil loss rate (15–50 tonnes/ha per year):* Larger portions of the project area in western Oromia encounter moderate soil loss at a rate of 15–50 tonnes of soils per hectare annually, mainly due to steep slope nature, sparse vegetation cover, high erodibility of the soil and high rainfall erosivity. About 13% of area of western Oromia is moderately eroded.
- *High soil loss rate (51–200 tonnes/ha per year):* In most of the highlands of the project area including western and central West Shewa, northern, western and southwest Shewa soil loss rate is high, mainly due to steep slope, sparse vegetation cover, and high rainfall erosivity. Soil loss rate ranges from 51–200 tonnes/hectare per annum. From the highland areas of the area, about 4–16.5mm depth of topsoil is removed annually resulting shallow soil for larger portions of the area and the soil degradation risk is considered to be high especially in areas under cultivation. About 30% of the project area is severely eroded (Figure 71).

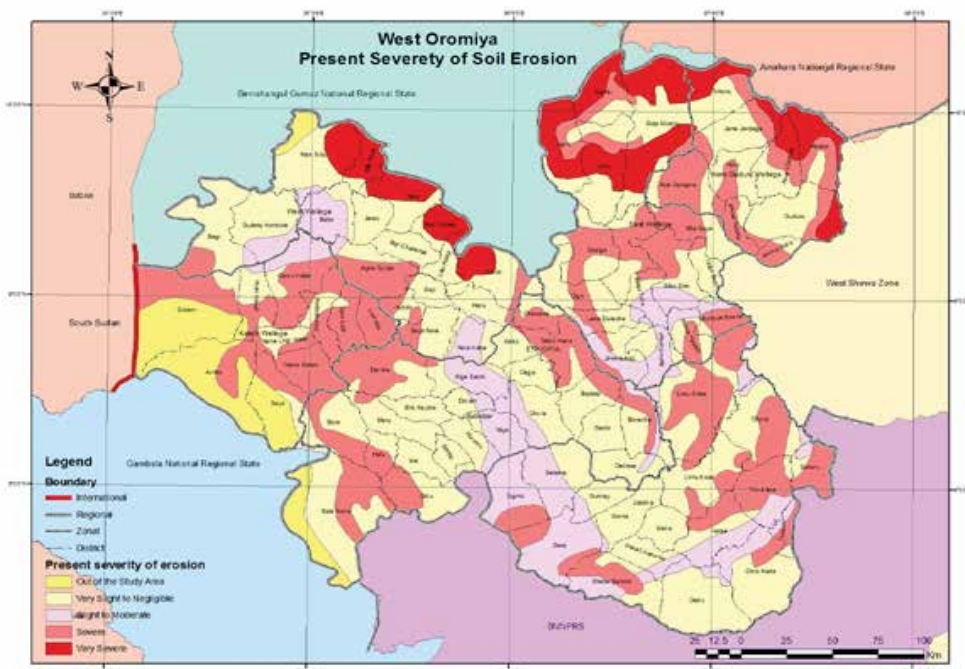
- *Very high soil loss rate (201–over 300 tonnes/ha per year):* In most of the escarpments and highlands of West Oromia, where deforestation or vegetation removal is severe, slope angle and rainfall erosive are high; soil loss rate is considered to be very high. Soil loss rate is about 201–over 300 tonnes/ hectare per year. In other words, about 16.5–over 25mm depth of soil are removed from the mentioned areas by water erosion annually. About 9% of the project area is very severely eroded.

Figure 71: Severity of soil erosion.



In general, large portion of the highland areas of the project area (52%) experience moderate to very high soil loss rate, i.e. 16–over 300 tonnes/ hectare per year. This is due to steep slope nature, sparse vegetation cover and high rainfall erosivity of the area. On the other hand, the ever increasing agricultural population and the growth rate of overstocking, which leads to overgrazing, are the aggravating factors for the loss of soil and vegetation cover in the area. Traditional agricultural practices have also induced rapid rates of soil erosion that again has impacts on agricultural productivity in the area. Figure 72 shows erosion status of western Oromia.

Figure 72: Severity of erosion in western Oromia.



Source: BoFED (2013)—western Oromia Atlas.

Though some effort has been made by the government and different organizations, a large portion of the project areas still run the risk of severe and very severe soil erosion, as whole parts of Horogudru Wellega, East Wellega, Shewa, Jimma and other zones of the project area have high water erosion.

Deforestation

Ethiopia due to its agriculture-based economy and rapid population growth has been experiencing high level of deforestation about 163,000 ha (Reusing 1998) per year. Between 2000 and 2008 alone agricultural land expanded in Ethiopia by about 4 million ha, and 80% of this new agricultural land was converted from forests, woodlands and shrub lands (Anonymous 2010). FAO (2010) also estimates that 141,000 ha of forest have been lost annually between 1990 and 2010 and that the average annual deforestation rate, based on forest cover change from 2005–10, amounts to 1.11% of total forest cover. However, review of different studies reveal that the average deforestation rate lies somewhere between 1.0–1.5% annually (FDRE 2011b).

It is also expected that the requirement for agricultural land is to increase from 15 million ha in 2008 to 34 million ha by 2030; most of the additional agricultural land is expected to come from conversion of forested lands (EDRI 2010). As it is indicated in Bale Mountain Eco-region Reduced Emissions from Deforestation and Degradation (REDD) project document (2014), the majority of forestry and agriculture based emissions in Ethiopia originate from deforestation within Oromia regional state which is the largest regional state in Ethiopia and home to 70% of the remaining high forest cover in the country. However, like most part of the country this eco-region has been experiencing high level of deforestation and forest degradation due to expansion of agricultural activities into forest lands, unmanaged fuel wood and construction wood collection from the forests and growing incidence of forest fires.

Programs for NRM

To reduce the impact of natural degradation in the country in general and Oromia region in particular, both the federal and regional levels designed different policies, strategies, programs and projects. Based on these, the federal and regional governments (supported by various donors, international agencies and NGOs), have made large scale investment in natural resource management-related activities, such as soil conservation and land rehabilitation measures. The rehabilitation of degraded lands, which started through food-for-work relief assistance has become a major component of the both federal and regional governments' approach to mitigate the impact of soil degradation by focusing on soil and water conservation; construction of terraces, check dams, cut-off drains and micro-basins, and afforestation and re-vegetation of fragile and hillside areas. The focus was on building physical structures to control soil erosion and rehabilitate degraded lands and massive efforts were undertaken in this regard.

Among these efforts, the government of Ethiopia developed policies and strategies, as well as programs/projects, that give attention to natural resources conservation, including ADLI, Natural Resource Conservation Strategy of Ethiopia, Ethiopian Strategic Investment Framework for Sustainable Land Management, and Sustainable Land Management (SLM).

Cooperatives are also formed to manage natural resources including forest, wetlands and water resources with the aim of ensuring the sustainable use of these resources and generating income for the cooperative members. There were 635 cooperative unions with 89,459 members organized to manage natural resources and also develop irrigation for efficient water use (Table 56). Moreover, 2850 primary cooperatives were organized with 244,026 members for the same purpose. Table 56 shows the number of primary cooperatives in Ethiopia and Oromia organized to manage and protect natural resources and irrigation water.

Table 56: Unions/cooperatives working on irrigation and NRM

Type of cooperatives	No. of member coops	Members			Capital in ETB
		Male	Female	Total	
Ethiopia					
Union	635	74,538	14,921	89,459	13,491,076
Irrigation	516	56,635	10,457	67,092	8,049,122
NRM	119	17,903	4464	22,367	5,441,954
Primary coops	2850	195,010	49,016	244,026	90,167,686
Irrigation	768	73,065	22,861	95,926	28,023,296
NRM	2082	121,945	26,155	148,100	62,144,390
Oromia					
Primary coops	1085	64,616	12,645	77,261	42,922,912
Irrigation	757	37,121	8724	45,845	33,624,583
NRM	328	27,495	3921	31,416	9,298,329

Source: FCA (2013).

Biodiversity

Ethiopia is one of the world's most biodiverse countries. It has a very diverse set of ecosystems ranging from humid forest and extensive wetlands to the desert of the Afar depression due to the variation in climate, topography and vegetation. This situation creates an opportunity to produce different types of crops in the country in general and in Oromia in particular. Generally, the agricultural production system is characterized by complex mixed crop and livestock systems.

Different crops (Annex 9) and livestock species grow in the project area. Besides, the forests of the area are homes for trees of different economic, medicinal and environmental values. Western Oromia includes an area of dense virgin tropical forests, hosting abundant wildlife and birds in the region. Forests like Belete-Gera, Babiya Folla, Sigo-Gaba, Saylem Wangus, Abelti-Gibe, Tiro-Boyer-Becho, Godere, Jorgo-Wato, Selemeseng Mocha, Sibto-Tole-Kobo, Yayu, Abobo, Gerjeda, Gidame, Liche-Dale-Gewe, Chato Sengi Dengeb, Komto-Waja-Tsige and Konchi cover 12,841 km² and are considered as sources of trees and wildlife biodiversity. Permanent rivers like Gojeb, Nuso, Geba, Sor, Birbir, Wangus, Abay, Dedessa, Anger, Gibe, Fincha'a, Birbirs and Dabus flow in the project area.

Opportunities, risks and constraints for NRM

Table 57: Opportunities, constraints and risks for NRM

Opportunities	Constraints	Associated risks
High Government support	Lack of alternative income generation opportunities	Soil erosion due to heavy rain (natural hazard)
Existence of programs like SLM	Declining soil fertility due to over use and erosion	Deforestation due to expanding investment in agriculture and expansion of farm land by smallholders
High natural resources recovery rate if conserved	Declining land under fallow for fertility restoration, low organic fertilizer use (crop residue used for livestock than for soil fertility)	Conflict on land
Potential for agro-forestry based crop and livestock production exists		
Experiences of NRM with NGOs and government organizations		
Initiatives on climate change and adaptation programs	Inadequate soil conservation practices, soil acidity and termite infestation	

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Annexes

Annex 1a: Average consumption expenditure in 2011 (ETB/HH)

Source of consumption expenditure	Expenditure		% of HHs involved	
	Ethiopia	Oromia	Ethiopia	Oromia
Consumption of own agricultural production	6097	6684	17.08	0.19
Sale of own agricultural product	9015	10,710	16.26	0.18
Use of own HH non-agricultural enterprise	1923	2629	2.48	0.02
Sale of goods and services of HH non-agri-enterprise	13,332	12,500	4.71	0.04
Salary/wage and benefits	13,759	13,798	5.06	0.04
Dividends/interest	11,493	4346	0.08	0.00
Imputed value of dwelling units (own, subsidized)	1972	1753	15.84	0.15
Rent (assets)	6386	9404	0.78	0.00
Saving (Bank, Saving and Credit Cooperative, and cash in hand)	6500	5800	0.21	0.00
Loans for HH consumption and repayments of loans made	2139	1398	0.85	0.00
From fines and other legal damages	3452	4388	0.02	0.00
Convenience/inheritance	4418	6310	0.03	0.00
Sale of HH fixed assets and personal goods	13,405	1027	0.03	0.00
Lottery prizes, gambling and other prizes	949	3666	0.00	0.00
'Equip'	1409	2118	0.13	0.00
Insurance/social security	7758	7466	0.33	0.00
Donation/Go/NGO transfer	1251	1485	3.15	0.01
Remittances	2621	2291	12.70	0.13
Alms, begging	2833	2802	0.07	0.00
Prostitution activities	13,047	27343	0.02	0.00
'Edir'	1980	1,617	0.03	0.00
Dowry	442	333	0.01	0.00
Gifts (Wedding and other sources)	2582	3575	0.55	0.00
Free collection (Firewood, water, from Forest and others)	1908	2084	18.40	0.20
Other sources etc.	4274	6815	1.18	0.01
Total	5109	5538	100.00	1.00

Source: Household Consumption and Expenditure Survey.

Annex 1b: Percentage of households owning less common assets in Ethiopia and Oromia in 2011

Type	Ethiopia			Oromia		
	Total	Rural	Urban	Total	Rural	Urban
Cattle-exotic/hybrid (Except farm animals)	1.28	1.17	1.67	1.38	1.11	2.63
Beehives-partially modern	0.33	0.4	0.1	0.3	0.35	0.06
Beehives-modern	0.48	0.56	0.18	0.24	0.25	0.21
Plough (modern)	0.83	1.02	0.13	0.96	1.14	0.08
Water pump	0.46	0.5	0.3	0.59	0.61	0.52
Kerosene stove	6.07	0.95	25.02	3.97	1.38	16.14
Butane gas stove	3.03	0.62	11.96	3.13	1.14	12.49
Electric stove	1.74	0.06	7.98	0.77	-	4.4
Iron (Coal)	1.13	0.46	3.59	1.07	0.48	3.85
Iron (Electric)	1.37	0.02	6.37	0.63	-	3.56
Fixed line telephone	4.5	0.09	20.81	3.37	0.14	18.53
Telephone(wireless)	0.17	0.06	0.6	0.07	0.05	0.21
Video deck	1.84	0.07	8.4	1.62	0.07	8.92
CD/CD/DVD	6.8	0.44	30.3	4.62	0.33	24.81
Dish	2.98	0.18	13.31	1.76	0.13	9.4
Sofa set	4.81	0.31	21.44	2.57	0.35	12.99
Motor cycle, bicycle	1.47	0.72	4.27	1.54	0.77	5.15
Cart (hand pushed)	0.16	0.09	0.43	0.16	0.09	0.5
Cart (animal drawn)	0.69	0.46	1.53	0.56	0.4	1.29
Transporting people and goods	0.74	0.67	0.99	1.07	0.98	1.49
Sewing machine	0.72	0.52	1.44	0.82	0.67	1.55
Weaving equipment	0.77	0.7	1.03	0.35	0.33	0.41
Builder's equipment	1.96	1.63	3.21	1.3	0.9	3.17
Carpenter's equipment	4.12	3.4	6.79	4.73	3.81	9.06
Welding equipment	0.13	0.01	0.58	0.08	-	0.48
Wood cutting equipment	0.78	0.73	0.95	0.81	0.73	1.19
Block production equipment	0.06	0.01	0.22	0.01	-	0.08
Mitad-Electric	3.44	0.01	16.13	1.52	-	8.65
Mitad-power saving (modern)	3.15	2.01	7.35	2.76	1.17	10.22
Refrigerator	3.27	0.11	14.96	1.73	-	9.85
Private car	0.33	-	1.52	0.08	-	0.46
Car-commercial	0.29	0.02	1.28	0.18	0.02	0.94
Bajaj	0.17	0.09	0.45	0.13	0.07	0.45
Wardrobe	6.14	1.37	23.77	4.13	1.46	16.66
Shelf for storing goods	7.97	0.88	34.18	6.68	1.11	32.83
Biogas stove (pit)	0.03	0.01	0.08	0.01	-	0.06
Water storage pit	2.1	2.3	1.38	2.02	2.1	1.66

Annex 2: Food balance sheet of Ethiopia in 2011

Single items	Domestic supply				Domestic utilization									Per capita supply			
	1000 Metric tonnes													Total	Protein	Fat	
	Prod.	Import	Stock Var.	Ex-port	Total	Food	Food-Manu	Feed	Seed	Waste	Other uses	Total utilization	Food balance	Kg/Yr	KCal/Day	Gr/Day	Gr/Day
Cereals—excluding beer	18779	1945	-2150	86	18491	13371	284	600	355	1020	2863	18493	-2	149.6	1353	36.5	6
Starchy roots	6274	0	0	47	6227	5568	0	0	96	565	0	6229	-2	62.3	237	2.6	0.3
Sugar crops	2500	0	0	0	2500	0	2500	0	0	0	0	2500	0	0	0	0	0
Sugar and sweeteners	328	252	0	1	580	580	0	0	0	0	0	580	0	6.5	62	0	0
Pulses	2268	59	-210	210	1907	1676	0	0	115	116	0	1907	0	18.8	176	12.3	1.2
Tree nuts	63	5	0	0	68	65	0	0	0	3	0	68	0	0.7	5	0.1	0.5
Oil crops	785	5	13	275	528	114	386	1	18	9	0	528	0	1.3	17	1	1.3
Vegetable oils	108	286	-60	0	335	277	0	0	0	0	57	334	1	3.1	75	0	8.5
Vegetables	1790	2	0	96	1697	1588	0	0	0	111	0	1699	-2	17.8	16	0.7	0.1
Fruits—excluding wine	733	40	0	16	757	706	2	0	0	49	0	757	0	7.9	12	0.1	0.3
Stimulants	384	1	-125	160	101	88	0	0	0	13	0	101	0	1	1	0.2	0
Spices	153	1	0	15	140	136	0	0	0	5	0	141	-1	1.5	14	0.5	0.7
Alcoholic beverages	823	2	0	3	822	822	0	0	0	0	0	822	0	9.2	12	0.1	0
Meat	732	0	0	18	714	714	0	0	0	0	0	714	0	8	43	3.2	3.3
Offal	134	0	0	1	133	134	0	0	0	0	0	134	-1	1.5	4	0.7	0.2
Animal fats	42	6	0	0	48	48	0	0	0	0	0	48	0	0.5	12	0	1.4
Eggs	40	0	0	0	39	33	0	0	4	2	0	39	0	0.4	1	0.1	0.1
Milk - excluding butter	3618	12	0	5	3625	3502	0	18	0	109	0	3629	-4	39.2	64	3.6	3.4
Fish, seafood	24	1	0	2	23	23	0	0	0	0	0	23	0	0.3	1	0.1	0
Infant food	0	1	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0
Grand total	39578	2618	-2532	935	38736	29446	3172	619	588	2002	2920	38747	-11	329.6	2105	61.8	27.3

Source: FAO Statistical Data 2014 (data for 2011); <http://faostat3.fao.org/download/FB/FBS/E> (Accessed Dec. 13/2014).

Annex 3: Nutritional status of women aged 15–49 years (% based on body mass index)

Location	Category	Thin (BMI <18.5)	Normal (BMI=18.5–24.9)	Overweight or obesity (BMI>=25)
	Age in years:			
	15–19	36.1	61.5	2.4
	20–29	21.3	73.5	5.2
	30–39	24.1	68.1	7.8
National	40–49	28.5	62.7	8.7
	Residence:			
	Urban	20.1	65.0	14.9
	Rural	29.1	68.2	2.6
	Total	26.9	67.4	5.7
Oromia		26.9	68.4	4.7

Annex 4: Breastfeeding practices of children aged 0–23 months (%) nationally

Age in months	Not breast feeding	Exclusively breastfed	Breastfeeding and consuming plain water only	Breastfeeding and consuming non milk liquids	Breastfeeding and consuming milk products	Breastfeeding and consuming complementary foods
0–3	0.8	61.8	17.3	3.1	11.2	5.9
0–5	1.5	52	18.6	4	13.8	10.1
6–9	2.7	14.2	14.6	4.2	12.8	51.4
12–15	3.6	1.9	7.7	2.6	4.6	79.7
12–23	10.1	1.4	4.4	1.5	2.4	80.2
20–23	17.8	0.8	1.4	0.5	0.5	79.1

Note: Breastfeeding status refers to a “24-hour” period (yesterday and last night) prior to the interview time.

Annex 5: Malnourished under five children based on anthropometric indices (%)

Location	Category	2000			2005			2011		
		Stunting	wasting	Under weight	Stunting	wasting	Under weight	Stunting	wasting	Under weight
National	Sex:									
	Male	52.2	11.4	48.1	47.2	11.4	38.9	46.2	11.1	30.5
	Female	50.8	9.6	46.2	45.8	9.6	37.9	42.5	8.2	26.8
	Total	51.5	10.5	47.2	46.5	10.5	38.4	44.4	9.7	28.7
	Residence:									
	Urban	42.3	5.5	33.7	29.8	6.3	22.9	31.5	5.7	16.3
	Rural	52.6	11.1	48.7	47.9	10.9	39.7	46.2	10.2	30.4
Oromia		47.2	10.4	42.4	41.0	9.6	34.4	41.4	9.7	26

Source: CSA—Ethiopian Demographic and Health Survey.

Annex 6: Feeding practices and their breastfeeding status of children aged 6–23 months who are living with their mother (%) nationally

Location	Category	Among breastfed children			Among non-breastfed children			Among all children		
		4+ food groups ¹	Minimum meal frequency ²	Both 4+ food groups and minimum meal frequency	Milk or milk products ³	4+ food groups	Minimum meal frequency ⁴	Breast milk, milk, or milk products ⁵	4+ food groups	Minimum meal frequency ⁶
	Age in months:									
	6–8	1.0	36.5	1.0	0.0	0.0	0.0	99.2	1.0	36.2
	9–11	2.1	37.7	2.0	0.0	0.0	0.0	97.5	2.0	38.2
	12–17	6.2	47.4	5.9	38.0	5.9	40.9	96.7	6.2	47.0
	18–23	6.0	65.4	5.9	6.0	65.4	5.9	91.0	7.6	65.3
	Sex:									
National	Male	3.7	48.3	3.3	42.4	13.4	59.3	95.4	4.5	49.2
	Female	4.9	47.5	4.7	41.8	8.3	50.7	96.1	5.1	47.7
	Total	4.3	47.9	4.0	42.1	11.1	55.4	95.8	4.8	48.5
	Residence:									
	Urban	8.7	49.4	7.9	67.3	38.3	74.9	96.4	12.0	52.2
	Rural	3.6	47.7	3.4	35.6	4.1	50.4	95.7	3.6	47.9
Oromia		6.1	56.0	5.8	33.5	6.4	54.8	95.7	6.1	55.9

Action sites

Notes:

1 Food groups: i. infant formula, milk other than breast milk, cheese or yogurt; ii. foods made from grains, roots, and tubers, including porridge and fortified baby food from grains; iii. vitamin A-rich fruits and vegetables; iv. other fruits and vegetables; e. eggs; v. meat, poultry, fish, shellfish, and organ meats; 6. legumes and nuts.

2 For breastfed children, minimum meal frequency is receiving solid or semi-solid food at least twice a day for infants 6–8 months and at least three times a day for children 9–23 months

3 Includes two or more feedings of commercial infant formula fresh, tinned and powdered animal milk; and yogurt.

4 For non-breastfed children age 6–23 months, minimum meal frequency is receiving solid or semi-solid food or milk feeds at least four times a day.

5 Breastfeeding, or not breastfeeding and receiving two or more feedings of commercial infant formula, fresh, tinned, and powdered animal milk, and yogurt.

6 Children are fed the minimum recommended number of times per day according to their age and breastfeeding status as described in footnotes 2 and 4.

Annex 7: Micronutrients intake of children under five years (aged 6–59 months)

Location	Category	Among children aged 6–23 months			Among children aged 6–59 months		
		% who consumed Vit-A rich foods in the past 24 hours	% who consumed iron rich foods in the past 24 hours	% given Vit-A supplements in the past 6 months	% given iron supplements in the past 7 days	% given de-worming medication in the past 6 months	% of HHs in w/c < 5 children living, taking iodized salts
National	Age in months:						
	6–8	16.4	10.3	40.5	1.8	3.5	14.4
	9–11	18.8	11.3	54.7	3.7	5.6	15.4
	12–17	30.1	14.2	51.5	3.3	14.5	18.1
	18–23	31.2	15.7	58.4	6.8	17.5	17.9
	24–35			56.0	6.8	24.7	15.5
	36–47			53.4	6.6	23.9	14.7
	48–59			51.6	7.2	26.8	15.2
	Sex:						
	Male	26.3	13.7	52.2	5.6	21.5	15.4
	Female	25	12.9	53.9	6.5	20.3	15.9
	Total	25.7	13.3	53.1	6.0	21.0	15.6
	Residence:						
Urban	37.9	22.3	56.8	3.3	25	23.7	
Rural	23.8	11.9	52.5	6.4	20.3	14.4	
Oromia	26.8	17.4	48.7	4.8	19.8	18.3	

Annex 8: Number and % of smallholder farmers (holders) producing crops in Ethiopia, Oromia and project sites in 2013/2014

Crop type	Number of holders			% of holders for each crop		
	Ethiopia	Oromia	Project sites	Ethiopia	Oromia	Project sites
Grain crops	14,093,660	5,446,779	2,457,825.00	100.0	100.0	100.0
Cereals	13,419,762	5,327,440	2,424,567.00	95.2	97.8	98.6
Teff	6,613,090	2,489,393	1,460,025.00	49.3	46.7	60.2
Barley	4,461,616	1,656,581	665,958.00	33.2	31.1	27.5
Wheat	4,746,231	1,948,739	801,742.00	35.4	36.6	33.1
Maize	8,809,221	3,840,128	1,945,970.00	65.6	72.1	80.3
Sorghum	4,788,499	2,097,467	1,079,268.00	35.7	39.4	44.5
Finger millet	1,608,823	473,372	393,734.00	12.0	8.9	16.2
Oats/'Aja'	290,613	200,689	52,061.00	2.2	3.8	2.1
Rice	119,497	27,667	1891.00	0.9	0.5	0.1
Masho	58,098	3158	924.00	0.4	0.1	0.04
Pulses	8,336,953	3,054,279	1,379,126.00	59.2	56.1	56.1
Faba beans	4,367,445	1,488,608	762,209.00	52.4	48.7	55.3
Field peas	2,005,888	607,839	354,000.00	24.1	19.9	25.7
Haricot beans	3,342,891	1,419,999	540,531.00	40.1	46.5	39.2
Chick-peas	994,079	292,670	158,617.00	11.9	9.6	11.5
Lentils	848,708	294,005	96,146.00	10.2	9.6	7.0
Grass peas	829,404	265,445	136,675.00	9.9	8.7	9.9
Soya beans	112,270	59,700	50,768.00	1.3	2.0	3.7
Fenugreek	634,582	336,788	118,203.00	7.6	11.0	8.6
Gibto	125,400	3576	-	1.5	0.1	-
Oilseeds	3,687,135	1,497,483	926,344.00	26.2	27.5	37.7
Neug	1,003,033	449,525	409,698.00	27.2	30.0	44.2
Linseed	1,026,972	429,446	186,850.00	27.9	28.7	20.2
Groundnuts	352,077	231,745	69,124.00	9.5	15.5	7.5
Sunflower	248,007	36,041	15,511.00	6.7	2.4	1.7
Sesame	689,977	168,679	73,677.00	18.7	11.3	8.0
Rapeseed	1,181,511	484,862	392,016.00	32.0	32.4	42.3
Vegetables	6,168,016	2,355,934	1,449,216.00	43.8	43.3	59.0
Lettuce	42,103	21,030	7,968.00	0.7	0.9	0.5
Head cabbage	424,084	253,658	179,887.00	6.9	10.8	12.4
Ethiopian cabbage	3,556,645	1,379,330	756,907.00	57.7	58.5	52.2
Tomatoes	241,355	96,647	30,024.00	3.9	4.1	2.1
Green peppers	1,134,545	639,362	494,625.00	18.4	27.1	34.1
Red peppers	1,956,999	621,212	473,319.00	31.7	26.4	32.7
Swiss chard	86,408	39,954	24,493.00	1.4	1.7	1.7

Crop type	Number of holders			% of holders for each crop		
	Ethiopia	Oromia	Project sites	Ethiopia	Oromia	Project sites
Root crops	6,403,663	2,339,017	1,316,813.00	45.4	42.9	53.6
Beetroot	374,001	246,922	178,597.00	5.8	10.6	13.6
Carrot	133,556	63,222	31,224.00	2.1	2.7	2.4
Onion	773,807	349,462	198,561.00	12.1	14.9	15.1
Potatoes	1,437,697	504,487	226,819.00	22.5	21.6	17.2
Yam/'Boye'	249,721	14,181	-	3.9	0.6	-
Garlic	2,667,163	970,825	618,546.00	41.7	41.5	47.0
Taro/'Godere'	1,534,451	403,672	383,282.00	24.0	17.3	29.1
Sweet potatoes	1,531,127	614,483	263,106.00	23.9	26.3	20.0
Fruit crops	3,612,308	1,228,863	893,117.00	25.6	22.6	36.3
Avocados	1,243,912	305,219	266,967.00	34.4	24.8	29.9
Bananas	2,305,291	803,456	591,458.00	63.8	65.4	66.2
Guavas	276,754	105,457	56,173.00	7.7	8.6	6.3
Lemons	186,253	40,587	25,754.00	5.2	3.3	2.9
Mangoes	997,195	410,229	342,517.00	27.6	33.4	38.4
Oranges	425,391	160,327	117,306.00	11.8	13.0	13.1
Papayas	542,070	186,935	141,856.00	15.0	15.2	15.9
Pineapples	38,438	11,091	7,956.00	1.1	0.9	0.9
Khat	2,755,204	1,524,560	680,676.00	76.3	124.1	76.2
Coffee	4,546,785	1,677,500	1,113,789.00	125.9	136.5	124.7
Hops	2,136,154	431,818	300,761.00	59.1	35.1	33.7
Sugar cane	1,151,342	335,347	249,086.00	31.9	27.3	27.9

Annex 9: Average area and production per holder

Crop type	Area per holder in 2013/2014 in ha			Production per holder in 2013/2014 in ton		
	Ethiopia	Oromia	Project sites	Ethiopia	Oromia	Project sites
Grain crops	0.88	1.038	0.884	1.79	2.30	1.58
Cereals	0.734	0.862	0.73	1.61	2.06	1.45
Teff	0.456	0.562	0.388	0.67	0.85	0.41
Barley	0.228	0.284	0.102	0.43	0.62	0.12
Wheat	0.338	0.43	0.174	0.83	1.18	0.27
Maize	0.226	0.282	0.3	0.74	0.94	0.91
Sorghum	0.35	0.319	0.262	0.80	0.80	0.58
Finger millet	0.283	0.211	0.318	0.53	0.39	0.51
Oats/'Aja'	0.123	0.149	0.01	0.21	0.27	0.01
Rice	0.283	0.121	0.055	0.77	0.41	0.13
Masho	0.184	-	0	0.14		
Pulses	0.209	0.227	0.137	0.34	0.41	0.16
Faba beans	0.123	0.149	0.083	0.23	0.31	0.10
Field peas	0.137	0.178	0.111	0.19	0.27	0.11
Haricot beans	0.098	0.101	0.046	0.14	0.16	0.05

Crop type	Area per holder in 2013/2014 in ha			Production per holder in 2013/2014 in ton		
	Ethiopia	Oromia	Project sites	Ethiopia	Oromia	Project sites
Chick-peas	0.231	0.303	0.196	0.43	0.61	0.27
Lentils	0.148	0.163	0.07	0.19	0.23	0.07
Grass peas	0.204	0.217	0.001	0.38	0.43	
Soya beans	0.272	0.232	0.036	0.54	0.52	0.04
Fenugreek	0.038	0.033	0.011	0.07	0.04	0.00
Gibto	0.178	-	-	0.18		
Oilseeds	0.221	0.245	0.231	0.19	0.23	0.17
Neug	0.284	0.428	0.361	0.22	0.33	0.23
Linseed	0.093	0.13	0.041	0.09	0.14	0.02
Groundnuts	0.227	0.228	0.18	0.32	0.30	0.06
Sunflower	0.046	0.042	0.005	0.03	0.04	0.00
Sesame	0.434	0.286	0.337	0.32	0.23	0.23
Rapeseed	0.037	0.034	0.026	0.05	0.05	0.04
Vegetables	0.026	0.031	0.015	0.12	0.14	0.05
Lettuce	0.006	0.008	-			
Head cabbage	0.009	0.01	0.002	0.06	0.07	0.01
Ethiopian cabbage	0.01	0.009	0.004	0.10	0.10	0.03
Tomatoes	0.03	0.038	0.001	0.16	0.31	0.00
Green peppers	0.005	0.005	0.004	0.04	0.03	0.03
Red peppers	0.056	0.083	0.034	0.13	0.20	0.07
Swiss chard	0.004	0.005	0			
Root crops	0.033	0.035	0.016	0.65	0.70	0.09
Beetroot	0.004	0.005	0.001	0.04	0.04	0.01
Carrot	0.012	0.015	0.001	0.05	0.08	0.00
Onion	0.032	0.035	0.004	0.28	0.25	0.01
Potatoes	0.046	0.071	0.002	0.55	0.59	0.01
Yam/'Boye'	0.012	0.004	-			
Garlic	0.006	0.006	0.002	0.06	0.05	0.01
Taro/'Godere'	0.028	0.012	0.022	0.78	0.31	0.17
Sweet potatoes	0.035	0.034	0.028	1.16	1.73	0.09
Fruit crops	0.02	0.019	0.016	0.14	0.12	0.13
Avocados	0.009	0.01	0.003	0.02		0.01
Bananas	0.018	0.016	0.014	0.15	0.11	0.10
Guavas	0.007	0.008	0.003	0.00	0.00	0.01
Lemons	0.006	0.004	0.001	0.03	0.01	0.01
Mangoes	0.01	0.012	0.009	0.07	0.08	0.08
Oranges	0.008	0.008	0.008	0.07	0.07	0.11
Papayas	0.005	0.006	-	0.06	0.07	0.10
Khat	0.081	0.096	0.025	0.09	0.10	0.03
Coffee	0.118	0.214	0.212	0.09	0.15	0.16
Hops	0.012	0.009	0.007	0.01	0.02	0.01
Sugar cane	0.025	0.024	0.014	1.22	0.98	0.70

Annex 10: Yield of crops in Ethiopia, Oromia and Humid tropic sites of western Oromia in 2013/14 (tonne/ha)

Crop type	Ethiopia	Oromia	Project sites	Crop type	Ethiopia	Oromia	Project sites
Cereals				Vegetables			
Teff	1.5	1.5	1.0	Head cabbage	6.8	6.6	7.0
Barley	1.9	2.2	1.3	Ethiopian cabbage	10.4	10.4	6.8
Wheat	2.4	2.8	1.5	Tomatoes	5.4	8.1	3.8
Maize	3.3	3.3	3.0	Green peppers	6.7	6.7	6.8
Sorghum	2.3	2.5	2.3	Red peppers	2.3	2.4	1.9
Finger millet	1.9	1.8	1.8	Root crops			
Oats/'Aja'	1.7	1.8	0.6	Beetroot	8.6	8.6	9.7
Rice	2.7	3.4	2.4	Carrot	4.2	5.4	9.3
Masho	0.8			Onion	9.0	7.1	7.0
Pulses				Potatoes	11.8	8.4	5.7
Faba beans	1.8	2.1	1.2	Yam/'Boye'			
Field peas	1.4	1.5	0.9	Garlic	9.7	9.1	7.1
Haricot beans	1.4	1.6	1.0	Taro/'Godere'	28.0	25.0	14.2
Chick-peas	1.8	2.0	0.9	Sweet potatoes	33.4	50.3	8.4
Lentils	1.3	1.4	0.7	Fruit crops			
Vetch	0.0	0.0	1.2	Avocados	1.7	0.0	6.2
Grass peas	1.9	2.0	0.5	Bananas	8.2	7.0	6.0
Soya beans	2.0	2.2	0.9	Guavas	0.4	0.3	2.2
Fenugreek	1.9	1.1	0.4	Lemons	4.1	1.2	10.0
Gibto	1.0			Mangoes	7.0	6.9	9.1
Oilseeds				Oranges	9.6	8.0	13.9
Neug	0.8	0.8	0.6	Papayas	12.8	12.0	31.3
Linseed	0.9	1.1	0.4	Khat	1.1	1.1	1.0
Groundnuts	1.4	1.3	1.7	Coffee	0.7	0.7	0.7
Sunflower	0.7	1.0	0.2	Hops	1.2	1.8	1.1
Sesame	0.7	0.8	0.7	Sugar cane	48.2	41.5	59.1
Rapeseed	1.4	1.5	1.2				

Annex 10a: No. of farmers using fertilizer in Ethiopia, Oromia and project area in 2013/2014

Crops	Ethiopia			Oromia			Project area		
	DAP	Urea	DAP and Urea	DAP	Urea	DAP and Urea	DAP	Urea	DAP and Urea
All crops	4,201,991	1,432,479	5,672,922	2,025,816	450,842	2,129,570	851,295	136,290	1,252,118
Cereals	3,606,377	1,069,561	5,469,672	1,874,025	337,009	2,043,888	794,280	75,793	1,220,971
Pulse	1,161,129	174,613	803,688	443,787	76,615	270,578	125,320	3,932	73,072
Oilseeds	240,228	118,675	458,742	109,404	57,147	125,064	34,880	1311	54,726
Vegetables	216,788	213,389	496,419	97,245	63,900	114,820	39,413	35,531	56,774
Root crops	493,477	233,927	559,212	244,847	66,427	210,195	67,041	8302	63,811

Annex I I: Trend of fertilizer utilization for maize in Ethiopia, Oromia and project area

Year	Ethiopia			Oromia			Project area		
	Holder	Area	Quantity	Holder	Area	Quantity	Holder	Area	Quantity
2006	2,018,433	559,354	766,243	925,419	283,351	388,867	439,672	139,317	221,660
2007	2,089,045	578,847	946,140	784,596	260,168	381,116	376,532	210,882	663,886
2008	2,059,737	547,806	888,446	738,144	239,220	351,250	332,011	208,202	214,551
2009	1,279,859	453,701	1,097,255	473,761	121,347	149,388	Lack of data		
2010	2,896,172	849,764	1,266,220	1,103,206	424,314	537,437	609,954	288,494	402,149
2011	3,488,181	869,405	140,614	1,251,802	388,240	32,039	658,046	240,278	19,950
2012	4,103,206	975,550	1,380,825	1,768,524	520,232	674,989	923,087	323,718	515,586
2013	4,012,243	1,014,118	1,663,432	1,749,455	518,092	761,733	948,712	348,840	603,150

Annex I 2: Trend of improved seed use for maize in Ethiopia, Oromia and project area

Year	Ethiopia			Oromia			Project area		
	Holder	Area	Quantity	Holder	Area	Quantity	Holder	Area	Quantity
2006	797,789	267,981	65,043	360,929	136,463	35,681	237,987	85,111	20,138
2007	344,460	344,460	86,602	359,300	147,271	34,555	226,770	102,113	28,389
2008	1,036,308	349,217	86,882	359,865	148,463	37,675	228,815	137,097	40,300
2009	1,124,946	209,850	102,112	108,843	29,619	6731	Lack of data		
2010	1,494,343	140,610	140,610	554,209	273,065	66,498	359,210	184,172	41,617
2011	1,986,691	629,589	168,133	678,244	275,301	76,541	464,366	196,910	49,537
2012	2,174,759	673,747	172,104	914,831	365,763	90,654	701,648	285,654	67,611
2013	2,427,626	798,029	201,291	1,054,094	406,321	104,438	743,379	343,032	79,513

Annex I 3: Trend of pesticide use for maize in Ethiopia, Oromia and project area

Year	Ethiopia		Oromia		Project area	
	Holder	Area	Holder	Area	Holder	Area
2006	202,943	41,853	113,122	31,672	49,099	5641
2007	228,575	50,610	111,241	32,932	34,549	5228
2008	273,808	61,519	148,296	44,552	75,239	34,620
2009	438,910	84,282	290,400	71,444	Lack of data	
2010	274,949	88,061	149,125	70,104	67,938	5356
2011	266,911	72,884	168,128	59,186	76,445	4195
2012	410,438	109,889	189,550	69,577	93,847	8738
2013	440,117	112,874	182,710	71,953	74,500	2461

Annex 14: Trend of irrigation use for maize in Ethiopia, Oromia and project area

Year	Ethiopia		Oromia		Project area	
	Holder	Area	Holder	Area	Holder	Area
2006	176,739	41,060	63,461	12,381	3341	489
2007	246,123	39,674	135,428	13,156	403	61,889
2008	249,631	49,272	127,815	18,037	8781	0
2009	237,105	32,195	89,705	11,575		Lack of data
2010	223,940	28,577	106,693	10,640	1135	0
2011	270,546	30,023	132,286	12,983	0	0
2012	247,730	28,225	129,458	12,213	0	0
2013	258,415	27,587	109,144	8113	3636	0

Annex 15: Trend of extension packages use for maize in Ethiopia, Oromia and project area

Year	Ethiopia		Oromia		Project area	
	Holder	Area	Holder	Area	Holder	Area
2006	1,193,660	379,733	498,186	174,550	291,069	104,770
2007	1,121,324	375,773	374,357	152,845	220,765	304,935
2008	1,355,009	407,030	415,910	145,024	206,786	138,328
2009	1,438,825	287,664	134,188	35,728		Lack of data
2010	1,902,643	616,775	600,438	256,242	330,309	170,020
2011	2,578,813	744,126	910,200	320,886	486,498	203,695
2012	3,018,439	847,261	1,232,883	1,115,957	689,217	274,933
2013	3,555,647	1,039,726	1,514,364	523,120	824,785	376,300

Annex 16: Trend of fertilizer utilization for wheat in Ethiopia, Oromia and project area

Year	Ethiopia			Oromia			Project area		
	Holder	Area	Quantity	Holder	Area	Quantity	Holder	Area	Quantity
2006	2,182,573	960,353	1,176,416	1,124,133	613,427	684,282	347,037	133,700	179,641
2007	2,207,844	884,781	1,204,071	1,083,200	566,905	700,977	304,921	223,776	609,368
2008	2,162,187	873,191	1,141,282	1,006,036	554,504	662,706	238,332	284,811	191,947
2009	1,594,510	627,539	2,696,516	656,840	297,607	311,206			Lack of data
2010	2,883,144	1,074,874	1,238,204	1,152,972	620,927	601,807	425,001	146,120	202,668
2011	2,852,340	1,024,275	719,527	1,103,376	585,649	477,859	379,906	115,664	39,874
2012	3,451,180	1,228,036	1,467,016	1,514,492	727,869	781,350	535,033	161,145	220,655
2013	3,347,019	1,177,831	1,622,952	1,469,132	679,120	829,218	535,125	163,781	243,494

Annex 17: Trend of improved seed use for wheat in Ethiopia, Oromia and project area

Year	Ethiopia			Oromia			Project area		
	Holder	Area	Quantity	Holder	Area	Quantity	Holder	Area	Quantity
2006	155,138	47,953	90,057	64,835	26,517	49,838	7283	2634	4840
2007	41,597	41,597	75,862	50,394	20,786	40,795	2593	4871	122,227
2008	193,030	56,030	99,655	76,924	34,155	61,490	195,154	17,122	10,868
2009	192,484	37,888	73,271	54,607	14,618	11,815			Lack of data
2010	340,535	183,465	183,465	95,018	41,053	84,326	5476	2134	4861
2011	426,295	120,649	261,347	126,952	58,977	128,248	23,765	7842	16,347
2012	269,893	70,743	128,932	498,483	37,957	72,641	24,115	9544	10,433
2013	365,659	90,280	163,372	78,852	29,045	56,770	16,396	1699	288

Annex 18: Trend of pesticide use for wheat in Ethiopia, Oromia and project area

Year	Ethiopia		Oromia		Project area	
	Holder	Area	Holder	Area	Holder	Area
2006	1,319,028	632,887	913,436	502,098	382,841	156,591
2007	1,353,824	621,140	925,765	496,063	292,209	90,551
2008	1,279,777	597,313	901,039	490,548	271,660	224,576
2009	1,571,593	396,016	514,665	234,171		Lack of data
2010	1,584,055	700,893	1,014,048	557,978	394,223	134,023
2011	1,444,358	661,947	948,598	524,582	375,042	118,104
2012	1,867,504	846,113	1,271,878	690,011	500,546	158,881
2013	1,735,147	757,864	1,183,581	624,172	607,303	198,788

Annex 19: Trend of extension packages use for wheat in Ethiopia, Oromia and project area

Year	Ethiopia		Oromia		Project area	
	Holder	Area	Holder	Area	Holder	Area
2006	706,512	368,251	292,072	202,487	42,284	17,067
2007	703,962	311,477	230,440	168,824	21,707	153,912
2008	728,421	298,245	204,971	147,550	17,695	27,758
2009	1,055,031	310,146	119,825	59,518		Lack of data
2010	1,136,167	425,494	261,178	197,950	15,532	2166
2011	1,423,113	502,617	359,342	225,067	58,373	13,612
2012	1,402,095	498,483	442,409	872,972	85,678	14,339
2013	1,926,229	685,994	571,201	312,374	136,901	30,566

Annex 20: Trend of fertilizer utilization for teff in Ethiopia, Oromia and project area

Year	Ethiopia			Oromia			Project area		
	Holder	Area	Quantity	Holder	Area	Quantity	Holder	Area	Quantity
2006	2,651,413	1,337,221	1,105,928	1,116,144	676,726	618,639	615,276	348,454	288,193
2007	2,907,078	1,391,955	1,322,390	1,153,902	678,147	639,966	634,484	437,257	684,533
2008	2,686,746	1,287,106	1,214,563	1,121,398	648,959	579,437	483,278	455,276	312,606
2009	1,994,348	1,019,530	2,128,123	683,513	327,886	392,249	Lack of data		
2010	3,802,734	1,754,439	1,486,844	1,332,469	840,195	682,430	765,137	460,693	370,793
2011	4,142,067	1,781,215	1,471,172	1,525,154	872,618	127,028	889,289	512,973	174,092
2012	4,037,987	1,946,333	1,823,133	1,690,885	941,786	818,862	1,017,521	552,790	470,940
2013	4,653,291	2,072,419	2,195,958	1,782,098	1,002,061	1,011,707	1,061,192	590,542	555,019

Annex 21: Trend of improved seed use for teff in Ethiopia, Oromia and project area

Year	Ethiopia			Oromia			Project area		
	Holder	Area	Quantity	Holder	Area	Quantity	Holder	Area	Quantity
2006	30,340	13,172	4640	9930	3362	1506	1873	689	356
2007	17,599	17,599	8030	8995	2913	1918	0	0	150,642
2008	42,104	16,610	7005	10,220	4565	2395	135,979	2349	0
2009	132,582	44,755	19,304	82,638	30,606	10,911	Lack of data		
2010	106,728	16,414	16,414	24,818	11,188	4385	6373	0	0
2011	154,174	49,859	20,910	22,401	8619	5165	3333	0	158
2012	131,292	38,400	13,730	498,483	6,832	2783	8974	1166	382
2013	365,659	94,500	31,225	48,848	20,238	8209	41,584	17,606	6,607

Annex 22: Trend of pesticide use for teff in Ethiopia, Oromia and project area

Year	Ethiopia		Oromia		Project area	
	Holder	Area	Holder	Area	Holder	Area
2006	1,534,565	731,899	1,058,820	562,714	757,387	377,329
2007	1,655,658	781,288	1,069,387	562,048	673,440	265,567
2008	1,620,820	736,063	1,112,200	565,787	619,508	442,237
2009	1,691,970	432,078	558,409	256,000	Lack of data	
2010	1,912,761	966,213	1,229,245	734,615	801,437	437,575
2011	1,908,803	986,489	1,305,609	775,560	871,720	503,952
2012	2,308,710	1,115,628	1,491,789	843,514	987,701	527,482
2013	2,328,713	1,192,319	1,456,978	879,841	1,132,548	686,046

Annex 23: Trend of extension packages use for teff in Ethiopia, Oromia and project area

Year	Ethiopia		Oromia		Project area	
	Holder	Area	Holder	Area	Holder	Area
2006	810,518	433,727	134,161	68,989	55,310	16,924
2007	800,505	354,805	97,647	54,328	22,066	469,261
2008	954,743	401,943	100,415	45,895	23,727	15,740
2009	1,234,343	479,078	121,211	55,504		Lack of data
2010	1,357,985	555,889	147,457	70,445	33,381	9003
2011	1,732,541	708,907	266,014	139,091	65,445	8910
2012	1,661,116	665,536	223,285	1,256,565	69,325	35,171
2013	2,553,547	1,099,419	467,667	245,934	231,167	114,513

Annex 24: Trend of fertilizer utilization for sorghum in Ethiopia, Oromia and project area

Year	Ethiopia			Oromia			Project area		
	Holder	Area	Quantity	Holder	Area	Quantity	Holder	Area	Quantity
2006	317,958	59,490	68,417	169,050	36,671	46,744	11,942	1889	1922
2007	231,722	47,485	50,014	99,600	24,266	29,650	3680	0	70,142
2008	250,898	47,922	44,820	93,472	16,052	10,987	5413	559	247
2009	226,449	86,268	401,153	238,149	52,813	63,141			Lack of data
2010	588,399	158,933	106,916	218,214	58,586	45,568	4422	705	103
2011	711,922	172,583	89,147	253,542	57,505	34,080	4133	338	219
2012	1,042,232	262,157	190,413	526,455	131,063	87,955	5383	676	239
2013	998,136	245,986	203,652	476,798	112,376	84,948	17,964	2242	527

Annex 25: Trend of improved seed use for sorghum in Ethiopia, Oromia and project area

Year	Ethiopia			Oromia			Project area		
	Holder	Area	Quantity	Holder	Area	Quantity	Holder	Area	Quantity
2006	11,862	2541	0	0	0	0	1138	12	12
2007	2098	2098	111	5699	0	0	0	0	6135
2008	8353	1480	100	3207	0	0	12,099	0	0
2009	72,375	16,390	3862	65,365	14,094	3595			Lack of data
2010	5808	338	338	0	0	0	0	0	0
2011	12,025	4091	799	1605	0	0	0	0	0
2012	5472	711	152	174,734	257	0	0	0	0
2013	17,625	2977	580	0	0	360	0	0	0

Annex 26: Trend of pesticide use for sorghum in Ethiopia, Oromia and project area

Year	Ethiopia		Oromia		Project area	
	Holder	Area	Holder	Area	Holder	Area
2006	171,337	55,287	75,135	22,101	61,855	21,955
2007	201,562	83,170	87,826	30,022	62,386	23,329
2008	322,815	141,039	147,423	48,285	96,100	34,098
2009	368,925	128,798	170,742	47,351	Lack of data	
2010	265,307	102,474	81,276	30,276	44,210	5429
2011	256,127	118,651	104,049	51,401	76,555	20,260
2012	348,767	163,975	126,790	54,361	88,361	15,422
2013	383,518	153,980	145,799	45,706	96,270	27,547

Annex 27: Trend of extension packages use for *teff* in Ethiopia, Oromia and project area

Year	Ethiopia		Oromia		Project area	
	Holder	Area	Holder	Area	Holder	Area
2006	122,770	31,549	46,889	10,939	3314	338
2007	108,821	21,775	31,815	4787	1459	41,827
2008	167,849	46,706	27,161	5654	0	0
2009	238,903	80,480	74,577	14,105	Lack of data	
2010	379,865	115,026	84,971	20,287	3750	732
2011	469,240	142,565	165,148	38,302	1603	0
2012	624,942	174,734	258,949	675,657	0	0
2013	754,142	214,452	279,269	63,386	8626	3216

Annex 28: Trend of fertilizer utilization for vegetables in Ethiopia, Oromia and project area

Year	Ethiopia			Oromia			Project area		
	Holder	Area	Quantity	Holder	Area	Quantity	Holder	Area	Quantity
2006	343,092	31,276	57,543	96,651	6958	5497	10,634	542	301
2007	487,031	37,120	80,764	109,997	8487	22,574	35,547	173	70,142
2008	630,166	54,984	107,804	147,122	9914	17,916	73,430	1717	2976
2009	337,566	156,452	55,420	125,414	4911	63,141	Lack of data		
2010	559,865	51,786	111,316	116,538	7986	6136	31,931	0	0
2011	885,733	67,658	28,260	238,438	21,691	5116	81,465	5002	1008
2012	1,119,296	98,250	159,666	317,618	37,631	50,755	179,053	4477	1840
2013	926,596	69,525	134,211	275,965	25,598	34,741	131,718	3436	3662

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