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Building Resilience in Vulnerable Areas of Rural Ethiopia: Status, Gaps, Opportunities and Strategic Options

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Acronyms

BEmONC	Basic Emergency Obstetric and New-born Care
CBHI	Community Based Health Insurance
CBO	Community Based Organizations
CBN	Community Based Nutrition
CCI	Complementary Community Infrastructure
CMAM	Community Management of Acute Malnutrition
CPD	Continuing Professional Development
DRM	Disaster Risk Management
EDRI	Ethiopian Development Research Institute
EEPRI	Ethiopian Economic Policy Research Institute
EIAR	Ethiopian Institute of Agricultural Research
EU	European Union
EU RESET	European Union Resilience Building program in Ethiopia
FANC	Focused Antenatal Care
FEFO	First Expire First Out
FFW	Food for Work
FIFO	First In First Out
GDP	Gross Domestic Production
GoE	Government of Ethiopia
GO	Government Organization
HABP	Household Asset Building Program
HDA	Health Development Army
HEP	Health Extension Program
HIV	Human Immuno-deficiency Virus
ICCM	Integrated Community Case Management
IFPRI	International Food Policy research Institute
ILRI	International Livestock Research Institute
IWMI	International Water Management Institute
IMNCI	Integrated Management of Now-born and Childhood Illnesses
IPLS	Integrated Pharmaceutical Logistic System
IUCD	Intrauterine Contraceptive Device
IYCF	Infant and Young Child Feeding
LARC	Long Acting Reversible Contraception
MAM	Moderate Acute Malnutrition
MI	Micro Insurance
NRM	Natural Resource Management
NGO	Non-Government Organization
ODF	Open Defecation Free
ORS	Oral Rehydration Salt
OTP	Oral Therapeutic Program
PMTCT	Prevention of Mother to Child Transmission
PSNP	Productive Safety Net Program
SAM	Severe Acute Malnutrition
SBA	Skilled Birth Attendant
SC	Stabilization Centre
SCM	Supply Chain Management
SLM	Sustainable Land Management
SNNPR	Southern Nations, Nationalities and Peoples Region
TVET	Technical and Vocational Education and Training
WASH	Water, Sanitation and Hygiene

Abstract

Despite the successive remarkable economic growth achieved in Ethiopia since 2005/6, the vulnerability of Ethiopia's rural population to drought induced crisis situations still prevails, affecting around 12 million resource poor food insecure small holder farmers, agro-pastoralists and pastoralists. Towards overcoming this development problem, different concerned stakeholders including the government of Ethiopia (GoE) and its development partners have been implementing various interventions. However, poverty, malnutrition and vulnerability to crises still remain high in the country. The implication is that dealing with the root causes of vulnerabilities, rather than with their consequences, and working towards achieving long term food security at household level in Ethiopia are still a huge and complex task.

Supporting resilience building is a long-term undertaking that requires strategies and programs designed to jointly address a set of multi-sectorial causes in order to generate multiple benefits. In this regard, development partners like EU has launched a resilience building program called EU-RESET in Ethiopia. The program is designed based on four cornerstones for building resilience including improving the provision of basic services, support to livelihoods, safety nets, and disaster risk reduction. Besides, it adopts a geographically-focused approach that covers most vulnerable cluster areas in five regional states of Ethiopia. With the aim of identifying feasible interventions to build resilience in vulnerable rural areas of the country, a detail situation analyses is made in a sample of these cluster areas. The study mainly uses detail field level qualitative data, supplemented by secondary quantitative data. We also made detail review of country's policy and literature related to vulnerability and resilience. This report contains an executive summary of the analyses and, based on the findings of the situation analyses, proposed intervention options to build the resilience of vulnerable communities. Since the geographical areas covered in the study can represent almost all vulnerable rural areas of the country, the findings and intervention options suggested by the study can also be an input for policy makers and development partners to design interventions to build resilience in similar areas, with some adoptions to the specific features of their intervention areas. The study can also contribute to the limited empirical evidence on resilience building in vulnerable part of developing countries, particularly in Sub Saharan African countries.

1. Introduction

Ethiopia has achieved significant economic development during the past ten years including a steady increase of production in the agriculture sector. During the past ten years, the annual GDP growth has registered a steady increase of annual average 10% with poverty rate reduced from 40% to 29% and significant increase of access to basic services (Heath, potable water supply, education, etc). However, the vulnerability of Ethiopia's rural population to drought induced crisis situations still prevails affecting around 12 million resource poor food insecure small holder farmers, agro-pastoralists and pastoralists[1].

Towards this, various interventions have been implemented to overcome the vulnerability of Ethiopia's rural population by different concerned stakeholders including the government of Ethiopia (GoE), regional organizations such as IGAD and donors (EU) since the past 10 years. For instance, the humanitarian needs are often well covered through the annual emergency relief food aid appeal mechanism, which covered on average 3.5 million people per year for one decade. Another intervention since 2005 is the Productive Safety Net Programme, which has provided an important safety net for around 7 million chronically food insecure rural households. Besides, the GoE under its Growth and Transformation Plan is committed to achieve national food sufficiency by doubling agricultural production through intensified small holder production system. The recently issued GoE - Disaster Risk Management Strategic Program and Investment Framework (DRM-SPIF) envisions a future where, disaster risk is prevented, mitigated and forecast to enable effective response. Besides, based on the IGAD Drought Resilience and Sustainability Initiative (IDDRSI) framework, the GoE has developed a Country Program Paper (CPP) as strategy and framework for resilience actions in Ethiopia in 2012. At regional levels, IGAD put in place the Drought Disaster Resilience and Sustainability Initiative (IDDRSI) as a framework to provide a roadmap for ending drought emergencies in the IGAD region.

However, poverty, malnutrition and vulnerability to crises still remain high in the country. Though poverty has decreased, 29% of the total population are still absolute poor, with an estimated 46% of the rural population are still vulnerable to absolute poverty, of these, nearly half still live in areas not covered by transfers from the PSNP. Besides, though malnutrition has decreased, it still remains high, with 44.4% of children stunted, 28.7% of children underweight and 9.7% of children wasted; and 27% of women underweight. This shows that

[1] We thank the EU – Delegation to Ethiopia for funding this research.

in Ethiopia, the main concern is to build the resilience of the most vulnerable people and communities to the impacts of shocks, in particular drought.

The implication is that not only that dealing with the vulnerabilities and root causes of crises has become the priority rather than dealing only with their consequences but also that achieving long term food security in Ethiopia is still a huge and complex task. This task requires coordinated approaches to tackle the whole range of risks and stress factors that induce crises, and address the structural causes of vulnerability with effective packages of short and long term interventions. Supporting resilience building is a long-term undertaking that requires strategies and programmes designed to jointly address a set of multi-sectorial causes in order to generate multiple benefits. This concept is embedded in EU's resilience approach to its external development assistance to Ethiopia. With the aim of simultaneously tackling the whole range of key risks and stress factors that induce crises and addressing the structural causes of vulnerability, EU has launched an innovative initiative called RESET that brings together at operational level ECHO and the EU Delegation in Ethiopia in a tangible LRRD process[2]. The RESET approach is based on the premise that chronic humanitarian and longer term needs and recurrent food insecurity, mainly - but not only - caused by drought can be more efficiently addressed via a longer term resilience approach, with better synergies and complementarities between the two EU financing instruments, the EU ECHO humanitarian rapid responses and the EU DEVCO recovery and long term resilience building interventions. The objective of the EU RESET program is to build the resilience and expand the coping capacities of the most vulnerable populations in the country. The concept of RESET is based on four cornerstones for building resilience including improving the provision of basic services, support to livelihoods, safety nets, and disaster risk reduction. These pillars are complemented by other areas of support such as natural resource management, sustainable land management, climate change adaptation and social protection. The EU RESET programme is following a geographically-focused approach whereby currently eight clusters of woredas are selected in highly food insecure and drought prone areas. The eight clusters cover 41 woredas and more than 2.5 million people spread across five regions (Somali, Oromia, Afar, Amhara and SNNPR)[3]. The

[2] EU has launched initiatives such as "Supporting Horn of Africa Resilience – SHARE" (Euro 275 million) to advance food security, sustainable agriculture and resilience in the Horn of Africa and address drought resilience through a combined humanitarian and development approach. The strategic objective of the EU SHARE program is to contribute towards averting the underlying causes of food insecurity through integrated actions and strengthening LRRD (Linking Relief to Rehabilitation and Development) to bring sustainable livelihood for the vulnerable rural population in lowland agro-pastoral areas.

[3] According to the EU RESET program, the clusters represent some 10 to 15 % of the overall population in the country who are vulnerable to disaster risk and in need of interventions that build their resilience.

clusters are composed of three to eight woredas. As an input to the EU RESET program, we have conducted comprehensive analyses of the baseline situations of the eight cluster areas. Based on the findings of this study, we have proposed a relevant and feasible strategy options that guides interventions that aim at building resilience in rural areas of the eight geographical clusters. Though this study focuses on EU RESET intervention areas, given the socio economic, geographical, and environmental characteristics of the study areas, we believe that the study areas can represent vulnerable communities in rural areas of Ethiopia, in particular, and Africa, in general. Thus, we believe that the study can have substantial contribution to policy makers and development partners who work towards building resilience in vulnerable rural areas of Ethiopia and African countries.

This report contains an executive summary of the study on the baseline situation of the eight cluster areas and the proposed strategic options towards building resilience in most vulnerable communities in rural areas of Ethiopia. The report is organized into five sections including this introduction section.[4] The second section briefly outlines the study approach, section three presents an executive summary of the findings on the baseline situation analyses study. The section is divided into five subsections. The subsections contain the basic context, livelihood profile, health and nutrition; and natural resource and disaster risk management situations as well as the review of the policy and institutional aspects of resilience building at national and local levels. The fourth section presents the findings on the gaps and opportunities for building resilience, which are the bases for identifying the strategy options for future interventions to build the resilience. The last section presents the strategic options.

2. Methodology

2.1 Conceptual Framework

The four cornerstones of a more global resilience building framework encompass disaster risk management, livelihood building, strengthening basic social services, and increasing access to safety nets (EU-RESET Programme, 2014). Key characteristics of resilient communities include food, nutrition and environmental security. Accordingly, we adopted a conceptual framework which looks into resilience building in the lens of development. The

[4] The overall report on the comprehensive baseline situational analyses study is organized in to five volumes. The first volume is this executive summary; volume two is the main situation assessment study report; volume three is annexes for the main report; volume four contains the agricultural profile of the eight cluster areas and volume five contains spatial and accessibility maps of the eight cluster areas. A separate volume is also prepared for the detail analyses made on the identification of strategic options. Readers can request the detail study at alebel.bw@gmail.com

framework conceptualizes the link between resilience, on the one hand, and livelihood strategy, health and nutrition and natural resource and disaster risk management, on the other hand. It also looks into how these key components of resilience (including livelihood strategy, health and nutrition as well as NR and DRM) should create linkage among themselves so as to build resilience in the vulnerable communities.

One important implication of this is that a development approach is embedded in the notion of resilience building in which due emphasis is given to systemic approach rather than in isolation. It also implies thinking holistically about development interventions that crosscut livelihood strategy, health and nutrition, natural resource and risk management. Finally, it has also important implications in measuring resilience in terms of livelihood asset, food and nutrition security and access to basic service at individual and household levels but also for the policy, institutions, and governance systems required to build resilience.

2.2 Data

The situation assessment is done using information primarily collected from field and nationally representative datasets collected by the Central Statistical Agency. The study collected qualitative information from 19 sample woredas selected from each of the eight clusters. Since the clusters areas and woredas encompassed a diverse array of agro-ecological, cultural and religious diversity, we covered 50% of woredas in the clusters in the field work to collect primary information. The field survey covered at least one kebele from sample woreda. We selected sample woredas and kebeles based on agro-ecology and livelihood characteristics of the woredas to represent pastoral and agro-pastoral livelihood system.

We also used data collected by the Central Statistical Agency, including surveys on agricultural sample, rural facility and land use. When cluster-level survey is not available, we used regional and national-level reports such as DHS, HICE and WMS. Other secondary sources such as policy documents and review of findings of other studies are also used to enrich our dataset. These sources were used extensively in analyzing the agriculture profiles and access to basic facilities.

2.3 Survey Instruments

We employed qualitative survey approach in which information on various issues are collected using livelihood trajectory exercise, institutional and organizational ranking, field level physical observation as well as stakeholder consultations. We used focus group discussions and key informant interviews to collect primary field-level information. We conducted 46 FGD with 372 community representatives, of which 166 (45%) are female. The

cluster-level key informant interviews covered 248 zone and woreda officials in administration and sector offices. Stakeholder consultation and briefing meeting was conducted with non-government organizations working in the clusters.

We collected information from field on various issues including community livelihoods, food security status, wealth profile and perception of inequality; cultural and gender dimensions of livelihoods; institutional and organizational characteristics; natural resource management; and health and nutrition profiles. We also collected information on the major development challenges and priority needs. The key informant interviews included priority role/area of focus, implementation strategy, development gaps/challenges, opportunities as well as priority needs for the cluster.

2.4 Analyses

The analyses on the baseline situation include analysis of contextual issues, livelihood, health and nutrition, natural resource and disaster risk management, and policies and institutions related to resilience building. In all the thematic areas, we tried to understand the trends, current status and the underlying challenges and opportunities that are important for resilience building. The assessment is done using descriptive analyses, review of policy and strategy documents, GIS mapping and other qualitative methods such as livelihood trajectory, food and water security calendar, wealth ranking, farm and non-farm employment profiling, institutional ranking, and trend analyses.

2.5 Limitation

The advantage of using different sources of information is that it enriches the analyses. However, it has a disadvantage particularly when the different sources give different data for the same variable. In our case, we faced this problem, in which case, we triangulated the different sources of information. The major limitation of this study is that it is based on qualitative data since it did not collect its own quantitative data. However, we supplement our qualitative survey with quantitative information generated through other sources. This data is either made for national or regional level or they are not up-to-date. Though we tried to use disaggregated data at cluster level, there are cases where we used regional level figures, particularly in health and nutrition outcomes.

3. Baseline Situation of the Vulnerable Communities

This section presents the summary of the key findings that characterize the baseline situations of the vulnerable communities, the underlying factors that drive for the prevailing situations as well as the gender dimensions of the key thematic areas that together make up resilience for vulnerable communities. It is presented in five subsections.

3.1 Basic Context

This subsection presents information that characterizes the basic situation related to individual-specific and covariate factors for resilience.

3.1.1 Demographics

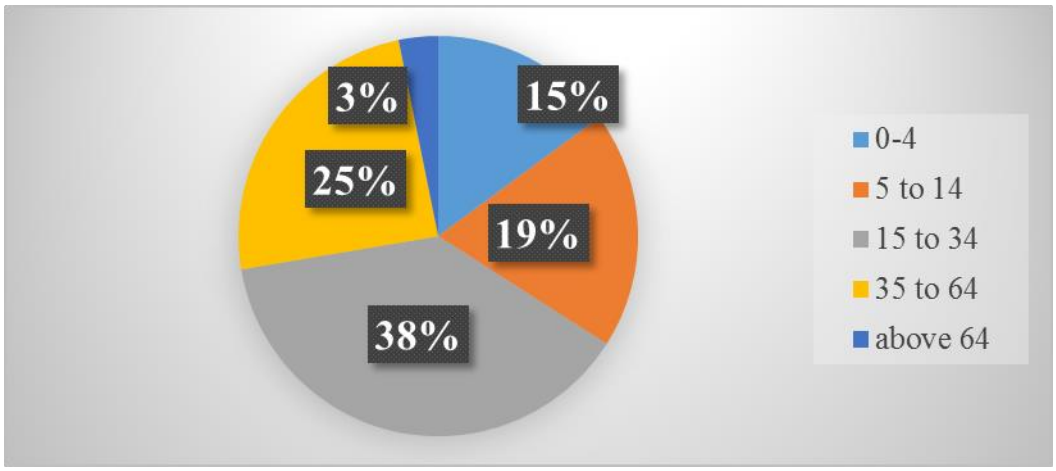
About 3.5 million people live in all the eight cluster areas (Table 1). The largest population is found in Liben and Wolaita, where the population is 640,940 and 638,400, respectively. The proportion of females in the population ranges from 45% in Afar to 51% in Wolaita. About 15% of the population is under age five, 19% are five to 14 years old, and 36% are 15 to 34 years old (Figure 1).

Table 1: Population by sex in cluster areas (2016 projection)

Cluster	Num. woredas	Male	Female	Total	% female
Waghimra	6	234,536	234,829	469,365	50
Afar	8	254,343	208,575	462,918	45
Siti	5	246,121	229,484	468,392	49
Liben	5	341,803	299,137	640,940	47
Bale	5	179,387	174,607	353,994	49
Borena	6	160,173	158,193	318,365	49
Wolaita	4	310,974	327,426	638,400	51
South Omo	3	80,571	78,910	159,481	49
Total	**42**	**1,807,908**	**1,711,161**	**3,511,855**	**49**

Source: CSA (2013)

Figure 1: Share of population by age group (based on CSA projection for the year 2016)



Source: CSA (2013)

3.1.2 Access to Basic Social Services

When we look into access to education as measured by population served per facility, one school facility serves 11,424 people in Siti, it serves only 1,834 in Waghimra (Table 2). Measured in terms of population served per facility, Siti and Wolaita have relatively poorer access to primary schools. However, when measured in terms of distance, the population in Wolaita and Waghimra travel below five kilometers to reach the nearest school facility (Table 3)[5]. On the other hand, the majority of the population in Siti, Liben and Bale travel at least six kilometers to reach the nearest school facility. Overall, access to education is generally poor though it varies from cluster to cluster. Access to schools is very poor in clusters Siti, Liben and Bale whereas it is relatively better in Waghimra and Wolaita[6].

The health status of members of household or community determines the capability to lead a decent life as it affects their productivity and creativity to utilize their environment to meet their livelihood objectives. In this regard, access to health facilities that provide the required health service is very crucial. Our study assessed accessibility of health facilities including health post, health center and hospital in the eight cluster areas. The result is shown in Tables 2 and 3.

Based on population served per facility, the result revealed that none of the clusters meet the Ethiopia Healthcare Tier System Standard (1: 60,000-100,000) for primary hospitals. Access to health center and health post is below the standard in both Siti and Liben. While

[5] See report on the spatial and accessibility (Volume V) for the GIS map of the functional facilities and their distance from villages.

[6] See the detail findings of the basic context that has direct and indirect effects on the individual factors for building their capability for resilience in section four of the main report (Volume II).

Wolaita and South Omo did not meet the standard for health center (1:15,000-25,000), Afar did not meet the standard for health post (1:3000-5000). With regard to coverage based on distance, 82%, 78% and 58% of the population in Siti, Liben and Borena, respectively, travel at least 6 kilometers to reach to the nearest health facility, respectively. Overall, communities in almost all cluster areas have poor access to health service, measured in terms of population served per facility and distance traveled to reach the nearest services[7].

Table 2: Access to basic social facilities (school, health and water supply)

Cluster	Primary school		Health center		Health post		Hospital		Protected water supply	
	No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio
Waghimra	256	1,833	31	15,140	125	3,754	3	156,455	544	862
Afar	153	3,025	22	21,041	75	6,172	1	462,918	263	1,760
Siti	41	11,424	11	42,581	51	9,1847			40	11,709
Liben	109	4,746	19	33,733	124	5,1681			40	16,023
Bale	823	430	19	18,631	90	3,9337	1	353,994	135	2,622
Borena	149	2,136	27	11,791	89	3,5775			414	769
Wolaita	159	4,015	22	29,018	128	4,987			486	1,313
South Omo	76	2,098	6	26,580	59	2,7038			108	1,476

Source: own calculation based on CSA facility survey (CSA, 2014)

In terms of access to potable water supply, communities in the EU RESET cluster areas use different sources of water, both protected and unprotected. In all cluster areas, bono, open pond, unprotected spring and water from deep well are the most common water schemes though the number and types of schemes differ from cluster to cluster. The population served per scheme and distance traveled to reach to the nearest protected water supply scheme is shown in Tables 2 and 3. In terms of number of people with access to protected water supply schemes, on average 1409 and 1314 people obtain services from one protected water supply scheme in Wolaita and Borena, respectively. On the other hand, one protected water supply scheme serves 37,702 and 13,382 people in Liben and Siti, respectively. People who live in about 59% of the villages of the clusters travel at least 10 kilometers to get water for drinking and other domestic use including livestock drinking. This also holds true for at least 61% of the villages in Liben (Table 3).

[7] Section 3 describes the health service (and, thus, outcome) situations in detail based on provision of service and utilization on the available health facilities in each of the cluster areas.

Table 3: Access to basic rural facilities in cluster areas (number and percentage of villages by distance to facilities)

Distance to	Waghimra		Afar		Siti		Liben		Bale		Borena		Wolaita		South Omo	
Facility, KM	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	Access to school facilities															
0 - 5	1601	95	368	63.00	92	40.00	203	24.00	206	33.0	478	58.00	856	100	143	61.00
6 - 10	76	5	124	21.00	65	29.00	236	28.00	168	27.0	235	29.00			61	26.00
Above 10	1	0	96	16.00	71	31.00	391	47.00	254	40.0	109	13.00			29	12.00
Total	**1678**	**100**	**588**	**100**	**228**	**100**	**830**	**100**	**628**	**100**	**822**	**100**	**856**	**100**	**233**	**100**
	Access to health facilities															
1 - 5	1428	85.00	393	67.00	40	18.00	187	22.53	461	73.4	348	42.00	852	99.53	160	69.00
6 - 10	241	14.00	99	17.00	21	9.00	153	18.43	133	21.2	271	33.00	4	0.47	43	18.00
Above 10	9	1.00	96	16.00	167	73.00	490	59.04	34	5.41	203	25.00			30	13.00
Total	**1678**	**100.00**	**588**	**100**	**228**	**100**	**830**	**100**	**628**	**100**	**822**	**100**	**856**	**100**	**233**	**100**
	Access to water facilities															
1 - 5	1482	88.00	311	53.00	64	28.00	137	16.51	367	58.0	409	50.00	766	89.5	110	47.00
6 - 10	124	7.00	181	31.00	74	32.00	183	22.05	212	34.0	294	36.00	90	10.5	82	35.00
Above 10	72	4.00	96	16.00	90	39.00	510	61.45	49	8.00	119	14.00			41	18.00
Total	**1678**	**100**	**588**	**100**	**228**	**100**	**830**	**100**	**628**	**100**	**822**	**100**	**856**	**100**	**233**	**100**

Source: own calculation based on CSA facility survey (CSA 2014)

3.1.3 Access to Public Services and Basic Infrastructure

Access to public services

Access to basic infrastructure is an important factor in building the resilience of vulnerable communities or individual households. Infrastructure facilitates the capability of individuals to access available opportunities and thereby improve their productivity which, finally, contribute to alleviate poverty and build their resilience to shocks. The study assessed availability of such infrastructure as agricultural services, commercial services, public services. Access to public services is generally poor though it varies from cluster to cluster. For instance, access to such services is better in clusters Waghimra, Borena and Wolaita. Similar to access to basic social services, Siti and Liben have no such access. These services are also poor in South Omo.

Access to infrastructure

In terms of basic infrastructure including road, telecommunication and electricity, our study revealed that Waghimra and Afar are connected to the main asphalt road (Table 4). In Waghimra, almost all the cluster woredas are linked with accessible road facility and have electrification and telecommunication facilities. There are also accessible roads that link kebele to kebele. In Siti, road problem is common and very serious problem in all the woredas and kebeles in the zone. In Liben, road accessibility is major problem. Even all weredas are not connected through all-whether roads yet. Other than kebeles that are found along the main road, kebele-to-woreda roads are seasonal.

Almost all woreda capital towns in all cluster areas have access to telecommunication in the form of fixed, wireless and/or mobile phone. However, it is rare situation to get such access in the rural kebeles of all clusters. However, there is variation among the clusters. In Siti, like the road and other basic social services, access to telecommunications service is very poor whilst such services are very rarely functional in Liben. Like the other basic social services, access to telecommunication is relatively better in Wolaita. Similarly, while almost all woreda towns in all clusters have access to electricity, it varies among the clusters in terms of duration of getting the service. While woreda towns in Wolaita have relatively better access to this service, it is very poor in Siti.

Generally, the basic situation of all the clusters in terms of access to basic social services and infrastructures is very poor though it varies from cluster to cluster. While communities in Wolaita fare relatively better in terms of access, communities in Siti have extremely poor access. Such situation has important implications for resilience building since it fundamentally affects their livelihood and thereby their food security status. Therefore, such

situation suggests not only that people in all clusters are vulnerable to any kind of shock but also that the degree of vulnerability varies from cluster to cluster as well as within a cluster.

Table 4: Access to basic infrastructure in cluster areas

Cluster	Road	Electricity	Telephone	Overall
Waghimra	All woredas linked Woreda–kebele linked	Access at woreda town Poor at kebele level	Access at woreda town, poor at kebele level	Better access
Afar	All woredas linked Woreda–kebele linked	Limited access at woreda towns, not kebeles	Access at woreda town and kebele level	Better access
Siti	Major problem	Very limited access	Very limited access	Very poor
Liben	Major problem	Limited access	Limited access	Very poor
Bale	Woreda–woreda linked Woreda–kebele: limited	Limited access at woreda towns	Limited access	Poor
Borena	Woreda–woreda linked Woreda–kebele: limited	Limited access at woreda town, not kebeles	Limited access	Poor
Wolaita	Woreda–woreda linked Woreda–kebele linked	Access at woreda town Access to some kebele	Access at woreda and kebele level	Better access
South Omo	Woreda–woreda linked Woreda–kebele linked	Access at woreda level	Access at woreda level and some kebele level	Better access

Source: Own data from site visits.

3.2 Livelihood Profile

The study analyzed the trends and current status of the livelihood profile of the eight cluster areas, the underlying driving factors as well as its gender dimensions. The analyses is made in terms of livelihood system, asset, livelihood strategies, wealth and food and water security. The key findings are summarized as follows[8].

3.2.1 Livelihood System

The livelihood assessment revealed that the principal livelihood systems include pastoralism (only raising livestock), agro-pastoralism (livestock raising with crop production), crop production with livestock raising as minor and variety of non-agricultural activities. The main form of livelihood in Afar, Siti, Liben, Borena, and South Omo is raising livestock. Majority of the households depend on this system and significant number integrate raising livestock with crop production as minor. For instance, in Afar and Liben, pastoralists are encouraged to practice crop and vegetable production by making irrigation infrastructure available and resettlement program. In Waghimra and Wolayita crop production is the main livelihood system. Most households in this cluster integrate crop production with raising livestock as

[8] See the detail findings of the livelihood aspects of resilience in section five of the main report (Volume II).

minor. In cluster Bale, agro-pastoralists are dominant. From 18 weredas in the zone, nine are dominantly pastoralists and the other nine weredas' livelihood system is majorly crop production with livestock raising as minor. Honey production and fishery are emerging livelihood systems which need support.

Non-agricultural activities are also practiced in some clusters. Non-agricultural activities like wage employment, handicrafts (weaving, spinning, carpentry, house mudding, pottery, etc), petty trade (firewood selling, charcoal selling, local brewed alcohol), livestock trading, grain trading, gum and incense selling, fruits and vegetables trading are practiced in the clusters. Most non-agricultural activities are main copying mechanisms to fill the food shortage gaps.

3.2.2 Livelihood Assets

The two major livelihood assets in the EU RESET cluster areas are land and livestock. In almost all cluster areas, one of the fundamental assets for livelihood, land, is not only an extremely expensive natural resource but also that it is less productive. This problem is being manifested in most clusters in different forms including very poor fertility and fragmented and very small size of holding. Availability of land for crop production is being deteriorated by size due to population growth and also becoming less productive as it is over utilized in a very traditional system.

When one looks into the current status of land use in the cluster areas, the situation looks like as shown in table 5. Based on the 2014/15 Annual Agricultural Sample Survey conducted by CSA, out of the total landholding the least proportion of land that is covered by crops is in Afar (20.8%). While Waghimra has the largest proportion of the land under crops (96.6%), Bale and Wolayita utilized more than half of their landholding for crops. Those clusters whose livelihood is strongly attached with crop production assign the largest proportion of their holding to temporary crop production. Other clusters whose livelihood depends on livestock has relatively lower proportion of their landholding for temporary crops. This could be due to the less availability of arable land.

The average landholding size by household is also very low which is not viable. The size of holding in most clusters is by far very low and not viable farm size by any standard given the traditional practice. It is in this context that households are struggling to produce crops and raise livestock. Information on the mode of land use that prevails within the farming population certainly assists the government to spell out land use policy so as to cope with the pressure on agricultural land.

Table 5: Land use patterns (% of total) in cluster areas

Land Use	Waghimra	Afar	Siti	Liben	Bale	Borena	Wolayta	South Omo
Temporary crops	96.5	19.4	42.8	51.3	63.3	43.0	53.4	71.0
Permanent crops	0.1	1.4	15.0	3.0	5.2	23.6	14.7	8.0
Fallow land	1.8	0.7	0.4	2.8	1.9	4.7	0.2	7.1
Grazing	0.1	1.6	17.5	7.9	16.2	14.6	16.2	8.2
Woodland	0.1	0.0	3.8	0.0	0.8	0.5	6.3	0.9
Others	1.4	77.0	20.4	35.0	12.7	13.6	9.2	4.7
Landholding size, ha	1.1	0.65	0.37	0.35	1.37	0.44	0.36	0.57

Source: CSA, Annual Agricultural Sample Survey 2014/15.

The other most important asset holding of the clusters is livestock. There are huge numbers of livestock with poor quality. In addition, the size of livestock is also on diminishing trend. Because of this, the benefit derived from livestock is not commensurate to the size of livestock and is on decline. The main reason for this is that livestock is being raised in traditional system. There are several and reinforcing reasons for this traditional system. Pastoralists attach high value not to the quality as such but to the size of livestock. The size of livestock is a symbol of richness and provides one high social status in the community. Thus, pastoralists do not want to sale their livestock (unless they are desperate) and hence no incentive for them to keep less number with high quality. Market/generating income is not the driving force for raising livestock in the pastoral areas.

3.2.3 Crop Production, Productivity and Technology Use

Crop production is not a serious engagement in Afar, Siti and Liben though they grow few crops. This is basically due to their focus on raising livestock as a main source of livelihood and also social value attached to the stock of livestock. In the other clusters, crop production is practiced in a very traditional way and because of this the productivity of land is not encouraging though it differs from cluster to cluster. Waghimra, Bale, Wolayita and South Omo produces all the five types of major crops including teff, barley, maize, wheat and sorghum. While teff yield is 15.6 quintal per hectare in Waghimra, in Afar and 6 it is as high as 36.5 quintal. The same story holds for wheat, sorghum and barley. The highest yield per hectare for wheat and barley is recorded in Bale, about 31.0 and 21.6 quintals, respectively.

Technology application that improves yield is very limited. It is reported that in 2014/15 crop season, Afar, Siti, Liben, and Borena did not use any inputs like fertilizer, improved seeds and pesticides. Pesticides are applied only in Bale. Even those clusters which applied inputs have problems of getting enough.

3.2.4 Livestock Production, Productivity and Technology Use

Five out of the eight clusters – Afar, Siti, Liben, Borena, and South Omo – are engaged in raising livestock as the main livelihood strategy. Though there are huge numbers of livestock in these clusters[9], their quality and number is declining mainly due to the traditional nature of the livestock production system and cultural values attached to size of livestock.

Table 6: Livestock population by cluster in 2014/15

	Waghimra	Afar	Siti	Liben	Bale	Borena	Wolayita	South Omo
Cattle	360,842	997,288	14,526	250,599	1,569,229	1,052,770	798,067	1,673,434
Sheep	141,874	945,218	55,387	318,337	378,286	439,082	215,579	1,205,825
Goats	416,551	1,999,445	145,595	879,685	742,490	878,355	146,292	2,924,841
Donkey	82,697	64,852	5,975	68,823	232,879	84,736	37,353	26,205
Mules	2,807	-	59,936	-	18,152	-	15,190	975
Horses	-	-	-	-	78,657	-	-	34,665
Camels	-	164,697	269,593	247,301	31,560	77,146	-	-

Source: CSA, Annual Agricultural Sample Survey 2014/15.

Since the clusters are vulnerable to recurrent drought, which exposed them to livestock failure, pastoralists are increasingly challenged by lack of water and pasture and from year to year the frequencies of their mobility is increasing and are struggling to cope with this challenge.

3.2.5 Food and Water Security Status

To understand the food and water security status in the cluster areas, communities were asked to rank availability of food and water over the 12 months of a year at different degrees. Our study revealed that most clusters suffer from shortages of food and water both for themselves and for their livestock. The maximum months during which food is available is five months. For some clusters like Borena, food is available only for three months. Availability of water has also followed the same pattern. This means people and livestock have to suffer from shortages of food and water for about seven to nine months in EU RESET II cluster areas within one year.

3.2.6 Major Risk Factors to Livelihoods and Coping Mechanisms

Drought is common and major disaster risk affecting the livelihood of the community which results in shortage of food, shortage of pasture and water and livestock disease. Lack of rain or untimely rain affects crop production significantly. Drought also affects availability of water and pasture and livestock suffered from lack pasture and water to drink. This exposed

[9] Data is available only for one year.

livestock to various diseases that culminate in death and loss of weight with the resultant low price.

Violent conflict between sub-clans is another risk factor for livelihood particularly in Siti. Flood is also a risk factor in all clusters except in Waghimra, Siti and Bale. Crop disease is a major risk factor in Bale. The types of livestock to be raised, the crop mix cultivated by peasants, and the cropping calendar are explained by the spatial and temporal distribution of rainfall. Thus, for rainfall dependent economy, both extreme situations of scarcity and excess would function against people's livelihood to a great extent, hampering the main production activities, the outcome of which is seen in the shortage of food supply. Water scarcity brought about by delay in rainfall from the normal period of occurrence, or even a complete failure constitutes drought and cause crop failure and weight loss or death of livestock.

Both the pastoralists and agro-pastoralists had practiced some survival strategies to cope with drought. Some of the major coping mechanisms adopted in the cluster areas include livelihood diversification; building water reservoirs such as water pond, water pool, *birka*, water well/*ella* and small dams to reserve water for consumption during the dry season; reducing daily food consumption; substituting for less expensive foods, eating wild food (less preferable in normal season), borrowing food or money and direct consumption of sheep and goat; sale of livestock, sale of fire wood, dung, charcoal (which is currently restricted by government); participation in food-for-work and employment-generation schemes, and migration in search of job or food.

3.2.7 Wealth Status of Community and Perceptions of Inequality

The study revealed that number of livestock is the main criteria to categorize wealth status of individuals. Among livestock, camel and cattle are the most recognized livestock but sheep and goats are rarely considered as wealth. Size of landholding, labor supply, brewing local alcohol for selling, and cash are also considered for wealth differentiation. The disparity among clusters is not pronounced. The only exception is South Omo where the standard is very high to be rich. In terms of livestock, a poor person in South Omo can be considered as rich in Liben, Bale, Borena and Waghimra.

With regard to community's perception about why some people are rich and others are poor and what drives this disparity, most attribute the disparity to Allah/God. Most said that wealth of individuals is predetermined by Allah/God. FGDs participants in Wolayita and South Omo are, however, of different opinion. FGD participants in Wolayita stated that wealth differentiation is driven by land, fertility of the land, oxen, access to water/irrigation, skill and access to modern production system, individual's effort, improper income management, and habit/knowledge of saving. Another interesting area mentioned by FGD participants of South

Omo is wealth status of parents and inheritance rules. Head of the household/father bequeaths all resources (land and all livestock) to the first born child. All the rest have to start from zero.

3.2.8 Gender Dimensions of Rural Livelihoods

Our study also assessed the gender dimensions of rural livelihoods in all cluster areas using focus group discussions with representatives of communities, supplemented by key informant interviews with local officers. There are clear divisions between women and men in terms of tasks; resource acquisition and management; decision making and management of household resources, participation of women in community matters, perception of local community on girls' education, and violence status in the community in all cluster areas. In general, the community opinion is that '*someone has to own and decide'.* Both the culture and religion in the community prescribe 'woman has to obey her husband's idea'.

3.2.9 Key Driving Factors

The major driving factor for the shortage of food and water for both humans and livestock depends on the specific livelihood activity. For those who are practicing farming, production depends on climate, available land including its quality, labor including its quality, livestock, agricultural inputs (improved seeds, pesticides, fertilizer, plant and animal health), and the equipment employed. Drought has disaster effect on crop production. Furthermore, crop disease and pests are prevalent in all clusters. Agricultural inputs are also another problem area that most clusters are facing.

For those who are pure pastoralists, the driving factor is the less income they generate from their livestock and the less livestock products they make due to several factors. All clusters are affected by drought and this has adverse effect on body condition and health of livestock via limited availability of animal fodder and water. This means the price of livestock will drastically fall and pastoralists could not generate enough income to buy food. This is compounded by several drivers such as livestock disease (prevalent in all clusters); lack of adequate health facilities for livestock and when there is the facility it lacks either the essential drugs or the proper health professional (this is the case in all clusters), lack of well-integrated market system and very poor transport facility (Afar, Siti, Bale and Borena); and lack of improved livestock production/varieties (Waghumra, Afar, Siti, Bale, and South Omo).

3.3 Health and Nutrition

The study also analyzed the health, nutrition and WASH aspects of resilience in the eight cluster areas from the supply (service delivery), demand (utilization of available services) and outcome (morbidity and mortality) perspective. The analysis is done to understand the

trends and the current status as well as the key drivers for the prevailing situations. The gender dimension is also addressed. The key findings are summarized as follows.

3.3.1 Trends and Status in Health and Nutrition Service Delivery

The health facilities in the clusters lack basic infrastructure like water and electricity, a challenge to be addressed to ensure quality primary healthcare services. The analysis on access of health facilities to basic infrastructure revealed 64.3% of health centers do not have access to potable water supply and 17.1% do not have access to any power source.

The analysis on human resource for health situation at the geographical clusters shows a critical shortage of pharmacy and laboratory professionals. The situation analysis showed 22% of health centers have no pharmacy professionals and 18.7% of health centers have no laboratory professionals in 2016. In addition there is high turnover of midwives and environmental health professionals. Availability of essential drugs and supplies is necessary to provide quality primary healthcare services. Observations by the field team in the health facilities visited in the geographical clusters confirmed stock out of essential drugs, family planning commodities, vaccines and reagents for performing hemoglobin test, VDRL test, AFB microscopy, blood film and HIV testing. See table 7.

Table 7: Availability of essential drugs and supplies at the geographical clusters in 2016

Cluster	Essential Drugs	Laboratory Supplies	Vaccines	Family Planning
Waghimra	Stock out	Stock out	No stock out	Stock out
Afar	Stock out	Stock out	Stock out	Stock out
Siti	No stock out	Stock out	No stock out	Stock out
Liben	Stock out	Stock out	Stock out	Stock out
Bale	No stock out	No stock out	No stock out	No stock out
Borena	No stock out	No stock out	No stock out	No stock out
Wolaita	Stock out	Stock out	No stock out	No stock out
South Omo	Stock out	Stock out	No stock out	No stock out

Note: The items marked "stock out" indicate that there was a shortage of one or more of supplies in the category.

Source: Own data from site visits.

3.3.2 Trends and Status in Health and Nutrition Service Utilization

Improving maternal and child health would improve the health of families and societies that eventually improves productivity and livelihood. The trend in health status in terms of input utilization for all clusters is shown in Table 8. Family planning and child spacing are key determinants for the well-being of the mother and the child. The contraceptive acceptance rate in Ethiopia among married women aged 15-49 in 2014 was 42%. The findings showed contraceptive acceptance rate in the geographical clusters in 2014 was higher than their respective regional averages in Waghimra, Siti, Liben and Wolaita clusters. On the other

hand the contraceptive acceptance rate in 2014 at geographical clusters Afar, Bale, Borena and South Omo was lower than their respective regional averages. Generally there is low utilization of family planning services in Afar, Siti, Liben, Bale and South Omo clusters; moderate utilization in Borena cluster; and high utilization in Waghimra and Wolaita clusters. Religion, culture and gender play a key role in influencing women's access to family planning.

The skilled birth attendant showed improvement at all geographical clusters in 2015 as compared to 2014 except in Siti which showed a decline. However, there is wide variation on the performance of skilled birth attendant at the geographical clusters in 2015 ranging from 9.3% in Liben to 67.5% in Wolaita cluster. In 2014 the geographical clusters of Waghimra, Siti, Bale, Borena and Wolaita achieved better performance on skilled delivery compared to their respective regional average, while the geographical clusters Afar, Liben and South Omo achieved lower performance compared to their respective regional average. Generally there is low utilization of skilled delivery services in Afar, Siti, Liben, Borena and South Omo clusters; better utilization of skilled delivery services in Waghimra, Bale and Wolaita clusters.

Table 8: CAR, SBA, and immunization in cluster areas

Cluster	CAR	SBA	Fully Immunized Children
Waghimra	Increasing trend; above average for Amhara (48.0%)	Increasing trend; above average for Amhara (11.7%)	Decreasing trend; above level for Amhara (75.9%)
Afar	Increasing trend: below average for Afar (13.7%)	Increasing trend: below average for Afar (10%)	Decreasing trend; above level for Afar (77.9%)
Siti	Decreasing trend; above average for Somali (1.6%)	Decreasing trend; above average for Somali (15.3%)	Decreasing trend; same as level for Somali (53.6%)
Liben	Increasing trend; above average for Somali (1.6%)	Increasing trend; below average for Somali (15.3%)	Increasing trend; below level for Somali (53.6%)
Bale	Increasing trend; below average for Oromia (39.1%)	Increasing trend; above average for Oromia (13.1%)	Increasing trend; same as level for Oromia (82.4%)
Borena	Increasing trend; below average for Oromia (39.1%)	Increasing trend; above average for Oromia (13.1%)	Increasing trend; above level for Oromia (82.4%)
Wolaita	Decreasing trend; above average for SNNPR (39.2%)	Increasing trend; above average for SNNPR (11.7%)	Decreasing trend; above level for SNNPR (96.2%)
South Omo	Decreasing trend; below for SNNPR (39.2%)	Increasing trend; below average for SNNPR (11.7%)	Decreasing trend; below level for SNNPR (96.2%)

Note: The data for the comparison with regional values for SBA and CAR is from DHS (2014), and for fully immunized children from MoH (2014). Figures in brackets are regional averages, and increasing/decreasing refers to direction of change between 2016 and 2014.

Source: DHS (2014) and MoH (2014)

The coverage of fully immunized children in 2014 was higher in Waghimra, Afar, Borena, and Wolaita; lower in Liben and South Omo; and the same in Siti and Bale clusters compared to their respective regional average. Immunization coverage in the geographical

clusters in 2015 was generally high except in Siti and Liben clusters which had immunization coverage of 33.8% and 23.3%, respectively.

There is wide variation in the geographical clusters on time of initiation of breast-feeding to a newborn ranging from immediate initiation to 12 hours. Mothers in the geographic clusters commonly breast-feed their newborn exclusively up to the age of 6 month except in Borena and South Omo where children are given milk, butter and/or water starting at the age of 4 months. Women in the geographical clusters universally continue breast-feeding up to the age of two or beyond unless another pregnancy occurs, which is common in Afar, Siti, Liben and Bale. The complementary diet is mostly limited to few varieties of cereals and milk across the clusters. Pregnant and lactating women and adolescent girls do not get special consideration to meet their nutritional needs associated to physiological changes.

Dairy products and cereals contributed most to consumption of children across the clusters. Roots and tubes contributed relatively higher proportions of food consumed by children in Wolaita and South Omo. Consumption of meat and fruits and vegetables rich in vitamin A was low among children in all clusters. Cereals constitute the majority of food consumed by women in Waghimra, Afar, Siti, Liben, Bale and Borena clusters while the combination of cereals and roots or tubes constitute the majority of food consumed by women in Wolaita and South Omo clusters. Cereals constituted the highest proportion of the diet among men across the clusters.

Common source of water, which includes public tap, spring, pond, deep well, shallow well, river, and water trucking, varies widely among the geographical clusters. There is low prevalence of the practice of treatment of water to make it safe for drinking at the household level. Women and girls are responsible to fetch water from the source for household consumption. The average time spent to fetch water, according to the focus group discussion participants, varies from 1-8 hours, with the lowest time spent in Siti, Wolaita and South Omo clusters (taking one hour) while the longest time spent was in Bale (taking 8 hours).

There is general awareness on the principles of hand washing before and after eating, toilet use and handling of dirt. However, the practice depends on a number of factors including behavioral factors and availability of water and soap. People in all clusters increasingly wash hands using water and soap or ash before and after eating. However, there is low prevalence of the practice of hand washing after toilet use. During water scarcity, which is common in the geographical clusters, water utilization is prioritized for drinking and food preparation instead of utilization for hygienic practices.

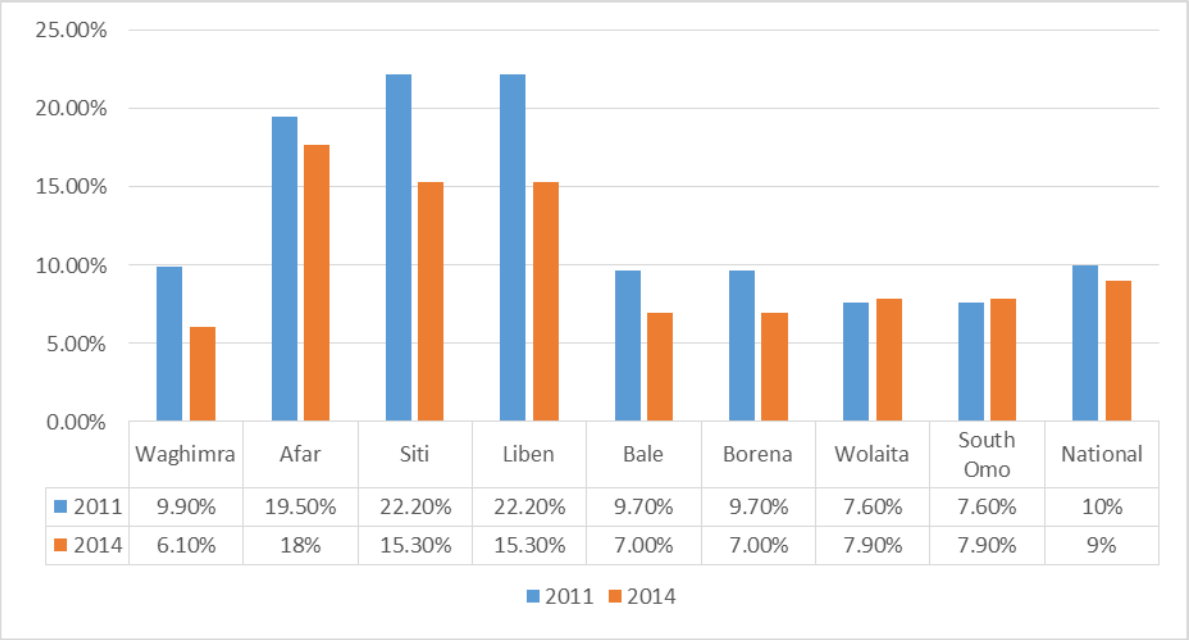
There is variation among the clusters in degree of access to latrine facility at household level. The proportion of open-defecation free kebeles in Afar, Siti, Bale and South Omo in 2016 was 11.3%, 3%, 6.6%, and 11%, respectively. No kebele is open-defecation free in Liben. The kebeles in Waghimra, Borena and Wolaita had relatively better access to latrine facility at the household level with 46%, 26% and 50% of kebeles are open-defection free, respectively, in 2016.

3.3.3 Trends in Morbidity and Mortality

Immediately reportable diseases surveillance at the geographical clusters during the first eight month of 2016 reported a total of four cases of acute flaccid paralysis (unconfirmed poliomyelitis) from Waghimra, six cases of measles from Waghimra, 371 cases of anthrax from Waghimra, and 281 cases of acute watery diarrhea (AWD) from Liben. No case of neonatal tetanus, small pox and yellow fever was reported in the same period. The findings on the surveillance of the weekly reportable diseases at the geographical clusters showed malaria is the most common disease under surveillance followed by severe acute malnutrition and dysentery.

The prevalence of acute malnutrition based on regional figures showed declining trend 2011-2014 in Waghimra, Afar, Siti, Liben, Bale and Borena clusters while it remained the same in Wolaita and South Omo clusters. Although there is declining trend, the prevalence of acute malnutrition among under-five children remained higher than the national average in Afar, Siti, and Liben clusters. This gives an indication of under-five children in Afar, Siti and Liben clusters more likely face acute shortages of food as compared to the other clusters. Similarly the eight-month prevalence of facility-based severe acute malnutrition in 2016 widely varies among the geographical clusters with the highest in Afar with a prevalence of 28% and the lowest in South Omo with a prevalence of 0.2%.

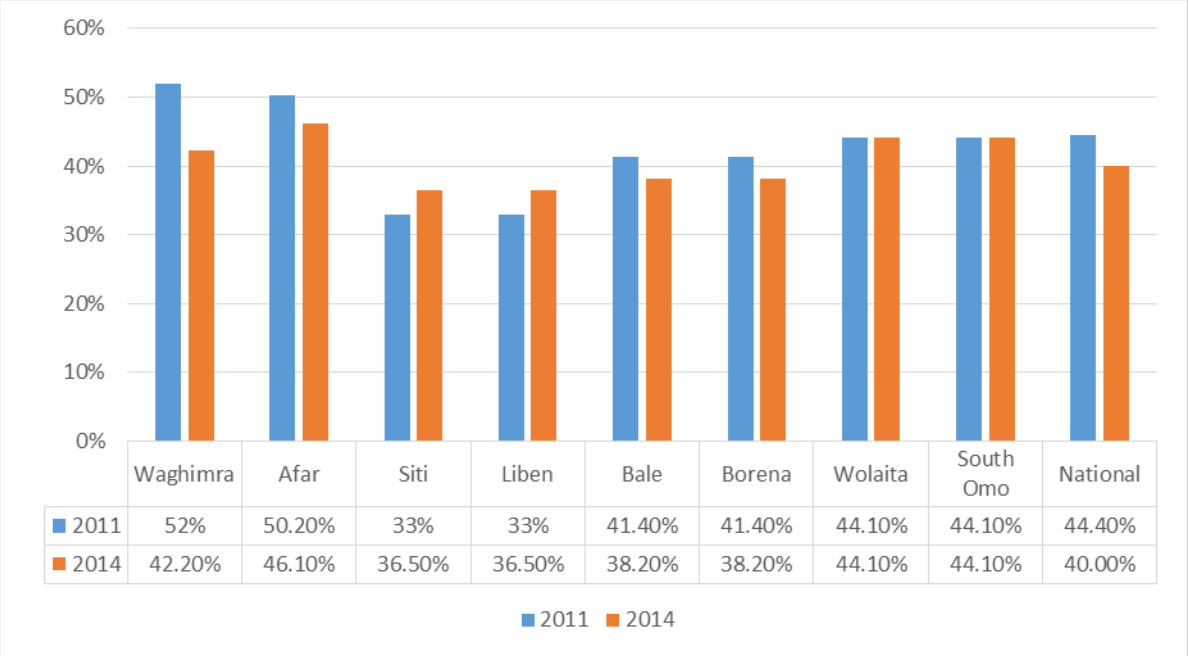
Figure 2: Trends in wasting based on regional figures, 2011-2014



Source: DHS (2011) and DHS (2014)

The prevalence of stunting based on the regional figures showed declining trend between 2011 and 2014 in Waghimra, Afar, Bale and Borena while it showed increasing trend in Siti, Liben, Wolaita and South Omo clusters. In 2014 the prevalence of stunting was higher than the national average in Waghimra, Afar, Wolaita and South Omo which give an indication of under-five children in those clusters are more likely face long term shortage of food compared to the other clusters.

Figure 3: Trends in stunting based on regional figures, 2011-2014

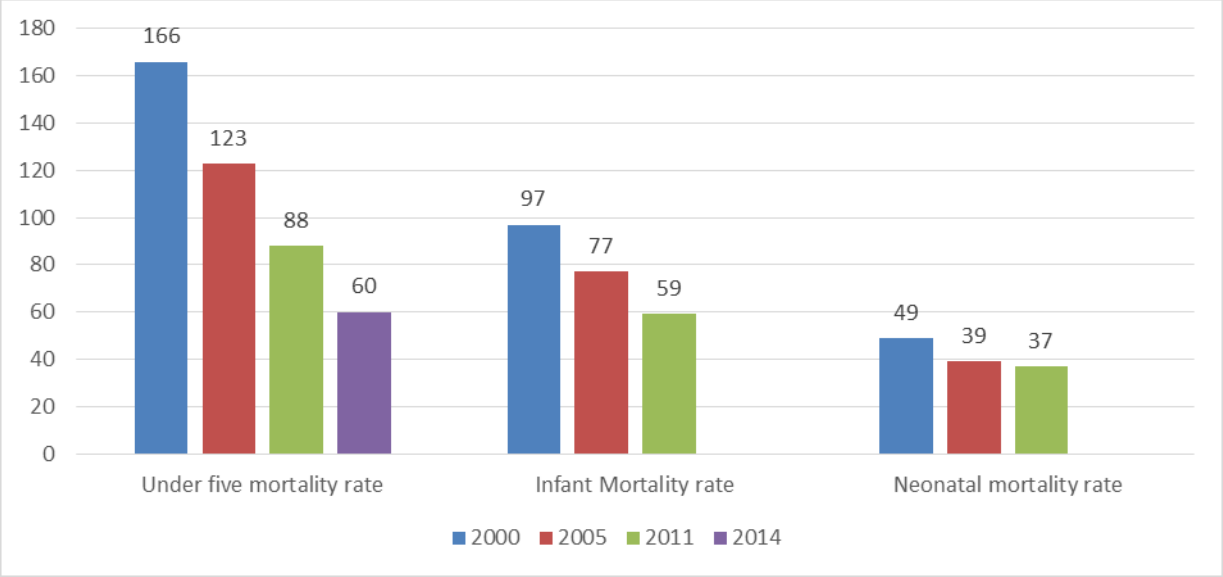


Source: DHS (2011) and DHS (2014)

Ethiopia achieved progress on improving maternal health in the past decade towards achieving the millennium development goal by reducing maternal mortality from 1400/100,000 in 1990 to 420/100,000 live births in 2013. The progress is mainly attributed to improved access of pregnant women access to skilled care during pregnancy, delivery and postnatal period.

Ethiopia achieved the target set for millennium development goal by reducing child mortality from 166/1000 live birth in 2000 to 60/1000 live birth in 2014, earlier than the date set for MDG goals in 2015. Similarly the infant mortality declined from 97/1000 live birth in 2000 to 59/1000 live birth in 2011. This achievement is mainly attributed to the health extension program that improved coverage of child health services at the community level by providing services including routine immunization against vaccine preventable childhood diseases and integrated community case management (ICCM) of common childhood illnesses. On the other hand although neonatal mortality has shown modest decline form 49/1000 live birth in 2000 to 37/1000 live birth in 2011, it remains the major contributor for child mortality.

Figure 4: National trend in early childhood mortality 2000-2014



Source: EDHS (2011) and UNDP (2014)

3.3.4 Gender Dimension of Health and Nutrition

Gender plays a key role in empowering women at household level to ensure the health of all family members. The situation analysis revealed men have a dominant power in terms of the women healthcare seeking decisions as men generally control resources. The frequency of gender-based violence such as wife beating, forced early marriage and rape is decreasing. Female genital cutting is still practiced in Afar, Siti and Liben clusters. Access to family planning services are influenced by religious condemnation in Afar, Siti, Liben and Bale clusters while cultural influences are evident in all clusters. Respectful maternity care;

maternity waiting areas at health facilities; free antenatal care, delivery, postnatal care, family planning and ambulance services are interventions that empower women and improving access to maternal health services. Women and girls are primarily responsible to dedicate 1-8 hours a day to fetch water for the households.

At times of food shortage husbands get priority access to food, followed by children and then women. This implies that women get less food in terms of quality and quantity during scarcity. There is no special consideration given to nutritional need of pregnant and lactating women and adolescent girls as they get similar type of meal with the remaining members of the family in all the geographic clusters.

3.3.5 Key Driving Factors

The findings on the status and trends on health and nutrition suggest access and utilization of primary healthcare services; access to basic infrastructures including safe water supply and electricity; hygienic practices and access to household sanitation facilities; access to adequate and diversified food; and gender are the main drivers of health and nutrition situation of the population in the geographical clusters.

3.4 Natural Resource and Disaster Risk Management

The study also analyzed the trends and current status of natural resource and disaster risk management aspect of resilience in the eight cluster areas. The key drivers of land use and land cover changes were identified and the gender dimensions of NR and DRM analyzed. Based on our assessment of NR and DRM in the clusters, the major take home messages are the following:

- Population growth in the clusters is much higher than the national average, and most depend on NRs. Dependence on NRs continues to grow due to population growth and also to more frequent droughts that force many to depend on charcoal making and fuel wood collection for sale that in the long term undermines resilience of the ecosystem.
- DR profile and DR Reduction Planning documents have been prepared for most woredas in all clusters except for Liben and South Omo. But there is little evidence to show that these documents are informing planning and implementation of NR and DRM undertakings of woredas.
- Drought, livestock disease and conflict are the three major disaster risks in all clusters.

- We see sharp increase in agricultural land and bare lands and major decline in area under forests and woodlands and grasslands. This undermines the resilience of the ecosystem.
- NR degradation (notably the expansion of barelands and invasive species and shrinkage of grasslands and forests and woodlands) is likely to be the major threat for livestock based livelihoods in all clusters.
- Yet most interventions focus on relief and on improving access to basic services. There is little to report on NRM. Emphasis remained on the communities but not on ecosystem.
- Unless NR and DRM are mainstreamed and made integral parts of interventions, building resilience of communities and their productions systems (the socio-ecological system) to climate variability and change would simply prove very difficult.
- In this regard, bridging the research-development-policy continuum is critical.

The sections below present the summary of major findings that led to the aforementioned key messages[10].

3.4.1 The Status and Trend of NRs in the Clusters

Land use and land cover changes over time: Wolaita is the most densely populated cluster of all, both in terms of human and livestock population. Agricultural production is important activity in Waghimra and Wolaita as more reliable rainfall and mild climate favor crop farming. In all other clusters, livestock production dominates. Semi-arid and dry climate marked by high average temperature and short and erratic rainfall characterize most of these clusters. Though rivers and underground water potentials exist in the clusters, effort to harness these resources for irrigation and other uses remains limited. As a result, rainfall distribution governs the availability of pasture and cultivated crops and hence the overall food security situation of the pastoral and agro-pastoral communities residing in these clusters.

Patches of woodlands, but vast expanses of shrubs, bushes and grasslands dominate the vegetation types in most of these clusters. These vegetation types support large number of grazing and browsing livestock species. The seven zones where the seven clusters are found are home for over 26 million livestock (CSA, 2015). Satellite images indicate a major land use land cover changes marked by sharp decline in woodlands, shrubs and bushlands

[10] See section seven in the main report (Volume II) for detail report on the natural resource and disaster risk management aspects of the eight cluster areas.

and rise in open grasslands, bare lands and agricultural lands. Vegetation cover is declining whereas agricultural land area is expanding in almost all clusters. Major decline in grassland area was observed in Siti, Bale and South Omo, and rapid decline in bush and shrub land areas in Afar, Borena, Wolaita and South Omo. Grassland expansion was noted in Afar, Bale, Borena and South Omo. Major increase in bareland areas was observed in Afar, Liben, Borena, Woliata and South Omo indicating the urgency to pay attention to use the NR base notably the vegetation cover. This clearly indicates a worrying trend of depletion of desirable vegetation cover and the need to address the challenges in a coordinated manner (Table 9).

The human population in the eight zones is estimated to be 9.4 million in 2017 and is growing at a rate of 3.4% per annum, much faster than the national average (CSA 2015). The population is largely dependent on pastoral and agro-pastoral production systems, but is characterized by weak coping capacity. Wealth is determined by the number of livestock especially cattle and camels. In the dry season, portion of the herd, except milking cows and sheep, are taken to other areas in search of water and pasture, and this reduces grazing pressure on habited sites. This mobility also enables pastoral and agro-pastoral communities to make use of seasonally available fodder and water resources but scattered over large area.

Income from firewood and charcoal sales is an important source of household income, especially for the poor though unsustainable wood harvesting practices further increase vulnerability in the long term. Food insecure households also receive government assistance either in the form of food aid (emergency ration distribution) or being part of the productive safety net program. Rapidly growing population in environmentally sensitive areas with rapidly degrading natural resources, notably desirable vegetation cover, clearly indicates the complexity of the challenge to build the resilience of livestock-based livelihood systems to the impacts of climate variability and change.

The drastic changes in land use indicate the need for working towards well thought-out land use plan in these areas. Areas that will be used for irrigation need to be defined and their uses assessed in view of their role in the overall pastoral and agro-pastoral livelihood systems. The farm by-products could provide feed sources and the farms could also create employment opportunities. By so doing they contribute to diversification of livelihood options as well. Thus, it is helpful to consider options to ensure that such land use changes (grazing lands to irrigated fields) would not further squeeze mobility of pastoral and agro-pastoral communities. Instead the sites could be identified and production systems identified in such a way that these irrigated farms also complement or livestock production nearby. Estimating

how much land can be irrigated and the implications of these on local livelihood requires more information and time to arrive at meaningful conclusions.

Table 9: Major land use categories in selected woredas in 2003 and 2013 (hectares)

Land use	Waghimra – Sekota woreda		Afar – Chifra woreda		Siti zone		Liben (Dolo Odo woreda)	
	2003	2013	2003	2013	2003	2013	2003	2013
Agricultural land	66,929	108,018	202	2,104	22,011	109,251		
Forest and woodland	8,627	412	16,952	8,979	16,271	4,194	33,491	4,507
Grassland			315	40,279	95,751	22,279	275,793	111,525
Bushland	85,407	85,407	84,671	38,472	379,501	371,172	603,535	581,862
Bareland	3,880	2,508	49,716	60,403	2,235,637	2,247,055	13,918	238,824
Wetland	20	14	393	2,015			4,776	6,170

Land use	Bale (Daweketchen woreda)		Borena (Meyo woreda)		Wolaita (Kindo Koysha woreda)		South Omo (Hammer woreda)	
	2003	2013	2003	2013	2003	2013	2003	2013
Agricultural land	6,835	15,285			22,617	29,941	9,278	8,813
Forest and woodland	15,268	620	44,495	37,463	1,016	594	18,564	16,212
Grassland	11,120	54,606	20,171	50,547	7,164	3,349	84,380	230,358
Bushland	248,922	212,012	212,302	175,235	21,997	15,692	423,514	207,259
Bareland	532	191	25,751	39,067		3,228	31,994	96,476
Wetland			71	152			9,548	4,212

Source: CSA (2014)

Access to and use of natural resources: As the livelihoods of pastoral and agro-pastoral communities is dependent on using communally owned natural resources, ensuring equitable access to and responsible use of these resources is critical for sustaining livestock based livelihoods of rural communities. Growth in human and livestock population as well as in the frequency of droughts further increased the dependence of communities on NRs. Increased drought frequency forced many to more and more engage in fuelwood collection and charcoal making for income which in turn aggravates the levels of NR degradation. This trend cannot be reversed unless access to and use NRs in the dryland areas is better governed. With regard to water points, shallow wells and small ponds are managed by the community members themselves whereas large dams and bore holes/deep wells are owned and managed by GOs.

Access to and use of privately managed crop fields varies between clusters. In Waghimra and Wolaita, this is done by the relevant government institutions through provision of land use certificates to households. In the clusters where pastoral and agro-pastoral systems dominate, land allocation for farming or grazing is commonly done through existing traditional institutions or elders that play role in enforcing grazing controls, and determine

timing and location of movements of livestock to minimize conflicts and over grazing of rangelands. Communal lands and forests are administered by the state in the highlands but mainly by traditional institutions in the lowlands. Key informants from communities feel that the traditional rules are effective and well respected and elders ensure equitable access and proper use of communal resources. Some point out however that the authorities of elders and traditional institutions are being challenged by the younger generation that increasingly demands their rights to resources.

This is compounded by the lack of clarity as to the legality and authority of these institutions in managing access to and use of NRs. Bekele and Kassa (2015) noted that successive governments paid less attention to the role of traditional institutions in the governance of common property resources in pastoral and agro-pastoral areas of the country. With regard to women, most of the assets with major values in most clusters are owned and administered by men, including privately managed lands. Thus a lot more time and effort is needed to empower women in the pastoral and agro-pastoral areas and assert their rights over resources notably land (See Table 9).

Livestock production in all of the eight clusters is based on grazing and browsing on communal rangelands. Rural communities depend on these resources not only for livestock feed but also for wood and on non-wood products. In pastoral and agro-pastoral areas wood and grasses are the primary materials used to make mobile homes and household furniture. Many youngsters and women from poor Households collect wood and non-wood products (fodder, forest foods, gums and resins, etc.) from dry forests and rangelands. Thus degradation will affect most dependents segments of the community.

Major factors of resources degradation: The immediate causes of NR degradation area: erratic rainfall and subsequent droughts, overgrazing and excessive extraction of wood/tree cutting for energy (in all clusters), expansion of invasive bushes, weeds and toxic plants on rangelands (in Afar, Siti, Bale and Borena), and farming marginal lands and hillsides (in Waghimira and Wolaita). The underlying drivers for all cluster are (i) population pressure (increase in number of poor people that depend on NRs), (ii) dependence on individual use of communally owned and largely unmanaged NRs, (iii) lack of national land use plan to govern development options and land use changes, and (iv) institutional failures (e.g. lack of clear and effective tenure system for communal resources; weak role (absence or limited presence) of GOs in NR and DRM in the pastoral areas, failure to enforce existing rules and regulations), etc.

The need to adopt the concept of opportunistic carrying capacity: In six of the eight clusters, pastoral and agro-pastoral production systems dominate. There has been attempts

to estimate carrying capacity of these areas in view of reducing NR degradation (carrying capacity is understood as the number of people, animals or crops a region or an area can support without suffering from environmental degradation). However various studies have pointed out the difficulties of using the conventional carrying capacity concept in such areas due to various technical and practical and knowledge related challenges. Our knowledge about the productivity levels of rangelands (and its variation over time and space) and the nutritional requirements of our livestock breeds for subsistence and production functions remain minimal. Also the concept is dependent on the vegetation condition and economic objectives we would like to attain and the production system we are following. For instance a private ranch managing cattle cannot have similar carrying capacity to a subsistence oriented pastoral production system on communally owned rangelands.

Thus, using a carrying capacity concept to determine the number of livestock or people that could be supported in the cluster areas may prove difficult. These areas are characterized by unpredictable and large inter and intra annual variations and greater spatial heterogeneity in primary (feed) production to allow meaningful carrying capacity estimation. Thus, using the carrying capacity concept in order to restore the equilibrium conditions (hoping to ensure sustainable resource use) by adjusting stocking density and grazing strategy in pastoral and agro-pastoral areas has been questioned. New understanding supports an alternative view which calls for opportunistic carrying capacity that allows stocking densities to vary overtime and space to make maximum use of vegetation without damaging resources and also accepting the periodic need to destock or suffer losses. In other words, recognizing efficiencies of existing practices and building upon them is essential.

Disaster risks, impacts and vulnerability factors: The major disaster risks and the vulnerability factors are broadly similar across the six clusters where livestock production dominates and between Waghimra and Wolaita where crop production is the major component of the livelihood system. Based on available secondary data, the table below summarizes disaster risks and their relative importance across the eight clusters, and provides percentages of Households affected by different disasters over the last five years, losses incurred in their order of importance and vulnerability factors across the eight clusters. Please note that Table 10 was prepared assuming that the disaster risk profile report from one woreda in each of the clusters would provide a general picture of the respective cluster**.**

Table 10: Importance of disaster risks, losses and vulnerability factors in the clusters

	Clusters[11]							
Disaster risks and their importance (1=most important)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Drought	1	1	1	1	1	1	1	1
Livestock disease (due to drought, mobility, etc.)	2	2	2	2	2	3	5	2
Crop pests and diseases	3	-	6	-	5	4	3	3
Flood (due to NR degradation and heavy rainfalls)	4	6	-	5	3		2	6
Human diseases (following occurrence of disaster, …)	5	3	5	3	6			5
Economic shocks/price hikes (disaster, export ban, ..)	6	5	4	-	8			
Conflicts	-	4	3	4	7	2		4
Landslides					4		4	
Percentage of households affected by disaster over 5 years								
Drought	38	29	31	-	34	35	-	31
Livestock diseases	26	27	21	-	14	14	-	27
Crop pests and diseases	17			-	27		-	20
Flood	7			-			-	
Human diseases		16	10	-			-	11
Economic shocks/price hikes			10	-			-	
Conflicts			21	-		33	-	
Landslides				-	17		-	
Losses households incurred to disaster (in importance)								
Livestock damage	2	1	1	1	2	1	3	2
Crop loss	1			3	1		1	1
Income loss	3	4	2	2		3	2	
Loss of labor (disease, physical damage, or death)		3	3	4	3	2	4	3
Loss of/reduced access to water points and grazing land		2	4	5				
Vulnerability factors (occurrence)								
Poverty and weak capacity of households to cope and adapt	X	X	X	X	X	X	X	X
Dependence on single livelihood option (livestock rearing)		X	X	X	X	X	X	X
Reduced mobility due to poverty and conflicts		X	X	X	X	X		X
Declining access to grazing lands and water points	X	X	X	X		X	X	X
Expansion of crop farming in riversides, dry-season grazing areas			X	X	X			
Poor access to water, education and health services		X	X	X	X	X	X	X
Unsustainable use of and little investment in NRs	X	X	X	X	X	X	X	X
Population growth adding pressure on limited resources	X	X	X	X	X	X	X	X

Source: field visits.

Poor capacity at zonal and woreda level to translate DRM strategies and plans prepared by federal agencies: Though at Federal level offices reports indicate availability of documents in terms of (i) DR profile, (ii) DR reduction planning, and (ii) mainstreaming by

[11] The numbers from 1 to 8 represent cluster name for Waghimra, Afar, Siti, Libe, Bale, Borena, Wolayita and South Omo, respectively.

the Federal Govt. for some of the woredas in the clusters, none of the woredas reported using those in their DRM work. We need however to note that no woreda in clusters Liben and South Omo has DR profile prepared by the relevant federal agency. But most woredas in other cluster have their DR profile and DR planning done. Thus building capacity and follow remains critical to make use of these reports.

DRM strategies of communities: In the face of the above disaster risks, communities have been using various DRM strategies. Drought, livestock diseases and conflicts remain the three major disaster risks in most clusters. Communities with the support from GOs and NGOs construct small dams, wells and other structures to improve availability of water for people and livestock and also for irrigation. Communities rely on and respect the traditional institutions to minimize the chances of conflicts over the use of communal resources and to resolve them quickly when they happen. GOs and NGOs have been supporting communities and the traditional institutions in their peace building efforts.

The other DRM strategies widely used by communities are: tapping into the existing social network and support mechanisms (to seek loans or supports/donations); reducing expenses and consumption; seeking employment and other income generating opportunities including seasonal migration to other areas; increasing dependence on income from wood (fuel wood, charcoal) and non-wood products (fodder, gums and resins, etc..); reducing livestock numbers through sales; increasing diversity of livestock species and herd structure; mobility (migrating to areas where more pasture and water for livestock are available being informed by surveillance of rangelands and exchange of such information (particularly common in Afar).

Measures being taken by GOs and non-state actors in NR and DRM: Major programs of the federal government that are active in the clusters are PSNP and PCDP. Regional and woreda level plans and programs though the prevalence and importance of each varies across clusters include: improving access to water, infrastructure, markets and social services; mobilizing communities to be engaged in soil and water conservation works; establishing nurseries and producing seedlings; promoting crop production based livelihoods; introducing improved farming and pest control methods; providing training, improving access to credits and supporting livelihood diversification; establishing peace and reconciliation committees; establishing early warning and disaster reduction management taskforces/command posts at different levels; and providing emergency aid.

Dozens of NGOs and non-state actors are active in the clusters. Most are engaged in providing either relief aid or supporting education, water and health sectors. The conclusion was that NR and DRM has not been high on the agenda of most-non state actors operating

in the clusters. Only a fraction of them have activities in NR and DRM. In this regard, the work of Save the Children has been cited as exemplary in its attempt to combine aid with long term NRM work at community level in Siti and Bale. Its work demonstrated that participatory, community-owned NRM projects can be planned and implemented in pastoral and agro-pastoral settings with positive impacts on the resource base and also on local livelihoods.

Perceptions of key actors on effectiveness of interventions in NR and DRM: Key informants from community members in Waghimra and Wolaita are of the opinion that soil and water conservation measures on communal lands were less successful. Annual tree planting campaigns on communal lands through mass mobilization were even less successful as follow up is inadequate, and the tenure rights remain unclear. They pointed out that more needs to be done to fine tune and improve appropriateness of soil and water conservation measures starting from selecting sites to identifying specific physical measures to be applied in pastoral and agro-pastoral ecologies and grazing based livestock production systems, determining species to be planted, and defining ownership and use rights of the surrounding communities on trees planted and landscapes rehabilitated. They stress that the needs, knowledge and capabilities or resources of local communities need to be properly considered during the planning and implementation stages, and rigorous follow up should be put in place to make sure that community efforts and the resources of GOs and NGOs are not wasted.

In the clusters where pastoral and agro-pastoral productions systems dominate, key informants have a more favorable view on the effectiveness of interventions to reduce disaster risks, especially attempts to improve access to water and emergency food aid. They also recognized the role of PSNP in protecting community members from selling their assets in difficult times. But experts and some community members stressed that the focus of GOs and non-state actors has generally been on emergency projects and not on long term undertakings that will contribute to building resilience of socio-ecological system. They also pointed out that efforts to increase biomass/feed production and improve vegetation cover on the landscapes were minimal in most clusters, and that there is little or no consultation with the community and GOS in the respective weredas during project design. Hence, top-down planning of intervention dominates and most interventions remain relief focused with little attention to NRM. There is a concern that the role of traditional institutions has not been officially recognized and supported by GOs except in Borena and Wolaita. There is recognition by experts that these institutions do well in terms of providing rules of resource usage between community members that ensure equal access to use of communal resources and in reducing conflicts over use of these resources. There is however a major

concern that they do not have track records of mobilizing communities to invest labor and other resources in improving NR management. Most felt that mobilizing communities to invest in NRM is being done by GOs.

3.4.2 Major Drivers of Change and Key Challenges

The major drivers of change in all of the clusters are: climate variability and change leading to increased frequency and severity of drought and water shortages; poverty and population expansion (human and livestock) that puts additional pressure on NRs; and government policy that aims at improving access to social services while also encouraging crop-production based livelihood option in these areas. Key challenges that constrain efforts in the clusters to build resilience are: dependency on communally owned but degrading natural resources (grazing lands and water points) leading to chronic water and livestock feed shortage; illiteracy and cultural values; living in climatically challenging environment and remote/isolated locations; poor access to extension, credits and markets; weak capacity of households and communities to cope and adapt; less well-thought development interventions; limited capacity of GOs and non-state actors to engage in long-term development interventions; poor coordination of actors; declining importance of traditional support systems; increased dependency on aid; degradation of rangelands; increased incidence and regionalization of conflicts; reduced mobility of particularly poor households; institutional gaps or overlaps in governing access to and use of NRs; unclear tenure on communal lands and resource; less emphasis on NRM at local level; inadequate efforts to promote collective action of communities in NRM; and little recognition by GOs to the need for rethinking and diversifying development pathways in pastoral and agro-pastoral areas.

Cluster specific challenges are: extremely high land degradation due to conversion of hillsides and shrub lands to agricultural lands in Waghimra and Wolaita, rapid decline in bush and shrub land areas in Afar, Borena, and South Omo, and decline in grassland area particularly in Siti, Bale and South Omo. Most worrying trend of rapid increase in the area of barren land is observed in 5 of the clusters, namely Afra, Liben, Borena, Wolaita and South Omo. This points to a major concern that requires the attention of all to be addressed.

To summarize, the following points are worth re-emphasizing to strengthen NR and DRM undertakings in the clusters:

- Most clusters are in areas to be affected most by the impacts of climate variability and change. Yet we observe alarming rates of NR degradation that needs to be addressed. Sadly, the level of awareness of communities and experts regarding the extent of LULCC and their implications for sustaining livelihoods appears to be low.

- The population growth in all clusters is much higher than the national average indicating that the degradation will be even more in the years to come unless mitigated.
- There is little evidence to support that DR profile and DR Reduction planning documents prepared for woredas are used in DR reduction plans and programs. Efforts to promote collective action in NRM and to develop appropriate tenure and governance systems that ensure sustainable use of NRs in pastoral and agro-pastoral areas remain limited. We also saw little evidence of learning from SLM in the highlands and from relief and development oriented investments in the lowlands in designing interventions in NR and DRM in the eight clusters. As a result, interventions in the clusters focus mainly on relief and improving availability of services and local livelihoods. This implies that NRM has not been high on the agenda of most GOs and non-state actors operating in the clusters. Even in clusters with NR and DRM related interventions, the undertakings are limited to building capacity through training and supporting activities nurseries. As a result, more needs to be done to focus on NRM to build resilience of the ecological system.
- To do so understanding the current status and changes in the natural resource base, major disaster risks and their relative importance in each of the clusters, what is being done by GOs and non-state actors and the various strategies that communities use to cope with and adapt to climatic and socio-economic changes is critically important to identify more effective and efficient intervention options to build the resilience of communities and their ecosystems in each of the clusters and also to identify and use robust indicators to assess progress in NR and DRM.
- In designing programs and assessing their progress in NR and DRM the following indicators are proposed to be used to monitor progress and assess impact of interventions in building resilience of socio-ecological systems:
    - Number of woredas using DR Reduction planning report to plan interventions,
    - Percentage of land, forest area, water points, etc. put under improved management,
    - Area of desirable vegetation cover (in line with the prevailing land use system),
    - Proportion of households that are food secure,
    - Proportion of food insecure households that have built asset and better coping capacity,
    - Capacity built to better forecast and manage disaster, and to specifically plan, implement and evaluate programs in NR and DRs at different levels,

3.5 Policy and Institutional Aspects of Resilience

Since policy is the starting point for any development effort, we also reviewed policies, strategies and programs formulated and being implemented in relation to building resilience of vulnerable communities in the country. The review not only includes government policies and strategies but also program interventions being implemented in the country by development partners in building resilience[12].

The government of Ethiopia has endorsed a comprehensive DRM policy and strategy**,** which emphasizes the necessity of a multi-hazard approach grounded in a deep understanding of specific disaster risk, and its link to development and vulnerability; emphasis on prevention, mitigation, preparedness and post-disaster modalities and capacities; de-centralization of resources and structures; a clear determination of DRM responsibilities, supported by the capacity for legal enforcement and a high degree of accountability. Other national and sectoral policies related to resilience building include population, women, youth, food security, education, health, water, etc.

These policies and strategies not only have close linkages with building resilience in Ethiopia, but also they form the basis for mainstreaming development plans in to the resilience building efforts of the DRM. For example, the National Women's Policy and the National Action Plan for Gender Equality provide the basis for mainstreaming gender in DRM. The Hyogo Framework for Action (HFA) and the Africa Regional Strategy for Disaster Risk Reduction are important initiatives of the international community and serve as the primary international framework on DRM. The Intergovernmental Authority on Development (IGAD) also reiterates the importance of integrating gender and youth in the regional responses through their gender policy and strategy, including disaster risk management in its paper entitled "To End Drought Emergencies in the Horn of Africa". IGAD aims to achieve regional food security and encourage and assist efforts of member states to collectively combat drought and other natural and man-made disasters and their natural consequences.

The medium term plan, the Growth and Transformation Plan (GTP II) have emphasized the importance of DRM. In relation to resilience building, the plan stipulated that agriculture and rural transformation is one of the key pillars for building resilience to any shocks. In this respect the strategic direction is that development of smallholder crop and pastoral agriculture will be further enhanced and hence will be the main source of growth and rural transformation during the plan period. The plan also stated that support to youth in terms of education will be key pillars so that the youth able to organize themselves and engage in

[12] See section 8 of the main report (volume II) for detail review of the policy and institutional aspects of resilience.

agricultural investment. In terms of improving the governance system in formulating, implementing and monitoring interventions that build resilience of vulnerable communities, the GTP II aims to strategically strengthening people's participation along all the political and development processes. In this respect, capacity building programs that build and enhance the capacity of woreda and kebele councils are given due emphasis.

The development of the Disaster Risk Management Strategic Programme and Investment Framework (DRM SPIF) is a testament to the commitment and dedication of the Early Warning and Response Directorate (EWRD) of the Disaster Risk Management and Food Security Sector (DRMFSS), federal government line agencies, regional governments, development partners, humanitarian organizations, and civil society organizations to the effort of operationalizing the new comprehensive DRM approach. The three programs closely related to the contribution of agriculture for building resilience are the Agriculture Sector Policy and Investment Framework (PIF), Agricultural Growth Program (AGP) and the Productive Safety Net Programme (PSNP).

With regard to health and nutrition, there are various programs and declarations made by the government of Ethiopia and development partners. Some of the most important for resilience building include the Seqota Declaration to express its commitment to end child under-nutrition by 2030; Health Sector Transformation Plan, the National Nutrition Strategy (NNS), the Nutrition Sensitive Agriculture Strategic Plan, under the Ministry of Agriculture and Natural Resource (MoANR), the National School Health and Nutrition Strategy (SHN), developed by the Ministry of Education, and the Productive Safety Net Programme (PSNP).

With regard to natural resource and risk management, the 2007 Forest Conservation and Utilization Policy and Strategy, the 2007 Federal Forest Law, the 2011 CRGE strategy and the GTP II targets are worth to mention. Besides, the Rural Development Policy and Strategy document underlines the need to rehabilitate and restore the country's degraded natural resources. It emphasizes the integration of tree planting in agricultural landscapes and advocates for having clearly defined objectives for tree planting initiatives. GTP II has set the target to increase national forest cover and double the contribution of the forestry to the national GDP. The National Women's Policy and the National Action Plan for Gender Equality provide the basis for mainstreaming gender in DRM. Likewise, the Food Security Strategy (FSS) emphasize the need to address vulnerabilities to drought and other natural calamities in the long and medium term. , In addition to those mentioned above, the Global Facility for Disaster Reduction and Recovery (GFDRR), is a key initiative of an international partnership initiative to help developing countries reduce their vulnerability to natural hazards and adapt to climate change particularly in pastoral areas.

In addition to the above review on national and international policies, strategies, program initiatives, the study also conducted institutional mapping at cluster levels. The following section presents the gaps and opportunities for each thematic areas as well as cross cutting issues that are relevant to build resilience in the vulnerable cluster areas.

4. Gaps and Opportunities for Resilience Building

Based on the analyses and findings of the past trends and current status as well as fundamental drivers of livelihood, health, nutrition and WASH, natural resource and disaster risk management as well as the policy aspects of resilience, the key gaps and opportunities are identified. These gaps and opportunities will be used as inputs in developing strategies to build the resilience of vulnerable communities in the eight cluster areas. The findings are summarized as follows.

4.1 Gaps and Opportunities in Livelihood

To deal with food shortages most clusters are suffering from several gaps. Water, animal and crop diseases, animal fodder, veterinary facilities, agricultural inputs etc are major gaps. There is a need to tackle these gaps to improve food availability. Pastoralists and agro-pastoralists are entirely dependent on rainfall for their crops and livestock. Water is critical for both human and livestock. Different potentials are available which could be tapped to deal with improving livelihood of the community. All clusters have large stock of livestock but poor quality. In order to tap this development opportunity and improve the livelihood of the community, it requires a serious work on the quality of livestock. It requires veterinary infrastructure, providing improved livestock breed that resist animal disease. Crop production is also another potential. Most clusters have arable land for crop production and in some clusters like Bale even potential for cotton, sugar cane, fruits, through irrigation. There are lots of rivers that flow throughout the year in most clusters suitable for irrigation.

For these opportunities to materialize there is a need for different kinds of support from the government. Improving the knowledge and skills of pastorals on how to integrate crop production with livestock raising, making available different agricultural equipment and inputs, enhance animal and plant disease protection facilities, and improving infrastructures for market accessibility and linkage, production of animal fodder, and the like. Honey production, tourism and fishery is also another potential that can improve the livelihood of the community if serious attention is given by all stakeholders.

Overall, the challenges that substantially contributed to the vulnerability for the livelihood of the communities include lack of human capital (low education level, poor health, limited skill); extremely poor initial conditions; poor access to soft and hard infrastructures; limited options

for livelihood strategy, which are vulnerable to shocks and climate change risks; and subsistence/traditional animal husbandry; low productivity due to crop disease/pest, low technology use such as improved seed, chemicals, improved livestock breed, absence or shortage of improved technology, poor access to transportation, poor market access and infrastructure/structure, absence/limited and poor veterinary facilities and services, livestock disease, shortage of livestock feed and limited institutional services and support; drought; flood and conflict.

In addition to the policies and strategies discussed below, there are opportunities in the cluster areas to address the above gaps and build the resilience of the vulnerable communities. These include high livestock resource, availability of arable land with water resource for crop production and irrigation, alternative livelihood strategies such as fishery, tourism, bee keeping (honey production), etc.

4.2 Gaps and Opportunities in Health and Nutrition

This study identified a number of gaps in health and nutrition in the communities. Overall, the health-related gaps in resilience building in the cluster areas include poor access to health facilities, available health facilities are with low access to basic infrastructure such as potable water supply, electricity; shortage of essential drugs and laboratory supplies, low utilization rate of available health facilities; shortage of pharmacy and laboratory professionals; inadequate implementation of Integrated Pharmaceutical Supply System (IPLS); low family planning practice (low contraceptive acceptance rate), low skilled-delivery service utilization, and low immunization coverage.

With regard to the nutrition, the key gaps include high rate of acute malnutrition (in Afar, Siti and Liben) and chronic malnutrition (Waghimra, Afar, Wolaita and South Omo); low consideration to improve access of pregnant and lactating women and adolescent girls to their nutritional needs at household level. The key gaps related to poor WASH status include low access to safe water supply, poor access to sanitation facilities such as improved latrine facility, and poor hygienic practices. The key gaps from gender perspective of the health and nutrition are that men plays dominant role in decision making on health seeking behavior and spending household resources; women and girls spend on average four hours to fetch water from the nearest safe water source; and the presence of gender based violence in the cluster areas.

The study identified important opportunities to be considered in designing interventions to build health and nutrition-related aspects of the communities' resilience. The opportunities include:

- the health sector transformation plan that gives due emphasis to provision of equitable, accessible, and quality primary health services;
- the woreda transformation plan which aims to create high-performing health facilities and model kebeles that ensure free home delivery and are open-defecation free;
- the flagship health extension program designed to improve access to health of women, children and families with a strong community ownership mechanism;
- the health development army organized to scale-up best practices gained from the implementation of the health extension program at household level;
- the maternal health initiatives of maternity waiting areas at health centers and Respectful Maternity Care;
- the WASH framework with an integrated approach which aims to improve access to water, hygiene and sanitation;
- the national nutrition strategy with a multi-sectoral and multi-dimensional approach which aims fulfilling the nutrition need of the population;
- the productive safety net program (PSNP) and availability of rivers at most clusters suitable for irrigation;
- the gender policy with a main strategy of gender mainstreaming in sector and development programs; and,
- the presence of experienced development partners on the ground in the geographical clusters working in the technical areas of health, nutrition and WASH.

4.3 Gaps and Opportunities in NR and DRM

In light of observed trends in the status of NRs and the challenges described above, the major gaps to be addressed for improving NR and DRM are:

- extremely underdeveloped capacity at woreda and lower levels for NR and DRM;
- the apparent lack of understanding of the severity of NR degradation in the clusters both by government experts and NGOs as well as development partners/donors;
- inadequate attention paid to ensuring mobility which in turn reduced possibilities to use seasonally available water and fodder on wider areas;
- the lack of adequate knowledge on dryland areas in general and on: (i) the status of NRs base, the extent of land use changes and their implications to livelihoods, and on site specific drivers and consequences of land use changes; (ii) options to better manage the NR-livestock link; (iii) to devise a mechanism that provides complementary roles for GOs and traditional institutions in NR and DRM; (iv) the extent and implications of individualization of communal resources (e.g. grazing lands and woodlands); and, (v) on the effectiveness of traditional institutions in

ensuring access and responsible use of communal resources and mobilizing communities to rehabilitate communal resources;

- little information on options to improve livestock feed resources in dry lowland areas of the country;
- underutilization of existing potential in GIS and remote sensing to gather spatial and temporal data on the changes over time and current status of NRs and to collate existing information for knowledge-based planning and informed decision making at different levels;
- unclear position of the government on the role of traditional institutions in managing NRs and conflicts;
- government emphasis on promoting settlement and crop based farming in most clusters with little emphasis to provide support to enable mobility of pastoral and agro-pastoral households reduces possibilities to use seasonally available water and fodder but scattered over wide areas;
- perceived increased dependency of communities on food aid and relief oriented interventions of NGOs and top down planning of government structures;
- limited effort to make explicit links between food security (PSNP, HABP) and natural resources management programs to ensure complementarities and maximize synergy;
- intervention identification and implementation not informed by knowledge and experience on the status and changes of the natural resources base;
- concerns that in some cases conflicts are taking regional dimensions and are becoming more difficult to solve;
- women in most clusters continue have little control over assets with major values, including privately managed lands;
- poor coordination amongst actors; and
- lack of multi-faceted approach targeted to the different segments of pastoral and agro-pastoral communities as the focus has been on promoting settlement and irrigation based crop farming over shadowing the need for rethinking and diversifying development pathways for varying segments of the community in pastoral and agro-pastoral areas.

The prevailing opportunities for building the resilience of socio-ecological systems in the eight clusters are, among others:

- existence of potentials for irrigation in a number of woredas in the clusters;

- improved capacity to predict weather patterns and forecast drought and floods as well as better communication capability (e.g. mobile network) that could be used to convey such information to rural communities;
- presence of NGOs and government offices in charge of NR and DRM at regional, zonal and woreda levels and in some cases committees at kebele levels;
- presence of traditional institutions that govern access to and use of natural resources that are used communally;
- presence in the country of international research centers (CIFOR, ICRAF, ILRI, IWMI, IFPRI, …) and national institutes (EEFRI, EIAR, EDRI, universities, …) that could support the efforts of GOs and non-state actors in building and sharing knowledge in NR and DRM; and
- the DRM strategy of the government that provides platform for encouraging coordination among actors.

The situation analysis revealed that drought is the number one disaster risk in all of the eight clusters. This is followed by disease (especially of livestock, followed by human and crop), conflicts, economic shocks, floods and landslides.

4.4 Policy and Institutional Gaps and Opportunities

In the previous three subsections, the gaps related to the specific thematic areas are identified. In this sub section, some policy and institutional gaps that cross cuts among the different thematic areas are identified. The policy and institutional gaps that link across the different thematic areas include the following: first, lack of scientific knowledge for policy priority for linking livelihood/agriculture and nutrition and health for resilience building based on country/region specific context; second, lack of strategy to link food security programs (PSNP, HABP) with NRM; third, more sector specific programs that have specific targets of achieving development outcomes; limited complementarities among different sectoral programs; fourth, lack of plans/programs designed based on agro ecological and socio-economic settings of the eight clusters; fifth, absence of targeted program coverage for integrating agricultural production for nutrition security especially for women and children that simultaneously improve the resilience of vulnerable communities; sixth, perceived increased dependency of communities on food aid and relief oriented interventions of NGOs and top down planning of government structures; seventh, weak coordination or weak linkage among the different sectoral offices, which led to very loss linkage among livelihood strategy, nutrition and health programs due to weak linkage among the different sectors; eighth, low capacity to harmonize and utilize existing opportunities in planning and implementing programs that have cross sectoral impact at local levels; ninth, weak

implementation capacity of programs at federal, regional and woreda levels in terms of skilled human, financial and material resources; tenth, limited participation of local communities in problem identification, planning, and implementation and monitoring; eleventh, lack of national research capacity on the link between resilience, on the one hand, and livelihood, health and nutrition, on the other hand; twelfth, lack of national research capacity on the link among livelihood, health and nutrition on one hand and between livestock/agriculture and natural resources management particularly in the pastoral and agro-pastoral areas on the other hand.

The key opportunities related to policy and institutions for development efforts to build resilience in the EU RESET cluster areas include the following. Policy related opportunities are Agricultural Development Led Industrialization, a fundamental strategy for sectoral policies, strategies and programs; encourages agro-ecological based plans and programs and emphasizes the need to be tailored to local context. There are many programs in Ethiopia that can be opportunities to take advantages of their presence to mainstream resilience building programs that requires multi-sectoral or cross-sectoral linkages. Institutional level opportunities include constitutional support for decentralization; government commitment to devolve decision making to local communities and high willingness and readiness of vulnerable communities to participate in local development activities; a well-established system to formulate medium term plans that contains successive five years sectoral plans in the country; government and donor commitments to formulate policies and strategies based on scientific evidences; establishment of the National Disaster Risk Management and Food Security Commission; presence of National Planning Commission that sees cross sectoral programs and plans at federal levels; political commitment from the government side to work with stakeholders; willingness of the donor communities to support with technical and financial resources in eradicating poverty, implementing the Sustainable Development Agenda and any efforts that aim to build resilience of vulnerable communities; presence of many non-governmental organization willing to work in remote and with vulnerable communities and working at local levels; well established research institutions that conduct policy and strategy. The link between the gaps and the opportunities by thematic areas is given under Table 11.

Table 11: Gaps and opportunities for building resilience in cluster areas

	Gaps	Opportunities	Remark
1	**Livelihood**		
1.1	Lack of human capital (low education level, poor health, limited skill)	- National and sectoral policies, strategies, programs and medium term plan; - Pro poor policies; - Commitment of the international community through SDGs	In all clusters
	Extremely poor initial conditions		
	Poor access to soft and hard infrastructures		
1.2	Limited options for livelihood strategy, which are vulnerable to shocks and climate change risks; and subsistence/traditional animal husbandry	- National and sectoral policies, strategies, programs and medium term plan - Commitment of the international community through SDGs	In all clusters
		- Rich in livestock resource	In all clusters
		- Arable land with water resource for crop production and irrigation	Opportunities exist in all except for Waghimra
		- Fishery	Opportunities in Waghimira, Afar & South Omo
		- Tourism	Opportunities exist in clusters Borena, South Omo
		- Bee keeping (honey production)	Opportunities in Waghimra, Welayita & South Omo
1.3	Low productivity	- National level and sectoral policies and strategies, programs and medium term plans; - Development partners and commitment of the international community to assist country development program and medium term plans	In all clusters

	Gaps	Opportunities	Remark
	- Crop disease/pest - Low technology use such as improved seed, chemicals, improved livestock breed - Absence or shortage of improved technology - Poor access to transportation - Poor market access and infrastructure/structure - Absence/limited and poor veterinary facilities and services - Livestock disease - Shortage of livestock feed - Limited institutional services and support	- Country structural organization from federal to local/kebele level to implement policies, strategies, programs and plans; - Non-governmental organizations willingness to actively participate in the implementation of national and sectoral programs and plans to fill the available gaps - Government commitment through its policy and regulations in private sector participation in the development of the country	
	Drought	- DRM policies and strategies - Water sector policy and strategy: Flood and drought control and mitigation efforts are also priorities in the water sector.	In all clusters
	Flood	- DRM policies and strategies - Water sector policy and strategy: Flood and drought control and mitigation efforts are also priorities in the water sector.	Gaps observed in all but mainly in Afar, Borena, Welayita & South Omo
	Conflict	- Country strategy and experience in conflict management	Gaps observed in all but mainly in Siti, Borena & South Omo
2	**Health and Nutrition**		
2.1	Health		
	- Poor access to health facilities - Available health facilities are with low access to basic facilities such as potable water supply, electricity, - Shortage of essential drugs, laboratory supplies and long-acting family planning commodities - Low utilization rate of available health facilities	- Health sector policy and strategy give due emphasis to provide accessible, and quality primary health service - Education sector policy and strategy to expand access to basic education services to all - GTP II: one of its priority areas is improvement in pharmaceutical supply service. - Global strategies to reduce malaria transmission	

	Gaps	Opportunities	Remark
	by users/beneficiaries - Shortage of pharmacy and laboratory professionals - inadequate implementation of Integrated Pharmaceutical Supply System (IPLS)	- GTP II aims to ensure institutions are capacitated in terms of human resource and equipment according to the standard set. - Available skilled manpower in the market due to the expansion of pre-service education institutions;	
	- Low family planning practice (low contraceptive acceptance rate),	- Full package implementation of integrated pharmaceutical supply system (IPLS) - Gaps and opportunities for building resilience in Cluster geographical areas health extension program	Gaps exist across the clusters except in Waghimra and Wolaita
	- Low immunization coverage	- Second phase of health extension program (to be implemented in GTP II period) aims to improve the number and skills, the right mix of professionals and the management of health workers. - Woreda Transformation Plan/agenda: The open defecation free (ODF) initiative in creating model kebeles through health extension program under woreda transformation agenda of HSTP	Gaps exist in Siti and Liben
	- Low skilled delivery utilization	- Focused antenatal care, BEmONC services, Maternity waiting areas, Respectful maternity care, Home delivery free initiative of woreda transformation	Gaps exist in Afar, Siti, Liben, Borena, South Omo
2.2.	**Nutrition**		
	- Higher rate of acute malnutrition compared to national average in 2014 due to shortage of food and lack of access to diversified food - Low consideration to improve access of pregnant and lactating women and adolescent girls to their nutritional needs at household level	- National nutrition strategy, which aims at producing healthy and productive citizens by fulfilling their nutrition demand - National nutrition program recommendations to pregnant, lactating and adolescent girls; interventions at health facilities to prevent iron deficiency anaemia in pregnant and lactating mothers - GTP II targets in the health sector development plan - Improving food production using irrigation (Tekeze and other rivers) and PSNP are opportunities to improve access to food - Health extension program in nutrition education,	Gaps exist in Afar, Siti and Liben Gaps exist across the clusters

	Gaps	Opportunities	Remark
		counseling and demonstration; nutrition screening at health centers, health posts and community health day; community based nutrition program (CBNP) - Health development army mostly women influence on health seeking behavior;	
2.3.	**WASH**		
	- Low access to safe water supply - Poor access to sanitation facilities such as improved latrine facility, and potable water supply	- WASH Implementation Framework (WIF) - GTP II: aims to improve access to potable water supply and sanitation and increase service coverage - GTP II plans to encourage WASH committees to maintain and rehabilitate water supply schemes.	Gaps exist across the clusters
2.4	**Gender**		
	- Gender gap (men plays dominant role in decision making on health-seeking behavior and spending household resources; women and girls spend on average 4 hours to fetch water from the nearest safe water source; - presence of gender based violence (female genital cutting)	- Economic empowerment of women; - Engagement of women and children office to reduce gender disparity; - Reducing the burden of women by improving access to safe water supply	Gaps exist across the clusters Gaps exist in Afar, Siti and Liben
3	**Natural Resource and Disaster Risk Management**		
3.1.	**Natural Resource management**		
	Lack of adequate knowledge on the following: - status of NRs base, the extent of land use changes and their implications to livelihoods - Options managing NR and DR; to better manage the NR-livestock link; how to provide complementary roles for GOs and traditional institutions in managing NRs. - Little information on effectiveness of traditional institutions in allocating resources and supporting rehabilitation efforts.	- Increased capacity to predict weather patterns and forecast drought and floods as well improved communication networks (e.g. mobile network coverage and use) that could be used to convey information to users quickly and cheaply. - Rivers and underground water potentials as well as labor to exploit opportunities for irrigation based farming for drop outs from pastoral and agro-pastoral systems - Availability of health, extension and credit service providing institutions closer to communities would	All Clusters

	Gaps	Opportunities	Remark
	- Growing trend of individualization of communal resources (e.g. grazing lands and woodlands)	particularly support agriculture and livelihood diversification efforts, and hence potentially reduce dependence on livestock production alone and on exploitation of NRs - Increased presence of GOs and offices in charge of NR and DRM at regional, zonal and woreda levels and in some cases committees at kebele levels - The existence of willingness and interest to support from bilateral and multilateral development agencies; - The presence of traditional institutions that govern access to and use of natural resources that are used communally; - Presence in the country of international research centers (CIFOR, ICRAF, ILRI, IWMI, IFPRI..) and national institutes (EEFRI, EIAR, EDRI, Universities, ..) that could support the efforts of GOs and non-state actors in collating, building and sharing knowledge in NR and DRM - The growing call for multi-faceted approach targeted to the different segments of pastoral and agro-pastoral communities.	All Clusters
	- Little efforts to improve livestock feed resources, the vegetation cover on the landscapes, and the natural resource base at large notably rangelands in the clusters		All Clusters
	- Fragmented and inadequate attempts to build DRM capacity at woreda and kebele level	- The DRM strategy of the government provides platform for encouraging coordination among actors. It lays the foundation for building capacity for early warning systems at lower levels of the government structure; - Improved understanding of the advantages and limitations and building on the strengths of DRM strategies communities. - Woreda level DSRM strategies and structures could lead initiatives to making such links and pilot such explicit links - Existing national and international capacities to generate spatial and temporal maps on the resource base and on options to improving management and sustainable use of NRs can be used	All Clusters
	- Little attention to ensuring mobility reduces possibilities to use seasonally available water and fodder on wider areas - Limited effort to make explicit links between food security (PSNP, HABP) and natural resources management - Planning is not informed by knowledge on the status and changes of the natural resources base		
3.2.	**Conflict**		

	Gaps	Opportunities	Remark
	- concerns that conflicts are taking regional dimensions - resource limitations are fuelling more conflicts	- Growing knowledge base on the advantages and limitations of traditional institutions in conflict management though this needs to be further strengthened. - In some clusters there have been efforts to establish peace committee and in others to actively engage elders and traditional institutions in conflict management. - Improving availability of water and feed resources helps reduce conflicts - Options to seek complementary roles of traditional and formal institutions in preventing and quickly and effectively resolving conflicts need to be explored further	In all clusters
3.3.	**Gender**		
	- Women in most clusters have little control over assets with major values, including privately managed lands.	- GTP II targets to develop women empowerment, participation and ensure their benefits through improving equality of education, ensuring land use right of all female headed households, etc.	In all clusters
4	**Policies, programs and institutions**		
	- Lack of scientific based knowledge for policy priority for linking livelihood/agriculture and nutrition and health for resilience building based on country/region specific context; - Lack of strategy to link food security programs (PSNP, HABP) with NRM - More sector specific programs that have specific targets of achieving development outcomes; limited complementarities among different sectoral programs; - Lack of plans/programs designed based on agro ecological and socio-economic setting. - Absence of targeted program coverage for integrating agricultural production for nutrition security especially for women and children	- Agricultural Development - Led Industrialization, a fundamental strategy for sectoral policies, strategies and programs; - Well established system to formulate medium term plans that contains successive five years sectoral plans in the country; - Sectoral policies and strategies encourages agro-ecological based plans and programs and emphasizes the need to be tailored to local context - There are many programs in Ethiopia that can be opportunities to take advantages of their presence to mainstream resilience building programs that requires multi-sectoral or cross- sectoral linkages; - Government and donor commitments to formulate policies and strategies based on scientific evidence	

	Gaps	Opportunities	Remark
	- Perceived increased dependency of communities on food aid and relief-oriented interventions of NGOs and top-down planning of government structures		
	- Weak coordination or linkage among different sectoral offices, which led to lack of linkage among livelihood strategy, nutrition and health programs; - Low capacity to harmonize and utilize existing opportunities in planning and implementing programs that have cross-sectoral impact at local levels - Weak implementation capacity of programs at federal, regional and woreda levels in terms of qualified, skilled human resources, financial and material resources; - Limited participation of local communities in problem identification, planning, implementation and monitoring - Lack of national research capacity on the link between resilience and livelihood, health and nutrition, on the other hand. - Lack of national research capacity on the link among livelihood, health and nutrition on one hand and between livestock/agriculture and natural resources management particularly in the pastoral and agro-pastoral areas on the other hand.	- Establishment of the National Disaster Risk Management and Food security Commission; - Presence of National Planning Commission that sees cross sectoral programs and plans at federal levels - Political commitment from the government side to work with stakeholders; - Willingness of the donor communities to support with technical and financial resources in eradicating poverty, implementing the Sustainable Development Agenda and any efforts that aim to build resilience of vulnerable communities; - Presence of many non-governmental organization willing to work in remote areas and with vulnerable communities - Presence of many government and non-government organizations working at local levels; - Constitutional support for decentralization; and high willingness and readiness of vulnerable communities to participate in local development activities - Well established research institutions that conduct policy and strategy - Research institutions established in the regions and universities and mandates to work on issues affecting agriculture and NRM in dry lands in general and in pastoral and agro-pastoral areas in particular	All Clusters

5. Strategic Option for Building Resilience

Following the situation analyses, a detail analyses is made to identify strategic options to address the gaps and utilize the opportunities so as to build the resilience of the vulnerable communities. The options are identified based on the findings of the comprehensive situation analyses of the vulnerable areas, review of policy, institutional and organizational arrangements related to resilience building at federal, regional and local levels. We also used primary information collected through field level activities as well as key informant interviews of key stakeholders including policy making, donors, government offices and non-government organizations that operate in the areas. Moreover, the analysis is supported by a review of literature on resilience building and vulnerability focusing on the transmission mechanism from interventions on livelihood, health, nutrition and WASH and Natural Resource Management (NRM) and Disaster Risk Management (DRM). The strategic options proposed to build the resilience of vulnerable communities in rural areas of Ethiopia are summarized as follows.

Fundamental strategic direction should be on interventions with complementarity effect: Since resilience has a multidimensional aspect, it is strongly recommended that the fundamental strategic direction is supporting interventions that have complementarity in building resilience in the vulnerable communities. In this regard, the key strategic directions that have such complementarity effects include interventions that focus on improving access to basic social services and infrastructure, community based development to broaden interventions that work on responsible use of natural resources that are supporting people's livelihoods; promoting and supporting climate smart agriculture and nutrition sensitive agricultural production practices that also enhance productivity and farm income; school based interventions as well as capacity building that improve governance system in coordination, accountability, planning, implementing and monitoring of interventions at federal, regional and local levels as well as building national and regional capacity for early warning and build capacity for preparedness. Given this, the key strategic options focusing on specific thematic areas and with complementarity effects on resilience building can be summarized as follow.

Major strategic options to improve the livelihood system for resilience building: The policy implication of the current situations in the study areas is that the proposed strategic options should not only consider addressing covariate factors but also individual specific factors such as the capability to utilize opportunities. Accordingly, the proposed strategic option to build

resilience through improving the livelihood system of the vulnerable communities focus on identifying interventions that improve the capabilities of individuals and communities in the vulnerable areas, and their agricultural production and productivity. Due emphasis should also be given to identify major strategic options to improve the livelihoods of communities in pastoral development areas, which is one of the major livelihood system in the study areas. Interventions are also required to improve or enhance non-farm rural development so that vulnerable communities can have alternative livelihood strategies other than crop and livestock productions.

Major strategic options to improve the health, nutrition and WASH for resilience building:

Important resilient building related policy implications can be drawn from the findings of the situation analyses on the health, nutrition and WASH. In this regard, due emphasis needs to be given for interventions that improve the service delivery and utilization, those that enhance resilience-oriented nutrition; improving the gender dimension of the health, nutrition and WASH; and improve the health information management system. Accordingly, the following interventions are worth to consider.

First, strategic direction to improve health service delivery include interventions that improve access to primary healthcare facilities through improving primary healthcare facilities, infrastructure (water & electricity), human resource capacity and supply chain management for drugs and supplies. Strategic directions to improve health service utilization include interventions that focus on improving utilization of family planning services that focus on reversible long acting contraceptives and post-partum family planning methods; interventions that improve utilization of skilled delivery through strengthening basic emergency obstetric and newborn care (BEmONC) services, maternity waiting areas and engaging traditional birth attendants in the referral of women in labor to health facilities; and interventions that focus on improving routine immunization services by focusing on reaching communities that do not have access to primary health care facilities and strengthening surveillance and response system for vaccine preventable childhood illness.

Second, strategic directions to improve WASH include interventions that improve population access to safe water supply through rehabilitation of existing water supply systems to reduce non-functionality and construction of new water supply systems; capacity building interventions for sustainable management of WASH facilities at the community focusing on improving the technical capacity of WASH committees at all levels in managing WASH facilities, managing finance, resources and maintenance of WASH facilities. The sustainable management of WASH

facilities needs further studies to investigate its impact in creating long term sustainability and ownership. Key strategic direction should also focus on interventions that improve access to sanitation facilities and communication for behavioral change on hygiene and sanitation at the communities through health extension program and health development armies.

Third, strategic directions to improve the nutrition status of infants, children, pregnant and lactating mothers include strengthening routine nutritional assessment for young infants, children, pregnant and lactating mothers with appropriate nutrition counselling for optimal nutrition practices; improving food diversification through education, demonstration, agriculture sensitive nutrition interventions like household gardening, community gardening, school gardening, small scale irrigation, fishing etc.; and improving the capacity of early detection and management of acute malnutrition through strengthening integrated community case management (ICCM) at the community and integrated management of childhood illnesses at the health facilities (IMNCI).

Fourth strategic directions to improve the gender dimension of health, nutrition and WASH should mainly focus on women empowerment through interventions that focus on income generating interventions like micro-finance, household gardening; and interventions that improve the health of children, women and families through strengthening implementation of the health extension program packages (HEP) through engagement of the health development armies (HDA's) in creating model households in health.

Major strategic options to improve the NRM and Disaster risk management system for resilience building: In addressing the challenges, gaps and utilize the opportunities to improve the NRM and DRM so as to build resilience, it is important that major strategic direction focuses on the following.

First, the major strategic interventions towards improving the NRM that are targeted to build resilience include those that improve natural resource conservation and utilization with emphasis on rural land administration that carefully marries the roles and responsibilities of GOs with traditional institutions, watershed management and expansion of small scale irrigation, which are fundamental to build resilience in the vulnerable areas. Besides, exploring options for working with elders, traditional institutions and Community Based Organizations (CBOs) to mobilise the communities to better manage and responsibly use these common property resources (e.g. in controlling bush encroachment, in reducing over grazing, excessive tree cutting, ..) and in identifying and protecting areas that could be used as fodder banks and dry season grazing areas.

Second, in relation to irrigation development, interventions that ensure sustainable agricultural development that does not undermine mobility of pastoralists and agro pastoralists; that enhances productivity through improved water utilization (e.g. multiple – use water system) and agro-ecologically sensitive irrigation schemes that do not lead to salinity; growing diverse crops that also contribute to livestock feed and human nutrition while also respond to market demands. All these efforts also need to contribute to women's empowerment through increased asset ownership, and improved access to and control over natural resources including production and cash income are proposed.

Third, in the disaster risk management, major strategic directions proposed include interventions addressing elements of risk related to food security such as livestock and crop diseases, supporting voluntary resettlement programs for those that cannot be mobile and plan to switch to settled farming, improving the credit and risk insurance system that would help household not to lose so much assets in times of disaster; exploring options to linking pastoral and agro pastoral systems to national and global efforts of building climate resilient green economy; strengthening community managed DRR practices and principles and creating incentive based effective links between eco-system management and climate change to DRR; and those related to climate change adaptation action plan (community contingency plan). Fourth, strategic interventions that improve food security, disaster prevention and preparedness are strongly advised. In this respect, the key strategic interventions include, but not limited to, those that improve contingency food reserve and safety net programs especially to food insecure households. This can be linked with strengthening voluntary and well negotiated and planned resettlement programs and improving the credit system that enables to build household assets; and establishing risk insurance system. In relation to social protection, it is strongly advisable to support interventions that provide timely resources for transitory food insecurity in response to shocks; and strengthening the delivery of demand-driven and market-oriented advice.

Strategic direction in improving the governance system for resilience: Since there are important policy related gaps that hinder or jeopardize the effective implementation of the strategic interventions proposed above, it is also strongly advisable to strategically promote and support governance related interventions to effectively implement the proposed strategies. The fundamental gaps related to governance include poor planning, lack of synergies among the various resilience related interventions, weak coordination among various sectors, low implementation capacity and lack of accountability at all level as well as lack of information and knowledge on the linkage among the various thematic areas related to resilience building. Thus,

the important strategic issues proposed by the study include interventions that aim to improve harmonization of the various sectoral strategies and programs; strengthen coordination capacity; enhance implementation capacity and accountability for building resilience as well as research that fill data and knowledge gaps. In these regard, the following interventions are worth to consider.

First, since issues of resilience cut across many sectors, resilience has multi-sectoral dimensions. Currently various programs are being implemented in all cluster areas that directly or indirectly have influence on the resilience of the vulnerable communities. However, there is lack of harmony among the various programs. The strategies, programs and interventions in the various sectors should be harmonized. Towards this, it is strongly advisable to promote and support interventions that aim to improve harmonization of the various sectoral strategies and programs. Joint planning and budgeting can help to improve harmonization across sectors.

Second, there is huge capacity gap in formulating, implementing and monitoring and evaluation of programs related to resilience building at all levels, and the gap is worse particularly at regional, local and household level. Lack of capacity, poor integration, and lack of accountability are among the key reasons for poor implementation. It is, therefore, strongly advisable to promote and support interventions that improve the implementation of the strategies including accountability at all levels including at federal, regional and local levels. Some of the proposed strategic options that aim to enhance the implementation capacity and accountability include, but not limited to, improving human resource development, information system, and supporting the private sector to engage in the value chain of resilience related interventions. Besides, in relation to improving the governance system in formulating, implementing and monitoring interventions that build resilience of vulnerable communities at local level, it is advisable to strategically support a decentralized and Community-Based System. In this respect, it is strongly recommended to strategically strengthening people's participation along all development processes starting from the planning of the interventions up to monitoring and evaluation. In addition, it is also advisable that capacity building interventions that build and enhance the capacity of woreda and kebele councils are given due emphasis.

Third, the various programs that are related to resilience need to be effectively implemented. These can be possible if and only if the different sector offices at federal, regional and local level implement the programs in a well-coordinated system. Coordination should be strengthened at all levels of government, down to the woreda level, as well as among donors and NGOs, and such coordination should direct efforts toward common targets. Accordingly, it is strongly advisable to support interventions that strengthen coordination among the various actors

including government, donors, NGOs at all levels. In addition, it is also advisable to support interventions that focus in strengthening inter-sectorial coordination and collaboration at the community, woreda, zonal and regional levels for effective implementation of the health sector transformation plan particularly those that focus on primary healthcare facilities & other.

Fourth, with respect to filling information and knowledge gaps, academic and research institutions as well as specialised government agencies (e.g. the national meteorological agency, disaster commission, etc) and local governance bodies need to be engaged to jointly identify and address knowledge and capacity related gaps. Accordingly, in relation to filling the information gap, it is advisable to engage research institutions in supporting them to collect and record data on the livelihood, health and nutrition aspects of resilience building since such information can help to generate knowledge to design feasible monitoring and evaluation systems that provide continuous feedback mechanisms to inform feasible interventions and their implementation mechanisms at all levels. Second, it is also important to engage specialised government agencies (e.g. the national meteorological agency, disaster commission, etc) and local governance bodies since such organizations, together with research institutions, play important role in generating and sharing data.

6. Further Research

The fact that resilience building has multi-sectoral dimension means that any effort towards building resilience requires empirical evidences conducted through multi-disciplinary approach. In this regard, given the limited resources and the urgency of the issue particularly in rural areas of the country and Sub Saharan Africa, there is still knowledge gap on the feasible policy, technological, institutional and organizational options towards building resilience at household, community and country levels. Accordingly, this study highlights the following as research gaps that deserve attention.

First, despite the various researches conducted on water management, there is still knowledge gap that feed into policy making on how to sustainably manage and integrate water supply schemes with small scale irrigation schemes. Second, there is little empirical evidence on how to integrate livelihood interventions with NRM & DRM specifically for low land pastoral areas. Third, there is still knowledge gap on the institutional arrangements that create synergies and effective implementation mechanism given the multi-sectoral & multidisciplinary nature of resilience, including the potential role of the private sector in resilience building. Fourth, further research is needed in how to integrate sustainable NRM & DRM including (i) understanding how mobility (short and long term migration of youth) are affecting production systems in terms of

labour, gender, and asset build up; (ii) feasible technical and institutional options to increase livestock feed and feed reserves at community and household levels; to mobilise communities in rangeland management and incentives and challenges to do so; and as to how irrigation based (smallholder or commercial) farming can be linked to supporting livestock production in terms of producing fodder as well (either as a product or as a by-product, etc). Finally, though climate change risks are recently given attentions among policy makers and development partners, there is little empirical evidence generated based on 'scenario – based analyses' under different environments that consider climatic, policy and technological changes and their implications for resilience.

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