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SCHOOL OF GRADUATE STUDIES

DETERMINANTS OF GRADUATION FROM PRODUCTIVE SAFETYNET PROGRAM: A CASE STUDY IN CHIRO DISTRICT, OROMIA NATIONAL REGIONAL STATE, ETHIOPIA

BY

CHALA WORDOFA BONSE

AUGUST, 2019

ADDIS ABABA, ETHIOPIA

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BY

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ADDIS ABABA, ETHIOPIA

Declaration

I declare that this dissertation is my Original work, and contains no material previously published or written by another person except where due reference has been made in the text. The content of the dissertation is the result of work I have carried out since the commencement of my research for higher degree candidature and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other higher institution. Lastly, I would like to confirm that any errors committed, if any, are my own responsibility.

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This is to certify that the Dissertation prepared by Chala Wordofa Bonse entitled: **Determinants of Graduation from PSNP: A case study in Chiro District, Oromia National Regional State, Ethiopia,** submitted in fulfilment of the requirements of the degree of Doctoral Philosophy in Rural Development complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

Signed by the examining committee:

External examiner_____ Signature_____ Date_____

Internal examiner_____ Signature_____ Date_____

Advisor _____Signature_____ Date_____

Name and Signature of Chairperson of the Examining Committee

Abstract

This dissertation deals with chronically food insecure rural households' graduation from external assistance, more specifically from PSNP Program. The main purpose is to explore factors that affect households progress to graduation and their food security statuses then after. In pursuit of this general purpose, the study explores and analyzes how the interplay among households` vulnerability context, level of their access to different livelihood resources and policy implementation influence the food security status of households and their progress to graduation. The central argument is that households' vulnerability factors, lack of access to adequate livelihood resources and impaired policy implementations limited households progress towards graduation. Rural sustainable livelihood framework was adopted to comprehensively grasp households' characteristics, access to different livelihood assets, policy related factors, and households' food security outcome.

Qualitative and quantitative data were drawn from both primary and secondary sources. The primary data was drawn from stakeholders at different levels with varied capacity of program implementation, and mainly from case study households in Chiro District *kebele*s in West Harerghe Zone of Oromia National Regional State in Ethiopia. Intensive field work was conducted to collect data through focus group discussions, individual interviews and household survey. Secondary data was obtained through desk reviews of literature and relevant government documents from national to *kebele* levels. Qualitative and quantitative datasets were integrated, used for mutual explanation and validation, and finding from each were compared and interpreted. Food security measurement tools such as household Self-Assessment Food Security (SAFS), Household Food (Insecurity) Access Scale (HFIAS), and Household Food Balance Model (HFBM) were adopted in the analysis. Both descriptive statistics such as frequency, mean, and standard deviation, and inferential statistics, binary logistic regression, were used in the quantitative data analysis. Composite Asset Index (CAI) for each groups of households were created by using Multiple Correspondence Analysis (MCA), and equality of each groups of households in terms of their asset endowments and food security statuses were analyzed.

The study revealed that most graduates had not done away from dependence on external assistances after their graduation. The study shows that the target households were highly vulnerable due to their demographic characteristics; limited access to productive assets such as land and livestock; limited livelihood options and income sources; exposure to persistent environmental risks such as drought, rainfall variability, crop pests and diseases. The services and products from food security program were found inadequate to address households' vulnerability and to replenish households' capacity to graduate from the program as envisaged in the program design. The analysis on food security status of graduated households revealed that the great majority of them were not year-round food secure during the study. The study also revealed that though the PSNP transfer significantly improved the food security status of ongoing PSNP households as compared to their status before joining PSNP, their annual food requirements were not fully met for most due to inadequacy of the transfer and exclusion of eligible household members. Perception of most ongoing PSNP households on graduation exercise was found gloomy. The shortcomings of previous graduation exercise which removed eligible households prompted most ongoing PSNP households to build wrong conception of graduation as an approach that leaves households in difficult circumstances by forcing them to quit the program.

The study concludes that households' progress towards graduation has been constrained by vulnerability factors related to households' characteristics, economic, environmental and institutional inefficiency that failed to adequately address these constraints as stipulated in the program design. It argues that most graduated households were made to exit the program without attaining food security and the capacity to withstand smaller shocks. Graduate households' asset endowment level and food security status was not different from that of the ongoing PSNP households at the time this study was conducted.

Thus, the study suggests that the government should look at the mismatch between its intention and implementation of graduation approach. Moreover, the study recommends that the success of the PSNP program should be more rated by how much it has protected the vulnerable households from being undernourished than by the number of households who exited it. The developmental deepening of the program and its outcome, graduation, should be judged against how other development interventions effectively complemented PSNP.

Key words: Vulnerability, livelihood assets, food security, MCA, CAI, graduation, HFIAS, SAFS, and HFBM.

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Acronyms and Abbreviations

ATA	Agricultural Transformation Agency
BRAC	Bangladesh Rural Advancement Committee
CAI	Composite Asset Index
CARE	Cooperative for Assistance and Relief Everywhere
CCI	Complementary Community Infrastructure
CFI	Chronically Food Insecure
CFPR	Challenging the Frontiers of Poverty Reduction
CFSVA	Comprehensive Food Security and Vulnerability Analysis
CGAP	Consultative Group to Assist the Poor
CSA	Central Statistical Authority
CSI	Coping Strategies Index
DA	Development Agent
DFID	Department for International Development
ECA	Economic Commission for Africa
EHRNI	Ethiopian Health and Nutritional Institute
ESMF	Environment and Social Management Framework
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agricultural Organization of the United Nations
FCS	Food Consumption Score
FDRE	Federal Democratic Republic of Ethiopia
FSCB	Food Security Coordination Bureau
FSP	Food Security Program
GDP	Gross Domestic Product
GHI	Global Hunger Index
GPS	Graduation Prediction System
HABP	Household Asset Building Program
HFBM	Household Food Balance Model

HFIAS	Household Food Insecurity Access Scale
IDS	Institute of Development Studies
IFAD	International Fund for Agricultural Development
IGVD	Income Generation for Vulnerable Group Development
KCAL	Kilo Calorie
KFSTF	*Kebele* Food Security Task Force
LAI	Livelihood Asset Index
MCA	Multiple Correspondence Analysis
MDG	Millennium Development Goal
MEDaC	Ministry of Economic Development and Cooperation
MFI	Micro Finance Institutions
MoA	Ministry of Agriculture
MoANR	Ministry of Agriculture and Natural Resource
MoARD	Ministry of Agriculture and Rural Development
MoFED	Ministry of Finance and Economic Development
NCFSE	The New Coalition for Food Security in Ethiopia
NGO	Non-government Organization
NPC	National Plan Commission
OCSSCO	Oromia Credit and Saving Share Company
PCA	Principal Component Analysis
PIM	Program Implementation Manual
PSNP	Productive Safety Net Program
RUSACCO	Rural Saving and Credit Cooperatives
SAF	Self- Assessment Food Security
SDG	Sustainable Development Goal
SLF	Sustainable Livelihood Framework
TLU	Tropical Livestock Unit
TUP	Targeting the Ultra Poor

UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations International Children`s Fund
VIF	Variable Inflation Factor
VSLA	Village Saving and Loan Association
VUP	Vision 2020 Umurenge Programme
WFP	World Food Program
WFS	World Food Summit
WFSTF	*Woreda* Food Security Task Force
WHO	World Health Organization

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'All things were made by Him; and without Him was not anything made that was made. In Him was life; and the life was the light of men. And the light shineth in darkness; and the darkness comprehended it not' (John 1:3-5).

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Chapter 1: Introduction

1.1. Background

> "The signs of increasing hunger and food insecurity are a warning that there is considerable work to be done to make sure we 'leave no one behind' on the road towards a world with zero hunger," (FAO *et al*., 2018:2)

Food insecurity had been a long-standing concern at global, regional, national, community, household and individual levels (Napoli *et al*., 2010; Foster, 1992) and it remained so in the new millennium. As a result, commitments were repeatedly made at United Nations (UN) level to tackle hunger in the world since 1990's (FAO *et al*, 2015). The first one is the commitment made by UN member states in its first World Food Summit (WFS) in 1996 '… to eradicate hunger in all countries with an immediate view to reducing the number of undernourished people to half their present level no later than 2015' (in FAO *et al*., 2015:4). The second one is the establishment of the first Millennium Development Goal (MDG) that reiterated a target to reduce the proportion of undernourished people by fifty percent by 2015 (FAO *et al*., 2015). Thirdly, the second Sustainable Development Goal (SDG) of the 2030 agenda also committed to end hunger and all forms of malnutrition.

Efforts were made at regional and national levels to translate the commitments to reality. Reports show that, though there were noticeable differences among regions and countries` performances, the target of halving the proportion of undernourished people by 2015 was met at global level (FAO *et al*, 2015). In Africa, the overall prevalence of food insecurity was reduced by 31% between 1990s and 2015 (FAO *et al.*, 2015).The estimated number of undernourished people in Sub-Saharan Africa as of 2014-16 was 217.8 million, of which 57% in Eastern Africa, 27% in Central Africa, 14% in Western Africa, and 2% in Southern Africa (FAO *et al*., 2015). The estimated absolute number of global hungry people declined by 218 million over 1991-2 to 2015, while that of Sub-Saharan Africa increased by 42 million over the same period (FAO *et al*., 2015). However, the recent reports on the trends of hunger at global level have come up with the reversed direction to the years before Sustainable Development Goal (SDG). The 2018 annual report on the global food security and nutrition revealed that hunger had been increasing in the past three years due to increased global economic slowdowns, violence and instability in conflict ridden regions, as well as climate variability and extremes (FAO, *et al*., 2018). The report showed that the absolute number of

undernourished people at global level increased from 804 in 2016 to 821 million in 2017 (FAO et al., 2018). As compared to 2015 the overall number of undernourished people in Africa has increased by 34.5 million (32.6 million more in sub-Saharan Africa, and 1.9 million more in Northern Africa), and reached 257 million which accounted to about 20% of the population of the continent (FAO & ECA, 2018). The report has also commented that the situation of undernourishment was worsening in the most regions of Africa and South America, while the trend was decreasing in Asia.

The trend in the number of undernourished people in Sub Saharan Africa has been ongoing over a longer period, which increased from181 million in 2010 to more than 236 million in 2017 (FAO *et al*., 2018). It remained the region with the highest number of undernourished people, comprising 237 million (92.2%) of the 257 million undernourished people in the continent (FAO & ECA, 2018). The estimated number for the chronically food insecure people in Sub-Saharan Africa, which was 23.2% of its population in 2017 was more pressing (FAO *et al*., 2018). The declining trend of food security situation in Africa has been ascribed to slowing down of world economic condition, particularly the failure in the prices of oil and minerals, and adverse climatic conditions that led to the fall of agricultural production, and increases in the prices of staple foods notably in Eastern and Southern Africa (FAO & ECA, 2018).

Ethiopia is one of a few Sub-Saharan African countries that have achieved the MDGs and made some progress towards target of halving undernourished people by 2015 (FAO *et al.*, 2015). It has increased food availability by 41%, decreased poverty level by 33% (1999 -2010), and showed consistent progress towards decreasing stunting (FAO *et al*., 2015). Moreover, Ethiopia had been able to reduce the number of undernourished people by 3.3 % in the years 2014-216 (FAO & ECA, 2018). In spite of these progresses, the number of food insecure people in Ethiopia is about 10% of its population and increases to more than 15% during drought years (Bisrat *et al.,* 2015). Moreover, according to the 2018 Global Hunger Index (GHI) that measures and tracks hunger at global, regional and national levels, Ethiopia scored 29.1 % and ranked 93rd out of 119 countries (Grebmer *et al*, 2018). Data in the index revealed that even though Ethiopia has made successive progress in reducing its GHI Scores from 55.9 points

('alarming hunger level') in 2000 by 26.8 points, it`s current GHI Scores places it in 'serious range' of GHI Severity Scale[1] (Grebmer *et al*, 2018).

Ethiopia has been facing subsequent cycles of food security crises. A number of researchers such as Pankhurst (1995, in Degefa, 2005), Webb *et al* (1992) and Degefa (2005) documented history of food crises and its underlying causes in Ethiopia. According to Webb *et al*. (1992), though drought and food shortages are familiar phenomena in Ethiopia, there have been multiple causation of famine in the country. Extreme whether events, rapid population increase, backward agricultural practices and low level of agricultural technology adoption, accelerated land degradation, absence of diversified income and limited employment opportunities, limited household assets, lack of access to market, low level of human capital, lack of good governance and inappropriate policy measures are cited as drivers of food insecurity in the country (Webb *et al*., 1992; Devereux, 2000; NCFSE, 2003; Degefa, 2005; Girma, 2014).

Historical records of drought and famine in Ethiopia has been traced back far to 250 B.C (Webb *et al*. 1992). According to Girma (2014), drought had been recurring with the interval of 13 to14 years for some 600 years; and since the first half of the 20th century, it is accelerated to recur between 7 to 8 years; and more recently shortened to reoccur between 2 to 3 years' cycle. The increasing climate change induced disasters coupled with chronic poverty threatened lives of millions. According to Ethiopian government`s official discourse the recent (2014/15) El Niño induced drought, for example, exposed more than 10.2 million people to food insecurity (NPCa, 2017). Though the prevalence of undernourished people in the total population was reported to have been declined from 39.7 % in 2004-2006 to 21.4% in 2015-2017, drought continued to disrupt agricultural production and rises in staple food prices in 2017 (FAO, *et al*., 2018).

Though considerable blame has been attached to drought for subsequent famines and chronic food insecurity in Ethiopia, Webb *et al.*(1992) argued that famine and chronic food insecurity

[1] GHI Severity Scale ranges from 'low' to 'extremely alarming,' based on the corresponding scores of GHI: ≤9.9=Low; 10-19.9= Moderate;20-34.9+ Serious; 35-49.9= Alarming; ≥50= Extremely alarming (IFPRI et al., 2018)

are not the immediate result of drought but the cumulative effect of events that erode the capacity of households to withstand short-term shocks that may take place in the form of environmental extremes. Webb *et al*. (1992) emphasized poverty as a determining factor of famine and households` depth of food insecurity. They indicated that the coping capacity of households in the famine prone areas of Ethiopia was already reduced in 1980s. Some accounts on rural development policy of Imperial Regime justify the point. According to Getachew (2018), during the Imperial regime, agricultural sector was traditional with no well-organized and capacitated institutional set up at least until 1950s. Beginning from 1950s, through a number of multilateral technical assistances, notably from the United States of America`s pioneer foreign aid which was in line with President Truman`s point 4 program, the foundation for agricultural development was laid. Accordingly, successive Five-Year Plans were worked out which served as a basis for government policy framework for national development. Though agricultural organizational foundation was laid down during these plans' periods, the institution was dwarfed by capacity limitation to reach out to the farmers.

More importantly, the policy focus was on large scale agricultural modernization that was led by commercial interest. Even so, as Getachew (2018) explained, neither the overall performance of MoA, nor that of the peasant was transformed due to different constraints. The major constraints discussed were limited or no benefits obtained by smallholder farmers outside of Comprehensive Agriculture Package Program implementation areas; farmers dependences on weather conditions and landlords, and landlords' lack of agricultural entrepreneurial skills were among others. Getachew (2018:186-7) described the failure and contribution of the Imperial policy to agricultural production failure:

> …the very extractive feudal system and absolutist Imperial Court used the newly established administrative structure and modern techniques of agriculture production served as egregious extractive devices. Peasant eviction and extractive tenancy arrangements created precariously subsistence population. At the time, population continued to grow relying on the traditional slash and burn systems of cultivation causing massive destruction to the natural environment. Logging of forest products as a means of earning foreign currency also contributed to the rapid destruction of forest cover, further exacerbated soil erosion and declining soil fertility. Already, by the 1950s and 1960s, the seeds of agriculture and food crises were firmly sewn.

This led to the 1973/74 famine to which the regime turned deaf ear, exacerbated the cry for land reform, and leveled the ground for the 1974 revolution, as a consequence of which the feudal system was collapsed.

As Webb *et a*l. (1992) argued, though famine was preventable, due to policy failures to put effective early warning and 'famine-relief intervention' systems, and lack of preparation for timely public responses, subsequent famines affected the lives of thousands and millions of people in Ethiopia. The Imperial regime was highly criticized for being indifferent in this case. Some sources indicate that despite long-standing prevalence of famine in Ethiopia, food security had not been a 'concern in public policy discourse' until the fall of the Imperial regime (Pankurst & Dessalegn, 2013).

The Derge Regime was acclaimed for ending feudal land tenure system and its effort on land distribution, but it was blamed for following 'ideological path of socialism and copied a system of collectivization and state farm that were alien to the Ethiopian reality' (Getachew, 2018). In fact Derge took numerous policy initiatives to address food security problem that took place in a form of short and long-term programs that combined, along emergency food assistances, efforts to increase grain production, soil and water conservation, irrigation development projects, employment generation schemes, resettlement programs and others to which government and development partners contributed a significant amount of resources (Pankhurst & Dessalegn, 2013). However, the efforts had not reversed the food insecurity situation due to a number of unpopular programs such as forced villagization, resettlement program, and 'economic extraction of the peasantry' through compulsory grain sales to government marketing board and cooperatives (Getachew, 2018). As a result, agricultural production was stagnated, recovery from incidents of weather irregularities became difficult for many households, and chronic food insecurity and regular food crises like that led to the 1983/84 famine became the norm for rural population (Getachew, 2018).

The subsequent food crises in Ethiopia led to the current Ethiopian government`s recognition of the need to put food security issue as one of its top agenda. It had developed the first National Food Security Strategy in 1996 which was followed by National Food Security Program in mid-1998 (Riley & Gavian, 2000) and updated in 2002 and 2003, respectively. The strategy is based upon three basic pillars (FDRE, 2004:7): 'to increase the availability of food through

increased domestic production, 2) to ensure access to food for food deficit households; and 3) to strengthen emergency response capabilities.' Moreover, the Food Security Program has come up with four components; namely 1) Productive Safety Net Program (PSNP), 2) Household Asset Building Program (HABP), 3) Resettlement Program, and 4) the Complementary Community Infrastructure (CCI).The specific objective in this Food Security Program is to 'Attain food security of the chronically food insecure five million population and significantly improve and sustain overall food security of ten million additional food insecure people within five years' (NCFSE, 2003:15).

The Productive Safety Program is the major component that makes predictable resource (cash or food) transfer to chronically food insecure people in chronically food insecure districts (MoARD, 2008). It was launched in February 2005 with the objectives to fill food consumption gaps, to prevent asset depletion at household level, to encourage households to engage in productive investments, to promote market development by increasing the purchasing power of households through cash transfers, to create community asset, and finally to help to bring about rural transformation (MoARD, 2004) .

The principal goal of food security program in general, and that of PSNP in particular in Ethiopia is graduation. There are two stages of graduation; namely, graduation from Safety Net Program (PSNP), and graduation from Food Security Program (FSP). According to MoARD (2007:13), graduation from PSNP is explained as: 'A household has graduated when, in the absence of receiving PSNP transfers, it can meet its food needs for all 12 months and is able to withstand modest shocks. This state is described as being 'food sufficient`.' This indicates the movement of a household out of PSNP when it is assessed for fulfilling food quantity it requires. The second level graduation is graduation from Food Security Program that is to be 'achieved when a household is assessed for being food secure' (Devereux, *et al*., 2014:4).

Asset-based thresholds are used as 'proxies for food sufficiency and resilience' (Devereux 2014). Accordingly, each region of the country has established its own graduation bench-mark based on market value of a bundle of assets (Devereux 2014). With such design and intention, government and donor communities have been struggling to improve the overall food security situation of food insecure population and to achieve graduation of chronically food insecure households from PSNP since 2005 in Ethiopia.

The case study district in this research is found in West Hararghe Administrative Zone of Oromia National Regional state. The Zone has been known for having a long-standing history of food insecurity. It was among the areas that Webb *et al*. (1992) categorized as the worst drought regions. As Webb *et al* (1992:19) explained, these areas were most affected due to 'population pressure, agroecological resource base, and climate.' Currently, it is the zone with the second, next to East Hararghe, largest number of chronically food insecure population, 411.716 (24%) of 1,733,626 PSNP beneficiaries, registered for the fourth phase of PSNP in nine zones of the Region. Parallel to this, there had been a great number of people who were assisted by emergency food aid due to persistent drought. To cite the most recent figure, 856,777 people were hit by the 2014/15 drought and assisted by emergency food aid (ODPPC, 2015). This and the PSNP beneficiaries figure amount to 1,268,493 which becomes 54.7% of the 2,318,898 people of the zone.

Chiro district is one of the 14 districts in the West Hararghe zone. As it is the case for the zone, the district has been highly vulnerable to chronic food insecurity due to, among others, population pressure, poor agroecological resource base, persistent drought and climate variability. All forms of food security programs have been implemented in the district, but the situation has not yet been reversed. Although a number of households were reported to have graduated, 30, 381 people are currently under PSNP support from all the kebeles of the district (personal communication). Parallel to this, there have been a number of people being supported through emergency food aid. On average, 56376 people were assisted through emergency food aid in the years 2016-17, within two years of the fourth phase of PSNP program.

1.2. The problem statement and research questions

As it has been indicated above, the first level graduation is graduation from PSNP that was envisaged to be achieved at scale within the first and second phases of the program (2005-2009). However, the government and donors understood that achieving food security at household level takes much more time than the initially agreed and thus extended the PSNP program for another five years (Desalegn, 2013). In the third phase (2010-2014), too, PSNP and Other Food Security Programs were designed in complementarity to achieve massive graduation at the end of this phase (Dadimos Development Consultants *et al*, 2014). However, different evidences show that though the Food Security Program in the country has been

showing a positive impact, progress towards graduation at each phase had not been achieved and is still challenging (Coulter 2011; Aschalew, 2013; Uffelen, 2013; Devereux *et al*, 2014).

Now the program is in its fourth phase of implementation. In spite of the intention of Food Security Program to significantly reduce the number of chronically food insecure and to improve and sustain the food security situation of transitory food insecure rural households, evidences show that though overall poverty has been declining, the number of chronically food insecure has risen in same areas and remained same in other areas of the country (Maxwell, *et al.,* 2013). The overall number of chronically food insecure people under PSNP increased from 5,136,298 (MoARD, 2004:105) estimated in 2004 to 7,997,218 in 2015/16 plan (MoANR, 2015) in eight regions of the country.

Though the governments` report at national level indicated that 496,438 household heads graduated, (Berhanu, 2012), studies show that many of the reported households complain that they were rather removed prematurely from the program than truly graduated (Devereux *et al*. 2014; Tafesse, 2013; Aschale (2013). A study by Sabates-wheeler *et al* (2012) in four districts of Tigray and Oromia revealed that about 50% of the beneficiaries under the program had no confidence to graduate while 25% graduates in two sampled Oromia districts and around 33% in Tigray districts had no confidence to continue without PSNP. Moreover, studies on the livelihood and food security statuses of graduated households after their graduation is scant in Ethiopia in general and in this research area in particular.

The graduation trend in Oromia National Regional State and the selected district for this study, Chiro, is almost similar to the national trend. Despite the controversial massive graduation (pressurized by the need to have graduates at the end of the third phase of the program) at which 36.6% of the public work participants reported to have graduated in 2015/2016, the number of PSNP beneficiaries increased from 1,492,632 before this graduation to 1,733,628 in the fourth phase in Oromia. To my knowledge, the food security status of the reported 'graduates' since then has not yet been studied.

There are varied views on the low performance of the graduation targets. Officials at higher levels in Ethiopia complained of dependency syndrome developed by participants (Sabates-wheeler *et al.,* 2013). Desalegn *et al*. *(*2013: 126) raised a question: 'has the program created dependency on parts of beneficiaries?' Though Dessalegn found that it was too early to give a

definite answer at that time, he suggested that 'the fact that there has so far been … only a small number of graduates suggests that dependency is a concern and will become a serious problem in the years ahead' (Dessalegn, 2013:126). On the other hand, a study by Sabates-wheeler *et al* (2012:37) on enablers and constrainers of graduation in Ethiopia indicated that participants were unwilling to graduate for the 'fear of drought; lack of adequate assets in the house; being too poor to graduate, and limited opportunities to access credit easily after graduation,' as opposed to officials' perception of participants having developed transfers dependency.

The reasons for why many beneficiaries failed to achieve 'sustainable graduation' in spite of their long-term stay in the program as compared to other graduation schemes in other countries (for example, 95% success rate within 24 months in BRAC`s Challenging the Frontiers of Poverty Reduction Program in Bangladesh (CFPR), (Devereux & Ulrichs, 2015) is not well documented.

Some empirical studies conducted on determinants of graduation by using descriptive statistics and econometric techniques (Yibrahe, 2013, Berihun & Hayalu, 2015, Gladding, 2015) based upon the reported graduates' data (graduate vs. non-graduate) have never touched upon the extent of graduation (whether the graduates are really food secure and resilient to modest shocks). Some many others (Yibrahe 2010, Gilligan *et al*. 2006, Ashenafi, 2011) dealt much more with the program impact evaluation and indicated improved food consumption of the beneficiaries while the program was running. The role of contextual factors, access to different resources (except PSNP transfers and Food Security Program loans) and institutional processes in impacting graduation outcome are overlooked in many of the studies. Some studies like that of Yibrahe (2013) and Maier (2014) conducted by using descriptive statistics and econometric techniques analyzed the quantitative relationships between measurable variables to find out determinants of graduation. However, as Scoones (1998:11-12) explained, 'unless we understand the social structures and processes through which sustainable livelihoods are achieved, a description of the relationships between variables and outcomes is somewhat limiting.'

Moreover, there are many graduation skeptics. Slater and McCord (2013: 50) argued, 'Governments and donors are often explicit about their expectations of graduation, but less clear about the likely constraints.' Some others argue that there is limited independent

empirical evidence as to whether successful graduation has occurred to date (Devereux and Sabates-Wheeler 2015, HLPE, 2012). Roelene (2015) is worry of graduation approach to leave children worse-off and resulting in 'intergeneration transmission of poverty'.

In Ethiopian context, livelihood vulnerability contexts are the most appalling issues. Referring to the 2008/2009 drought effect that destroyed assets and income gained in three years prior to the disaster, Devereux (2010:10) wondered, 'What do 'graduation' and 'resilience' mean in such inherently vulnerable and unpredictable livelihood contexts?*'*

Graduation from PSNP is generally understood as graduation from chronic food insecurity or from PSNP program to food self-sufficiency. However, households are assessed for graduation based on asset values with limited attention to food security dimensions, and dynamic nature of constraints of livelihood assets. Devereux *et al.* (2014:5) have indicated:

> Critics argue that asset ownership is a very imprecise proxy for a household`s food sufficiency and resilience and that reducing the criteria for graduation to the monetary value of a bundle of assets deflects attention from other factors that enable or constrain sustainable livelihoods. An asset threshold approach leads to focus on moving people across an essentially arbitrary benchmark value, and assumes a linear accumulation pathway that is at odds with the reality of variable, unpredictable and highly risky livelihood in rural Ethiopia.

This quote shows that there has been unresolved issue on the proxy of households' graduation to food sufficiency. Therefore, the arguments and issues related to household's graduation in different contexts need further investigation.

In general, a number of studies on PSNP agreed that though the program positively impacted the food security situation of participant households, progress towards graduation was limited. However, there have been limited evidences on addressing the following major questions:

1. Why there has been limited progress towards graduation?
2. What is the livelihood asset and food security status of households after their graduation?

This study assumed that the great majority of PSNP beneficiaries failed to achieve 'sustainable graduation,' for more than three subsequent phases of the program. In defining 'sustainable graduation' the researcher maintained the idea in the Graduation Guidance Note

(2007): ‘a condition when a household shifts from being classified as chronically food insecure to food sufficient, and [with the capacity] to withstand modest shocks' without PSNP transfers, *(MoARD, 2007).* Though ‘modest shock’ is not clear in the program document, the concept of sustainable graduation in literature is that it is ‘the capacity to generate adequate streams of future food and income and being resilient against future shocks’ (Devereux, 2010:9). As Sabates-Wheeler *et al*. (2012) defined it is ‘ability of the household to remain above the benchmark’ after graduation. Evidences show that many of the reported graduates complained that they were prematurely removed from the program than they truly fulfilled graduation criteria, and thus this study presumed that there was no any significant difference between graduated and ongoing PSNP households’ livelihood asset holding and food security status. Therefore, detailed research questions related to the assumptions and problems discussed so far in this study include:

- What is the purpose of graduating households from PSNP program?
- How the intended graduation approach has been implemented in practice?
- What are the stakeholders’ perspectives of graduation from PSNP?
- What are factors that affect households` graduation from PSNP program?
- What are the current livelihood assets and food security statuses of graduated and ongoing PSNP households?
- Is there any significant difference between graduated and ongoing households in terms of their food security status?
- What are the determinants of households’ food security status after graduation?

1.3. Objectives of the study

The main objective of this research is to explore factors that affect chronically food insecure rural households’ graduation from PSNP and graduate households’ livelihood and food security statuses after their graduation. In pursuit of this general purpose, the study is more specifically set to:

1. Analyze government`s intent of graduation from PSNP;
2. Explore the way PSNP beneficiaries and key stakeholders perceive graduation;
3. Explore factors that affect households’ graduation from PSNP;

4. Examine the livelihoods asset status of graduated households after their graduation;
5. Examine food security status of graduated households since their graduation;
6. Investigate ongoing PSNP households' food security status; and
7. Analyze determinants of graduate households' food security status after graduation.

1.4. Significance of the study

This study aims to create a comprehensive and integrated understanding of contextual factors that challenged PSNP beneficiaries in the study area to graduate. It aims to supplement previous studies by approaching the problem more broadly by taking food security dimensions and households livelihood security than merely focusing on the limited objectives of graduating from PSNP. The study on livelihood and food security status of graduated households after their graduation is almost new in its kind and came up with new insights regarding whether the livelihood assets and food security situation of graduates were improving or declining; whether graduate households` livelihood assets and food security status was really better than ongoing PSNP households; factors that contribute to either positive or negative trajectories, and the relative significance of these factors. Methodologically, the study engaged participants more to find out their constraints, by using both qualitative and quantitative approaches to overcome the shortcoming of previous studies. Multiple factors interplay to determine households' food security status that could not be adequately captured only by employing one method. Thus, different food security indicators are used to address different dimensions of food security status of the households over time Moreover, the study contributed to graduation theory which is at an emerging stage by providing contextual insights that not all households able to show positive trajectory with administratively decided asset thresholds. The findings inform government and donors for policy and program intervention design to address context specific and varying vulnerability characteristics of participant households. Beneficiaries could also benefit from the improved policy and intervention design as a result of these research findings.

1.5. Scope and delimitation of the study

As graduation from PSNP refers to beneficiaries becoming 'food sufficient' through the combination of consumption smoothing and livelihood asset accumulation enhancing mechanisms, the theoretical framework adopted in this study is Sustainable Livelihood

Framework. The emerging graduation theory is considered within the food and livelihood security framework. Food security can be analyzed at national (macro), community (meso), and household and individual (micro) levels. This study, however, primarily focuses at household level without disregarding the national, local and community contexts. The study mainly explored determinants of graduation from PSNP, but not graduation from food security program as a whole, and livelihood assets food security statuses of graduated households. Moreover, as this research is exploratory case study, findings are limited to areas of comparable livelihoods and vulnerability contexts to this study area.

1.6. Organization of the Dissertation

This PhD dissertation is organized into seven chapters. Chapter One is an introductory that provides the overall global, regional and country specific food security situation. The Chapter further presents the statement of the problem, research questions, objectives, the scope and significance of the study.

Chapter 2 presents theoretical and empirical reviews of related literature. It sets the study within the context of food and livelihood security theoretical contexts; assesses the emergence and the intent of graduation in social protection at global level in general, and in Ethiopia in particular; its practical implementations, debates and issues around it. The Chapter explores empirical studies on graduation at global and national levels and concludes with the lessons to be drawn and gaps.

Chapter 3 describes the physical and socio-economic characteristics of the study area and research methodology. Chapter 4 investigates perspectives of key stakeholders such as local implementers at different levels, graduated and ongoing PSNP households on the performances of graduation from PSNP. Finally, it summarizes, discusses and concludes the main exploratory findings.

Chapter 5 broadly presents factors of livelihood capitals and food security programs that affect households` food security status and graduation. It explores different livelihood assets, presents livelihood asset index, and compares livelihood asset status of groups of households: graduated, non-graduated and on-going PSNP households.

Chapter 6 analyzes food security statuses of households. First it investigates food security status of graduated and ongoing households separately using three food security measures: Household Self-assessment measure, HFIAS, and Household Food Balance Model (HFBM). Then it investigates the differences across the three groups of households. It also analyzes determinants of graduated households' food security status.

Chapter 7 summarizes and discusses the findings of the study in terms of research objectives and related literatures. It also presents conclusions drawn from the major findings of the study, and reflects on the contributions of the study to the theoretical, methodological knowledge and policy viewpoints. Finally, it provides some way forwards on issues identified by the study, and suggests some areas for further research.

Chapter 2: Review of Theoretical and Empirical Literature

2.1. Introduction

Related literature provides existing theoretical perspectives and research findings on the problem under investigation (Leady & Ormrod, 2005). According to Singh (2006:35), 'Human knowledge has three phases: preservation, transmission, and advancement.' Human preserves knowledge by encoding and recording. They continually add on these stores of knowledge that makes possible advancements in all spheres of human efforts. Therefore, literature review is useful to write a background to research problem, to mirror the research problem and what it adds upon the available studies, to avoid duplication of the same knowledge, to identify important variables, methods, data sources and statistical techniques appropriate to investigate the problem.

Therefore, this part is devoted to reviewing some theoretical perspectives and previous research studies related to the research problems understudy. The review looks at conceptual development of food security, its expansion from 'food security' to 'sustainable livelihood security,' approaches to food security, the concept of 'graduation approach' in social protection programs, and the findings of empirical studies on social protection graduation approach programs.

2.2. Evolution of food security thinking and approaches

Although famine has a long-standing history in human life, the concept of food security emerged only in 1970s (Degefa, 2005). Food security problem has been an ongoing policy and technical concerns since then. As a result, its concept has evolved over time with new concerns at each time (Norhasmah, S.; Zalilah, MS. & Asnarulkhadi, 2010). The shifts in the concerns of food security are reflected in successive definitions of the term provided over time (Norhasmah *et al.,* 2010). Based on the history of food security paradigms, specialists have categorized the food security concerns into three 'overlapping' shifts: (1) 'from the global and the national to the household and the individual', (2) 'from a food first perspective to a livelihood perspective, and' (3) 'from objective indicators to subjective perception' (Maxwell, 1994:1). Moreover, as presented by Degefa (2005:52), based on the cause of famine and food insecurity Devereux (1993) classified famine theories into three major categories: 'Food

Availability Decline (FAD), Food Entitlement Decline (FED) and Political Economy explanation,' (see Degefa for detail discussion). Brief description of each of the shifts in food security food security perspectives are presented hereunder.

2.2.1. The shift from the global and the national to the household and the individual level

Since the introduction of 'secure, adequate, and suitable supply of food for everyone' in Hot Spring Conference of Food and Agriculture in 1943 up to 1970s, the concern was rested upon food supply at global, regional and national levels (Gross *et al.*, 2000:3). Moreover, following the 1972-1974 global food crisis, the first World Food Conference in 1974 adopted the Universal Declaration on the Eradication of Hunger and Malnutrition which was adopted by General assembly in the same year (Gross *et al.*, 2000). This first World Food Conference introduced the term 'food security' when it defined the concept in terms of food supply: 'Availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices,' (as cited by FAO, 2006:1). The emphasis then was a continuous supply to satisfy the growing food needs at global and national level which was an issue then, but did not observe the difficulty of accessing food at household levels and distribution at individual level even though supply could be adequate at global and national level.

However, food crisis that particularly hit Africa for the second time in the 1984-85 (Frankenberger & McCaston 1998), the deterioration of basic needs during structural adjustment, the emergence of Sen`s 'entitlement' theory in early 1980s (Maxwell and Smith, 1992) led to a paradigm shift in the understanding of food insecurity. It was observed that the overall adequacy of food supply at global and national level did not ensure all people to access sufficient package of food (Frankenberger & McCaston 1998). As a result, food security at household and individual level became a central issue in the second half of the 1980s through 1990s (Frankenberger & McCaston 1998). This led to the revision of the thinking of food security in terms of food supply at global and national levels availability to include both access and availability at household level (Frankenberger & McCaston 1998). Thus, in 1983 the definition is expanded to: 'Ensuring that all people at all times have both physical and economic access to the basic food that they need' (FAO, 1983). This definition encompasses availability, stability, and access which could be constrained by either physical and/or economic barriers.

Adequate food availability at national level could be constraint by issues related to market infrastructures, household/individual economic constraints as well as lack of commitments, economic, administrative and logistic difficulties from the government side to ensure the basic entitlements (transfers) for citizens.

The World Bank report 1986 made a distinction between *chronic* and *transitory* food insecurity, based on temporal dynamics of food security (Clay, 2002). According to FAO (2003) transitory food insecurity happens when temporary food access/ shortage exists as a result of short-term shocks of food availability or access. Chronic food insecurity, on the other hand, is a long-term persistence in which people are not able to meet the required amount of food. It results from long term poverty, lack of assets and inadequate access to productive or financial resources (FAO, 2003).

The micro-level definition of food security again triggered another issue; that is, whether the unit of analysis should be individual or the household. Two schools of thoughts, the one which focused on household, another focused on intra household as a unit of analysis of food security emerged (Maxwell, 1994). Access to food through own production, purchase, transfers and gifts could increase availability at a household level but does not guarantee utilization and intra household distribution which are important determinants of nutritional status regardless of food availability (FAO,2003). Recent researches recognized the importance of access to food by individuals in the household as intra-household power relation affects access to resources (Maxwell, 1994). Therefore, most recent definitions of food security consider individual entitlement without denying the 'complex inter-linkages between the individual, the household, the community, the nation and the international economy' (Maxwell, 1994: 3). Thus, the food security definition that most referred to in this regard is the definition provided by the World Bank (1986:1): 'Food security is access by all people at all times to enough food for an active, healthy life.' There was an important addition of a new element in this definition_ 'food for active and healthy life' which reflects the idea of food quality.

2.2.2. The shift from a food first perspective to a livelihood perspective

The underlying assumption of the conventional view of food security as a primary human need in Maslow's hierarchy of needs, was started to be questioned after African famine of 1984/85 (Maxwell S., 1994). As Degefa (2005) reiterated, research finding during famine of Darfur and

others in Africa revealed that people prefer to go hungry to preserve assets and their future livelihoods. This is the coping mechanism people follow to minimize future risks. The other development with the objectives of preserving livelihood is that people need not only livelihood but 'secure and sustainable livelihood' (Maxwel S., 1994). In addition to current nutritional security, people want to secure their livelihood in the face of future crises. According to Oshaug (1985), food secure people are not only those who met the current food required but those who have developed 'internal structures that will enable' them to sustain it (Maxwell, 1994).

This idea brings us to the recognition of livelihood security as the necessary and sufficient condition of food security (Maxwell, 1994). In food security definition, the idea of livelihood security is implicit. The definition provided by Frankenberger and McCaston (1998:30) makes the concept of household livelihood security and its relationship with food security more explicit:

> Household livelihood security is defined as adequate and sustainable access to income and resources to meet basic needs, which include adequate access to food, potable water, health facilities, educational opportunities, housing, time for community participation and social integration. The risk of livelihood failure determines the level of vulnerability of a household to income, food, health and nutritional insecurity. Therefore, livelihoods are secure when households have secure ownership of, or access to, resources, including reserves and assets, and income earning activities to offset risks, ease shocks and meet contingencies.

Therefore, the notion of food security was broadened to include livelihood security. Food security is considered not the only basic need but one of the basic needs of the people that include potable water, health, education, participation and social integration described in the preceding quote. It has come to emphasize that people's access to all these basic needs could be ensured when they have secure income or ownership of material and non-material resources.

LIFT (n.d:8) explains the livelihood and food security relationship more clearly:

> …livelihood security and food security are linked in a bi-direction relationship. Food production constitutes one of the most basic livelihood activities, and can be a critical source of food access, particularly for rural households. The household's ability to purchase food in the marketplace is another critical determinant of food access, which in turn depends on the household's ability to generate income. ... The household's livelihood security in turn is affected by its food security. Households with poor food access and/or poor food utilization tend to suffer more from illness or other physical debilitations thereby impairing their labor productivity and/or their ability to engage in livelihood activities.

Thus, the livelihoods approach to food security has become a comprehensive approach that captures the multidimensionality of food security. This approach focuses on a long-term perspective; that is, sustainability of livelihood than short term outcomes; expands from limited focus on agriculture or trade to diversified livelihood strategies; takes into consideration the diverse and complex challenges faced by poor people in a specific context; and focuses on people's existing capabilities and assets than the external experts and inputs (Burchi & Muro, 2012).

2.2.3. The shift from objective indicators to subjective perception

The third shift in food security thinking is from objective indicator to subjective perception. The definition of food security in terms of levels of food or calorie intake is found imprecise as it varies with season, environment, and activity pattern and adaptation strategy (Maxwell S. 1994). Pacey and Payne, 1985 (in Maxwell S., 1994) have underlined that estimate of nutritional requirement should be treated as a 'value judgment'. Regarding whose value judgment needed to be considered, Maxwell (1994:5) stated: 'There must be a predisposition to believe that the judgment of the food insecure themselves is to be weighted disproportionately in this process'. The second qualitative issue in this debate which iterated 'nutritional adequacy is a necessary but not sufficient condition for food security' (Maxwell, 1994) arose. This idea suggests that food security is not the technical quality of food access but also it's cultural 'acceptability, human dignity and local food habits' (Maxwell S., 1994). Issue of measurement also arose again which led some such as Maxwell to stress the subjective dimension of food security. Maxwell S. (1988) defined food security: 'A country and people are food secure when their food system operates in such a way as to remove the fear that there will not [be] enough to eat. In particular, food security will be achieved when the poor and vulnerable, particularly women and children and those living in marginal areas, have secure access to the food they want' (as cited in Maxwell S., 1994). Thus, food security comprises the subjective judgment of people that they have enough food to eat and the cultural acceptability of the food they eat.

2.2.4. A link to socio political construct

More recently, the thinking of food security is explained by linking it to political economy construct. This is more related to approaches to the analysis of the causation and response to

famine. The Political Economy explanation of famine attributes war and civil unrest, displacement and unequal access to resources to production failure and starvation (Da Corta, 1985, Devereux, 1993, in Degefa 2001). As Degefa (2001) argued, production failure may or may not lead to famine, but the commitment level to respond to it both at national and global level. Devereux (2000:1) argued, 'if famine is completely to be eradicated during the 21st century, this requires not just technical (food production and distribution) capacity but substantially more political will, at national and international levels….' According to Degefa (2005:69) governments contributed to famine incidences in four ways: 'inappropriate policies, failure to intervene, by-products such as war, and malign intent or deliberate government creation of war.'

In fact, the causation of food insecurity is not explained by only political economy approach, but also by other two models: Food Availability Decline (FAD) and Food Entitlement Decline (FED) (Degefa, 2001). FAD emphasizes shortfalls of food supply for an extended period due to production reduction /disruption by factors such as drought, floods, population pressure and others (Devereux, 1988 in Degefa 2001). The FED which was founded by Amartya Sen (1981) complemented that the aggregate food availability does not assure individual entitlement to it unless it has command over it by accessing through production, exchange or transfer (Degefa, 2001). The author of this dissertation suggests that all the three approaches are valid in their perspectives.

In general, it could be understood from the preceding brief assessment that the multidimensional nature of food security was recognized as a significant concern that ranged from adequate supply at global, regional, national level to adequate nutrition and wellbeing at household and individual levels (FAO, 2003). Though a number of food security definitions have been provided at different times by varying scholars and organizations, the most commonly accepted food security definition approved by World Food Summit (1996) is: 'Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life,' (FAO, 2008:1). Four main dimensions of food security are identified from this definition. These are 1) physical availability of food, 2) physical and economic access to food, 3) food utilization and, 4) stability. These four dimensions have to be fulfilled in order for the food security to exist (see FAO, 2008 for detail).

To sum up, the conceptual definition of food security has been evolving along with the debates around food security problem, leading to policy and strategy changes triggered by new challenges. Initially, food security was conceptualized as the overall food supply or availability at national, regional and even global levels as compared to the general food requirement. Later on, it has become clear that the overall adequacy of food availability does not guarantee the required amount of food consumption for all people. As a result, the concept is expanded to include elements of access at household and individual level. Subsequently, it has become evident that food security is one element of livelihood security; and therefore, measuring food security cannot be done without understanding livelihood security (Maxwell, 1996). The recent addition of political construct in food security approach is an important aspect that looks at concerns and commitments of decision makers to understand and address context specific food insecurity problems, be it macro, meso, and micro-levels.

The debates around food security concept and approaches evolved over time have their own merits, one addressing the shortfalls of the other. They have made clear the complexity and multi-dimensional nature of the concept. Therefore, lesson could be derived from food security literature that graduation from food insecurity programs should be seen within the conceptual framework of food and livelihood security, and defining context and livelihood system, not only in terms of the particular program defined to achieve limited objectives at a time. In line with this idea, food security definition provided by Degefa, (2007, in Mesay, 2001:15-16) best reflects the Ethiopian context:

> A household can be described as food secure when its livelihood activities allow to meet its food requirements and other basic needs, either through its own production i.e. crop cultivation and /or livestock rearing, through having opportunities to run non-farm ventures or to work with somebody else, or getting access to food through transfers.

2.3. Conceptualizing graduation

In recent years, the notion of ‘graduation’ has received considerable attention in social protection programming. Therefore, it is imperative to review and understand the theoretical and conceptual underpinning of this notion, and learn from the existing empirical evidences about the enabling and constraining factors of graduation. Thus, this section reviews the historical development of ‘graduation’ thinking in social protection and development discourses; its rationales; its concept; and empirical evidences to draw lessons.

2.3.1. Historical background of graduation approach in social protection

As traditional support system struggled to support individuals facing ever increasing shocks, developing countries have been adopting a range of social protection programs to help vulnerable people to maintain minimum standard of living and wellbeing. According to Garcia and Moore (2012), 121 cash transfer programs were implemented between 2000 and 2009 in 47 African countries. A large number of it has been direct benefit and insurance based (Samson, 2015). A number of policy initiatives that promote the need to integrate social protection with cross-sectors development agenda to strengthen the capacities of beneficiaries and build livelihoods emerged in recent years (Samson, 2015). This is considered the innovative aspect introduced in social protection programming as a vision that assumes 'social protection' has the potential to reduce vulnerability of the poor people to the extent that they can withstand risks without external support (Sabates-Wheeler & Devereux 2011). This notion of helping poor people to move out of vulnerability and extreme poverty into productive and resilient livelihoods is 'popularly termed as graduation' (Sabates-Wheeler & Devereux 2011).

The idea of graduation was initiated by an NGO known as Bangladesh Rural Advancement Committee (BRAC) in Bangladesh when it collaborated with Bangladesh government and WFP that run a program named Income Generation for Vulnerable Group Development (IGVD) to link livelihoods training to the feeding program already in place in 1985 (Hashami & Umaira, 2011). BRAC was working then in rural and urban slums of Bangladesh with a focus on poverty reduction through the provision of micro finance, schooling, healthcare, marketing services, training and advocacy works (Hashemi, Syed M., & de Montesquiou 2011). Realizing that its microfinance service was not reaching many of the ultra-poor, BRAC cooperated with the Government of Bangladesh and World Food Program (WFP) to add a 'graduation ladder' to the already running safety net program (Hashemi, & Umaira 2011). The model was initiated with the idea of bringing sustainable change in the lives of the extreme poor contrary to the safety net program that provided only short-term relief assistance (Hashemi & Umaira, 2011). The assumption was that safety net or other aids may sustain life but not enough for promoting livelihoods (Hashemi & Umaira, 2011). Thus, BRAC worked with the identified beneficiaries by adding intensive packages of supports such as skills training, mandatory savings, and small loans (Hashemi, *et al*., 2011). Moreover, the program defined

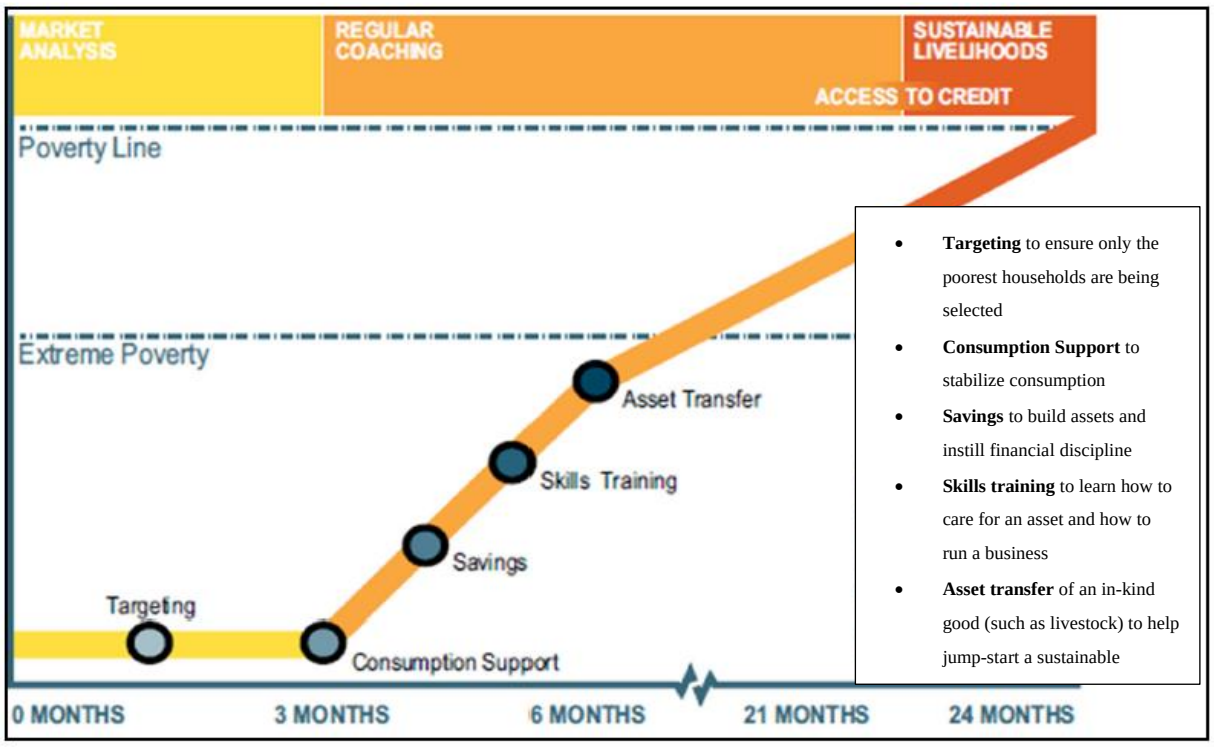
pathways out of the program and criterion for assessing graduation based on the specific living condition of the poor.

Thus, the graduation model was adopted by different NGOs in Bangladesh (Hashemi & Umaira, 2011) then after. Moreover, ten pilot projects were conducted to replicate the model in ten countries (Haiti, India, Pakistan, Honduras, Peru, Ethiopia, and Ghana) with the support of the Consultative Group to Assist the Poor (CGAP) and the Ford Foundation in 1996 (Hashemi & Umaira, 2011).

2.3.2. Graduation theory of change

Different studies show that Graduation Theory is emerging in social protection programs of many developing countries (Devereux & Sabates-Wheeler, 2011, 2015; Garcia &Moore, 2012; Hashami& Umaira, 2014). The model has been put into practice in different developing countries` social protection program with almost similar themes and assumptions. Sabates-Wheeler and Devereux (2011:10), for example, have summarized six common themes of graduation approach from the graduation models of BRAC, 'Vision 2020 Umurenge Programme' (VUP), and PSNP: 'poverty targeting, transfers to protect subsistence and support livelihoods, complementary activities to enable further accumulation and increased productivity, pathways and linkages between different interventions, clearly defined thresholds for graduation, and coherent visions for sustainable poverty reduction.' Moreover, Hashemi *et al.* (2014) have depicted five building blocks up on which the CGAP-Ford Foundation Program graduation model is built: targeting, consumption support, savings, skills training and regular life coaching, and asset transfer. The assumptions in these sequenced five blocks and six points that are summarized by Sabates-Wheeler and Devereux (2011) as common themes of theory of change in most of graduation programs comprise almost identical concept.

Figure 1: Graduation approach model



Source: Hashemi and de Montesquiou (2011)

As Devereux and Sabates-Wheeler (2015: 2) explained, these sequenced components of intervention depicted in the Figure 1 are assumed to play complementary roles to enable households to graduate:

> Cash transfers are expected to: (1) stabilize household consumption, (2) protect assets against being sold to meet basic needs, and (3) relieve liquidity constraints, allowing households to make productive investments. The promotion of savings and access to microcredit strengthens resilience to shocks and also protects the assets transferred against being sold as a 'coping strategy' following a shock. Finally, training in income-generating activities plus coaching in life-skills is sometimes described as the 'X-factor' of graduation model programmes.

Based on the common themes of the above discussed graduation approach, Sabates-Wheler and Devereux (2011:11) proposed the following most commonly held 'graduation theory of change':

1. A considerable number of poor are ‘more risk-averse and less productive than they could be, due to adverse environment, lack of resources and know -how’.
2. ‘These people could engage in productive activity and build their asset base and be able to become resilient to future shocks if they are provided income or asset supports’.
3. ‘Regular predictable payments to these poor will protect them ‘against downside risk’ and enable them to engage in higher return and productive businesses.
4. Consequently, their ‘lives and livelihoods will be transformed in a sustainable way, allowing them to support themselves so they are able to graduate off external support.’
5. ‘Multiplier and spill-over effects from more productive and market-engaged households will have a positive aggregate that is bigger than the sum of all the individual household effects.
6. “This type of transformation will be ‘virtuous’, in the sense that strengthened, more resilient livelihoods characterized by higher levels of productivity will have a self-sustaining momentum with pro-poor growth effects”.

2.3.3. Theory of asset accumulation and asset thresholds

Livelihood promotion and asset accumulation are central to the graduation model (Sabates-Wheeler & Devereux 2011). Sabates-Wheeler and Devereux (2011) traced this idea to Theory of Asset Accumulation and Asset Threshold. According to their discussion, the conventional income-based measurement approach in poverty reduction was challenged in 1990s as a result of which empirical researches started analyzing poverty by using livelihood assets and entitlements (Sabates-Wheeler and Devereux 2011). As a result, a number of theoretical asset accumulation models that ‘focus on the acquisition, retention and transmission of assets as fundamental to wellbeing’ emerged (Sabates-Wheeler and Devereux 2011:4).

As discussed by Sabates-Wheeler and Devereux (2011) some proponents of graduation model believe that improving households` assets through short-term transfer will increase households’ incomes to bring about the required outcome. Others, asset threshold model, argue that it is not necessarily the incremental change but certain asset ‘threshold needs to be crossed’ for a household to transform from poverty to productive life. According to pro ‘asset threshold’ argument, asset accumulation is nonlinear and lump sum asset transfer does not permanently move households from poverty. Therefore, in order for households to graduate from poverty,

there needs to be critical threshold at which they are breaking away from poverty. For asset threshold models, transferring assets below the required 'breakeven' to make a productive move away from poverty and dependence does not make sense. This gives the idea that those households far below the threshold needs much more asset transfer than those who are just below the threshold (Sabates-Wheeler and Devereux 2011).

According to Sabates-Wheeler and Devereux (2011) literatures on poverty traps underlined asset accumulation as a necessary condition for households to move out of poverty (Carter & Barrett, 2006; Carter and May, 2001; Adato *et al.,* 2006). Many of them (Carter & Barett, 2006; Barett *et al.,* 2006,) emphasize growth in asset leads to change in productivity and income. If a household`s asset holding is low, its return is also low as it does not have assets more than its immediate consumption needs to invest. As a result, such a household remains in poverty trap. This implies that asset thresholds required to be crossed has to be established for sustainable livelihoods (Sabates-Wheeler and Devereux 2011). The thresholds are likely to vary depending on size of the household, gender composition, dependency ratio, socio-economic context, livelihood strategies and opportunities, and the combination of different capitals (Sabates-Wheeler and Devereux 2011). Generally, it is considered that 'the relationship between asset accumulation, higher productivity, and income growth is the basis for the graduation vision' (Sabates-Wheeler and Devereux 2011: 5).

2.3.4. Typology of graduation

Sabates-Wheeler and Devereux (2011, 2013) have identified two types of graduation: 'threshold-based' graduation and 'sustainable' graduation.

2.3.4.1. Threshold graduation

As already indicated above, asset threshold approach claims that there is a need for the poor to cross asset threshold to graduate from poverty. Threshold graduation is explained as administratively determined benchmark at which the beneficiaries are no longer eligible for the program because of their reaching the benchmark (Sabates-Wheeler & Devereux, 2011). According to this approach, there is a down and upward dynamics of asset accumulation. If the asset level is below the critical threshold, there will be the possibility of moving downward to 'low productivity, subsistence level equilibrium' (Sabates-Wheeler & Devereux, 2011).

However, if asset accumulation is once above the threshold, the dynamism is to move up to high productivity equilibrium (Sabates-Wheeler & Devereux, 2011).

However, Winder and Yablonski (2012) argued, reaching the threshold or achieving above it at a point in a time does not guarantee households remaining resilient and above the benchmark in the future. In developing countries in particular, where the degree of poverty and vulnerability is high moving poor households out of social benefits require careful consideration. Furthermore, Winder and Yablonski (2012: 39) contended:

> A narrow, asset-based and static… approach to graduation may be not adequate. This approach may not acknowledge the dynamic nature of vulnerability and poverty, integrate social vulnerabilities, and address the needs of groups that may require permanent assistances or acknowledge that 'graduated households may need to be reconsidered as a program beneficiary.

2.3.4.2. Sustainable graduation

According to Devereux (2010: 9) sustainable graduation is a 'dynamic concept that involves (a) the capacity to generate adequate streams of future food and income; and (b) resilience against future shocks.' Sustainable graduation incorporates the notion of resilience; and thus, it is categorized as developmental graduation (Devereux and Sabates-Wheeler, 2015).

Roelen (2015) takes a step forward the concept of sustainable graduation. She argues that a true sustainable graduation is graduation that breaks the 'intergenerational transmission of poverty' by achieving sustainable livelihood (Roelen 2015:27). For her, programs that put too much pressure on participants to graduate leave many children worse-off by 'prioritizing short-term graduation at the expense of long-term poverty reduction' (Roelen, 2015:27). She justified her position by presenting what she called two-fold poverty trap (Roelen 2015:27):

> …households with children participating in graduation programmes are required to perform a balancing act between meeting investment requirements for short to medium-term graduation and children's needs for long-term intergenerational graduation. This leads to a twofold investment trap as households have to make choices regarding: (1) the distribution of household resources to children (versus livelihoods improvements); and (2) the contribution of resources by children to the household (versus their own development).

She maintained that graduation can only be truly sustainable if it assures long-term improvements in livelihoods and living conditions that are passed on from adults to children (Roelen, 2015).

2.3.4.3. Other variants of graduation thinking

In reviewing different social protection programs around the globe, Samson (2012) identified three different models of graduation from social protection programs. These are 1) Exogenous 2) Endogenous, and 3) Developmental graduation. The exogenous graduation is an externally imposed graduation without ensuring that beneficiaries are moved out of poverty. It is based on personal characteristics (for example, 'graduating to adulthood after the age of 18'), and on project life ('ends with the termination of the project even though some beneficiaries may not have graduated, or some may slip back to it'). An exogenous graduation is also based upon predefined benchmark established using key indicators for graduation. It requires individual assessment and retargeting process to assure that a household is not below the required poverty threshold. This is similar to what Sabates-Wheeler and Devereux (2011) termed as' threshold graduation.'

Endogenous graduation makes retargeting based on the socio-economic circumstances of the participants. According to Samson (2015:14), 'Exit' is 'endogenous' in the sense that an individual or household`s behavior is influenced by the programme benefit and in turn influences the duration of the benefit.' It terminates program benefits from households who have improved their economic circumstances. On the other hand, it allows participants who are unable to lift themselves out of poverty to continue to receive program supports. Thus, endogenous graduation adjusts to the vulnerability situations of participants. However, there is a downside of this approach. It creates incentives for some to deliberately keep themselves below the 'graduation thresholds,' especially if the program does not allow re-entry when faced with shocks (Samson, 2015).

The third approach, 'developmental graduation', does not necessarily require participants to exit the program (Samson, 2015). They rather continue to receive, besides social protection, a wide range of services such as credit and trainings to enable them to 'accumulate skills, productive assets and access to livelihood opportunities, leaving them better placed to achieve sustainable self-reliance when they stop receiving program supports' (Devereux & Sabates-

Wheeler, 2015:3). Even though the direct intervention may terminate, its developmental impact continues to grow as exemplified in BRAC`s Challenging the Frontiers of Poverty Reduction (CFPR) (Samson, 2015).

According to Samson (2015) concept of graduation that focuses on exit, undermines the major objective of promoting developmental impacts that enable beneficiaries to continuously move out of poverty through comprehensive support. Therefore, integrating social protection with other development agendas enables the system to address poverty and vulnerability more effectively (Samson, 2015). The likelihood of achieving 'dynamic deepening of developmental impact' is affected at micro and macro levels (Gahamanyi & Kettlewell, 2015). Therefore, program design features that support developmental impact need to consider micro-level social poverty, promote context specific livelihoods, make sufficient and reliable transfers, and think through enabling macro environment such as structural unemployment issues and market conditions (Gahamanyi & Kettlewell, 2015).

2.3.5. Graduation approach in Ethiopia

2.3.5.1. Rationales for PSNP as an integral part of Food Security Program

Ethiopian economy has been agriculture-based subsistence economy that heavily relies on rainfall. However, the rain fall pattern in the country has been variable and the frequency of drought increased to occur within 3-5 years (NCFSE, 2003). The food insecurity in the country became predominantly chronic affecting about 5 million people every year, and its coverage increased to reach as high as 45 percent of the population (NCFSE, 2003) in the years prior to the creation of the 2003 Food Security Program. An issue note presented by the World Bank during the inception of PSNP indicates that measure of rainfall variability in time could be below or above the average of 33 years before 2000 by up to 50 percent (Dabalen, *et al*., 2003). Moreover, variability across space as measured by coefficient of variation ranged from a low of 43% to a high of 61% using annual rain fall totals, and from 29% to 38% in the rainy season months (Dabalen *et al.*, 2003:1).

Efforts had been underway to address short-term and long-term food shortfalls that included emergency food aid appeal, government intervention in food market, maintenance of food stocks at national level, and agriculture extension service to improve agriculture productivity

and increase food production with the aim of assuring food self-sufficiency at national level. In spite of reported bumper grain harvest in 1995/96, about 2.7 million needed emergency food aid in same year (Devereux, 2000). The number of needy people increased in subsequent years up to 7 million in 2000 drought (Devereux, 2000) and later on to 10 million del Ninno *et al.*, 2005). In years 2000/2001 and 2001/2002 cropping years there were reported good harvest, as a result of which 'grain prices fell below historic average' (von Braun & Tolulope O. T, 2007:2). The increase in food production was not stabilized and the country was hit by another drought in late 2002 which led to subsequent emergency appeal for food supply. Ethiopia`s reliance on international food aid was about 265 million USD per year on average five years before the launch of PSNP in 2005; of which 93% had been financed from external sources (Dabalen *et al.*, 2003). In ten years, period (1995-2004), about 95 percent of the aid inflow was food grain out of which only 19 percent was purchased locally (von Braun & Tolulope O. T, 2007). The two major drought shocks and production reduction just before the launching of PSNP occurred during the year 1999/2000 and 2002/2003 exposed 10 million and 13 million people to food insecurity, respectively (del Ninno et al.2005). However, major famine was averted in these two major shocks when compared to the 1984 major shocks that cost a million of lives (del Ninno *et al.*, 2005).

The humanitarian food aid appeal system had been acknowledged to have saved lives of thousands and millions for years in Ethiopia. However, numerous shortcomings had been raised about the food aid`s efficiency and long-term impacts. Concerns related to food aid had been timeliness of supply, delivery and administrative costs, leakages, and its potential disincentives effect on domestic production through reductions of market food prices of producers; and encourages government not to invest in productivity enhancing technologies and policy reforms (del Ninno *et al.*, 2005; von Braun & Tolulope O. T, (2007). In Ethiopia, late arrival of food aid in 2001 was cited as contributing to sharp reductions in producer prices (del Ninno *et al.*, 2005).

The most appealing point in the criticism has been the idea that resources obtained through the emergency appeal system was not predictable, did not protect livelihood, create community assets or develop human capitals. The adoption of food aid appeal system by national and international community in Ethiopia was criticized as being more of 'crisis management strategy' that depended on food aid than addressing the underlying cause of poverty and

livelihood insecurity (Devereux, Sharp & Amare, 2004, in Del Ninno, 2005). Accordingly, Sharp, Devereux and Amare (2003) suggested the need to invest to address the root cause of chronic food insecurity in the country (in del Ninno *et al.*, 2005).

Moreover, as Ethiopia became chronically food insecure country, a more predictable safety net program was recommended than annual appeal system to address the needs of chronically food insecure people. However, there were issues to be addressed in suggesting social safety net program. As del Ninno *et al.*, (2005: vii) emphasized, "Safety Net programs though well designed and implemented, cannot guarantee by themselves food security unless accompanied by poverty reduction strategies that increase real incomes of the poor in the medium-term, as well." Moreover, there was the recognition that safety incurs large cost that competes with fiscal resources and requires administrative capacities.

The cost balance was weighed against that of the emergency appeal system. As the food insecurity in Ethiopia had been chronic in nature, annual food aid import was considerably large, amounting to 700,000 metric tons per annum over 15 years prior to the launch of PSNP (FDRE, 2002). The substantial amount of the food was donors imported food aid, amounting to 9% of the total grain consumed in the country in the year 200-2001(Dabalen *et al.*, 2003). Moreover, according to Subbarao and Smith (2003), food aid distribution in Ethiopia involved high administrative costs which was assumed to be substantially reduced had the transfer was made in cash and the required food was purchased by beneficiary households (in Dabalen *et al.*, 2003). Thus, considering these facts, development partners (donors, UN agencies, NGOs and others) working in Ethiopia partnered with government of Ethiopia to address persistent food insecurity challenges with multiannual resource supply system (NCFSE, 2003). Report on roundtable discussions of participating agencies on how to best address the chronic food insecurity (3-5 June, 2002:1) in Ethiopia revealed the understanding that run:

> The Annual Appeal system is designed to save lives – it does. However, we believe that particularly for the predictably food insecure population, we could do better than just save lives. We can move towards saving livelihoods if we plan our support on a multi-annual basis, at a level that protects livelihoods, and encompass relief and asset protection within a development framework.

Ethiopian government`s major principles of transferring resources to vulnerable population, as indicated in Food Security Strategy (2002) and reiterated in Food Security Program (2003),

was designed to be done in the way that undermines dependency and "enhance the capacities of the recipients for self-provisioning in longer-term" (FDRE, 2002:21). Accordingly, to address consumption requirement of vulnerable population, cash /food transfers were designed to be made in exchange for public works to those who able to work to "make best use of relief resources to achieve development objectives" and there by undermining dependency syndrome (NCFSE, 2003:76).

It was assumed that the Safety Net Program guarantees households` incomes to cover consumption shortfalls, incentivizes households to take risks to invest in high risk productive ventures, protects distress sale of their productive assets such as livestock (NCFSE, 2003; Dabalen *et al.,* 2003). Moreover, public work can build the most needed public infrastructures such as roads, schools, irrigation, and soil and water conservation structures and others (FDRE, 2002; NCFSE, 2003). The gradual shift of transfer from food to cash was also seen as a means of protecting domestic food production from decreasing in prices due to absence of effective demand. Moreover, it was also foreseen that transfers to be made in cash to beneficiaries would promote market development. Therefore, it was envisaged that a well-designed safety net program would smooth consumption, protect assets at household level, provide employment for able bodied people, create the most needed infrastructure at community level, and promote productive behavior than inducing dependency (NCFSE, 2003; Dabalen *et al.,* 2003). With all these considerations and commitments from donors and Government of Ethiopia to finance multi-year program, Productive Safety Net Program (PSNP) that simultaneously addresses immediate humanitarian needs and supports development efforts was designed as one component of food security program.

2.3.5.2. Ethiopian graduation approach and its rationales

Ethiopian government committed itself, not only to make the Safety Net Program productive, but also to achieve food security for chronically food insecure households in targeted rural Ethiopia within a short period of time. Therefore, the designed PSNP became one major component of FSP that contributes to the attainment of food security of chronically food insecure rural population. Though initially there was no mention of the term 'graduation' in either food security strategy or in food security program, later on, 'graduation' has become the

central indicator of the success of food security program in general, and that of the PSNP, in particular.

In the Program Implementation Manual (PIM) developed in 2004 and revised in 2006, it is indicated that graduation is a two stages process: the first being graduation from PSNP and the second being graduation from food security program (MoARD, 2006). Graduation from PSNP is defined as chronically food insecure households becoming food sufficient for 12 months from own production and income sources and being able to withstand moderate shocks without PSNP transfers. Graduation from food security program was recognized as a long-term process that requires households to become 'food secure.' Though the distinction was made between graduation from food security and graduation from PSNP, the policy focus to-date has been on graduating households from PSNP. Chronically food insecure households registered with the capacity to participate in PSNP public works are required to exit the program when they have achieved 'food sufficiency.' It is by decreasing the number of these registered chronically food insecure households that the achievements of PSNP is measured every year, or/and at the end of each program phase.

2.3.5.3. How to achieve graduation

PSNP was designed with the primary purpose of addressing food consumption needs of chronically food insecure households through predictable resource transfers covering not only consumption shortfalls of bad harvest years but also the needs of normal years (CFSPE, 2003). It was assumed that if short-term food consumption needs of food insecure households were met in such a way, there would not be distress sale of productive assets. Therefore, assets at household level would be protected and households would not fall in to deeper food insecurity. Thus, food insecure households would avoid negative coping strategies with longer consequences. They would be encouraged to undertake productive investments and production that may enable them to earn further incomes and build assets.

However, households require not only food consumption but also other resources and supports to engage in investments and to become productive. Vulnerability factors that put and kept households in vicious circle of food insecurity need to be addressed. PSNP alone would not do more than consumption smoothing and protecting assets at household level. The envisaged goal

of food security program, graduation, was supposed to be possible only if PSNP was linked to other food security programs interventions (MoARD, 2006).

Therefore, it was understood that these chronically poor households need both consumption and livelihood support to graduate into food sufficiency/food security. To increase households` productive assets and income diversification over time, Other Food Security Program, which was renamed HABP in 2010, was sought to be integrated with PSNP and PSNP clients. The OFSP/HABP focused on creating assets at household level, reducing households' vulnerability and building resilience of households to withstand shocks. The combined impact of these was expected to lead to increased household income and assets over time (Sabates-wheeler & Devereux, 2011). As a consequence, the number of chronically food insecure households that depended on the PSNP would decline through time.

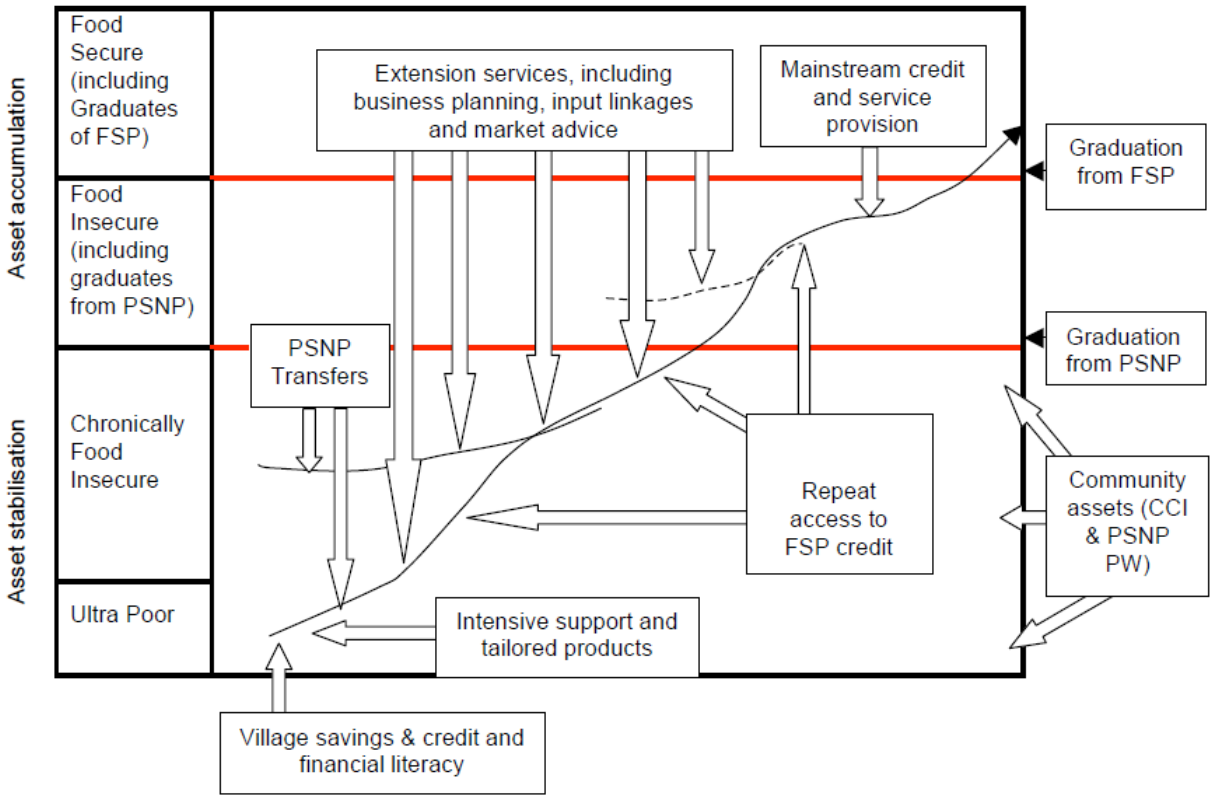
The graduation approach later explained in 2010-2014 PIM depicted tailored and sequenced support systems combined with the PSNP transfers to bring about graduation. This program document classified food insecure households into three hierarchical categories based on their capacity to "undertake investments, assume risks, adopt innovative practices, and to take on and repay credit" (MoARD, 2009: 18). The types and intensity of supports suitable to each category of food insecure households were also presented in the HABP document. The categories were (MoARD 2009:18):

i. The first category is chronically food insecure households with limited assets and insecure income sources, and those who depend on handouts for a significant percentage of their food requirement. These households have limited capacity and confidence to take loan with all financial service providers' conditionality. They may not have recorded credit experience, and therefore, commercial moneylenders do not will to supply loans to these households.
ii. The second category is chronically food insecure households, with resources better than the first category. They may dare to take loan, yet because they depend on food assistance to meet their consumption needs and have no traceable credit and saving experience record, they are not attractive to commercial credit providers.

iii. The third category of households includes those with better asset holding and those who have relatively secure income sources. However, their livelihoods are not dependable to be attractive customers to commercial finance providers.

Therefore, all the three categories of food insecure households require supports that suit their prevailing conditions to move towards graduation, as depicted in the Figure 2.

Figure 2: Pathway to graduation from PSNP and Food Security Program



Source: MoARD, (2009)

As described in the Figure 2, the extreme poor (which is the first category of chronically food insecure), needs PSNP; trainings on financial literacy and encourage to participate in village savings, intensive supports and coaching to embark on food security pathway. The focus is on rebuilding their productive system as a prerequisite for them to undertake new, larger, innovative and productive businesses. Extension services, micro-credit and saving with subsidized loan and business advice were assumed to help them to stabilize and build assets. The micro-credit and saving behavior developed at this stage will enable them to enter into credit market. The second category, the chronically food insecure households, also need PSNP

transfer together with higher and more innovative business plan and all the other services provided to the ultra-poor. They will have repeated access to credit from OFSP/HABP. The third group refers to transitory food insecure that are not in PSNP, and households who graduated from PSNP. This group is also considered food insecure. It is the group of transitory food insecure people who are vulnerable to shocks and become acute food insecure during drought shocks. They were estimated to be about 9-10 million people when Food Security Program was designed. The government intended to provide supports to this group in order to prevent them from falling into deeper food insecurity. The kinds of supports foreseen to be provided to this category were market development and identifying business opportunities and extension services. However, they were assumed to take loan on commercial basis. According to the Graduation Guidance Note (2007), however, households who graduated from PSNP receive support from OFSP/HABP on a priority basis to continue the process of household asset building that would move them towards food security, the second level of graduation.

The second level graduation for the PSNP graduates occurs when they become food secure. Food security is defined by the NCFSE (2003:2) as, "access by all people, at all times to sufficient food for an active and healthy life." Accordingly, a household is said to be food secure when all household members have access to food all the times for healthy and active life. The categorization of graduate households implies that graduate households are not expected to meet the universally accepted definition of 'food security' but expected to be 'year-round food sufficient.' This was the area of ambiguity to assess graduate households as food secure or 'food sufficient.' However, further discussion with implementing agencies experts and thorough investigation of documents revealed that graduate households might fall to food insecurity due to major shocks. However, they are expected to meet minimum food consumption needs from their own production and income without external assistance when they are assessed to graduate.

In general, while the PSNP was designed to protect existing assets and ensure a minimum level of food consumption, other food security interventions (OFSP/HABP) were designed to complement PSNP to assist households to increasing incomes generated from on-and/or off-farm activities and to build up assets so that they would be able to become food sufficient and "graduate" out of the program.

2.3.5.4. Graduation benchmarks

The guiding resource for graduation prior to 2014 was the Graduation Guidance Note (2007). Asset value bench mark was adopted as an indicator of households' food security status. According to the Guidance Note 2007, the bench-mark was said to be established flexibly by regions based on types of household assets and differences in the livelihood zones. Accordingly, the level of assets value 'food sufficient household' would have was established by each region and refined by districts as deemed appropriate. The total value of assets owned by the household was added up and compared with the set bench-mark. If the total asset value owned by the household was found to be equal or greater than the bench mark, the household was considered 'food sufficient.' According to information obtained from Oromia Food Security Coordination Directorate experts, the first graduation bench-mark established in Oromia was 19,187 Ethiopian *Birr* per a household (about 3837 *Birr* per capital). However, districts were allowed to adjust on the graduation benchmark set at regional level according to their context, particularly based on the livelihood system in their area. Chiro district, for example, revised and set its own graduation bench-mark to 30,000 *Birr* for the years 2012 and 2013 based on household assets such as land covered with crops, coffee, *jima/chat (*stalk count), livestock holding (number of oxen, cows, heifers, bulls, camels, donkeys); types of house cover (grass/corrugated iron sheet), new opportunities livelihood opportunities, additional incomes and income sources (guidance note obtained from the district, 2007 E.C /2015).

However, in 2011 Graduation Guidance Note that updated the 2007 version was developed, piloted in 2012 and the final version was issued in 2013 (PSNP Graduation Guideline, 2013). The Graduation Prediction System (GPS) was created claiming that graduation benchmarks and their use in assessing graduation was found unclear and challenging in practice. Therefore, the GPS was presumed to simplify the process of assessing graduation at district and *kebele* level, and make the graduation process more evidence-based and transparent. The GPS was a software tool used to predict the number of households to graduate from PSNP and FSP as a measure against program bench-marks (MoARD, 2012). It used data available at district and *kebele* level for predicting number of households to graduate. The actual selection of individual household was proposed to be done by *kebele* FSTF and community by comparing the wealth status of food insecure households. Wealth ranking was expected to be done in each *kebele*

before screening of individual households for graduation. The Graduated households of 2014 and then after in Chiro district were assessed based on GPS.

2.3.5.5. Common themes in Ethiopian graduation approach and the prevailing graduation theory of change

The Food Security Program graduation model in Ethiopia shares the most common themes and approaches in the graduation theory of change discussed above. Like BRAC`s Graduation Approach Theory of Change Model, it follows a sequenced intervention approach that comprises: targeting chronically food insecure and ultra-poor households, consumption support transfers from PSNP, technical and business development support, and access to saving and credit from HABP through MFI or RUSACCO, access to community infrastructure, and assessing households for graduation against regionally established asset thresholds. Chronically food insecure households graduate from PSNP when they become food 'self-sufficient first,' and then from Food Security Program when they become 'sustainably food secure' (MoARD, 2009). Households who graduate from PSNP will continue receiving FSP extension support and credits from MFI.

Moreover, the Ethiopian Food Security Program graduation model shares some features from each of the typologies of graduation discussed above. It shares the feature of 'exogenous graduation' in which 'threshold 'is administratively established; incorporates the notion of 'resilience' and the capacity to generate adequate streams of food and income from 'sustainable graduation'; allows adjustments to the vulnerability situations of participants as in the case of 'indigenous graduation', permits graduates from PSNP to continue receiving other food security program`s services and products to build further assets and become 'sustainably food secure' as in the case of 'developmental graduation.'

2.3.6. Some outstanding issues on graduation agenda

There is no agreement on whether graduation should be part of social protection agenda somewhat because there is no agreed definition of social protection (Sabates-Wheeler & Devereux, 2015). Proponents of graduation model believe that graduation strategies can contribute to household social and economic development, as well as to pro-poor and inclusive economic growth' (Samson 2015: 14). The problem arises when graduation is politically motivated to remove poor people from the program with the pretext of reducing costs and

dependency (Samson 2015). This intention exacerbates poverty rather than bringing about socio-economic transformation of the poor (Samson, 2015).

As already discussed in the introductory part above, there are skeptics who question the workability of graduation approach. Devereux and Sabates-Wheeler (2015) indicated that as graduation model is new, the evidence base is limited. They pointed out that though there have been rigorous impact evaluations for some of graduation programs, little is known whether graduates retain their gains and are resilient to shocks they face as post-exit evaluation or evaluation after the end of a program is not conducted.

Though all graduation programs` intention is to graduate participants from extreme poverty, they define graduation based on different parameters such as poverty line, asset threshold, and social poverty levels (Devereux & Sabates-Wheeler, 2011). PSNP in Ethiopia and CFPR/TUP in Bangladesh defined graduation in terms of continuous variables, asset values and incomes, respectively (Devereux & Sabates-Wheeler, 2011). Moreover, there is no a clear agreement on the definition, scope, types (threshold graduation visa-a-vise sustainable graduation, exogenous /endogenous graduation, and developmental), its 'most appropriate strategies, its potential impacts, and on how to define indicators to monitor and evaluate its impacts' (Daidone Pellerano, Handa & Davis, 2015: 9).

2.4. Review of empirical studies

2.4.1. Empirical studies in other parts of the world

Existing literature on graduation model to-date indicates that it is the BRAC`s CFPRU-TUP model that has been intensively studied since 2002. According to Hashemi *et al*. (2011) three rounds of survey were conducted on BRAC`s program with same participants from 2002-2008. The results indicate that ninety-five percent of the participants graduated by fulfilling six indicators - food security, diversified income sources, asset ownership, improved housing, and school enrollment - out of nine indicators.

However, the aforementioned studies and some qualitative studies revealed that graduation process is not always linear as evidenced by 'many households do not graduate, and many other households go through different cycles of improvements and worsening problems' (Hashemi & Umaira 2011:9). Factors such as health, age, marital function, and participants` personality,

access to health and education services, market functions, agro-ecological conditions, and macro issues were identified as determinants of success or failure of graduation programs (Hashemi & Umaira, 2011).

The findings from a study on 10 pilot CGAP–Ford Graduation Program, (of which the one is in Ethiopia, Tigray), indicated that 'a well-sequenced, intensively monitored program combining consumption support, access to savings, livelihoods training, and an asset transfer can lead to increased consumption, asset and income diversification, and some level of empowerment' (Hashemi *et al*., 2011:11). However, the study suggested for further research on sustainability of registered changes over time, to identify success factors and the role of access to finance.

Gahamanyi and Kettlewell (2015) in their analysis of Vision 2020 Umurenge Programme in Rwanda using a probit regression (marginal effects) model have shown that being literate household, access to financial services, family composition (particularly age of head of a household), access to health insurance service, and community sensitization have positive effects on livestock holding for graduation. However, though there has been improvement and some 'exit' from the program, their assessment has not confirmed anybody achieving sustainable graduation. They indicated that the amount of benefit received by public work participant is shared among household members and the duration of the stream of benefits is too short to enable a household accumulate enough assets (Gahamanyi & Kettlewell 2015). Thus, they have recommended the need to define pathways towards sustainable graduation.

A qualitative impact evaluation conducted by Sabates and Devereux (2015) on Concern Worldwide's Graduation Programme in Rwanda that made regular cash transfer to participants for the minimum of 12 months has revealed that positive improvements in terms of 'deprivation index', a composite measure of a household's ability to meet its basic needs for food security and health care, asset ownership, school participation of children, and its social inclusion. However, the authors acknowledged that those early impacts were attributed to cash transfers and they indicated the need for further research to see whether the improvements are sustained after the program. On the other hand, the study indicated that shocks such as illness of working adult, lack of assets and income generating activities before joining the program undermined their progress towards graduation. Moreover, their study revealed that graduation into self-

reliance is unlikely for some extremely poor households. As a result, it was recommended that a 'conventional long-term social assistance' as a conceivable form of support (Gahamanyi & Kettlewell 2015: 72).

2.4.2. Empirical studies in Ethiopia

In Ethiopia, different PSNP impact evaluations have been conducted by donors and government sponsored consultants at national level. Gilligan *et al.* (2008) evaluated the connections between PSNP and Other Food Security Program (OFSP) to see whether they improved participants` food insecurity and consumption level, encouraged households` investment and livelihood diversification, and led to households` resource buildup. They also looked at programs` disincentive effects on beneficiaries' participation in wage labor and reduced private transfers. The study was based on quantitative household and community survey data collected from sixty-eight districts of Amara, Tigray, Oromia, Southern Nations, Nationalities and Peoples (SNNP) Regional States. The impacts were measured using propensity score and nearest neighbor matching. Their study results show that there was positive trend in terms of improved food security, use of agricultural technology, borrowing for investment, and participation in off-farm activities for those who accessed both PSNP and OFSP services and resources. For public work PSNP participants who did not acquire OFSP services and resources, PSNP transfers improved only food calorie available. The finding shows that the asset growth rate of treatment group was slower than the control group. Though the study was conducted at the earlier stage of the program, the finding is very important in showing the positive trends towards asset accumulation and graduation for households who benefited from both programs. As they acknowledged, their study considered treatment groups that received a minimum of half of PSNP service packages than considering those who received full package benefit as per the design. Another problem in this study is that they included PSNP beneficiaries before the study in the control group as non-beneficiary households. Moreover, the study was conducted very early, a year after PSNP launched.

Maier (2014) who analyzed the extent of PSNP impact in reducing the food insecurity and vulnerability of beneficiary households by using secondary longitudinal data collected by CSA on Food Security for the years 2006, 2008, 2010, and panel data collected by IDS, and IDL group, A-Z Consult and Indak International in 2006 and 2008. The data was collected from all four regions, Amara, Oromia, Tigray, and SNNP, by using mixed methods. The finding showed

that there was no significant impact in terms of improving daily consumption of food measured at 1800 kilocalories per a day per a person and in terms of livestock holding (Maier 2014:112). The author attributed the limited impact to timeliness of transfers, inadequacy of payments, limited complementarity between PSNP and OFSP, and limited capacity of districts. This study is based on quantitative and qualitative data collected by Gilligan *et al* (2008) at national level yet provided divergent results.

Sabates-wheeler *et al.* (2012) assessed enablers and constrainers of graduation from Food Security Program in Ethiopia by employing mixed methods. They sampled four districts from Oromia and Tigray, two districts from each Region. Their findings indicate that many of the beneficiaries understand the meaning of graduation and the criterion for graduation, but many of the graduated households complained that they graduated early, and they did not believe that they should have graduated. Moreover, 25% of graduated respondents in Tigray, and around 33% in Oromia had no confidence of not needing PSNP in the future (Sabates-wheeler, Mulugeta, Tefera & Girma Bekele., 2012: 36). The authors have not confirmed the reason for graduated households` disbelief in their graduation; however, they forwarded their judgment that it could be either from graduates being prematurely exited the program or due to their tendency to depend on the transfers of the program. Though the proportion of the graduate households from the total number of beneficiaries was not indicated in the assessment, about 74.7% of graduates in both regions indicated that their food security status was improving (24.3% improved a lot, and 54.4% improved some) since their graduation.

Regarding constraining factors for graduation, they identified delay in PSNP transfers, public work wage rate, market price fluctuation, and lack of labor market, frequent drought, crop and livestock pests, and time pressure put on female public work participants to engage in livelihood development. These findings are very important; however, their sample size was limited to represent all program districts in the country; the assessment has not explored why and how these and other contextual factors, particularly drought shocks and program related factors which could be common to all beneficiaries in the same community affect graduates and non-graduates differently. More insights were also needed from additional research why many of the graduates were not confident to remain resilient and how their food security and livelihood status was changed since then, which this study attempted to capture some of them.

Yibrah (2013) conducted a case study to identify determinants of graduation from PSNP by using a logistic regression in the Eastern Zone of Tigray. He collected a cross-sectional data from 400 sample PSNP beneficiary households. The study found that use of agricultural package, having male household head, age squared of a household head, education level of a household head, access to credit, petty trade and irrigation, saving culture of a household, and the program being implemented by non-governmental organization increase the probability of participants` graduation from the program. Large family size is identified as negatively relating to graduation. Likewise, Hailu and Seyoum (2015) assessed determinants of PSNP beneficiaries` graduation from the program in Emba Alage district of Tigray, by collecting cross-sectional data through semi-structured questionnaire to randomly selected 246 beneficiary households. They analyzed the data using descriptive statistics and binary logistic regression model. Their results show that gender, access to irrigation, and credit, total production and targeting mechanisms have positive and statistically significant relationship while incidences of natural shocks such as drought, and number of dependents carried statistically significant negative association with likelihood of graduation.

These studies are based on the reported data of graduated and non-graduated households based on the threshold. The quantitative findings show the statistical relationship between the identified variables and graduation. However, these associations do not tell us whether the graduate households really have achieved one-year food self-sufficiency and became resilient to modest shocks since their graduation, which this study attempted to capture.

Guush Berhane *et al*. (2014) conducted an impact evaluation on PSNP program using a longitudinal data collected from almost the first two phases (2005-2009) and the first year (2010) of the third phase of the program. They evaluated the impact of the duration of households' participation in the public works of the program. They matched participants who received payments only for one year with those who stayed in the program for 2-5 years. Accordingly, they reported that participation in PSNP public work improved their food security by 1.29 months, and a five year stay in the program against one-year stay resulted in an increase in livestock holdings by 0.38 Tropical Livestock Unit (TLU). Moreover, the combined impact of PSNP and OFSP Program was found greater than access to one program alone. Their data shows that access to both programs increased food security by 1.5 months and livestock holdings by 0.99 TLU (Berhane *et al.,* 2014:23).

Sengupta (2012) conducted a qualitative study through narratives of participants` life stories to document lessons on the CGAP-Ford Foundation Graduation Pilot Program in Ethiopia, Kilte Awalalo district of Tigray Regional State. She dealt with 12 respondents by classifying them into three categories: fast, intermediate and slow climbers (Sengupta, 2012). The life stories of the fast climbers showed that they were not the most vulnerable and not at the bottom of poor at start. To their relatively preexisting better position, the program added 'the right assets; transferring new technical and financial skills; building confidence, and harnessing their pre-existing resources, finally enabled them to realize their own potential' (Sengupta, 2012: 32). The stories of the slow and intermediate climbers communicated that the program has not matched the preexisting constraints of more vulnerable households. Besides socio-economic constraints, slow and intermediate climbers 'had deep rooted intangible constraints like 'psycho-social constraints', which include lack of self-confidence, fear of credit, sense of achievement as compared to others, and social relations (Sengupta, 2012: 28). This qualitative pilot study, though limited in scope and did not deal with the actual graduates, has brought important insights to varying degrees of households' constraints to graduate.

Devereux and Ulrichs (2015) have conducted qualitative study on stakeholders` perceptions of graduation in Ethiopia and Rwanda. The study exposes that the major stakeholders conceptually agree on the 'protection' and 'promotive' function of social protection. However, development-oriented stakeholders give more emphasis to 'graduation,' by the token of which they judge success of the program. Inversely, stakeholders who focus on 'guaranteeing a minimum subsistence to all poor and vulnerable citizens and residents at all times' opt for the establishment of sustainable social welfare system that guarantees vulnerable citizens protection against future shocks (Devereux & Ulrichs 2015:152). The authors suggested that the design and implementation of graduation programs require in-depth investigation of enablers and constrainers in different contexts for the fact that graduation model cannot replicate 'equal probability of success' in different places and livelihood systems. Besides, they underlined the need for strong political support for social protection programs; yet they signaled that politicians focus more on graduation than safety nets, and the ambitious expectations of graduation may risk genuine and sustainable graduation outcomes. Accordingly, they revealed that evidences from Ethiopia indicated that political discussions around PSNP associated program success with the number of graduated participants as a result

of which civil servants and local officials push for rapid and premature graduation (Devereux & Ulrichs, 2015).

2.5. Lessons to be drawn and research gaps

As it could be understood from the preceding conceptual and empirical reviews, graduation model in social protection programs are based upon the rationale that with the right mix of consumption and livelihood supports, the poor can graduate from extreme poverty and food security program. The approach is most commonly practiced by providing sequenced consumption and livelihood supports to the extreme poor to enable them to accumulate resources to the level above locally established thresholds.

However, there is no common consensus on the definition, scopes, types, strategies, and measurements of graduation model. As a result, different countries exercised graduation model with different support packages and achieved varied results. Positive moves towards graduation are generally reported by different studies; however, evidences show that graduation model cannot replicate 'equal probability of success' in different places and livelihood systems. Asset threshold approach to graduation is questioned as to whether it's a reliable proxy, but it is not conclusively rejected. Graduation approach is also doubted for the fear that it may transfer intergenerational poverty. Studies on sustainability of graduation programs` outcomes, livelihood assets and food security status, after the conclusion of the program or after graduation are scarce.

In Ethiopian, though many evaluations report positive trends in terms of improved asset holding and food security situation while the program is running, the aspired graduation level has not yet achieved. Food security and livelihood situation of graduate households since their graduation has not yet been clearly documented. Many of the quantitative studies looked at statistical relationship of variables than exploring why many of the PSNP households failed to graduate. None of the studies looked at the dynamic nature of vulnerability context, assets, livelihood and food security situations which may hold households in the program. Moreover, few studies evaluated the achievement of the PSNP program by taking a comprehensive and multi-dimensional nature of food security concept. The effect of premature graduation on graduate households is also not known. The intergenerational transmission of poverty that some worry about are not empirically supported.

2.6. Analytical framework

Food Security Program in Ethiopia and the graduation theory discussed earlier suggests the combination of social protection transfers with livelihood enhancing interventions to build the capacity of households to become food self-sufficient and graduate from PSNP. Moreover, Maxwell (1988, and 1991) explicitly presented that 'food security will be achieved when equitable growth ensures that the poor and the vulnerable have sustainable livelihoods' (in Maxwell & Smith,1992: 31). Therefore, as this study intends to explore factors that affect PSNP households to become food self-sufficient to graduate, and to examine graduate households` livelihoods and food security status after graduation, sustainable livelihood frame work is found to be adopted as an appropriate analytical tool in this research.

Sustainable livelihood is explained as:

> A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base (Scoones,1998:5).

This definition has become the basis of sustainable livelihood framework adapted by different government and non-governmental development agencies and academia for program design and evaluations. Five major elements are disaggregated from this definition to form the basis of the framework as depicted in IDS team`s sustainable rural livelihood framework (scoones, 1998): context, resources, institutional processes and organizational structures, livelihood strategies, and livelihood outcomes (see Scoones 1998 for detail discussion of each).

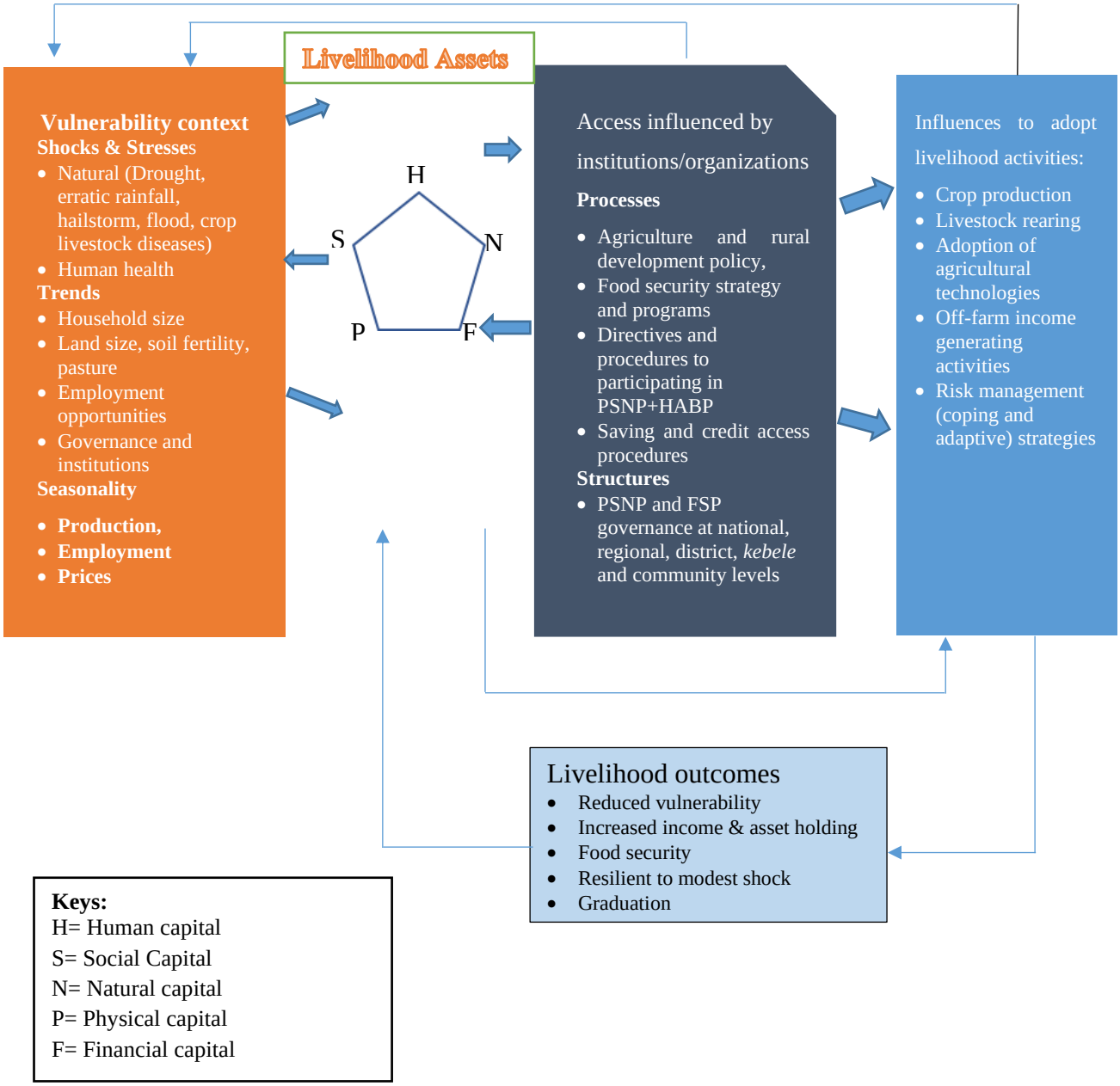
As already stated, it is well acknowledged that food security could be achieved when sustainable livelihoods of the poor people are ensured through equitable growth. On the other hand, households` food security status influence household`s livelihood security. Food insecure households are liable to disease and may be physically weakened to engage in productive livelihood activities.

For rural households, the most basic livelihood activity to access food is through food production. Another means of accessing food is based upon household's ability to purchase food. The ability to purchase food again depends on household`s ability to generate income.

Therefore, household`s access to food is dependent on household`s food production and/or ability to generate adequate income. If a household has no economic opportunity or adequate income to produce or purchase sufficient amount of food it is vulnerable to food insecurity. Therefore, households` livelihood activities determine their food security. Households` livelihood strategic choices to produce food or generate adequate incomes to achieve food security depends on households' access to different assets referred to as 'capitals' (Scoones,1998). However, food insecure households are asset poor. Therefore, policies and institutions governing food insecure households' access to different livelihood resources such as land, social and economic infrastructures, agricultural technologies, credit facilities and extension services play significant role in enabling or constraining poor households to engage in productive activities. Moreover, households` perception of risks, their abilities to manage risks, to cope with stresses and shocks influence their decisions of livelihoods strategies and investment level to build or replenish assets.

Understanding challenges of households' graduation from PSNP and sustainability of the gains of graduate households require looking at the full range of food insecure households' livelihood system. Accordingly, based on the conceptual framework summarized in the preceding paragraph, this study intends to analyze vulnerability context, livelihood resources, livelihood activities and mediating factors in constraining or enabling PSNP beneficiaries to graduate and graduate households to sustain their gains (see Figure 3).

Figure 3: Analytical Framework



Source: Adopted from Scoones (1998), DFID (2000), Degefa (2005)

Chapter 3: The Study Area and Research Methodology

3.1. Introduction

Research design is a plan and process of research that involves type of research strategy to be adopted, specific methods of data collection, analysis, interpretation and validation, shaped by broader philosophical assumptions that the researcher brings to the study, nature of research problem, personal experience of the researcher and audience for the study (Creswell, 2009). Therefore, this Chapter presents a brief description of the study area, Chiro District, and research methodology. The description involves physical and socioeconomic characteristics; research design, strategy and specific methods adopted that range from data collection, analysis, interpretation, validation, and reporting. The purpose of study area setting is to provide the contextual background through which the issues investigated in the following Chapters could be grasped. The methodological accounts are also important to judge the findings of the study to the context and the process through which they were generated.

3.2. The study area

This study was conducted in Chiro district of Oromia National Regional State in Ethiopia. As already indicated in the introductory part of this study, the district is found in West Harerghe administrative zone which is the second most chronically food insecure zone comprising of 411, 716 (24%) of 1,733,626 total PSNP beneficiaries targeted for the Fourth Phase (2016-2020) of the program in Oromia (MoANR, 2015).

The main center of Chiro district, Chiro town, is located at about 326 kms away from Addis Ababa on the way to Harar City. The district has the total area of 583.1 km^2 (BoFEDO, 2013), and 40 *kebele*s including one rural urban center. It is bordered by Gemmachis and Oda Bultum districts to the South East; with Doba, Tulo, and Mesela to the East; Mieso to North and North-East; and Guba Koricha from South to South-West within west Hareghe Zone. Its topography is characterized by plateau and mountains. Its altitude varies from about 1500 to 3060 meters above sea level (BoFEDO, 2013). Agro-climatically, 46.7% of the district is *gammojjii*/lowland, 36.6% is *baddadaree*/mid land, and 16.6% is *baddaa*/highland (West Harerghe Zone Finance and Economic Development Office, 2016). It has a bimodal rain fall pattern locally known as *Arfasa* (which falls during about late February to End of April) and *Genna* rain (falls beginning from late June to mid of September) (Chiro Office of Irrigation Authority, 2010 E.C (2018).

The district practices mixed farming system. Crop production such as sorghum, maize, barely wheat, potato, cash crop, dominantly *Chat/jimaa*, and livestock raising, particularly for middle and better-off households, that include cattle, shoats (sheep and goats), equine (donkey, horses, camels) are important economic activities. Local labor such as working on *Chat* farm and harvesting and packing *Chat,* self-employment such as petty trade and firewood sales are some other sources of rural households' income.

However, it is one of the 14 chronically food insecure districts in the zone most commonly attributed to population pressure, small land holding size, drought and rainfall variability. According to CSA (2013), the rural population of the district was estimated to be 216,090 (110,274 males, and 105,816 females) as of July, 2017. Besides drought and rainfall variability, crop disease, floods and hailstorms affect the agricultural activities of the households in the district.

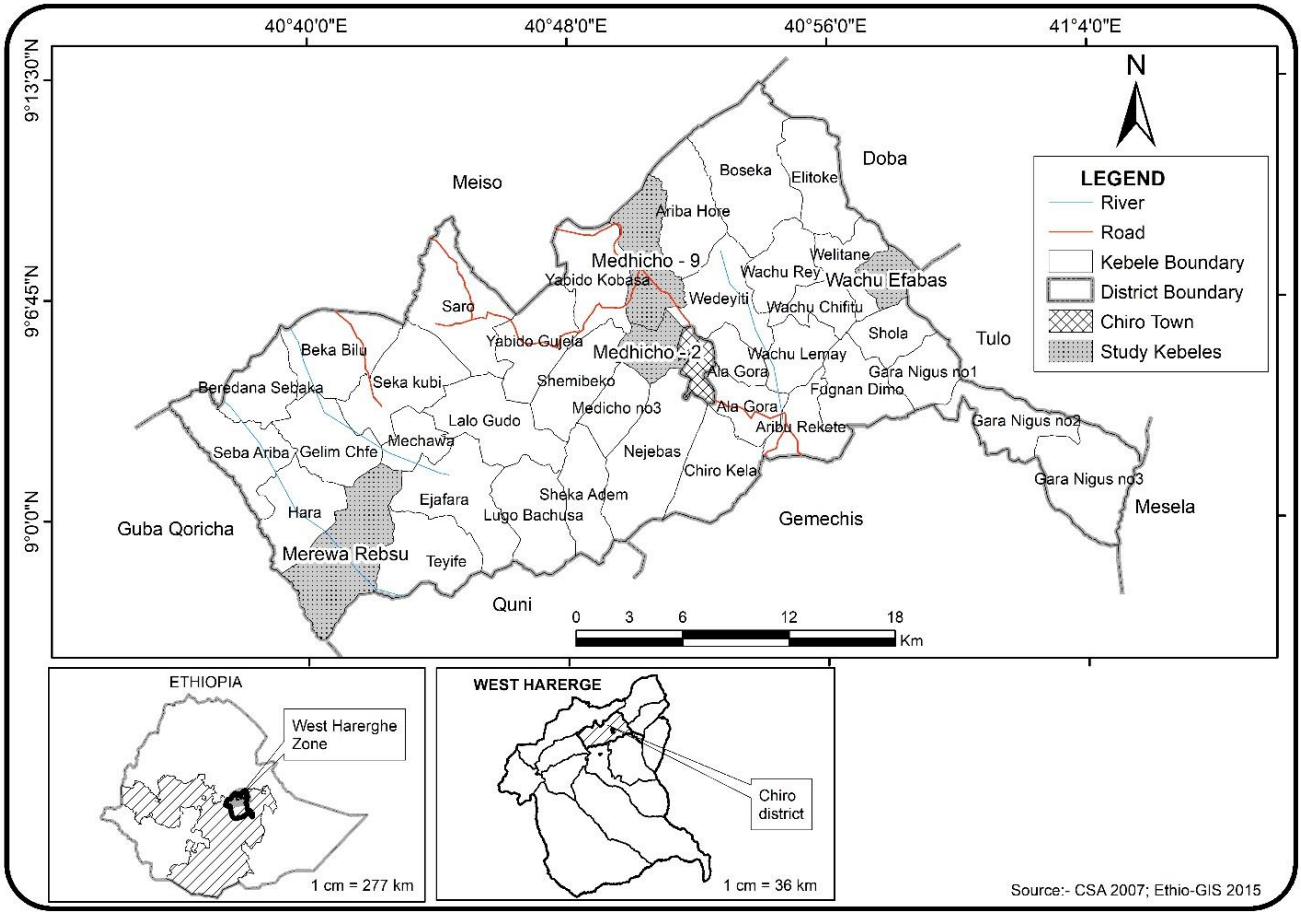
All 40 rural *kebeles* of the district are currently under PSNP support. Out of these *kebele*s, 13 *kebele*s were added to the program in the fourth phase of the PSNP, while the rest 27 *kebele*s have been ongoing beneficiaries from the previous phases of the program. Accordingly, all types of food security program interventions have been implemented in the district since the inception of the program. According to information obtained from Oromia Agriculture and Natural Resources Bureau, the ongoing PSNP participants in the district were 6,566 households, or 30,381 persons including their household members in all 40 rural *kebele*s. Moreover, 1863 households (of which 273 were female, and 1590 households were male headed) graduated from the PSNP as of the end of 2015 in the ongoing 27 PSNP beneficiary *kebele*s. However, the recently added 13 new *kebele*s had not graduated any household, and thus they were not included in the sampled kebeles

3.3. Sampling technique

A multi-stage sampling technique was used to determine the sample households. Based on the district`s classification of *kebele*s into three agro-climatic zones, four *kebele*s were randomly selected for this study (one *kebele* from each of *baddaa*/ highland and *badadaree*/ midland, and two *kebele*s from *gammojjii*/lowland agro-climatic zones).Twenty-seven PSNP *kebele*s in which both ongoing beneficiaries and graduated households resided were first clustered into their respective agro-climatic zones such as highland, midland and lowland. Accordingly, the distribution of ongoing public work PSNP beneficiaries and graduated households in the agro-climatic zones of the district were found to be 23% in highland, 31% in midland, and 46% in the lowland. The agro-ecological classification was not absolute, for in each *kebele* small portion of

different agro-climatic characteristics are found than the dominant portion of it. From the clustered *kebeles*, one *kebele* was selected from each of the highland and midland *kebele*s; and two adjacent *kebele*s were selected from dominantly lowland *kebele*s using a lottery method.

Figure 4: Location map of the study area



Number of required sample households were proportionally allocated to each sampled *kebele*s, based on the size of the population of interest- current PSNP beneficiary and graduated households. Then, systematic random sampling technique was used to select sample households from each categories of the population based on the proportion of their size.

The sample size for households' survey was determined by specifying precision of estimation desired by using a simplified formula provided by Yamane (1967:886):

$$n = \frac{N}{1+N\,(e)\,2}$$ whereas n=sample size; N=Population size; e=level of precision (which is set here at $\pm 5\%$).

The total current beneficiary and graduated households in the 40 *kebele*s of the district was 10021 (male 7665; female 2352); out of which 8158 (male 6079; female 2079) were current public work PSNP participants; and 1863 households (1590 male; 273 female) were graduated households. However, *kebele*s with both graduated and current beneficiary households were 27 with 7334 total households (1863 graduates; and 5471 current PSNP beneficiaries). The sample household size for the study was therefore: 7334/ (1+ (7334*0.05*0.05)) = 380 households. Table 3.1 summarizes the sampling techniques and sample households' distribution as discussed above.

Table 3.1: Summary of sampled households' distribution

Category by agro-climatic zone and type of HHs	All PSNP *kebele*s	No.of HHs	No. of HHs in 27 *kebele*s	Selected *kebele*s	No. of HHs planned	No. of HHS surveyed	Percent responded
***Baddaa*/highland *kebele*s**	9	2309	920	M/ Rebsu	45	45	100
Ongoing PW HHs	9	2096	633		33	30	90.9
Graduate HHs	3	213	287		15	15	100
***Baddadaree*/mid-land *kebele*s**	13	3152	2125	W/Ifebas	113	111	98.2
Ongoing PW HHs	13	2721	1745		93	93	100
Graduate HHs	8	431	380		20	18	90
Gammojjii/low-land *kebele*s	18	4556	4289	Medhicho-2	85	85	100
				Medhicho-9	137	136	99.3
Ongoing PW HHs	18	3341	3093	Medhicho-2	70	52	74.3
				Medhicho-9	110	108	98.2
Graduated HHs	16	1215	1196	Medhicho-2	35	33	94.3
				Medhicho-9	29	28	96.6
Total current PW HHs	40	8158	5471	4 *kebele*s	283	283	100
Total graduate HHs	27	1863	1863	4 *kebeles*	97	94	96.9
Grand total	40	10021	7334	4 *kebeles*	380	377	99.2

Source: Own survey data, 2018

3.4. Research paradigms and methods

3.4.1. Philosophical orientation

Though there is an ongoing debate on where a particular research approach, quantitative, qualitative, or mixed is based, three philosophical paradigms are most commonly mentioned in research tradition: positivism, constructionism and pragmatism. Positivism lends itself to hard science, seeks clear-cut data, tangible evidence, rules and regularities (Crossan, 2015). On the contrary, constructivists do not believe in the existence of universal law and absolute truth (Creswell, 2009). For constructivists people construct their views of the world on their perceptions of it, give meanings in their pursuit of understanding it (Creswell, 2009). Therefore, the goal of research is to understand multiple realities people ascribe to the world around them (Creswell, 2009). Methodologically, positivists rely on quantitative while constructivists depend on qualitative method.

Pragmatism as a world view emerged 'out of actions, situations, and consequences rather than antecedent conditions (as in post positivism)' (Creswell 2009: 10). Pragmatists do not believe in the existence of 'absolute truth'; but for them 'truth' is 'what works at the time,' (Creswell, 2009). According to Teddlie and Tashakkori (2003), pragmatism sidestepped the dispute on concepts of 'truth and reality' that have caused unimportant continual arguments. In line with Frazier (1981), Kitchin and Tate (2000:13) indicated that pragmatism asserts that 'studying a particular real-world situation is important for providing both theoretical understanding and practical solutions.' Epistemologically, pragmatism allows researcher to study what he/she values in the way that one may find appropriate, and to use the results in the way that can be positively significant in one`s value system (Tashakkori & Teddlie, 1998). Pragmatism is 'a practical approach to a problem and has strong association with mixed methods research' (Cameron, 2011:101). Thus, both quantitative and qualitative methods are compatible with pragmatic paradigm. The choice of method is dictated by the purpose of the research (Patton, 2002).

Therefore, as pragmatism allows a researcher to use the method or the combination of methods that one finds to work best for answering the research questions at hand (Johnson & Onwuegbuzie, 2004), the Pragmatic philosophical inquiry is adopted in this research.

3.4.2. Mixed research method

Mixed research method is relatively the recent approach that has emerged as an alternate to the long-standing debates between quantitative and qualitative approaches (Tashakkori & Tadli 2003). Various Scholars have provided different definitions of mixed methods. For the purpose of this study, the definition provided by Creswell and Clark (2007:5) is adopted:

> Mixed methods research is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone.

This study deals with rural households' graduation from PSNP/chronic food insecurity. As Degefa (2006:1) argued, 'combining qualitative and quantitative household data in a single research project allows a comprehensive and holistic understanding of food security situation.' This is so because, as Degefa (2006) expounded, quantitative data helps to capture measurable economic and demographic characteristics of a household, while qualitative data serves to apprehend a wide range of constructs that cannot be measured in arithmetical terms.

Therefore, in this study we opted to adopt mixed method research. Quantitative data on households' demographic and economic characteristics, such as household composition, asset holding and income, food security status, level of vulnerability and changes over time were collected and analyzed. Qualitative data was used to understand local people`s conception of food insecurity, its causes, factors that affect them to graduate from PSNP, and their perception of graduation. The quantitative and qualitative datasets were integrated, used for mutual explanation and validation, and finding from each are compared and merged.

3.4.3. The design

The design in this study was a concurrent triangulation in which both qualitative and quantitative data were collected in parallel; and then, the two datasets were compared to determine whether there was convergence, differences or some combination. As indicated by Creswell (2009), the qualitative and quantitative methods are used separately with ideally equal weights, 'but often in practice with priority may be given to one or the other.' Accordingly, this study is a mixed methods research with equal weights of both quantitative and qualitative information. The method is preferred to supplement the findings of one method with the other, and/or to counterbalance the weaknesses in each of the methods.

3.5. Sources and methods of data collection

Both secondary and primary information were collected from different sources. Various data collection methods, such as document reviews, observations, individual household interviews, focus group discussions, and sample households survey were employed. Details of methods employed are presented hereunder.

3.5.1. Preliminary visits to the study areas

Before undertaking a complete process of data collection, preliminary visit to the study district was made by having official letter from Addis Ababa University. During this visit, the researcher introduced himself to the district and *kebele* officials, identified different sectors that played important roles in the food security program implementation, observed the general livelihood activities, held informal talks with the people about the livelihood and food security situation of the general population, identified key informants at district and *kebele* levels, learned possible cultural and religious barriers to conduct interviews with different individuals and groups such as women. This visit helped me to build confidence among different stakeholders and participants on my purpose of being there, to refine research objectives and questions and data collection methods before embarking on formal data collection.

3.5.2. Document reviews

Document review is one of the important methods of qualitative and quantitative data collection. This study conducted reviews of several relevant government documents such as pre PSNP design Concept Notes discussed at Federal and donor groups consultative meetings; Food Security Strategies; Food Security Programs from phases 1-4; Program Implementation Manuals (PIM) of each phase of the program; performance reports; studies conducted by government/ donors sponsored consultants, researchers, and development organization in relation to food security and graduation from social protection program, among others. Moreover, socio-economic profile of Chiro District held at different sectors; data on number of chronic and transitory food insecure households; major environmental and socio-economic shocks; number of PSNP beneficiaries, and PSNP transfer amounts to the beneficiaries, amount and level of OFSP/HABP resources and services availed to beneficiaries; district graduation benchmark; district livelihood support; graduation performance reports; number of graduate households per year were investigated. Some unpublished notes from Food Security Directorate at Federal and regional levels were compared with ideas reflected in the official government strategies, programs, guidelines and plans, and for explanation of issues if they do not contradict.

3.5.3. Observations

Observation could be a 'scientific tool and the method of data collection for the researcher when it serves a formulated research purpose, is systematically planned, and recorded and is subjected to checks and controls on validity and reliability' (Kotari, 2004:113). Accordingly, the observation in this research plays a supplementary role to other methods of data collection. The researcher observed and recorded livelihood activities of the participants in their natural setting, the physical environment in which people are functioning, terrain and topography, access to different infrastructures such as roads, water, health, schools and market were observed.

3.5.4. Interviews

Interviews were conducted with selected current PSNP participants, graduates, and community leaders/elderly that were recommended as having longstanding knowledge and experience about local community livelihoods and food security situation and trends. Interviews with the participants were made to elicit their views on their experience of food insecurity, shock and risks they were exposed to, their access to different livelihood resources their activities, coping and adapting strategies when they were exposed to different food insecurity shocks. Interview questions were semi-structured and organized around the research questions/ thematic areas. Some emerging questions were probed while the dialogue between the researcher and participants were proceeding. Accordingly, 14 individual interviews were conducted: 5 with elderly (2 in Medhicho-9, and one from each of the 3 sample *kebeles*); 5 graduates (two from W/Ifabas, one from each of the 3 *kebele*s); 4 ongoing PSNP households (one from each of the *kebeles*).

Relevant responsible persons from Agriculture and Natural Resources sector and Food Security Coordination units found at national, regional and district levels; experts and development agents who engaged in the implementation process of the food security programs from regional to *kebele levels*, Zonal MFI and District CARE Office responsible persons were interviewed. The main concerns at local level was to elicit the historical trend of local food insecurity; major causes of food insecurity; major shocks and stresses; coping and adapting strategies; different food security interventions; how these interventions were making differences; their perceptions on graduation; challenges and prospects of graduating households from PSNP, and the overall trends of livelihood and food security condition of the PSNP beneficiaries and graduate households. At national, regional, district officials and experts' levels, the concern was to understand their perception on the intent of graduation and its performance, on the compatibility of graduation approach and the

persistent shocks that induce food insecurity, the linkages between PSNP and OFSP/HABP, challenges and prospects of achieving graduation at scale. Accordingly, 8 individual interviews were conducted.

3.5.5. Focus group discussions (FGDs)

Focus Group Discussion was held with 14 groups (4 FGDs with graduated household; 4 FGDs with ongoing PSNP household; 1 FGD with District FSTF; 3 FGDS with *kebele* FSTF; 2 FGDs with Regional and Zonal Food Security Directorate experts).
The FGDs were used to generate shared experiences, perceptions, and beliefs of groups on the design and implementation of graduation; graduation performance; graduate households' livelihoods and food security status after graduation; prospects of ongoing households to graduate; food security situation of the beneficiary households and the district as a whole, and the challenges and achievements of PSNP and food security programs.

3.5.6. Data collection instruments

Open questions and interview guides covering the thematic areas of the study for discussions with both the individual households and with Focus Group were prepared beforehand with the possibility of further questions during the discussion process. Checklists were prepared and used for field observations. Discussions were recorded with hand-held tape recorder with consent from the participants. Personal field observations were supported with field notes and photos to complement data obtained from other methods in this study.

Most interviews and FGD at *kebele* level were held at *kebele* centers. Individual interviews were conducted in their residential areas/homes, work place, under shades and on field sites where I observed public works based on the convenience of the interviewee.

The time and place for consultation were facilitated by DAs and *kebele* administrators. Lists of current PSNP beneficiaries and graduates were obtained from *kebele* Development Agents (DAs), or *kebele* administration office, and then contacted for group and individual discussions.

3.5.7. Sample household survey

A cross-sectional quantitative data was generated through sample household survey questionnaire. The questionnaires were designed to generate a mix of descriptive and analytical answers to find

out factual and subjective data related to the respondents' situations, attitudes and beliefs. The questionnaires were close-ended with some allowance for the respondents to comment/justify some questions related to their perceptions. The questionnaires were used to capture households' demographic and economic characteristics, access to different assets and services, their livelihood strategies, exposure to different shocks and stresses, their coping and adapting mechanism, their food and cash incomes and income sources, current food security status, their perceptions on graduation exercises. In addition to these, the survey questionnaires administered to graduate households were to capture what negative or positive trajectories they had experienced since their graduation.

The survey data was collected by nine enumerators who were qualified and experienced in food security assessment from different zonal and district sector offices. One research assistant nominated to assist the researcher as a guide during the tour to *kebele*s, as a facilitator to find and contact relevant *district* and *kebele* institutions and personnel, to assist in nominating enumerators and in coordinating field works was also a qualified and experienced in food security sector. The selected assistant and enumerators were oriented on the data collection instruments before embarking on data collection.

During the field work the researcher and research assistant were randomly checking data collection process; made clarifications on some survey questions when some enumerators call or ask in person for further illuminations based on their encounters. The household head along with his/her spouse or any other adult, particularly during asking questions on HFIAS, were respondents to the survey questionnaire. The enumerators filled 377 households' survey questionnaires (94 graduates, and 283 ongoing PSNP households) by going house to house.

After field work, all the quantitative data, and information from open-ended questions and supplementary responses to pre-coded questionnaires were entered into computer for data cleaning and analysis. In fact, data was originally entered into Excel and subsequently transferred to SPSS and STATA for data cleaning and analysis.

3.6. Measurement, data analysis and presentation

3.6.1. Qualitative data analysis

Qualitative data obtained through FGDs and individual interviews were conducted by the researcher himself with the support of research assistant. The full accounts of fieldwork, observations, short field notes and recorded voices, were written down immediately after field.

Data was classified according to their sources such graduated households, ongoing PSNP households, elderly, and other key informants; and whether they were obtained through FGS or individual interviews and places where interviews were conducted. They were also organized and described based on the objectives and questions of the study. The obtained data was analyzed using qualitative data analysis techniques such as thematic and comparative analysis. The analyzed qualitative data was also compared and triangulated with results from quantitative data at appropriate thematic areas in discussing, interpreting and writing up of the dissertation.

3.6.1.1. Thematic analysis

The information was gathered based on the thematic area of interest and thus some analyses were made while gathering data and writing reports immediately after discussions. Data obtained through FGDs and individual interviews were compared and cross-checked for their convergences and divergences, the differences were clarified while the researcher was in the field. Thus, the data were first thematically organized and described by looking at the notes taken during the discussion and listening to the recorded voices. The data is then summarized and interpreted.

3.6.1.2. Comparative analysis

Then after, the researcher read through all the reports organized by themes; compared information from FGDs with individual interviews; reflected on their convergences; checked for their accuracy; reflected on their overall meanings and interpreted. The results from qualitative data was also compared with the quantitative results and triangulated at appropriate thematic areas.

3.6.2. Quantitative data analysis

As already mentioned under survey data collection process, survey data was classified, coded and entered into computer for checking and analysis. Cleaned data was described and analyzed using descriptive statistics such as measure of frequency distribution, cross tabulation, arithmetic mean, mode, variance and standard deviation. Inferential statistics, binary logistic regression was also used in the analysis of determinants of graduate households' food security status. Appropriate statistical tests such as Mann-Whitney and Kruskalis-Walis tests; Levene`s test for homogeneity of variance; Kolmogorovo-Smirnov and Shapiro-wilk tests for normality of data distribution; tests for multi-co-linearity and linearity of logit model and others described under each of the analysis to be discussed shortly were used. Data entered into computer was analyzed by using computer software, such as Excel, Statistical Package for Social Scientists (SPSS) and STATA.

3.6.2.1. Variable exploration and descriptive statistics

The question of why households failed to achieve sustainable graduation was explored and analyzed by being guided by major components of sustainable livelihood framework. One component of sustainable livelihood framework was vulnerability context. The study began with the qualitative exploration of preexisting constraints of households to become chronically food insecure and went on to understanding the present condition. This was done to appreciate which vulnerability factor threatened food security and what measures were in place to manage the risks. To understand present condition relevant to vulnerability required understanding households' asset portfolio and the livelihood-related activities in which people were engaged. Thus, investigation was made on environmental, social, economic, natural, demographic, and institutional/food security program related factors. Different environmental shocks that households experienced, and how each of them had affected the study households` food security and asset status as well as their would-be graduation from PSNP were explored by using both qualitative and qualitative methods. Descriptive statistics such as mean, percentages, and standard deviations were used to describe and analyze the major characteristics of participants and their asset holding status.

3.6.2.2. Comparative analysis of groups of households

Comparative analysis of different groups of households, mean differences between 'graduated' and 'ongoing PSNP' households; and among 'non-graduated', 'graduated', and 'newly admitted PSNP' households in terms of their asset endowments and vulnerability were made to learn how differently they were affected to become food secure and graduate from PSNP.

3.6.2.2.1. Mann-Whitney and Wilcoxon rank-sum tests

Comparison of two experimental conditions with different participants in each condition can be dealt with independent-means t-test. Like dependent t-test, independent t-test is a parametric test that relies on parametric assumptions. Parametric tests include assumptions such as normality of data distribution and homogeneity of variances, among others. When parametric assumptions are not met, assumption free tests, non-parametric tests, such as the Mann-Whitney test and Wilcoxon rank-sum test which are considered "the non-parametric equivalent of the independent t-test" (Field, 2009) were used.

Accordingly, before conducting comparing and testing the mean differences among group of households in the study, normality of data distribution and homogeneity of variances were explored and tested. Test of normality was conducted by using Kolmogorov-Smirnov and Shapiro-Wilk

tests. When the significance value of Kolmogorov-Smirnov and Shapiro-Wilk tests are P < .05, which means significant, the data distribution is considered non-normal; and if the tests are at p>.05, they are non-significant and data distribution is considered normal. Shapiro-Wilk test is considered to produce more accurate values for significance whereas Kolmogorov-Smirnov provides approximation of .2 due to the limitation of SPSS in calculating exact significances in this case (Field, 2009). Thus, when the significance values of the two are different, Shapiro-Wilk tests are used. Moreover, Levene`s test was used to test homogeneity of variance. If Levene`s test is significant at p<.05, the variances are significantly different (heterogeneous), and thus the assumption of homogeneity of variances is broken. If Levene`s test is non-significant, the assumption of homogeneity of variance is met.

In this study, before conducting comparative analysis the assumption of parametric tests such as 'normality' of data distribution and homogeneity of variances were tested and found that both or either of the assumptions were violated. Therefore, non-parametric test, Mann-Whitney test was used to compare the mean asset possession and mean food kilocalories available at a household level of 'graduated' and 'ongoing PSNP' households. Mann-Whitney test looks at differences between the ranked positions of scores in two different groups.

3.6.2.2.2. Kruskal-Wallis test

As already indicated, sampled households in this study were further categorized in to three groups. The first independent group was graduated households. The ongoing PSNP household group comprises households who continued from the previous program phases, termed as *non-graduated*, and newly admitted households referred to as *new clients/new PSNP households* in this study. As non-graduate households were neither new household nor graduated, this study aims to see their relative position in terms of their asset possession and per capital calorie supply with and without PSNP transfers by comparing them with graduated and newly admitted PSNP households. This comparative analysis informs how fairly they were judged to remain in the program as compared to graduated households.

Thus, our data distribution for the three groups of the sampled households- non-graduated, new PSNP clients and graduated- did not meet the parametric assumptions. Kruskal-Wallis test is the non-parametric counterpart test of one-way independent ANOVA when some assumptions of parametric tests are violated. Therefore, Kruskal-Wallis test is used to test for equality of mean asset possessions and mean per capital food calorie distribution among the three independent sample groups of households in this study. In cases where Kruskal-Wallis test comes up with the

significant differences across the households, post hoc test was conducted to pinpoint where the difference lies from among the three groups. Post hoc test for the Kruskal-Wallis test was done by using Mann-Whitney tests by making adjustment using a Bonferrroni correction to ensure that the type I error would not increase to more than .05. The Bonferroni correction uses .05 confidence intervals divided by the number of tests conducted instead of using 0.5 across all the tests repeated (Field, 2009). In this study we have three post hoc tests which led us to use .0167 significance level (.05/3= .0167). Kruskal-Wallis test is based on ranked data just as Mann-Whitney and Wilcoxon rank-sum (Field, 2009) to compare independent conditions.

3.6.2.3. Creating livelihood asset index

Being poor is widely considered as being unable to afford the minimum asset required (Emorine, *et al*., 2014). As such, asset is a proxy indicator of household food security as it informs about the ability of a household to access food. Assets are observable and easily captured in rural areas. Accordingly, asset-based indicators are used for assessing households` food sufficiency and its ability to graduate from PSNP program in Ethiopia. Though community-based household assessment for graduation was not guided by sustainable livelihood framework, the qualitative information conveyed that there was consideration of components of livelihood capitals: Human, Social, Natural, Financial and Physical.

As explained by Emorine *et al* (2014), asset index is a measure of differences. They indicated that "asset index may reflect a vision of inequality closer to the one felt by the citizens" (Emorine *et al*., 2014:8). However, the absolute value of asset index has no concrete meaning by itself unless comparison is made among households (Emorine *et al*., 2014).

However, the use of asset index has its own limitations that should be noted. As Emorine *et al.*, (2014) explained asset index is a relative measurement that assesses households' asset endowment in relation to other households. Due to this fact, the absolute value of asset index has no meaning by itself unless it is compared with other. Even so, we have to be cautious when we interpret it as having an asset index twice higher than some households does not mean being twice wealthier (Emorine *et al*, 2014). Therefore, asset index is best used for comparison in terms of average across groups of population and for regression analysis. Accordingly, the researcher used the asset index created here to make comparisons across groups of households defined in the study.

Another important shortcoming of asset index relevant to this study worth to mention is that while measure of wealth such as income and/expenditures are scalable to household size, asset indices are not (Emorine et al., 2014). Therefore, according to asset indices, households with smaller

household size could be termed poorer, which is against the income or expenditure measure that would possibly reveal the poorer being households with larger family size (Emorine *et al*., 2014).

3.6.2.3.1. Multiple Correspondence Analysis (MCA)

A number of recent studies use Principal Component Analysis (PCA) and Factor Analysis for the construction of asset index (Booysen *et al.*,2008). Studies have shown that there is little empirical difference between different approaches in weighing the underlying asset indicators to combine into index (Wai-poi *et a*l., 2008). However, PCA suites continuous variables, and it assumes normal data distribution in the process of livelihood asset creation. This study, thus, opted to use Multiple Correspondence Analysis (MCA), because it is a method designed for analyzing observations on categorical ordinal indicators (Asselin, 2009). Unlike PCA, this method does not presume normal distribution of indicator variables. The survey data for this study is found not normally distributed and thus do not meet PCA assumption. MCA also solves asset weighing difficulty by using "covariance of the ownership of each asset across the population to deserve a different weight to each asset" than relying on asset value of the item and judgment of data analyst (Emorine *et al*., 2014). As a result, some continuous variables were transformed to dichotomous or categorical variables to use MCA.

3.6.2.3.2. Variable selection to construct asset indices

Different studies exhibit different livelihood asset pentagon related to their areas. Accordingly, the asset indices to be created in this study follows sustainable livelihood framework by carefully selecting indicators and variables relevant to types of capitals in the livelihood framework discussed so far. The indicator variables were drawn from those the district used for establishing graduation bench-marks, from what the participants defined as important for households' ability to be food sufficient, from graduation enabling factors defined in the food security program, and theories of livelihood assets. In general, variables were selected with the consideration of their theoretical, policy and contextual relevancies

Study participants defined size of land held, quality of land held, access to water both for irrigation and drinking, access to financial services (HABP that includes training, transfer/ loan and saving), participation in off-farm income generating activities, skill trainings, livestock holding, access to inputs, dependency ratio, participation in experience sharing, gender of household head, household health status, participation in self-help social groups, and environmental factors as determinants of food security status of a household. The graduation bench mark asset valuation format used in Chiro district encompassed asset variables such as land held (classified by the type of crop it was

covered with_ *Chat*/*jima* in *katara* (row), grains, coffee), livestock holding, house cover type, and income from off-farm activities/ created by food security interventions such as HABP. All these could be amalgamated to livelihood asset pentagons: Human, Social, Natural, Financial and Physical assets. These capitals and 23 indicator variables indicated in Table 3.2 were selected to create asset indices for each of the capitals and composite asset index.

Table 3.2: Variables included and weights obtained from MCA to create LAI

Livelihood Asset	Variables	Categories	Weights
Human Capital (HC)	Household head sex	Male	0.273
		Female	-1.178
	Age of household head	Age (18-30)	2.872
		Age (31-50)	-0.755
		Age=>51	-0.796
	Education level of household head	Illiterate	-0.993
		Lower primary (1-4)	1.820
		Higher primary (5-8) and above	0.277
	Household head able to work	Yes	0.274
		No	-2.675
	Household size	5 persons or less	0. 841
		Above 5 persons	-0.960
Natural capital (NC)	Land holding size in ha	<0.25	-1.138
		>0.25-0.375	-0.618
		>0.375	1.294
	Land quality (as perceived by head of the household)	Infertile/degraded	-1.223
		Fertile	0.413
	Access to irrigation water	Yes	3.680
		No	-0.385
Social capital (SC)	Any HH member participating in self-help organization	Yes	0.348
		No	-2.224
	Any HH member participating in farmers development group	Yes	1.132
		No	-1.349
	Any HH member participating in farmers` cooperatives	Yes	2.252
		No	-0.478
	Any HH member participating in *kebele* leadership/political activities	Yes	1.214
		No	-0.513
Financial capital (FC)	Any household member participating in HABP	Yes	1.996
		No	-0.564
	Access to credit	Yes	3.559
		No	-0.470
	Have saving in formal institutions	Yes	0.942
		No	-0.383
	Participate in off-farm activities	Yes	0.674
		No	-1.116
	Annual cash income from all sources in *Birr*	<5740	-0.686
		5741-10000	0.546
		>10000	2.187
Physical capital (PC)	Use Chemical Fertilizers	Yes	1.053
		No	-2.073
	Access to improved seed	Yes	1.553
		No	-0.981

Livelihood Asset	Variables	Categories	Weights
	Prepare and use compost	Yes	0.917
		No	-1.763
	House cover	Grass/ thatched	-1.032
		Corrugated iron sheet	0.367
	Livestock holding (in TLU)	<7TLU	-0.331
		≥7TLU	0.313
	Own water pump	Yes	2.093
		No	-0.093

Source: Own household survey, 2018

The asset index used in this study is just to weigh and capture the differences in asset holding among the households, graduated and non-graduated households.

3.6.2.3.3. Computing asset weights and asset index

After the selected variables were coded according to the preceding discussion, the MCA command was applied to each indicator of asset variables using Stata 13. According to literatures, asset and poverty indices encompass negative values which are not appropriate for poverty and inequality measurement (Swira, n.d). Thus, following the suggestion of Greenacre (2007), we adjusted the negative values by adding a value higher than the negative absolute values.

Following Booysen *et al* (2008), the equation used to calculate a composite asset index score using MCA for a household is:

$$MCA_{Li} = R_{i1}W1 + R_{i2}W_2 + \ldots + R_{ij}W_j + \ldots + R_{ij}W_j \quad (1)$$

Where MCA_{Li} is the ith household composite livelihood asset indicator score, R_{ij} is the response of household i to category j, and W_i is the MCA weight for category j of dimension 1. The MCA command applied using Stata 13 estimated an adjusted simple correspondence analysis on the Burt matrix constructed with the selected variables.

After having generated sub-component of livelihood assets index using equation 1, there was a need to standardize each as an index because we used a mix of binary and ordinal categorical indicators to construct this index. Accordingly, the indicators are standardized following the procedure adopted by Hahn, Riederer, and Foster (2008) from the one used for Human Development Index in measuring life expectancy index in developing vulnerability index. Thus, the equation for the standardization is:

$$SL_{index} = \frac{Li - min}{Smax - Smin} \quad (2)$$

Where, SL_{index} is the standardized sub-component livelihood asset index; Li is the initial component of livelihood asset index for the household i obtained by equation (1); and S_{min} and S_{max} are the minimum and maximum values of each sub-component index determined by MCA based on data from the district, respectively.

3.6.2.4. Analysis of food security statuses of households and measurement techniques

As food security is multi-dimensional which makes it difficult to capture with a single framework, different indicators are developed and used by various organizations and academician to capture its various dimensions. In spite of the development of many different food security indicators, there has never been a single measure that is "valid and reliable, comparable over time and space, and which captures different elements of food security" (Maxwell D. *et al*, 2013). All measurements have their own shortcomings and elements of complementing each other. Consequently, they are usually recommended to be used in combination for better results (Maxwell *et al* 2013, Perez-Escamilla & Segall-Correa, 2008). Accordingly, this study chose to use Household Self-Assessment Measure, HFIAS, and Household Food Balance Model (HFBM) to assess the food security status of graduate and current PSNP households. These tools capture elements of access, quantity, adequacy, quality and stability of food security dimensions.

3.6.2.4.1. Household Self-Assessment Measure of Food Security (SAFS)

Food security measurement includes not only technical quality but also people`s value judgment (perception) of having enough food they eat and cultural acceptability (FAO, 2003). Self-assessment Measure of Food Security (SAFS) is the most recently introduced measure of food security that is considered to be easy to use in Programmatic context (Maxwell *et al* 2013). It is used to capture the current food security status reported by the respondents and 'the change in livelihood status over a longer period of time' (Maxwell *et al*., 2013). Maxwell *et al.* (2013) used self-assessment measure by 'asking households to characterize the state of food security as compared to a "normal" (not good, not bad) year on a five-category scale: Food secure; slightly food insecure; moderately food insecure; very food insecure; extremely food insecure.

In this study, self-assessment measure of food security is used to capture households` perception of having enough food to eat after graduation and while in the PSNP. Retrospective questions were used to elicit graduated households` perception of their food security status from their own

production and purchase after their graduation. The measure is meant to capture households` subjective judgments of adequate food availability at household level without external support. As there has been criticism on its subjectivity, it is used here not as standalone indicator, but as a complement to other measures used in this study.

3.6.2.4.2. Household Food Insecurity Access Scale (HFIAS)

Household Food Insecurity Access Scale (HFIAS) is an experiential measure that captures households' behavior that suggests insufficient 'quantity, quality, and anxiety over insecure access' (Maxwell *et al*., 2013). According to Coates *et al.,* (2003), though other indicators are recently recognized, household level food insecurity has long been understood, measured, and responded to as a problem of insufficient food quantity. Household level food insecurity experiences has led to the assembling and developing of effective experience-based scales, Household Food Insecurity Access Scales (HFIAS). Efforts have been made to identify commonalities and differences in how household-level food insecurity experiences are expressed and managed across cultures. The idea of Household Food Insecurity Access Scale is that "…the experience of food insecurity access causes predictable reactions and responses that can be captured and quantified through a survey and summarized in a scale" (Coates *et al.,* 2003:1). Accordingly, Coates *et al.* (2003) developed and recommended the generic questions for assessing elements of household level food insecurity which were adopted in this study[=].

Application of HFIAS have generally been practiced with 12 months, 6 months, or 30 days recall period based on considerations of the extent to which food insecurity of a household is likely to vary over time; the purpose for which the data is used; and how respondents are able to remember and correctly reflect behaviors and attitudes they experienced (Coates, *et al.,* 2007). This study chose to use the shortest recall period, 30 days before the date of the survey, to obtain more accurate and reliable data from respondents, and to minimizing possible distortions made due to households' memory elapses.

Nine generic questions that could be applied cross culturally developed by FANTA with scores ranging from 1-27 were used by adapting to local language, *Afan Oromo*. The questions were asked about the occurrence of the condition with the recall period of 30 days to elicit 'Yes' or 'No' answer. If the answer was confirmation 'Yes,' frequencies of the occurrence of the condition in the past 30 days was asked that were characterized to one of the following three response categories:

1= Rarely (once or twice)

2= Sometimes (three to ten times)

3= Often (more than ten times)

Survey data was analyzed, and, based on Coates *et al*. (2007) suggestion, households were identified as: 1) Food secure; 2) Mildly food insecure access; 3) Moderately food insecure, and 4) Severely food insecure access.

3.6.2.4.3. Household Food Balance Model (HFBM)

The use of per capital dietary energy (calories) available is known as FAO method to assess food security at national level by using Food Balance Sheets and calorie intake variance data derived from household income and expenditure survey (Freze-Escamilla & Segall Korrea, 2008). This indicator was first adopted by Degefa (1996) to household level and termed Household Food Balance Model (HFBM) which was then after used by other researchers in the field of food security in Ethiopia (Mesay, 2009; Mesay 2012; Meskerem & Degefa, 2015; Furgasa & Degefa, 2016). To estimate per capital food calories available at household level, net food available at the household level in the year of interest is converted to kilo calories, then divided by the standard minimum kilo calorie at national level, and again divided by the number of households and days of the year of interest.

This model captures the availability/the quantity supply dimension of food security. It has its own limitation which is attributable to memory elapse of respondents to accurately recount food grain obtained and expended over time (Mesay, 2009). It is also not the direct indicator of calorie distribution at individual level. However, it provides a useful proxy indicator of food calorie supply at a household level that covers a relatively longer period of time. It is particularly important if it is used in conjunction with models that covers shorter period such as HFIAS, as it is done in this study.

Hence, this model is used here to analyze per capital food calorie available at household level by converting reported major grains available at household level to kilo calories by using food composition table prepared by Ethiopian Health and Nutrition Institute (EHNI, 1968-1997). The adopted model specification for the household food balance is:

$$Nij = (Pij + Dij + PSNPij + FAij + FPij + FBij) - (Hij + Sij + RGLij + SDij + Sij)$$

Whereas:

Nij= Net food available for household i consumption in year j

Pij= Total crop produced by household i in year j

PSNPij= Total food transfer from PSNP to a household i in year j (cash transfer converted to equivalent grain amount)

FAij= Total Food-aid transferred to a household i in year j

FPij=Total food purchased by a household i in year j from its own income sources

FBij= Food borrowed/gifts from relatives/friends by a household i in year j

Hij= post-harvest losses out of total output produced by household i in year j

Sij= Amount of grains utilized for seed by household i in year j

RGLij= food grain loan paid by household i in year j

Sij= Sold out food crop by a household i in year j

The per capital food calorie available at a household level was obtained by dividing the total calorie available at a household by the number of households, and then divided by 365.25 days. Based on the recommended food calorie level per adult equivalent of 2100kcal/per person/day for Ethiopia (Messay, 2011), households with per capital food kilo calorie supply ≥ 2100 were categorized as food secure, and those with less than this threshold were considered as food insecure.

The investigation of food security statuses of ongoing PSNP beneficiaries was required because it provides information on household's ability to accumulate assets in order to graduate from PSNP. If a household is food insecure while receiving PSNP transfers, there is no way of saving and accumulating assets to attain graduation benchmarks. Furthermore, the analysis also helps compare and contrast the food security status of graduated and ongoing PSNP households with and without PSNP transfers.

3.6.2.5. Binary logistic regression

Determinants of graduated households remaining food secure after graduation was analyzed using binary logistic regression. Households were identified as food secure, and food insecure based on per capital food calorie available calculated based on HFBM discussed above.

Following Gujarati (2003), the functional specification of logistic model was as follows:

$$Pi = E(Y=1|Xi) = \frac{1}{1+e^{-(\beta 0+\beta 1 Xi)}} \quad (1)$$

Where Pi= is the probability of being food secure (which falls between 0 and1); Y=1 means graduated household is food secure; Xi= a set of explanatory variables; and i is the i^{th} household.

For ease of interpretation this can be expressed as:

$$P_i = \frac{1}{1+e^{-Z_i}} = \frac{e^{Z_i}}{1+e^{-Z_i}} \quad (2)$$

Z_i is a function of n-explanatory variables which can be expressed as:

$$Zi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots \beta_i X_i$$

Where β0 is the intercept, β1, and β2… βi are slope coefficients, and Xi is the explanatory variables of the model.

The probability of being food secure (P_i) is non-linearly related to explanatory variables Zi; that is (Xi). There are two requirements in logistic regression: (1) as Xi increases, Pi=E(Y=1|x) increases but never steps outside 0-1 interval, and (2) the relationship between Pi and Xi is nonlinear', that is, it approaches zero at smaller rate as Xi decreases, and approaches 1 as Xi increases (Gujarati, 2003:594).

However, P_i is nonlinear not only in X but also in β's. Therefore, we cannot use the usual OLS to estimate the parameters. Thus, it can be linearized as follows:

If the probability of being food secure (P_i) is given by equation 2, then the probability of not being food secure (1- P_i) is:

$$1 - Pi = \frac{1}{1+e^{Z_i}} \quad (3)$$

Therefore, by combining equation 2 and 3 we can write:

$$\frac{P_i}{1-P_i} = \frac{1+e^{Z_i}}{1+e^{-Z_i}} = e^{Z_i} \quad (4)$$

Now, $\frac{Pi}{1-Pi}$ is the odds ratio; that is, the ratio in favor of the graduated household being food secure to the probability that a household will not be food secure.

The natural log of equation 4 is: Li=ln ($\frac{Pi}{1-Pi}$) =Z_i

$$=\beta_1+\beta_2X_i \quad (5)$$

Finally, the logit model to be estimated or equation 5 can be written as:

$$Li = \ln\left(\frac{Pi}{1-Pi}\right) = \beta_0 +\beta 1+X_1+\beta_2X_i+u_i \quad (6)$$

Where Li is the log of odds ratio which is linear in both X and parameters; βs are coefficients; X is explanatory variable, and u is disturbance term. As the disturbance term in logit model is heteroscedastic just as in the case of LPM, Weighted Least Square (WLS) is used instead of Ordinary Least Square (OLS). The estimation of disturbance term is given as:

$$\hat{a}^2 = \frac{1}{NiP\hat{}i(1-P\hat{}i)} \quad (7)$$

Finally, the equivalent of F-test in the linear regression model, likelihood ratio (LR) is used to test model fit. Predictive variables included in the regression model were tested for multi-co-linearity using variable inflation factor (VIF) tolerance test. Moreover, continuous variables included in the model were tested to see whether they are linearly related to the log of the outcome variable, food security status of a household.

3.6.2.5.1. Variables definition

A. Dependent variable

The dependent variable (Y) is food security status of a household after its graduation categorized based on per capital kcal available at a household level obtained from HFBM. A household was termed ‘food secure’, and coded 1 if the per capital food calories available at household level was ≥ 2100, or ‘food insecure’ and coded 0 if the per capital food calories calculated at the household was below 2100 kcal.

B. Explanatory variables

Independent variables were drawn from literatures, program interventions and qualitative exploratory works in the field. As it has been stated in FSP (2010-14), graduated households continue to access FSP support from extension services and financial institutions in order to enable

them to further build their assets to become sustainably food secure. Thus, factors that are defined to be graduation enablers are considered here as determinants of households remaining food secure after their graduation.

Gilligan *et al*. (2007) found positive relations between household assets such as landholding, livestock, household size, education level and household`s food security status in Ethiopia. Likewise, Ellis and Bahiigwa, (2003), emphasized that rural poverty is strongly associated with the shortfall of land and livestock holding and lack of nonfarm opportunities. Moreover, Sabates-Wheeler *et al.* (2012) identified land holding size and its fertility level, access to irrigation water, location and initial household asset base as PSNP beneficiary specific graduation enablers or constrainers. Food security program in Ethiopia also emphasizes improving land productivities through use of different agricultural technologies and households' access to irrigation water through public irrigation infrastructure development, traditional irrigation and water harvesting at household level.

Therefore, households` land holding size is taken as an important variable for analysis. Data collected on land included total land held and land cultivated. In this analysis, land held in hectare is used because land cultivated was inconsistent with land held. More than that, the use of total land held has the advantage of capturing land used for grazing. Households` access to irrigation water was also considered as a dummy variable (coded 1 if a household access to irrigation water, 0 otherwise), captured by identifying the type of irrigation (traditional or modern that include water harvesting at household level for crop production).

Productive assets such as livestock holding, converted into Tropical Livestoc Unit (TLU), and access to inputs such as fertilizer and improved seeds that have important effect on households' food security status were considered. Access to inputs was assumed to be captured by households` participation in regular extension services through which information and these products are delivered.

Households access to financial assets is assumed to positively contribute to household`s improved food security status. Accesses of sampled households to financial resources were mainly from food security program, off-farm and on-farm activities. As cash income from on-farm activities could be indirectly captured by land and livestock holding, annual cash income from off-farm activities and HABP were considered as important predicting variables. HABP is a food security program component that includes credits/loans, saving and training services provided in collaboration with

microfinance institutions sponsored by government and other stakeholders working with the government. Thus, all serves are considered as a package for households to diversify their income. Sabates-Wheeler *et al*. (2012) also suggested that skill training and credit from HABP and extension supports as graduation enabling factors. According to Devereux and Ulrichs (2015) 'failure to successfully link the PSNP and HABP was considered to be one of the main obstacles to graduation' in Ethiopia. Thus, HABP is one of the important variables that are assumed not only to enable graduation but also supports graduated households not to fall back.

Therefore, access to HABP is used as dummy variable including extension services and all other components of program package, and coded 1 if a household had access to any component of it, 0 otherwise. In this study, annual cash income from all off-farm activities reported to have been generated by a household (in *Birr*) is also considered as an important financial variable for determining graduated households` food security status.

In their study of determinants of graduation which is resulted from households being 'food secure,' Yibrah (2013), Berihun and Hayalu (2015) found that household characteristics such as household`s head sex, age, education level, and household`s size to be important determinants of household graduation from PSNP. Thus, among different variables related to human capital, this study considered factors such as head sex, head age, head education, and household size as important determinants of graduated households' food security status. In general, 10 predictors are included in the binary logistic regression analysis in this study.

Table 3.3: Summary of variables included in the model

Variable name	Description	Variable type
Dependent variable		
HH food security status after graduation defined in terms of food kcal available	Household had attained ≥2100 kcal/person/ day for all its members (coded 1 if obtained ≥2100 kcal; 0 otherwise)	dummy
Explanatory variables		
$\mathbf{X_1}$: Sex of household head	1= male, 0= female	dummy
$\mathbf{X_2}$: Age of household head	Age of a household head in years	continuous
$\mathbf{X_3}$: Education level of household head	Households education status categorized in terms of education level: Illiterate =0; Read and Write=1; Some elementary school and above=3	categorical
$\mathbf{X_4}$: Household size	Number of household members eating from same plate	continuous
$\mathbf{X_5}$: Land held	Total land held in m^2	continuous
$\mathbf{X_6}$: Livestock holding	Household`s livestock holding size in Tropical Livestock Unit (TLU)	continuous
$\mathbf{X_7}$: Household`s access to HABP	1=if any household member participates in household asset building program; and 0, otherwise.	dummy
$\mathbf{X_8}$: Household`s access to irrigation	Households access to irrigation water from any source (schemes, water harvesting, pumping ---) coded: Yes= 1; No=0	dummy
$\mathbf{X_9}$: Household`s annual cash income from off-farm activities	Household estimate of annual cash income from off-farm activities in Birr in the previous year	continuous

3.7. Ethical considerations

The researcher obtained entry permits from district administrator, by presenting supporting letter from Addis Ababa University, College of Development Studies. Supporting letter from district administrator was also presented to the sample *kebele* administrators informing the purpose of the researcher for being there. All the participants were informed the purpose of the study, the confidentiality of their identity for the information they provided unless they consented, and their rights to withdraw from the study any time they found it necessary. The study was proceeded with their consents. Moreover, the researcher attempted to make full acknowledgement of all materials,

ideas, thoughts and words borrowed from the work of others. The findings are presented in honest and complete fashion based on data collected without intentionally misrepresenting or fabricating data to support a particular conclusion.

Chapter 4: Stakeholders' Perspectives on Graduation from PSNP

4.1. Introduction

This Chapter mainly explores key stakeholders' perspectives on graduation exercise and achievements so far. The purpose of the Chapter was to investigate whether the food security programs were implemented as envisaged in program design and how the intended goal of graduation was met. The Chapter first presents the overall graduation performance from national to the case study district and the description of study households' types and demographic characteristics as starting point. Then it attempts to uncover different stakeholders' viewpoints on the graduation exercises and achievements. Both qualitative and quantitative data were analyzed and triangulated. Key stakeholders in this case study refers to PSNP participants, both graduates and on-going PSNP households, program implementers, particularly food security program coordinators and experts at regional, zonal, and district levels in Oromia; and FSTFs at Chiro district and sampled *kebele*s. It argues that though the vision of making predictable transfers for food consumption need of the targeted households was more or less achieved, the expected outcome of enabling targeted households to become food sufficient with buffer assets to resist modest shock was not met due to irregularities in program implementation.

4.2. Description of graduation performances

4.2.1. Graduation performance at national and regional levels

Government of Ethiopia has the intention of gradually reducing and finally ensuring food security for chronic and acute food insecure rural population. As a measure of the success of food security program, graduation was introduced and practiced since 2008. Accordingly, as can be seen from Table 4.1, hereunder 3,673,397 participants graduated from PSNP until 2015 at national level (MoANR, 2010/2018).

Table 4.1: Clients graduated from PSNP in eight years (2008 - 2015)

Regions	Graduated clients in different years								Total
	2008	2009	2010	2011	2012	2013	2014	2015	
SNNP	15791	23178	17088	110426	275485	302908	259895	117874	1,122,645
Amhara	51390	156785	19694	401004	427686	67812	10331	3863	1,138,565
Tigray		21941		69105	141435	401733	90000	28919	753,133
Oromia	1825	160470	1350	3332	67137	42278	327151	42624	646,167
Dire Dawa			3010	897		3488	5492		12,887
Harari					1925	1138			3,063
Total	69006	362374	41142	584764	911743	818219	692869	193280	3,673,397

Source: MoANR, Employment Creation and Food Security Sector (2010 E.C/2018)

The upper caseload of Food Security Program was 15 million, as estimated by NCFSE based on the 2002 drought induced needy population (MoARD, 2009). The caseload boundary for PSNP was also estimated to 8.3 million people in Amhara, Oromia, SNNPR, Tigray, Dire Dawa, and Harari (MoARD, 2009). When the number of graduate clients in Table 4.1 is compared to the upper limit of the estimated PSNP clients, it accounts to 44.3%. However, the number of PSNP households increased from 5,136,298 (MoARD, 2004:105) estimated in 2004 to 6,667,529 in 2008 (MoFED, 2008) and to 8.3 million in the third phase, and subsequently to 7, 997, 218 in the fourth phase plan of 2015/16 (MoANR, 2015) in eight regions of the country. Data in Table 4.1 also shows that 646,167 clients in Oromia graduated up to 2015, which was 43.3% of 1,492,632 clients in third phase of the PSNP. However, the number of PSNP clients in Oromia also increased by 16% and reached 1,733,628 in the fourth phase of the program.

According to the qualitative information obtained from Employment Creation and Food Security Directorate of MoANR, the major reasons for increasing number of PSNP beneficiaries during these times at national level were due to the expansion of the program in Afar and Somali regions to include new chronically food insecure beneficiaries, and the fall of acute food insecure population to chronic food insecurity in chronically food insecure districts. The reason for the increased number of PSNP beneficiaries in Chiro district, according to the information from the district Food Security Desk, was attributed to both acute caseload population falling into chronic food insecurity and expansion of the program to new chronically food insecure *kebele*s,

In general, in spite of reported number of graduated clients indicated above, both at national and regional levels, the number of chronically food insecure people joining the PSNP was increasing

up to phase four of the program. It should be noted that the addition was not only due to the expansion of the program to those chronically food insecure population in Afar and Somali regions, but also due to the fall of acute food insecure people in other regions into chronic food insecurity than improving their food security status through other food security interventions as envisaged in Food Security Program.

The livelihood and food security status of graduated households after graduation was not well known. It was only in 2018 that MoANR conducted limited rapid assessment in 12 sampled districts of four regions (Oromia, Amhara, SNNPR and Tigray), three districts from each region. The assessment report revealed that there had not been any follow up study on graduate households in all the regions before that assessment. The assessment found that there had been a number of graduates who relapsed back after their graduation in sampled districts except those in Adewa district of Tigray region. Though data for Amhara was incomplete, percentages of graduate households who relapsed in Oromia, SNNR and Tigray were 63%; 93.5%, and 16.75 %, respectively (MoANR, 2018). In Amhara 15,213 graduated households in three districts were relapsed (MoANR, 2018)).

Table 4.2: Elapsed back graduated households in sampled districts of four regions

Regions	No of graduates	No. of graduates readmitted to PSNP	Supported by contingency/emergency food aid	Total relapsed	Percent of graduates relapsed
Oromia	11310	199	6914	7113	63
SNNPR (3 districts)	33054	30,912	30,912	30912	93.5
Tigray	97402	11540	4776	16316	16.75

Source: Computed from MoANR, (March, 2018)

As can be observed from Table 4.2, in Oromia, out of the 7113 (63%) of the households whose food security status was declined after graduation, 6914 (97.2%) households were assisted by emergency food aid, whereas only 199 (2.8%) households were readmitted to PSNP. In fact, the sample is too small to be representative of the whole region. However, it is an indicative that the great majority of those who relapsed were assisted with emergency food aid.

4.2.2. Graduation performance in Chiro district

Although graduating households was started in 2008 in Oromia, Chiro district reported to have conducted graduation from 2010 to 2015. In 2009 the total PSNP beneficiaries were 24,746 in the district. It was reported that 2885 beneficiaries were relocated in other districts, Boke and Daro Labu, within West Harerge Zone in the same year. Except in 2011, there was graduation in the years that followed 2010 to 2015 (see Table 4.3).

Table 4.3: Graduation performance in Chiro district (2009-2014)

Years	Number of PSNP clients	Number of PSNP clients graduated
2005	24,746	-
2006	24764	-
2007	24764	-
2008	24764	-
2009	24764	-
2010	23461	1303
2011	23461	0
2012	22715	746
2013	19440	3275
2014	19,440	6109*
2015	19255**	-
2016	30,381	-
Total	30,381	11433

Source: Compiled from Chiro District Graduation bulletin, brochure and documented reports
*Includes some households graduated in 2015
**This number was raised to 30,381in the fourth phase of the program

According to data in Table 4.3, out of 21861clients originally targeted for the PSNP program, excluding those who relocated, 11433 (53%) clients were graduated in years 2010-2015. However, the total number of beneficiaries in the district rose to 30,381 (2375 direct support, and 28,006 Public Work participants) in 2016 as the caseload, or acute food insecure who became chronic in the previous subsequent years. The PSNP was also expanded to the remaining 13 *kebele*s in the district. Thus, the program area and beneficiary coverage increased by 48% and 46%, respectively. The proportion of the number of newly admitted PSNP beneficiaries to the number of graduates was found to be 149%.

4.3. Description of study households

4.3.1. Description of study households by graduation status

The question of why PSNP households failed to achieve sustainable graduation arose out of the hypothesis that: 1) The majority of the PSNP households failed to graduate from the program; 2) Those who graduated have not sustained their gains after their graduation. Therefore, before exploring reasons for households' failure to achieve graduation and sustain their gains after graduation, it would be better to understand the proportion of graduated and non-graduated households in the district up to the end of the phase III of PSNP program.

As already indicated in the preceding discussion, in Phase IV of the PSNP, 30,381 clients (28,006 public works, and 2,375 direct support) were targeted, out of which 35.6% were public work clients who continued from the previous phases. Thus, 18,353 (60.4%) clients were new entrants to the program. When we look at the total number of households targeted for phase IV in the district, it amounted to 9,296 households (6,573 public work, and 2,723 direct support), which indicates that the average household size targeted for the program was 3.3 persons.

The household survey conducted found that out of 283 sampled ongoing PSNP households, 71 (25.1%) were non-graduated households who continued from the previous phases in the study *kebele*s. The data was originally obtained from households` self-report, but it was learned later that some households deliberately concealed or could not clearly remember the year they joined the program. Thus, detail work was done to find their names with the year they joined from rosters found at district level.

Table 4.4: Sampled PSNP IV households' status in the program

Household types in the program	N	Percent
Non-graduate households (joined before Phase IV)	71	25.1
New clients	212	74.9
Total	283	100

Source: own survey data, 2018

The secondary data obtained from the district and the sample household survey on the current clients presented in Table 4.4 indicated that households who continued from the previous phases

of the program were not the majority as previously assumed in phase IV of the program. However, both the secondary and household survey data revealed that the number of households who continued from the previous program phases was not small as compared to program vision for achieving a tremendous graduation outcome. Graduated households who were proportionally sampled and included in this study were 94 households. Therefore, sampled households for this study are disaggregated into ongoing PSNP households, which comprises non-graduated and new entrants/clients, and graduated households.

4.3.2. Description of basic characteristics of study households

According to the sample survey result of this study, out of 377 households, 306 (81.2%) households were male headed and 71 (18.8%) households were female headed households. The mean age of all households was 40 years with the minimum age being 18 and maximum 75. Among all household heads, 301 (79%) were married, 23 (6%) were never married, 43 (11.4%) were widowed, 8 (2.2%) were separated/divorced, and only 2 (0.5%) were polygamous. The mean household size for all households was 5.47, with the mean dependency ratio of 1.47. Moreover, 239 (63.4%) were not literate. Ethnically, 354 (94%) of the sampled households were Oromo, whereas 23 households (6%) were Amhara. The majority of household heads, 319 (84.6%) were Muslim, and only 58 (15.4%) households were Orthodox Christian.

Table 4.5: Basic characteristics of sampled households

Households socioeconomic variables	Number of households by graduation status		
	Graduates N=94	Ongoing N=283	Total N=377
Mean age of heads of households	43	39.3	40.3
Sex of heads of households:			
Male	84	222	306
Female	10	61	71
Heads of households' education status			
Literates	34	104	138
Illiterates	60	179	239
Marital status of heads of household:			
Married	79	222	301
Never married	9	14	23
Widowed	5	38	43
Divorced/separated	1	7	8
Polygamous	0	2	2
Mean household size	6.2	5.2	5.47
Mean dependency ratio	1.33	1.5	1.47
Ethnicity			

	Oromo	81	273	354
	Amhara	13	10	23
Religion				
	Muslim	79	240	319
	Christian (Orthodox)	15	43	58
Main occupation of head of household:				
	Farming	93	271	364
	Others (causal labour, petty trade…)	1	12	13
Land holding size (ha)		0.42	0.36	0.37
Livestock ownership (TLU)		0.83	0.90	0.88

Source: Own survey, 2018

The main occupation of 297(96.5%) of all sample households was farming, whereas the remaining 3.5% were engaged in causal labour, petty trade and others as their main livelihood (see Table 4.5). The mean land holding size of all households was 0.37 hectares (0.42 for graduates, and 0.36 for ongoing PSNP households). Moreover, the mean livestock holding size of all study households was found to be 0.88 TLU (0.83 for graduates, and 0.93 for ongoing households).

4.4. Households perspectives on graduation

4.4.1. Perspectives of graduate households on their own graduation

Four focus group discussions were held with graduate households in all the four sampled *kebele*s to learn about their graduation experiences. The guiding question was open-ended and they were asked to tell how they were graduated from PSNP program, what was their livelihood and food security status then after, and what supports they received from food security program after they exited the program. Questions were probed while the discussions were on progress just to have clarities on what they were saying and to know whether they all agree or not on the points raised.

The discussions with graduate households revealed mixed results on their graduation experiences. To summarize the findings from the FGDs, I have categorized their responses into three categories based on their perspectives on their graduation exercises. The first category of their response was that the majorities of the households were prematurely removed from the program and faced difficulties in feeding their households then after. The second category of their responses was that there were households who were unfairly removed. The third category was that there were households whose graduation was fair and appropriate.

The first categorization revealed that most of the graduated households did not know how they were evaluated to graduate. During graduation, they were told what they got after joining PSNP,

but not how adequate was their gains to become food sufficient. They acknowledged that some of them received limited amount of loans and made some improvements before graduation. But they believed that the improvements they made were not adequate enough to be year-round food sufficient. Moreover, they complained that the promised continued support after their graduation was not realized and thus their household sustained life with difficulties. They believed that names of households were read out in *kebele* meeting and told that they were graduated. The criterion was not clear and transparently communicated. Particularly graduates in Merewa Rebsu *kebele* emphasized absence of transparency in the graduation process. They explained that had they known who graduated and how beforehand, they would have adjusted some unfair graduation because they knew each other and even voluntarily leave a place for a person who was more vulnerable than graduating him in want.

The second response category was the idea of unfairness. They believed that there was no difference between some households who remained to continue benefiting from the program and themselves. They acknowledged the admission of new entrants to the program after their graduation. They had the idea that they all were the same so that they should not have been graduated. This idea was critically emphasized in Medhicho-2 FGD with graduated households. They complained of lack of transparency on their graduation and wondered how some others continued to benefit from the program when they were removed. However, when they were asked what happened to them, negative or positive, after their graduation, the majority of them answered saying 'nothing.' They said that they worked day and night and feed their household members. Their children attend school regularly, and there was no instance of malnutrition on their children. When asked what they were doing for living and to compensate for the PSNP they missed, they said that they relied on pottery and petty trade. However, the discussion with *kebele* FSTF revealed that many of graduates were benefiting from food aid because of the continued drought since their graduation. In the Medhicho-2 FGD, except one participant who was considered to be readmitted because he had no land, the others believed that they were not neither worse nor better than those households in PSNP program. They were angry because they thought that there were others who were as poor as they were but allowed to continue benefiting from PSNP.

The researcher found and talked to a wife of the person who in one FGD identified as an example of unfairly removed from the PSNP program. She told that her husband was not around because he left for "*kuli*" work in Bedessa. The household was graduated in 2010. No support was given to the household after graduation. She related:

> Our condition when we were in PSNP was better, because we feed. Then after, we decreased. Sometimes we get, some other times we do not get from harvest due to erratic rain fall. We go for '*kuli*' to get something for our daily consumption; our farm land is not prepared well; we send children to school; and there are other expenses. We go to Baddessa to work on others` farm to feed our children.

The third categorization was that there were households who were voluntarily left and should actually graduate. These graduates were year-round food sufficient unless there was major drought when they required food aid. They believed that these people were at least better than the newly admitted PSNP beneficiaries. Graduated households who appeared for FGD in Wachu Ifebas *kebele* reflected the perception in this category. The FGD held with graduates in this *kebele* informed that graduated households were better than the newly targeted households and those who continued to benefit from PSNP. Unlike one member of the group who was recognized losing a cow and calves after her graduation, others agreed that they were food sufficient, and able to feed and send their children to school regularly.

When asked how they graduated, they informed that they were trained, organized in groups, obtained 4 oxen in a group of 7, and transferred the same type of in turn to others. Some others obtained loan, engaged in petty business, saved and improved. However, they raised the concern that they were losing what they accumulated after their graduation due to frequent droughts. Though they believed that their graduation was fair as compared to the poverty level of newly admitted households to the PSNP, they complained that they were not receiving the promised support after their graduation. They said that *kebele* officials did not take their requests for support well after their graduation. Even though they had complaints of not having adequate, they believed that they were not as poor as before: "*Amma bakka duri hin jirru; fooyyee qabna.*" Nevertheless, they informed that they could not withstand any kind of shock if it happened without external assistance. They indicated that they might withstand some production reduction due to rainfall failure before grain-filled crops are fully matured.

Box 1: A case of successful graduate household

My informant was 28 years old, educated up to grade 8. He was married and with 2 children. He owned 0.375 hectare of land, engaged in mixed farming, livestock fattening, non-farm activities such as masonry and gabion works, and pipe lying after his graduation. He joined PSNP in 2008 and graduated in 2014.I asked him to explain how he became food insecure, his experience as PSNP client and graduated household.

He informed me that he had no resource of any kind except his labor when he joined PSNP in 2008. He got 0.375 hectare of land of his father who went for resettlement leaving him his own land. After he joined PSNP, he obtained training on income generating activities and received 1500 Birr as loan. He fattened a bull, sold it and paid the loan, and bought another bull by the profit he made on the fattened bull he sold. He continued fattening and doubled the bulls then after.

Moreover, he also got the opportunity to get skill training on gabion work and then after worked as a foreman in PSNP public work. The skill he obtained then helped him to work for many other people to gain income. He continued doing livestock fattening. Moreover, he improved his farming practices and started using farming technologies. He did not use fertilizer before he heard about composite preparation to be used as fertilizer. When he prepared composite and applied it to his farm for the first time, he was able to harvest 11 quintals of sorghum from 0.125 hectares in the same year. Thus, then after he got the capacity to buy fertilizer and use it. He improved his farm productivity and his income. As he informed me that he shifted his attention to using fertilizer than composite after his income was improved. I probed a question to explain the reason for him not to continue using composite. He explained that composite preparation takes time and needs much laboring. As he explained, he engaged in different off-farm activities and did not like to depend on one crop but planted onion for market during both *Arfasa/belg/* and *Genna/Meher/* seasons. He said he did not depend on sorghum or maize which takes long maturing period. Planting onion was the best farming venture than cropping in his *kebele*, as he explained.

When asked to give his opinion on why others had not succeeded as he did, he explained that the problems were multiple. The first one was limited land holding; the others were related to beneficiaries' attitude and personal efforts. He expounded:

> No one says enough to him/her supports provided from state. If I`m given, I`ll also receive supports. There is lack of engaging oneself on one`s job in a planned way. Some people lack determination to work hard and add upon what they have. There are limitations in attending meetings called by DA, participating in experience sharing and implementing the experience of others. As I`ve told you, I was not able to buy fertilizer. It was after I heard about composite that I started preparing composite, and then after I`m improved and able to purchase fertilizer.

Regarding the status of graduate households, he stated that there were mixed issues. There were those who able to support themselves; there were also who should have never been graduated because they did not have land or have very small land, but with large family size. In fact, graduated households were at least better than the current beneficiaries. They complain because as he stated: "*Kennan namaa hin quufamtu*"- 'No one contends gifts from others." Some others who did not graduate after they got some livestock transfers reduced by changing them- "*Ni qashabee gadi buusa*."

4.4.2. Lessons from case study graduate households

It can be learned from the case studies that various factors play roles in determining households` success and graduation. The first important factor households emphasized was land holding and holding size. In all FGDs and individual interviews, scarcity of land and land holding size was

discussed as the major constraint. Access to land was either lacking, or holding size was inadequate. As it can be understood from the above-mentioned informant explanation, he was landless and was assisted through food aid and PSNP before his father left for settlement. The land he obtained from his father who left for resettlement was a starting point for his pathway to success. He started by improving the productivity of the land he held by applying composite, then adopting chemical fertilizers and planting crop types that cope with climate change and variability. The second important factor was access to information to improve agricultural production and productivities.

Moreover, the case studies revealed that participation in *kebele* meetings, in farmers' development groups and in trainings provided by Development Agents (DA) were the sources of information. However, most poor households, particularly those who had no adequate land but depended upon daily labor and petty trade for subsistence did not actively participate in *kebele* meetings, farmers' development groups, and different trainings provided by DAs.

Besides, practical application of different farming practices and adoption of technologies among poor households were varied. Successful households used information they obtained through different mechanism to access technologies and implement on their individual farming plots. Some others, though they may have information, did not apply due to lack of motivation, financial resources, or time. Not all households who required loans were able to acquire it as a result of which adoption of technologies was lacking. Many households who engaged in daily labor for income generating did not have time to attend regular trainings provided by DAs, to focus on their land management, to prepare manure, to prepare their land for timely planting.

It could also be deduced that as land holding was almost lacking, skill training and access to labor market was found important to improve households' incomes. The case study household documented in Box 1, for example, obtained skill training as a result of which he was able to work as a foreman on PSNP public works, on other government projects, and engaged on gabion work for individual households to generate additional cash income.

Furthermore, as the case study household explained, personal efforts and innovative thinking was crucial for households` success. The successful case study household was energetic young man who had innovative thinking. He was determined to graduate from PSNP and focused on improving his farming practice and income generating activities. He shifted from long cycle crop to early maturing cash crop. He prepared onion seedling with the water he harvested early before the

expected *belg/arfas* rainy season, waited until he was sure that the rainfall was adequate, and then transplanted the seedling to the land he prepared. He harvested twice in a year and got adequate income for his household. He understood that growing a long cycle sorghum which takes two rainy season time to mature was not viable farming activity to sustain life on such small land holding size.

4.5. Results from graduate households' sample survey

To expand on and supplement qualitative data obtained through FGD and case studies summarized above, household survey was conducted to understand the perception of graduate households on their graduation from PSNP and the process through which they had been supported to be able to graduate. The focus was made on how services and products designed in the program to ensure households graduation was understood by the participants, and how it was delivered.

4.5.1. Transparency and accountability of graduation process to the clients

One of the fundamental principles of graduation is transparency and accountability. This is very important, because prematurely graduating households who actually need PSNP negatively affects households` livelihood and their food security status and there by induces social distress among the community. That is why the graduation guideline issued by the government puts seven core principles, seventeen steps of applying graduation bench marks, and six safeguarding mechanisms in implementing graduation (see annex 5). Lists of households proposed for graduation are expected to be made public 6 months before decisions made at community FSTFs level, and the community FSTFs display proposed lists at least for a week before it is endorsed by *kebele* general meeting. Dated lists are expected to be posted every six months according to the guideline.

However, qualitative information from graduated households was different from these principles of transparency. Many of the households knew that they need to graduate. Some of the households also indicated that they had the intention to graduate than to be called 'dependent upon hand-outs'. However, not all households had plan to graduate beforehand.

Table 4.6: Households intention (plan) to graduate before graduation

Responses	Number of HHs responded	Percent
Yes	44	46.8
No	50	53.2
Total	94	100

Source: Own survey, 2018

According to household survey result in Table 4.6, about 47 % of households had plans to graduate from the program before their graduation. However, the majority of graduated households (53%) were had no intention or plan to graduate.

Moreover, the household survey on graduated households' awareness of their being nominated for graduation before their graduation revealed that only 8.5% of them were aware of it. The remaining 91.5% of the graduated households reported that they were not aware of their being nominated for graduation before their being announced 'graduates' (Table 4.7).

Table 4.7: Awareness of graduation from PSNP before graduation

Responses	Number of HHs responded	Percent
Yes	8	8.5
No	86	91.5
Total	94	100.0

Source: Own household survey, 2018

The finding is consistent with the information obtained from FGDs. The process of evaluating and selecting households for graduation was not clear for most graduate households. In some FGDs with graduated households, they mentioned some graduated households by name and compared them with those in the PSNP and conclude that the graduation decision was not fair. The household survey also shows that the great majority of graduate households believed that their graduation was biased. As Table 4.8 depicts, only 15% of the sampled graduate households believed that their graduation was fair (out of which 8.5% households left the program by their own will, and 6.4% accepted the graduation decision as fair).

This finding on the transparency of graduation is consistent with the findings of Hoddinnot *et al.*, (2015) who reported the summary findings on evaluation of the impact of Productive Safety Net Program at national level. They clearly indicated that though there were few exceptions, graduate households did not know why they were nominated for graduation, how their asset holdings differ from those who did not graduate, and many respondents believed that there were few instances where graduated households were better than the PSNP households.

Table 4.8: Households perception on their graduation

Households perceptions	Number of HHs affirmatively responded	Percent
I was self-graduate	8	8.5
I was ready to graduate and accepted my graduation decision	6	6.4
I was prematurely graduated	75	79.8
Other reasons	5	5.3
Total	94	100

Source: Own survey, 2018

As could be observed from Table 4.8, the majority (79.8%) of the graduate households reported that they were prematurely removed from the program. About 15 % of them accepted their graduation as fair (8.5% self-graduated, and 6.4 accepted the decision) whereas the remaining 5% of them had other reasons, probably removed as a result of inclusion error, a case which was reflected during FGDs. The result is consistent with the findings of Sabates-Wheeler *et al.* (2012) who reported the mixed feelings of graduated households of which some were self-graduated and some did not want to lose the benefit; yet the qualitative survey found about half of them were not ready to graduate at the time they were nominated.

The graduation guidelines, both the 2007 and the updated version in 2013, have actually put safeguarding mechanisms to minimize risks related to premature graduation as a result of lack of clarity and transparency. The safeguarding system includes community awareness creation to support the graduation process, appeal system, monitoring the food security condition of graduate households, allowing graduates to participate in HABP on priority basis after graduation, readmitting to PSNP if a graduate household becomes food insecure afterwards (MoARD, 2013).

Regarding the safeguarding mechanisms, particularly appeal system and decisions, the focus group discussion with graduate household informed that the probability of being reconsidered was less.

In one FDG it was expressed, "*mariin guyyaadha, murteen halkanii, maal goona*?" Means, '*discussion is in a day light, but decision is in a dark night; what shall we d*o?" Thus, they did not want to appeal even though they knew the appeal process, which is consistent with what Sabates-Wheeler *et al* (2012) documented. According to this study, many graduate households who should have appealed did not have confidence of obtaining the right decision for their appeals and thus remained reserved from appealing. Kebele FSTF acknowledged that there were graduated households who could be eligible to be readmitted to the Program, yet they were constrained by resources allocated to the District.

According to District Food Security Coordinator then, graduates in the 4th phase were assessed based on Graduation Prediction System (GPS). However, from the discussion conducted with FSTFs, both at district and *kebele* levels, and with graduate households, the GPS had not been understood as simple and transparent to all the implementers and graduated households as it was assumed to be. Graduated households said that they were told by local authorities to have been removed at higher level by computer: "*Olitti kessaa baatan*; *komputaratu isin tufe.*" Most of them complained that they did not explain how they were selected and presented to the community discussion for graduation.

District implementers did not only lack clarity on the GPS system but also pressurized by the need to show success by maximizing the number of graduates, the needs of eligible caseloads, and scarcity of resources to include all eligible households. Therefore, they opted to move some households to emergency food aid by prioritizing new eligible caseloads for PSNP. As emergency food aid usually delays, the practice would inevitably lead to more erosion of livelihood assets of exited households than had they remained in the PSNP until they were ready to graduate.

4.5.2. Access to OFSP/HABP before graduation

One core point in the Graduation Guidance Note (2007) indicated that PSNP households to be considered for graduation should be only those households who had access to OFSP package, credit, irrigation infrastructure, support from other development interventions, and whose members got permanent income sources from off-farm or employment. However, the graduation exercises, as confirmed by both qualitative and quantitative study did not indicate this.

Table 4.9: Participation in any component of HABP before graduation

Responses	Number of HHs responded	Percent
Yes	28	29.8
No	66	70.2
Total	94	100.0

Source: Own survey, 2018

From the sampled graduate households, only 28 (29.8%) households had access to any of the components of HABP that includes training, extension services, and business plan and credit provision before their graduation. The remaining 70.2% had no access to any form of HABP. Even so, there were wide variations among the number of households who attended training on income generating activities, prepared business plans, and the actual number of households who obtained loans. Chiro District`s five years report on HABP performance during the third phase of the PSNP program indicated that, out of 5866 households targeted for HABP services, only 1114 (19 %) households obtained loan service. The average loan size disbursed was about 3,007 *Birr* per a household (see Table 4.10).

Table 4.10: Performance of HABP (2003-2007 EFY/2011-2015) in Chiro District

Activities	Number of HHs		
	Male head	Female head	Total
HHs Consulted and targeted for HABP services	3675	2191	5866
On- farm	3126	1811	4728
Off- farm	549	380	1138
Prepared business plans by HHs	684	412	1096
On- farm IGAs	647	363	1010
Off- farm IGAs	37	49	86
HHs referred to financial services	594	272	866
RuSACCOs	594	272	866
HHs received loan from HABP source	539	187	726
HHs received loan from RuSaCCos own source	202	186	388
Total HHs received loan	741	373	1114
Disbursed loan from both sources (in *Birr*)	2,394,537	954,978	3,349,515

Source: Compiled from Chiro District Five Years Performance Report, 2015

Accordingly, out of the 28 sampled graduate households who reported to have participated in HABP before their graduation, there were 22 households who reported having accessed the credit component. The remaining 6 households, though reported having participated in HABP because they took trainings, they did not have access to credit component.

Table 4.11: Access to credit before graduation

Responses	Number of HHs responded	Percent
Yes	22	23.4
No	72	76.6
Total	94	100

Source: Own survey, 2018

Though HABP was meant to enable households to diversify their income sources, graduate households' access to the service before their graduation was limited. Data on graduate households' access to irrigation infrastructure which was set as criteria for graduation was also inadequate. Only 12 (12.8%) households reported to have access to irrigation before graduation (3 households to modern, 2 households to traditional, and 7 household to motor pumped from wells, ponds or rivers).

Table 4.12: Access to irrigation infrastructure upon graduation

Response	Number of HHs responded	Percent
Yes	12	12.8
No	82	87.2
Total	94	100.0

Source: Own survey, 2018

In general, the number of graduate households who accessed livelihood support other than PSNP transfers before they were nominated for graduation was small. This shows that households were selected for graduation whether they participate in household package/HABP or not. This is against the Graduation Guidance Note (2007:5) that states "Only those households participating in the PSNP that have taken OFSP household packages and credit will be considered for graduation."

The Graduation Guidance Note is unambiguous in this regard. However, due to a push for achievement from the program implementers, households were pressurized to graduate without receiving the services they were entitled to.

4.5.3. Adequacy of OFSP/HABP loan size

Adequacy of loan size for the intended business is vital for poor households to engage in the business they wanted with confidence. However, many households who obtained loans reported that the amount of credit they took was inadequate for the businesses they intended to engage in. Particularly, households who planned to involve in livestock fattening complained that the credit amount was insufficient. The information obtained through sampled household survey showed that out of 22 households who reported having obtained loan in the years before their graduation, 9 households (42.9%) reported that the loan they took was not adequate (Table 4.13).

Table 4.13: Households` perception of adequacy of loan size before graduation

Responses	Number of HHs responded	Valid percent
Yes	12	57.1
No	9	42.9
Total	21	100

Source: Own survey, 2018

According to the qualitative information from FGD, some households who engaged in livestock fattening added cash from other sources to buy a matured bull; and some others bought small bulls and kept it until it matured; fattened it and sold. The disadvantage for buying smaller bull was that it took time until it was grown up and be fattened. Therefore, the long duration of keeping and feeding smaller bull, and paying interest rate on the loan until it was resold and the loan was repaid made it costlier. However, had the loan size been adequate to buy a matured bull, it would have taken 4-6 months to fatten it. Thus, the turnover could have been 2-3 times in a year.

4.5.4. Graduate households continued access to HABP after graduation

Graduates households are expected to have continued access to credit be it on commercial basis or from subsidized HABP in order to further improve their incomes and build their assets to graduate

to food security. However, very few of the graduate households interviewed reported to have access to OFSP/HABP after their graduation.

Table 4.14: Participation in HABP after graduation

Responses	Participate in HABP		Accessed loan from HABP	
	Frequency	Percent	Frequency	Percent
Yes	16	17.0	6	6.4
No	78	83.0	88	93.6
Total	94	100	94	100

Source: Own survey, 2018

There were 16 households (17%) of the sampled graduate households who had access to any component of the HABP. However, there were only 6 households (6.4%) of the sampled households, or 37.5% of those who had access to any component of HABP in the sample received loans. In the FGDs conducted with graduate households, some of the households remonstrated that they were deceived by being told that they would receive supports from food security program after graduation which they believed that they were neglected then after.

In general, both qualitative and quantitative information obtained from graduate households showed that there had been mismatch between the intention of the government in designing graduation and the implementation process.

4.6. Perspectives of food security experts

Focus group discussion was held with experts involved in the coordination of Food Security Programs in Oromia Agriculture and Natural Resource Bureau to obtain their perspectives on graduation from PSNP, successes and challenges. The discussion informed that graduation in Oromia had been a challenging task. They explained that they knew PSNP transfers alone did not bring about graduation. PSNP needed to be supplemented with OFSP /HABP, both targeting the same households. However, the resources allocated to finance household asset building program in chronically food insecure districts of Oromia was limited. Food security budget allocated from Federal Government to Oromia was used almost for infrastructure development at community level and for the implementation of resettlement program. There was no new disbursement from Federal for HABP since 2012 in the fourth phase. As a result, the region was advised to revolve the already

disbursed credit. However, collecting and revolving the limited OFSP credit by itself had been challenging.

Furthermore, the OFSP credit component distribution was made through different government institutions, such as Bureau of Agriculture and Rural Development, Irrigation Authority, and Women`s Affairs, who had limited understanding and attention to recollect and to revolve. When the cash was disbursed, beneficiaries were not aware of its being repayable. Though the districts were informed later on that the credit component of OFSP disbursed to them was loan, beneficiaries considered it grant and resisted to pay.

Donors financed other food security budget was relatively better managed and documented. The credit component was transferred to Oromia Rural Saving and Credit Cooperatives at *kebele* levels to be used as revolving fund. However, the *kebele* coverage of the World Bank food security budget was limited and the amount of credit cash available at each *kebele* to finance all the PSNP beneficiaries who needed it was not adequate. In general, there was no adequate amount of resource allocated for OFSP/HABP for chronically food insecure districts in Oromia.

Therefore, as experts at all level agreed, graduation was slow up to the third phase of PSNP Program. In fact, the Oromia region started exercising graduation in 2008. But the massive graduation occurred in the third phase of the program. In the third phase of the program, there was pressure from all direction to graduate a substantial number of people. Districts were instructed by regional Agriculture and Rural Development Bureau to graduate about 60% of the beneficiaries in 2014, as a result of which about 36.6% of the total PSNP beneficiaries (clients) graduated from the program at the regional level. The push to graduate the said number of beneficiaries from PSNP in Oromia was based on the achievement of other regions, particularly Tigray and Amara, who used a substantial amount of Food Security budget for HABP in the previous years. The situation in Oromia was different, however, as the FGD informed.

The FGD with food security coordinating unit at West Harerge zone also confirmed the same thing. Two major issues that constrained graduation were: resource constraint to fully support the OFSP/HABP, and program leadership problem. The graduation evaluation was not conducted based on the services and products provided and the outcomes observed. Few graduated households obtained HABP supports to enable them to graduate. The amount of food security budget set aside for HABP was very small as the resource was diverted to community asset building from chronically food insecure households. The disbursed amount was expected to be collected

and revolved for the same purpose among the beneficiaries. However, that was not materialized as required. Resources that were allocated for the supply of irrigation technologies such as drip irrigation technologies, water tankers and others were not distributed and put into the purpose they were bought for in the zone.

Moreover, the technical support for household asset building program for on farm activities had been under extension service of Bureau of Agriculture and Natural Resource (BoANR) at all levels. However, the extension service unit at each level, particularly at district level, had not given necessary attention as required to the program. Services tailored to chronically food insecure households were not prepared, and monitoring and evaluation were not timely conducted. Furthermore, implementation of HABP relied on various agencies` expertise. Agencies such as Finance and Economic Development, Agriculture and Natural Resource, Cooperatives Development, Micro Finance, Irrigation Development Offices and others had different roles and responsibilities in the HABP program implementation. These sectors needed to be effectively coordinated and be accountable for the roles they should play. However, the district task force which was chaired by administrator at district level had limited attention on program coordination and implementation, as the chair person was usually busy with political and administrative tasks.

Besides the financial limitation to finance HABP, there had been difficulties in delivering efficiently the available resources. According to food security experts at zonal level, Oromia Credit and Saving Share Company (OCSSCo) was entrusted to finance credit component OFSP/HABP for all PSNP households in the zone. Even so, the OCSSCo`s procedure was not compatible with the poorest household capacity. It required them to pay interest rates as much as regular customers pay. Moreover, the company also set a precondition of 97% loan repayment rate to disburse any additional loan to the communities/ the *kebele*s in which there was unpaid matured loans. Its attention to collect matured loans disbursed from OFSP/HABP was also limited. As a result, the existing limited OFSP/HABP credit was not being collected and disbursed timely to the beneficiaries.

Moreover, RuSaCCO manages loans transferred to it from World Bank`s community grant. The agreement with RUSaCCo was to manage and disburse the loan with 13% interest rate. However, lately, the company unilaterally announced that it required food insecure households to pay 17% interest rate which was out of the agreement with the food security unit. Moreover, it delayed

disbursement of food security credits to selected beneficiaries with the pretext of un-paid mature loan. Therefore, graduation exercise was not as successful as it was envisaged.

To verify issues related to efficiency of delivering the existing HABP credit components to those who needed it, discussion was held with the head of OCSSCo at West Harerghe zone. According to the information obtained through this discussion, all districts in the West Harerghe zone had been known for being food insecure. As a result, there had been different mode of free transfers (cash/in kind) and food aid to the people through government and non-government agencies. Because of these experiences, most people in the zone expect free transfers. So, when OFSP credit component was transferred to food insecure households, there were a number of issues that were not addressed well: 1) There was no pre-training and awareness creation on the loan; 2) There was no business plans proposed by beneficiaries and professionally supported before disbursement; 3) There was no follow up and reliable documentation. Therefore, when the management was transferred to OCSSCo, there were mainly the documents and a few amounts of cash that was handed over to the company. As a result, there were difficulties of identifying clients and collecting loans disbursed by some other agencies.

Likewise, even after the loan management was transferred to OCSSCo, screening and selection of beneficiary households were done by *kebele* FSTFs. OCSSCO received instruction from district Agriculture and Natural Resources Offices to disburse loans to selected beneficiaries. Thus, the company had no saying on the selection of beneficiaries and their business plan except receiving and financing the approved business plan and beneficiaries referred to it to be financed. Therefore, the company had no way of ensuring that the business for which the loan was provided was profitable.

Regarding collecting and revolving the matured loans, the discussion revealed that because the previous transfers were not repaid, people considered that it was free and not repayable. As a result, the matured loan repayment rate was very small. The 2018 Ethiopian fiscal year`s matured loan repayment rate, for example, was 12% for OFSP; 85% for the HABP; and 94% for the regular credit. Thus, according to the informant's perception, OFSP credit had already distorted the regular operation of OCSSCo. Had the awareness creation and sound management system was in place from the beginning according to microfinance principles, it would not have been distorted as such.

OCSSCO`s experience with CARE, as the informant explained, informed the possibility of making chronic food insecure households credit worthy. CARE had a program named Village

Saving and Loan Association (VSLA) operating in Chiro district. It provided trainings to voluntary households who were organized in groups on credit and saving, and helped them to save and gain experiences. Then after, CARE linked the selected beneficiaries to OCSSCO to receive loan cash allocated to them. As a result, the matured loan repayment rate for that loan was 97%. Therefore, according to the informant`s judgment, those beneficiaries became credit worthy. Thus, they engaged in different businesses and attained the capacity of sending goats to sale in Mojo town in East Shewa Zone then after.

The informant continued to tell the researcher that there was no strong coordination and cooperation between OCSSCO and Offices of Agriculture and Natural Resources. Agriculture and Natural Resource Offices blamed OCSSCo for paying more attention to collection of disbursed loans than disbursing additional credit. OCSSCO refutes the accusation saying that it had concern for both disbursement and collecting matured loan. According to OCSSCO, to bring about attitudinal change, the already disbursed money needed to be collected to the level that the continuity of micro finance operation is ensured.

Moreover, the informant commented on the shortcomings in business plan preparation and financing. According to his judgment, business plan was not professionally evaluated before disbursing cash to participants. He complained that Agriculture and Natural Resource Offices simply instructed OCSSCo to disburse 8000 *Birr* to each household. However, as he argued, the amount required for livestock fattening and goat fattening might not be the same, for example. However, as it was commented by one of my informants from food security experts, this informant also commented that beneficiaries were not afraid of taking loan, whether it was viable or not, yet they did not like to pay: "*liqii hin sodaatan, garuu deebisuu hin jalatan*."

The company cited good examples in Mesela and Gelemso districts of West Harerghe zone where the Offices of Agriculture and Natural Resources and OCSSCO cooperate and deliver loans. As my informant reported, in the mentioned two districts, OFSP saving and loan was performing just as well as the regular saving and loan provided by OCSSCo. However, the company acknowledged that it`s follow up on Food Security Saving and Credit component was not as strong as regular one after disbursed. That was because small amount of credit was disbursed in very remote areas to small number of people which made it expensive and challenging to the company. Moreover, there was logistic problem, and as a result, attention given to the issue was less from the side of the company staff members.

Therefore, it can be understood that there was less coordination and cooperation between the HABP credit management and technical supports to be delivered to the beneficiary households. As food security experts at zonal level complained, coordination and cooperation among different institutions to make the program delivery efficient and effective had been challenging. Though the management of HABP credit component was transferred to MFI, it had not become efficient and effective as it was envisaged. It could be deduced from the arguments presented in the preceding discussion that institutional politics and FSTFs leadership gaps had been responsible for the inefficient implementation of HABP in the Zone in general, and in the study district in particular.

4.7. Perspectives of Chiro District Food Security Task Force

District Food Security Task Force is the highest body in the district that is responsible for operational decision making and close guidance to the implementing agencies on food security issues. It is chaired by district administrator or represented by head of District Agriculture and Natural Resource Office, in which major stakeholders that are responsible for the implementation of food security program components relevant to their institutions are members.

Therefore, the focus group discussion was held at district administrator's office with the chairmanship of the District Agriculture and Natural Resource Office head. Many of the task force members were new to the office they represented at the time of FGDs. However, they assured the researcher that they had been in the district with different capacities of duty in the previous years; and thus, they confirmed that they knew what had been going on in implementing Food Security Program in the district. However, as we proceed with the discussion, there was a tendency of few participants dominating the discussions as many chose to be silent. I asked them to explain whether there was graduation in the district, how households were supported to graduate, how they perceive the success of graduation, what plans the task force in the district had to graduate the current beneficiaries and the likelihood of graduating the current beneficiaries.

The taskforce confirmed that there had been graduation of PSNP beneficiaries from the program in the previous years. They hinted that, however, it was difficult to talk about graduation at that time of the year during interview for two reasons: first, it was a year immediately after two consecutive drought years; and second it was a year in which wide public, particularly *Qero*`s protests against the prevalence of maladministration was going on. This hinted that there was no intention of graduating households in that year.

The researcher probed the question to explain graduate households complaining of their prematurely graduating. The discussion revealed that the problem with PSNP started with targeting in the district. There were some ineligible people targeted for PSNP. Accordingly, graduation exercise was also full of anomalies. Nepotism, localism, neighborhood, and dependency syndromes were major attitudinal problems that played roles in both targeting and graduation. They also anonymously referred to some non-graduated households who sold *Jima/chat* for more than sixty thousand *Birr* annually but received PSNP transfers. According to their judgment, such type of a person never wanted to graduate. As saying, as one key informant stated, "*ni hinaafnne jette jaartiin jaarsa dhokattee galmooftee*"- meaning "*we are jealousy of it' said a wife registered for PSNP deceiving her husband*." Thus, the task force believed that it did not think that there was no asset accumulation at all for graduation. But there were people who deliberately wanted to keep themselves in the program by consuming/concealing their assets to stay in the program.

In fact, FGD in one of the sampled *kebele*s with current and graduate households emphasized governance problem in food security program delivery. According to this group discussion, *kebele* administrator resided in one village of the *kebele* which was in a best position in terms of asset holding, access to market, and other infrastructures. PSNP beneficiaries in the village where the *kebele* chairperson resided, according to the FGD, were better-offs. One informant stated that "*I once received 3kg of improved maize seed. That seed was early maturing and the best….*" "*Ani sanuu hin agarre*," another lady interrupted, meaning, "*I haven`t seen even such seed,*" … the first speaker continued saying, '*ila yoo nama 40f dhufte 10 gadi nuti darbaniit …taan achumatti firuma galmeessanii kennu*"-"*look, if the quota is for 40 people, they send us for 10 persons and share the remaining 30 among their relatives*."

According to the FGD conducted in this village, there were limited supplementary services and products to PSNP beneficiaries in the village. The village was known, according to the informants, "*Ganda cilee fi qoranii*,"- "*a village of charcoal and fire wood*" (as a sign of shaming them). They complained that *kebele* leaders usually came to their village to collect tax when *Jima*/*Chat* was harvested. As a result, one of the groups informed that women almost refused to appear on any meeting *kebele* administration called because when they went to the meeting nobody heard their concerns.

However, as the district FSTF explained, there was also other side of graduation problem. The PSNP transfer amount did not cover the whole household members. The number of months for

which PSNP transfer was made was the same for all households (six months). However, the capacities of households were different. Moreover, the graduation modality changed from time to time[2]. There was no clarity on graduation bench-mark. As a result, the graduation exercise was not evidence-based but forced. "*Waa argatee foyya`ee jiraaf otoo hin ta`in kan biraas yaa gahuuf kessaa baasa*n" – meaning "they removed not because he/she gained something better, but to give the chance to others."

Furthermore, the task force also acknowledged that there was very limited follow up on the credits provided before. Much of it was not repaid. To take legal action against defaulters, as the task force explained, the defaulters did not have anything at hand. There was no new seed money injected for loan to provide to current PSNP beneficiaries who needed it to enable them to graduate. Drought was also mentioned as the major constraint to graduation. To cope with persistent drought, irrigation development was mentioned as a major intervention option; yet, as the task force explained, the district had no capacity to address the existing needs. The recent livelihood supports piloted in the district was small and not scaled up to cover all the *kebele*s in the district. According to the report obtained from Chiro District Livelihood Technical Assistant, only 17 chronically food insecure *kebeles* out of 40 were selected for livelihood transfers. In all the 17 *kebele*s, 1000 beneficiaries (691 males, 309 females) obtained 4,000,000 *Birr* for livelihood supports, 4000 *Birr* for each of the targeted household. The impact of this new intervention was premature to assess when this study was conducted.

In general, the district task force underlined issues related to good governances such as deliberate inclusion/exclusion errors and favoritism; expansion of the population who need PSNP; limited resources to finance HABP to cover all who needed it; lack of clarity on graduation benchmarks and assessment process; inefficiency in OFSP credit delivery and management ; lack of adequate enabling environment such as irrigation, water harvesting investments to address issues related to rainfall variability and drought; and factors related to some beneficiaries who deliberately conceal or reduce their gains in order to remain in the program, and in the most cases, graduation was not evidence based.

[2]This was in reference to the introduction of graduation prediction system

4.8. Perspectives of *Kebele* FSTFs

Three FGDs were held with *Kebele* Food Security Task Forces (KFSTFs) to obtain information on graduation exercises in their respective *kebele*s. The researcher asked them how they practiced graduation, what services and products were provided for households to graduate, and how they evaluate the performance of graduation in their *kebele*s.

The task force explained that, besides PSNP transfer, there were supports such as livestock and cash transfers for some PSNP beneficiary households through *kebele* development committee. However, these supports were not made for all graduated households before their graduation. Concerning different skill trainings and extension services targeted to the poor food insecure households, the explanation given by Wachu Ifebas FSTF was worth mentioning. This task force had the categorization of farmers in to three: *Adda duree, Jidugalessa, harka qalleyyii* (Lead, middle, and poor farmers). According to its explanation, the poor, the chronically food insecure, do not attend meetings and trainings provided for farmers, and do not use technology. That was because they had no time as they go for *kuli (*daily labour*)* to nearby town, or to work on other farmers` *jima* farm, or move far to other places in search of work. Same idea was reflected in almost all *kebele*s discussions. Though the poor had some consumption supports from PSNP, they had many other needs such as children schooling, fertilizers, and food needs beyond the months covered by PSNP for which additional incomes were required.

Regarding graduation experiences, the task forces informed that graduation benchmark set for the *kebele* was 30,000 *Birr* for a household. The graduation benchmark was established by estimating the value of owned *jima* in cash; house estimated in cash; livestock in cash; crop production in cash, and value of trees owned in cash. Moreover, most *kebele* task forces remembered more the practice of 2014 graduation which was based on graduation prediction system[3]. They informed that as they were given quota to graduate certain number of households from the program, they nominated graduate households based on their relative wealth status. The *kebele* task forces had no clarity on asset valuation procedures and its soundness as graduation criterion. In Merewa

[3] Graduation prediction system (GPS) is software developed at Federal level to predict the number of households to graduate from the program based on different services and products obtained, such as input supply and the livelihood zone agro-climatic condition.

Rebsu, the task force members complained that they did not have written guidelines at hand and they used their own judgment to graduate people.

All *kebele* FSTF reported that they graduated households based on the quota given (as later on verified from Chiro district, the quota was based on graduation prediction system), not based on actual assessment of each household`s being able to feed itself year-round without PSNP transfer. As they explained, the comparison was made to give chances to others who had not benefited from the PSNP. It was not actually based on the graduation criterion though there was a process of asset valuation. Thus, they used their own judgment to graduate households, by comparing the poor with the poor. They said, "*kan har`a du`uu fi kan boru du`u tokkoo miti*_ a person who dies today is not the same as the person who dies tomorrow." Therefore, the criteria of households being year-round food secure and with the capacity to withstand modest shock to graduate out of the program was missed.

Moreover, according to the conception of the FGD with *kebele* FSTs and confirmed in the discussion with key informants, using house roof cover type as a proxy indicator of improved food security status of a household in Harerghe in recent years is irrelevant. A house is one of the basic needs. Most people opt for corrugated iron sheet because *chita* (grass) for house cover is either could not be found, or as expensive as corrugated iron sheet in Harerghe. Thus, a household with corrugated iron sheet that could be estimated to more than 30000 *Birr* could be food insecure. Besides, the household could not sell it out, mortgage or rent it out as the case in urban areas. Therefore, gradation benchmark needs to be localized and confirmed by community observers.

With regards to the condition of graduate households when they graduated, the task forces believed that not all graduates were food sufficient and withstand modest shocks. Few households who engaged in different business activities and who had access to irrigation and water pumps might be food sufficient. In Medhicho-2, for example, households whose women engaged in pottery sustained lives of members of their households by the income they get from sale of pottery. Moreover, many graduate households were benefiting from emergency food aid due to continued drought since they graduated. There was no livelihood support or credit and saving services targeted graduate households because loans disbursed in previous years were not recovered and was not adequate to cover even the on-going PSNP households.

On the other hand, regarding the existence of plans to graduate the on-going PSNP participants, none of the *kebele* FSTF informed having a plan for graduation. Merewa Rebsu *Kebele* FSTF

informed that there was 4000 cash transfer to some of the current PSNP beneficiaries by which some households were showing encouraging improvements by engaging in different business activities and livestock fattening. However, no *kebele* informed that they had graduation plan for the year 2018. In fact, DAs had a follow up format in which they register asset status of beneficiary households each year. However, they could not tell how they planned to improve the food security status of the PSNP. Some DAs informed that they had information that the government had a plan for graduation but they did not know how and when that would happen in their *kebeles*.

4.9. Key Informants perspectives on graduation

Key informants such as community elderly, successful graduate households and non-PSNP households were interviewed how graduation from PSNP program was exercised in their respective *kebele*s. Four local elderlies and knowledgeable persons were interview, one from each of the four *kebele*s.

One of the key informants had been *kebele* x-administrator since the commencement of PSNP program until a year before the interview in Wachu Ifebas. The researcher asked him how the *kebele* exercised graduation from PSNP, and about what factors enabled graduation and what factors retarded it.

According to his information, there had been OFSP/HABP credit services in his *kebele*. Therefore, there were PSNP beneficiaries who got credits and livestock transfers. According to his comment, "few households improved their situation, yet some others consumed it". Those who made some improvements were persons for whom oxen were bought in *gare* (group). Oxen were bought for poor households who were organized in a group. An ox was transferred to a person in a group. This person was allowed to use it for cultivation, fattened it, and then after sold it. He/she was required to transfer the same kind of ox to the next person in the group waiting for his turn within six months. According to my informant, a well fattened ox could be sold for about thirty thousand *Birr*. Thus, the transfer to the next person could be by far small. This process of transferring an ox happened until all in the group got one. They had common insurance mechanism by which they minimize risks. They contributed money to replace in case any of the transferred oxen died. They used to oversee one another. My informant further mentioned that the group transfer system was successful because the group members oversee and control each other. But the group transfer system did not continue because of the reason he could not explain.

He went over to say that the OFSP credit was not all paid back. Those who succeeded paid, but those who consumed did not pay. My informant commented: "*aadan liqiii deebisuu gaarii miti*."- meaning "The culture of paying loan is not good". This was because people used to receive in-kind assistances and transfers from NGOs and governments which they were not required to pay. He added that, because of the abused culture of not paying loan, some beneficiaries resisted to pay loans even taken from OCSSCO. According to his judgment, transferring what they could really work upon and become productive with strict follow up could be more important than transferring cash to the poor people. He suggested that, skill training, identifying those who really are interested in fattening livestock and supporting them were better options.

Regarding the current beneficiaries, the greatest problem he mentioned was the transfer amount. Full family was not targeted in order for a household to be fully food secure. There were no loan facilities for the current PSNP and graduates as the previous loan was not repaid. Therefore, the prospect for the current beneficiaries was not promising as before.

The researcher asked him how he compared the livelihood and food security status of graduates and current PSNP households. He explained that PSNP beneficiaries who graduated from the program had observed improvements in terms of their asset holding and income when compared to the newly admitted beneficiaries. But he acknowledged that what graduate households gained was not adequate for them to become fully food sufficient to graduate. He stated, "We used to graduate them not because they were fully food sufficient but because they had shown some progress and benefited from the program for sometimes."

Another informant was from Medhicho-9 who did not participate in PSNP but used food aid only for 6 months in one year before. I asked him about his perception of the PSNP supports and beneficiaries' improvement in their food security and livelihood status. He told me that PSNP beneficiaries were not making any improvement because there was no follow up and supervision. He said, '*kanuma kennaniifuu irraa mogolu; xa`oo fi buusii adda addaa jedhanii'*- they rather (*kebele* administration) deduct from what they provided; for fertilizer and for other contributions'. On the other hand, he explained that some beneficiaries did not make efforts to improve their situation:

> PSNP transfer has not improved anybody. They are those who do not receive any PSNP transfers that are better. Had they determined to work hard; they could have graduated. In some places, they are better-offs that simply sit and consume PSNP transfer. In --- village, for example, [mentioning one village in the *kebele*], there are

people who have better *Jima* and better access to market who sit and receive PSNP transfers.

From this comment, it could be deduced that there had been a sign of lack of personal efforts and dependency on external supports from some beneficiaries' side, expressed by phrases such as '*warra seeftii neeti hin fudhannetu irra fooyyee qaba; iddoo tokko tokkotti kanuma fooyyee qabutu taa`ee nyaataa jira.*' Moreover, there was targeting problem in which ineligible people were included in the program; '*warra jimaa fi daldala fooyyee qabutu taa`ee fudhata'*. The other point was that there was a problem of deducting PSNP transfers amounts from beneficiaries for different contributions and to fulfill some *kebele* commitments. Complaints raised during FGD with on-going PSNP households in Medhich-9 justified this point. Some households complained that they were obliged to purchase fertilizers which they did not want by deducting from PSNP payments.

It could be learned from key informants` information that PSNP households to whom in kind livelihood transfer was made through group loan system were more successful than those who obtained cash loan from OFSP. The success was attributed to the type of transfer that was believed to be adequate and relevant to the experience of the recipient households, the group insurance mechanism developed to replace the livestock transferred in case it was lost due to the reason beyond the control of the recipients, and strong supervision of the asset transferred by the group members. Cash loans from OFSP was less successful due to defective disbursement and weak loan management system. As a result, some households used cash loans for consumption purposes than for investment to diversify their livelihoods and improve their incomes. These types of poor house households were neither able to repay loans, nor did they graduate from the program. Dependency syndromes from part of some households explained in terms of lack of interest to invest to improve than prioritizing consumption, reducing their assets to evade from being graduated, and unwillingness to repay loans and credits by adapting to free transfers being made for a long time from NGOs and governments in the study area, and inclusion of ineligible households coupled with administrative malfunctioning were also some of the concerns.

4.10. Ongoing PSNP households` perception on graduation

Phase III of PSNP program was concluded in 2014. However, graduate households were given a grace period of one year to stay in the program. Therefore, Phase IV PSNP program was officially understood to have started in 2016, though some of the new entrants in the ongoing PSNP households joined the program beginning from 2015. When this study was conducted, the ongoing

PSNP households were in their third year of participating in the program. Assessment of ongoing PSNP households' perception on graduation was made to learn how much they were aware of graduation and their intention to graduate at least at the end of phase IV of the PSNP. Both FGD and household survey was conducted to obtain their opinion.

Four FGDs, one in each *kebele*s, was separately held with selected ongoing PSNP households. The FGDs informed that beneficiaries knew that they need to graduate. They said that even the community would not allow them to continue after the end of the phase IV. They also believed that they should leave and give the chance for others. They said that they did not want to be called "*warri seeftii neetii warra midhaan mootummman safaramuuf sani*?" _Meaning_ "are Safety Net clients those for whom food is allocated to them by state?" They reiterated, "*Seeftii Neetiin nus hin ajjeestuu, nus hin baastu*---" -means, '*PSNP neither lets us down nor moves us up.'* So, they believed that they need to exit from the program. But most of the participants were not sure of how they could graduate from the program. Though the information obtained through FGDs seemed to inform that many of the households had intention to graduate, the household survey indicated that the great majority of the households (65.7%) had no intention to graduate. As can be observed from the Table 4.15, only 97 households (34.3%) reported that they had intention to graduate from the program.

Table 4.15: Households intention to graduate

Responses	Number of HHs	Percent
Yes	97	34.3
No	186	65.7
Total	283	100

Source: Own survey, 2018

In Focus Group Discussions, though they acknowledged that PSNP helped them to supplement their incomes, they emphasized short comings in program delivery system that could hamper their prospects to graduate. They complained that the PSNP transfer was not made according to their household size; even the household size cap, which was set at 5 members, was not maintained. The cash transfer amount which was Birr 205 at the beginning of phase IV was reduced to Birr 150 per person per month. Delays in payment reduced the value of money to acquire the food quantity they could buy had it been timely. Livelihood supports were in cash amounted to 4000 Birr was

available for selected households but not all households had access to it. Moreover, there was no credit facility to support small business. In medhicho-9, for example, all participants complained that they were refused loans from micro-finance because the previous food security loan was not paid. According to their understandings, the unpaid loan was provided to the people who had no intention of doing business or did not have business know-how when they took it. As they informed, the defaulters were better than the poor who needed it when they took, and were not paying because of the power and connection they had with *kebele* authorities.

Data obtained from Chiro district technical assistant report on food security loan disbursement and collection to validate the qualitative information confirmed that collection and revolving of the food security loan fund was not performing well. OFSP/HABP cash available for credit in Chiro was 8,984,970 (7,076,980 from the World Bank project, and 1,907,990 from Federal Food Security budget support), out of which 8,822,481 was disbursed to 8,143 clients in 2005-2010 (Table 4.16).

Table 4.16: OFSP/HABP cash available and disbursed credit to the District (2005-2010)

Source of finance	Total allocated in Birr	Loaned (Birr)	No. of beneficiaries		
			Male	Female	Total
World Bank	7,076,980	7,076,980	1,406	4,472	5,878
Federal FS	688,855	688,855	233	41	274
Federal FS (development corridor) *	1,219,135	1,056,646	_	_	1,991
Sum of Federal FS	1,907,990	1,745,501	-	-	2,265
Total	8,984,970	8,822,481			8,143

Source: Chiro district M&E report, 2010

**This component is Federal Food Security budget allocated basically to supply different water harvesting and irrigation technologies in kind to households in the district, but not clearly disaggregated to PSN and non-PSNP households*

The available HABP credit from both sources was a revolving fund from which targeted PSNP households were expected to borrow for on-farm or off-farm income generating activities. However, report on the loan performance as of July 2015 indicated that only 9.8% of matured loan was repaid (Table 4.17). Moreover, the repayment and refinancing of the credit component of Federal supported food security budget was almost non-performing since it was transferred to OCSSCO.

Table 4.17: Performance of HABP matured loan collection in Chiro (2007 E.C/2015)

Source of Finance	Planned for collection	Collected	Percent collected
World bank FS	5,987,500	626,860	10.5
Federal FS	557,087	17,100	3.1
Total	6,544587	643,960	9.8

Source: Compiled from Chiro District HABP summary report, 2015

This data confirms the qualitative information that revolving fund was not performing. This performance could have different implication as suggested by West Harerghe Zone OCSSCo: 1) it distorts the financial market and micro finance discipline; 2) it disrupts the continuity of the revolving fund; 3) PSNP beneficiaries on waiting list loses the chance to obtain loan for income generating activities; 4) consequently, there would not be the prospect for PSNP households to diversify their livelihood and income sources, to build assets, and graduate from the program.

When the ongoing PSNP households were asked about their prospect of graduation, women in FGD in Medhicho-9 had more courage and vision for graduation. They said that they could graduate by engaging in *Jima/Chat* trade if they were provided loans. Many of men participants in Medhicho-9 had no confidence to tell how they could graduate. Some of them forwarded some conditionality on which their graduation prospect might be possible. They said that they could graduate if they could obtain loans amounting up to 10,000 Birr for livestock fattening, and/if irrigation was developed for them to engage in irrigated *Jima/chat* growing (irrigated *Jima*/*chat* was more lucrative than rain-fed.) In fact, Medhicho-9 is nearer to and along the main road from which irrigated *chat/jima* was supplied to Chiro town. Women participants in Medhicho-9 FGDs mentioned having many small children as constraint to engage in different business activities as they wished. When asked why they did not use fertility regulation measures, they informed that because some women experienced complication with fertility regulation contraceptives as a result of which many afraid to use it.

In Wachu Ifabas, too, FGD participants indicated PSNP transfers really helped them by protecting what they had at home. One of my informants from PSNP clients in this *kebele* explained that she took sheep from other person to keep for *ribi (*sharing off-springs*).* After she became PSNP beneficiary, she never sold out the share she gained from *ribi* to purchase food. However, FGD

participants in the study *kebele*s complained that livelihood support was limited in the *kebele*. They said they were ignored that thinking they were benefiting from PSNP. Livestock transfers such as poultry and improved seeds provided through regular extension program targeted the better-off than the poor PSNP program, as they informed. According to the FGD participants, *kebele* authorities exclude them from resources supplied through regular extension program by telling them that they were already being supported by PSNP transfers. Therefore, many of the FGDs participants were hesitant of their probability of graduating from PSNP program at the end of phase IV. The household survey revealed mixed opinions of households regarding the likelihood of their graduation.

Table 4.18: Household`s perception of its likely to graduate

Households perception	Number of HHs	Percent
Very unlikely	34	12.0
Unlikely	73	25.8
Neutral	91	32.2
Likely	82	29.0
Very likely	3	1.1
Total	283	100.0

Source: own survey, 2018

As depicted in Table 4.18, only 30.1% of the households expressed their likelihood to graduate (likely, 29%; very likely 1.1%). Among the remaining households, 32.2% households remained neutral, whereas 12% and 25.8 % expressed their opinion as very unlikely and unlikely to graduate, respectively.

The reasons for ongoing PSNP households for not anticipating to graduate and/not confident enough to be able to graduate at the end of the program were expressed in different ways. One major reason, as already discussed in the FGDs summarized above, was inadequacy of PSNP and livelihood support services and products. The second reason that they expressed was the experience of graduate households who were not able to support themselves after their graduation. They conceived that many graduate households were in difficulty circumstance after graduating from the program. Thirdly, they got worried of falling into food insecurity after having graduated and afraid that they might not get assistance then after. Thus, the finding would suggest that many of them formed the image that graduation was not good.

One survey question administered to ongoing PSNP households asked households to provide their overall reaction to graduation exercise in their *kebele*. The result in Table 4.19 indicates mixed perceptions. About 43.5% households approved the graduation exercises, while 37.4% disapproved, and 19.1 remained neutral.

Table 4.19: Households` overall reaction to the current graduation exercise

HHs perception on graduation	Number of HHs	Valid percent	Cumulative percent
Strongly approve	26	9.4	9.4
Approve	95	34.2	43.5
Strongly disapprove	27	9.7	53.2
Disapprove	77	27.7	80.9
Neutral	53	19.1	100
Total	278	100	

Source: Own household survey, 2018

Following the questionnaire that was administered to households to provide their overall reaction to graduation exercise, an open-ended question was also asked to elicit reasons for the disapproval of the graduation exercise so far. Their responses were summarized below:

- Graduates were removed before building adequate assets
- Graduates themselves are living under difficult circumstances
- There is no adequate support for household asset building
- Full family is not being supported
- The cash support does not cover the food basket we need
- Not all graduates are self-sufficient
- Once you graduated without being self-sufficient, you won`t be readmitted
- We are not fully supported- no livelihood support; no loan, and the PSNP cash transfer is inadequate.
- Graduates should have graduated after they have improved their situation

4.11. Impact of graduation

According to some authors' arguments such as Roelen (2015), graduation in general, prematurely gradating households from predictable transfers in particular, is disputed for negatively impacting

child growth and education and then leading to intergenerational transmission of poverty. Households reduce child nutritional quality and quantity in order to save for future and graduate from the program. A prematurely graduated household becomes more worried, starts consuming less, and may even remove children from school which are not intended outcomes of graduation model.

The qualitative information obtained through FGD and individual interview with graduate households revealed some instances of these cases. In Merewa Rebsu, for example, one graduated household told me that his family started consuming less, conflict with his wife started increasing after the household graduated. He said that he kept on nagging his wife to save; sometimes, when the grain they had at home was getting smaller and smaller, he suspected her as though she sold out some portion of it. Moreover, FGD with graduated households revealed that they usually worried when the rainfall was not normal, worried of its continuity if it rained; worried of their being able to feed and send children to school. They explained that if children were not going to school, particularly male, they would blame their family later on for not educating them; and more than that, there would not be peace at home. In focus group discussions held with graduate households in all *kebele*s, it was in Merewa Rebsu that prevalence of malnutrition among graduated households` children was more pronounced. The quantitative information obtained from sample household survey also revealed some incidences of malnutrition on child under age of 5.

Table 4.20: Incidence of malnutrition of children under age of five screened by health extension after graduation

Responses	Number of HHs	Percent
We do not have children under age of 5	35	37.6
No incidence of malnutrition	44	47.3
There was incidence of malnutrition intermittently	13	14
There is increased incidence of malnutrition	1	1.1
Total	93	100

Source: Own household survey, 2018

Table 4.20 shows that 14 (15.1%) graduate households reported incidences of malnutrition on children under age of five after their graduation. In fact, the incidence might not be only due to

lack of food but could also be resulted from food utilization. In all sampled *kebele*s, scarcity of potable water was critical. Moreover, as the qualitative information from FGD revealed, some households had been using negative coping strategies such as reducing meal sizes and meal quality due to lack of resources which could lead to child malnutrition. Therefore, it could not be conclusively said that the incidence was only due to households` graduation from the program. The rate of the prevalence of incidence of malnutrition among ongoing PSNP beneficiary households` children aged less than 5 was even greater than that of graduate households.

Table 4.21: Incidence of on-going PSNP households` children screened for being malnutritional after joining PSNP

Response	Frequency	Percent
Yes	65	23.0
No	218	77.0
Total	283	100.0

Source: Own survey, 2018

There were a number of other possible factors that households raised during focusl group discussions and confirmed through quantitative household survey contributing to ongoing PSNP households` children malnutrition. Among different factors raised during FGDs were inadequacy of PSNP transfers due to reduced household size; absence of supplementary food for households with children under age of 5 as it was the case for emergency food aid; delay of PSNP payments; inadequacy of some households` incomes to cover the remaining six months food gaps they had, and scarcity of potable water in all the *kebel*es were the major ones. Therefore, it was unlikely to attribute incidences of malnutrition in the case of children of ongoing PSNP households only to households` intent to save by reducing from children`s consumption requirement to attain graduate as Loeren (2015) was worried of. However, the dilution of the PSNP resource transferred due to family cap system and failure to cover full family had a contribution to the incidences of malnutrition reported.

Moreover, household survey came up with certain graduated households` school age children (children between age of 7-15) not go to school due to different reasons among which households' inability to cover school expenses that could include feeding, dressing, and stationery materials.

Table 4.22: Number of graduate households` school-age children not go to school

Number of children not go to school	Number of Households reporting	Total number of children not go to school	Percent	Cumulative percent
1	10	10	37.0	37.0
2	6	12	22.2	59.3
3	7	21	25.9	85.2
4	2	8	7.4	92.6
5	2	10	7.4	100
Total	27	61	100	

Source: Own household survey, 2018

Table 4.22 depicts that 27 (28.7%) graduated households did not send school age children to school due to different reasons. The total school age children that did not go to school from these households were 61 (24 males; 37 females); which was 29.2% of the school age children of total graduate households (Table 4.23). This means the net enrollment rate of school age children of graduated households was 75.6 % (Female 76.9%; Male 74.3%). In fact, this was greater than the net school age enrollment rate attained at the district level three years before (in 2014) which was reported to be 74.4% (Female 65.7%; Male 82.6) (Oromia Education Bureau, 2015).

Table 4.23: Graduate households` school-age children that did not go to school

Description	Female	Male	Total
Number of graduated HHs school age children	104	105	209
Number of school age children not go to school	24	37	61
Percent of school age children not go to school	23.1	25.7	24.4

Source: own survey data

Graduate households that were not sending school age children to school were asked about their reason for not doing that. Their reasons are summarized in Table 4.24.

Table 4.24: Reasons for graduated households' school-age children not go to school

Responses	Frequency	Percent
School too far	2	9.5
HH not afford school materials expense	10	47.6
Assist at home	6	28.6
Herd cattle	+1	4.8
Other reasons	2	9.5
Total	21	100

Source: Own household survey, 2018

Out of 27 households, 21 households replied to the survey questions on households` reasons for not sending school age children to school. Two households (2.1%) mentioned distance from school as their main reason. The qualitative discussion informed that all *kebele*s had elementary schools, yet the secondary school is in Chiro town for Wachu Ifebas, Medhicho-2 and Medhicho-9 *kebele*s, and Bakka town for Merewa Rebsu. Most graduated and non-graduated PSNP households reported that financing children attending secondary school was not affordable to most of them. Ten households (47.6%) replied that they did not afford school materials; six households wanted them to assist at home; two households gave other reasons. The qualitative data from FGD indicated that some households used their female children to generate incomes by sending them to '*kote*'- collecting and trimming *chat* for wealthier farmers.

In general, though there were some instances of children malnutrition, households' inability to finance children for further education beyond elementary school, and even to feed adequately and dress them for school, because of the limitation of the scope of this study to include control group, the negative impacts cited here could not be conclusively attributed to graduation as Roelene (2015) argued.

4.12. Summary

The intention of the government and donors in designing and financing PSNP program as part of food security program was to break the cycle of food aid appeal for chronically food insecure people by providing predictable multi-annual transfers for food consumption and then by building the capacity of households to become subsequently 'food secure' by linking PSNP transfers with

livelihood development interventions. Thus, PSNP households were presumed to graduate by uplifting them to the better food security status with the capacity to generate future streams of incomes and be free of dependency on external assistances in a shortest period of time.

Information obtained from government offices revealed that about 50% of the initially targeted households exited the PSNP program; at national, regional, and the study district level. About 50 % of the initial beneficiaries are still in the program together with newly admitted households who became chronically food insecure in the past program years. The overall number of PSNP participants has not decreased at all levels; national, regional and at the study district as previously envisioned. On the contrary, there has been an increasing trend of PSNP participants in the past subsequent program phases not only for program expansion to new regions but also due to the fall of transitory food insecure households to chronic food insecurity.

This study identified lack of program complementarity as one major constraints of progress to graduation. The program components design and their linkage to bring about envisaged graduation have passed through successive learning processes from phase to phase. OFSP intervention was not originally designed in complementarity with clear road map towards graduation as it was introduced earlier to the launch of PSNP. Second, strict micro-credit provision arrangement and management discipline was not followed in OFSP credit component at start. Credit disbursement was not made by professional agency and did not pass through learning process of micro-finance discipline. The support services, such as skill trainings, savings, grants/ loans, coaching, monitoring and evaluation were not strictly sequenced and targeted to the same PSNP as per the program design. The great majority of PSNP households had no or inadequate access to OFSP services and products. Even after the shortcoming of OFSP was recognized and HABP was introduced, the support system was not as intensive and all-inclusive as envisaged in the national graduation pathway depicted in Figure 2. Another learning process, free livelihood support transfer to the poorest households who could not take loan was introduced as a new component of PSNP Phase IV (MoA, 2016)[4]. This addition is in line with BRAC`s recognition that few MFI, even MFIs that focus on serving very poor segment, reach the poorest due to some MFI policy, destitute households self-exclusion and exclusion by groups (Hashemi,& Rosenberg, 2006).Together with

[4] Livelihood support free transfer to the poorest households was being piloted in Chiro district, during data collection for this study.

this, new institutions such as Small and Micro Enterprise (SME) (responsible for off-farm pathway), Labor and Social Affairs (responsible for employment pathways), and Technical ,Vocational, Education and Training (TVET) (responsible for technical training) were added to Agricultural Extension Directorate (responsible for crop and livestock pathways) to play roles in livelihood support (MoA, 2016). However, strong coordination was still lacking as informed by West Harerghe Zone Food Security Coordinating Directorate.

The perspectives of implementers on graduation exercise, particularly on graduation exercise conducted at the end of phase IV of the program was that it was not done as per the intentions reflected in the program document. Lower level implementers confirmed that mostly it was non-evidence-based and was forced graduation. Participant households had mixed stand points. They had the conception that graduation exercises conducted so far was not transparent, not based on detailed evaluation of households` capacity to be food sufficient, biased, in which partial treatment of some households reflected and at most they were prematurely removed. Though few graduated households believed that their graduation was fair, they reported that their gains had been decreasing since their graduation due to persistent drought and limited access to household asset building resources after graduation. In principle, graduate households were expected to have access to HABP after their graduation to enable them to build further their assets and diversify their incomes to graduate to more secure livelihoods than fall back, few households reported to have obtained the service.

The graduate households' experience after their graduation was not taken as good lesson for ongoing PSNP clients. They were worried of graduation and the significant number of them disapproved the graduation exercise by conceiving that 'graduated households themselves were in difficult circumstances" after they graduated. This conception of households corresponds with qualitative information obtained from key informants that revealed some households deliberately keep themselves in the program by concealing or reducing assets they gained after they joined the program. This was done for the fear of falling back to food insecurity and not being allowed to join the program.

As it could be learnt from case study graduate households, innovative and adoption of appropriate technologies and faming practice are more important than doing business as usual. Depending on only increasing the productivity of sorghum variety that almost all households plant, for example, was not as gainful as planting onion twice within the time sorghum takes to mature. The district is

vulnerable to drought and rainfall variability. Crop harvest is not reliable as rainfall fluctuates from season to season or from year to year. The 2014/2015/ graduates hit repeatedly by drought. It can be said that they were graduated to drought years than to better livelihood system. Access to irrigation and/or water harvesting technologies, as well as access to drought tolerant crops by the study participants were barely available.

Though the program document and manuals have no confusion regarding how and whom to graduate, most households were prematurely removed from the program due to the lower level implementers being pressurized to show success of the program. It could be argued that measure of success that depended only on the number of households who exited the program blurred the true graduation intention. The success of FSP program as a whole should have been based upon reduced prevalence of malnutrition, reduced hunger, increased children school participation, diversified and improved income sources, availability and adoption of appropriate technologies that help households to adapt to persistent drought and rainfall variabilities. District and *kebele* administration and DAs should have been judged not only by the number of people they put out of PSNP program, but also with total number of people depending on external assistances, including PSNP and food aid except during major disasters.

In general, many good things were designed in the program document. However, they were not consistently implemented. Graduation is premeditated without adequate services and products to enable graduation. Therefore, the graduation approach is good on paper, but impaired by implementation difficulties. Clear demarcation of institutional responsibilities and accountabilities, the achievements of which could be measured by the impacts it had on the participants lives needed to be ensured.

Chapter 5: Livelihood Capitals and Factors that Influence Households' Graduation

5.1. Introduction

The most basic livelihood activity to access food for rural households in Ethiopia is through food production. Another means of accessing food is based upon household's ability to purchase food. The ability to purchase food again depends on household`s ability to generate cash income from on-farm or off-farm activities. Therefore, household`s access to food is dependent on household`s food production and/or ability to generate adequate income to purchase food. If a household has no economic opportunity or adequate income to produce or purchase sufficient amount of food, it is vulnerable to food insecurity. Therefore, households` livelihood strategies and activities determine their food security status. Households` livelihood strategic choices to produce food or generate adequate incomes to achieve food security depends on households' access to different assets referred to as 'capitals' (Scoones,1998*).* Moreover, households` perceptions of risks, their abilities to manage risks, cope with stresses and shocks influence their decisions of livelihoods strategies and investment level to build or restock assets. Chronically food insecure households in rural Ethiopia have become considerably poor in terms of productive asset holding (NCFSE, 2003). Therefore, Food Security Program in Ethiopia recognized the need for the combination of social protection transfers with livelihood enhancing interventions to build the capacity of households to become 'food sufficient' and graduate from dependence on external assistance.

Therefore, to understand factors that affect chronically food insecure households to graduate from PSNP and their food security status after their graduation, this study attempted to investigate households' demographic characteristics and livelihood assets in the form of capitals/assets based on sustainable livelihood framework. This is also investigated by linking livelihood strategies that households adopted and government`s interventions as a transforming structure to improve household vulnerability and food security outcomes. Livelihood asset index is created to comprehensively understand livelihood asset status of households by comparing across types of households defined as graduated, non-graduated, and new entrants /clients in the preceding section.

The analysis considers components of SLF such as livelihood assets and activities, vulnerability and coping strategies, policies, and processes, and livelihood outcomes, which is households` food security status. Qualitative information from key informants and PSNP participants, both graduated and current PSNP clients, was used to understand the general vulnerability context of the study

*kebele*s and population. Household survey data was analyzed by using descriptive statistics such as mean and their corresponding standard deviations. Wilcoxon rank sum, Kruskal-Wallis tests were used to see differences between and among household types categorized according to their status in PSNP.

5.2. Vulnerability context of study households

Vulnerability context forms the external environment in which people live that include critical trends (demographic, resources, governance, etc.), shocks (human, livestock, crops, natural hazards such as drought, floods, hailstorms etc.), and seasonality (changes in production, incomes, job opportunities and the like) upon which people have no or limited control (GLOPP, 2008). They have great influence on people's livelihood and availability of assets. In fact, not all the trends and seasonality are considered negative because they may sometimes move to favorable direction. Understanding vulnerability context has critical importance for assessing cause of poverty and food insecurity, as well as people`s capacity to respond effectively.

5.2.1. Socio-economic vulnerability factors of study households

In Ethiopia, smallholders' agriculture has been and is still the mainstay of the economy in general, and the foremost source of food and income for the rural population in particular. However, a number of rural smallholders failed to secure their livelihood and food needs due to a combination of factors. According to Messay (2012), food insecurity in Ethiopia is the combined results of ecological degradation and bioclimatic factors such as population pressure, soil loss, deforestation, erratic rainfall, livestock and crop pests and diseases, among others.

Individual interviews and focus group discussion in Chiro district evidently revealed these facts. Land shortage induced by rapid population increase was presented as the major reason for household's food insecurity. One of the key informants' explanation best presents the case in point which is summarized in Box 2.

Box 2: Observation from key informant interview

My informant, from Wachu Ifebas *Kebele*, was a 48 years old adult, who graduated from PSNP. He owned 0.5 hectare of land, two oxen, a cow with calf and two goats. His family size was 7 persons. He was born and lived in the *kebele* till we had the interview. I asked him about food security situation of the *kebele* people in general, and his own household, in particular. He told me that since he had come to understand himself, the *kebele* was receiving food aid through different means (free food aid, food for work, and PSNP). The number of people falling into food insecurity and needing food aid increased from time to time since then.

As he explained, many people owned large size of land when he was small boy. Land size owned by a household decreased from time to time as population increases. For example, the land used by only his father had been gradually divided among four households, among his father and his three brothers: *"lafa abbaan kiyya kophaa isaa irraa nyaatu, amma abbaa warraa afuritu irra jira. Laftis maatiin qoodamte*" – meaning- '*four households now depend on the land that only my father used. The land was divided among household members*." Later on, one of his brothers left for resettlement in Wellega, and the remaining three of them were able to hold improved farm size (0.5 hectare). As he explained, there were other households in the *kebele* who lived on one *qindi* (0.125 hectare) of land, referring to his holding size as relatively better.

He went on to tell me that more than the decrease in land size, the land held had been repeatedly tilled; its fertility gradually reduced. The topography of the *kebele* was undulating and vulnerable to erosion as a result of which the land became infertile (which he called *haphina lafaa*). Thus, in recent years, the majority of the farmers practiced soil and water conservation activities through soil and stone bunds and planting trees in some protected areas. They used to use manure before, and later on they started using both manure and chemical fertilizers. However, not all farmers use chemical fertilizers and animal manure, because they had no cash to buy fertilizers, or had no livestock for manure. Some households also did not practice soil and water conservation due to their personal discretion as a result of which their lands became less productive.

Furthermore, drought, erratic rainfall and crop pests and diseases were the major cause of food shortfall. They used to plant crops during *arfasa*/*belg* season. However, *arfasa /belg* rainfall became highly erratic and repeatedly failed in recent years. So, some able farmers in W/Ifebas *kebele* diverted to planting onion called *bombee* during *arfasa/belgi* as a major adaptation strategy to persistent drought and erratic rainfall (*ciccita roobaa*). Moreover, water scarcity was the major problem in Wach Ifebas, not only for irrigation but also for drinking

What has been summarized in Box 2 from the key informant encompasses almost all what was informed from FGDs and key informant interviews in the sample *kebele*s. One important point worth mentioning emphasized by other elderly was the vegetation cover of the area. The bare mountains and hills observed in the study area were covered with forests at least before 1984. That was completely changed to farm lands and left with few patches of wood lands at the tips of some hills and mountains put under protection. In general, both focus group discussion and individual interviews revealed that demographic factors; diminishing land holding size; removal of vegetation cover; deterioration of soil fertility as a result of poor land management and repeated tillage; persistent drought and erratic rainfall; crop pests and diseases; limited access to financial resources

to access improved seeds such as *bombee (improved variety of garlic)* and others; limited off-farm opportunities; and low level of adapting agricultural technologies were listed as the major factors for households becoming food insecure, unable to graduate, and sustain their gains after graduation.

5.2.2. Exposure to shocks and stresses

As Sabates-wheeler and Devereux (2015) explained, rural livelihoods in Africa are erratic which are characterized by irregular weather conditions and other shocks that threatens crop and livestock production. Therefore, as they illuminated, even if a household was able to achieve asset threshold and graduated at a point in time, it is difficult to warrant that whether that household would endure a major shock that would ruin its gains and leave that household impoverished and vulnerable to hunger.

Agricultural activity, which more than 96% of sampled households reported as their main occupation had been vulnerable to different shocks and stresses. Drought (h*oongee*) and erratic rain fall (*ciccita roobaa*) were the major natural hazards cited in all sampled *kebele*s that had been affecting the livelihood incomes of households most frequently. Crop pests and diseases usually accompanied the rain fall patterns as the households informed. Erratic rainfall affects the planting times and crop maturity as a result of which crop production fails or substantially decline. Focus group discussions held in all *kebele*s revealed that *arfasa/belg* rain fall distribution in time, space, and quantity has become unreliable almost on annual basis in the district. As farmers explained, rainfall insufficiency and its erratic distribution is usually accompanied by high pest and crop disease infestations. The erratic rainfall (*ciccita roobaa*) is characterized by farmers as rain falling before or after the time farmers usually expect it to fall and sporadically stops or quit before it is supposed to leave. Drought is characterized by study households as absence of rainfall for a long time that significantly affects crop production, water availability and livestock feed and health.

The *Arfasa* rain, which is the short rain duration, is expected to fall from the mid of February to April, when land preparation and planting of major food crops, sorghum and maize are performed. These two crops are the long cycle crop usually affected by rainfall scarcity. Sorghum is more drought tolerant than maize, as the farmers explained, saying "*sagal du`eet sagal ka`a*,"- meaning "*it dies and rises nine times."* Maize is almost being escaped as it is always damaged by *arfasa* rain failure.

The *genna*[5] */mehar* season, the longest and main wet season, is usually expected to run from mid-June to end of September. Barely, wheat, *Teff*, horse bean, haricot beans and pea are planted in the district during this season. As observed from the field visits and FGDs information, farmers in Chiro district do not plant only one crop at a time in both seasons. Intercropping is the common practice in West Harerghe zone in general, and in Chiro district in particular. According to my physical observation, *chat/jima* occupies significant portion of farm lands. However, it is not officially supported with agricultural extension services as other crops, yet acclaimed undercoat as a source of income. Haricot beans, pea, and onions were observed being intercropped with maize and *chat/jima* during both *arfasa* and *ganna* rain seasons as coping strategies.

Even so, erratic rainfall (*ciccita roobaa*), drought (*hoongee*), and livestock and crop diseases and pests frequently affected farming households in all *kebele*s. As FGD participants and key informants explained, flood had been threatening few years ago, but its impact has recently been reduced through soil and water conservation activities being practiced on both public and private lands, though it was not totally avoided.

Table 5.1: Reported households` experienced shocks in the past five years (multiple response is possible)

Shocks/stresses	N =377	
	No of HHs affected	Percent of reporting HHs
Production reduction due to rainfall variability	329	87.3
Major production loss due to drought	321	85.1
Major crop damage by pests and/ crop diseases	245	65.0
Major price rise for agricultural inputs	78	20.7
Livestock death	66	17.5
Major crop damage by flood	41	10.9
Income fall due to health problem of HH members	25	6.6
HH`s crop damaged by hailstorm	24	6.4

Source: Own household survey, 2018

[5] *Genna* rain for the lowland districts such as Hawi Guddina and Burqa Dhintu, and Teyife starts at about the mid of September and lasts to end of November.

As it can be observed from Table 5.1, household survey confirmed that rainfall variability (*ciccita roobaa*) was the top natural disaster that most of the households (87.3%) experienced, followed by drought (85.1%) and crop pests and diseases (65%). Number of households who reported price rise for agricultural inputs and livestock deaths shocks were also not small, 17.5% and 10.9%, respectively. As the qualitative information revealed, households affected by flood were not much as compared to other disasters implying soil and water conservation activities being practiced in the district improved not only their land productivity but also the consequences of incidences. However, the number of households being affected by flood in the past five years from the sampled households could not be undermined.

The top three disasters reported by the households were most frequent in the past five years before this survey. More than the third of the households were affected by drought and rain fall variability three times within five years (34.7% and 40.3% households affected for 3 years, respectively).

Table 5.2: Frequency of the top three shocks in past five years reported by households

Frequency (in the past 5 years)	N=377					
	Drought		Rainfall variability		Crop pests & diseases	
	No of HHs	Percent	No of HHs	Percent	No of HHs	Percent
1	70	18.5	40	10.6	35	9.3
2	98	25.9	101	26.8	81	21.5
3	131	34.7	152	40.3	89	23.6
4	15	4	17	4.5	16	4.2
5	7	1.9	19	5	24	6.4
Total	321	84.9	329	87.3	245	65

Sources: own survey data, 2018

The environmental factors presented in this discussion are covariates that affect the wider population in the same locality. However, different households have different livelihood options, coping strategies and adaptation capacities, which could be reasons for different household in different *kebele*s reporting different magnitude of effects. In all the cases that have been discussed above, these households had been vulnerable residing in such volatile environment. Though, environment is not the only factor that affects livelihoods and food security status of households, Deverux (2010) was right when he wondered what graduation means for such households in such vulnerable environment. Except for very few who succeeded, graduation for many of the graduated

households in the study area was a forced removal as a result of which they fell again to needing external assistances.

All these factors could be summarized under livelihood assets and examined at household levels. Following, these factors are detailed and investigated at household level, and then aggregated into relative livelihood assets to create Livelihood Asset Indices. The created asset index is used to see the livelihood asset statuses of all groups of households (graduated, non-graduated and on-going PSNP households) and to compare across the groups in the study.

5.3. Livelihood assets and activities

5.3.1. Human capital

According to DFID (2001) human capital is the major component of livelihood assets that comprises:

> "…skills, knowledge and ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood outcomes. At a household level human capital is a factor of the amount and quality of labour available. This varies according to household size, skill levels, education, leadership potential, health status, etc. Human capital is necessary to be able to make use of the other four types of livelihood assets.

Thus, as human capital has a central role in facilitating the achievement of livelihood objectives that people pursue, exploration of this factor inform households' ability to increase income and to achieve food security. Accordingly, sample households' characteristics such as head sex, age, household size and dependency ratio, household education and health status were explored as a proxy of households' human capital.

5.3.1.1. Sex of head of study households

Human capital involves the quantity and quality of labour available which also in turn depends on time available (Degefa, 2005; DFID, 2001). Female headed households are much more labour constrained than male headed households as they have extra domestic tasks such as family management besides their main livelihood activities. In contrast, male-headed households have more labour time than female-headed households to expand their livelihood activities to increase their income. Thus, sex of head of households provide some indication of households' level of labour availability and income level.

According to the sample survey result of this study, out of 377 households, 306 (81.2%) households were male headed and 71 (18.8%) households were female headed (Table 5.3). Out of the 283 ongoing PSNP households 61(21.6%) were female headed (25 from non-graduated, and 36 from newly admitted) households. The proportion of female headed households in graduated households was 10%, which was the least as compared to the proportion of non-graduated (35.2) and new clients (17%). As focus group discussions revealed female headed households lack labor and more vulnerable to food insecurity. Thus, a greater number of female headed households remained in the program as non-graduated than graduated households.

Table 5.3: Sex of heads of study households

Household type	Household sex			%
	Female	%	Male	
Ongoing PSNP HHs (N=283)	61	21.6	222	78.4
Non-graduated (71)	25	35.2	46	64.8
New clients (N=212)	36	17	176	83
Graduates (N=94)	10	10.6	84	89.4
Total (N=377)	71	18.8	306	81.2

5.3.1.2. Household size and dependency ratio

Household size is often referred to as indication of labour availability at household level in rural communities where working age adults are reasonably high than dependents. However, in rural Ethiopia, larger household size with higher dependency ratio put more pressure on household food security; which means, an increase in household size and dependency ratio increase households' probability of being food insecure (Mesfin, 2014).

In this study, the mean household size of all sample households was 5.47 (5.5 for non-graduated, 5.12 for new entrants, and 6.2 for graduate households). These figures are greater than the national, Oromia, and Chiro district rural household average household size which was 4.9 (CSA, 2016); 5 and 4.8 persons (CSA, 2008), respectively. The mean dependency ratio (children under age of 15 and elders above 64 against the working age members in the household) for all sampled households was 1.47. The mean dependency ratio was 1.33 for graduated households; 1.64 for non-graduated households; and 1.47 for newly admitted PSNP households. One adult in the sampled households

supports more than one person. According to Ethiopian Demographic and Health Survey 2016, children under age of 15 accounted for 47.4% and elders aged 65 and above were 3.7% in rural Ethiopia. Accordingly, the dependency ratio in rural Ethiopia is almost 1 person per working age adult. When seen against the national average, dependency ratio of the sampled households is very high for PSNP households in Chiro.

Table 5.4: Household size and dependency ratio

Indicators	HH type	N	Mean	Std. Deviation
Household size*	Non-graduated	71	5.6	1.903
	New client	212	5.12	1.794
	Graduated	94	6.2	1.921
	Total	377	5.47	1.896
Dependency ratio	Non-graduated	71	1.6	1.41385
	New clients	212	1.5	1.22152
	Graduated HHs	94	1.33	0.88782
	Total	377	1.47	1.1894

Mann-Whitney U test of means differences		
	Household size	Dependency ratio
Mann-Whitney U	9433.000	12850.000
Wilcoxon W	49619.000	17315.000
Z	-4.281	-.496
Asymp. Sig. (2-tailed)	.000	.620

Source: Own household survey, 2018

*Note: Household size includes household members feeding from the same plate

Table 5.4 depicts household size and dependency ratio by three household groups, non-graduated, graduated, and ongoing households. Graduated households mean household size is the largest, but the least in terms of dependency ratio. Thus, on average, graduated households had about one more person (mean 6.20, Std. deviation=1.92) than ongoing PSNP households (mean =5.23, std. deviation=1.83). However, on average the ongoing PSNP households had more dependency ratio (M=1.5138, Std. deviation=127.2) than that of graduate households (M=1.3307, Std. deviation =88.8). To see the significance of these differences, Mann-Whitney test was conducted for both means on SPSS. The household size difference was significant at $p<.001$. However, the difference in dependency ration was not significant at $p \leq .05$.

Moreover, when household size and dependency ratio of non-graduated households were separated and compared against other household groups, it was found that non-graduated households had the largest dependency ratio of all groups, and larger household size than newly admitted PSNP households. We used Kruskal-Wallis test in this case to verify whether the differences were significant.

The test statistics still shows the same results. There was significant difference among the three groups of households in terms of household size, while indicating that there was no significant difference in terms of dependency ratio. Therefore, in order to understand the significance of household size mean difference between graduated and non-graduated, which is important to inform on their graduation status, post-hock test for Kruskal–Wallis is conducted by controlling for type I error by dividing .05 significance level by two (.05/2=.025) because we repeated the test.

Table 5.5: Post hoc Kruskal-Wallis test for household size differences (non-graduates against graduates)

	Total household size	Dependency ratio
Mann-Whitney U	2728	3031
Wilcoxon W	5284	7496
Z	-2.03	-1.01
Asymp. Sig. (2-tailed)	.042	.311

Source: Computed from own survey data, 2018

The test result for the equality of means of household size and dependency ratio for graduated and non-graduated households in Table 5.5 are non-significant for both household size and dependency ratio because p>. 025. Therefore, it could be concluded that there was no significant difference between the mean household size and dependency ratio of graduated and non-graduated households. However, household size of graduated households was significantly larger than the ongoing PSNP clients.

In general, labour constraint was not the issue in the study area. However, the study revealed that the increasing population pressure and the dwindling of natural resources, particularly the fragmentation of landholding (to be presented shortly here under) to the level that it could not produce the minimum food needs of a household is the apparent challenging fact in Chiro district.

5.3.1.3. Age of heads of study households

Experience in livelihood activities, particularly experience in agricultural activities, is usually considered as one of the determinants of households' improved income. Age of rural households' heads is assumed to be a proxy indicator of their ability to labour and their experiences in agricultural activities. Young heads of households may have more labour but less experience in agricultural practices than aged heads of households.

When we look at age distribution of the sampled households (Table 5.6) the newly admitted PSNP households composed more younger households (aged 30 and below) than the graduate households. The mean age of all households was 40 years with the minimum age being 18 and maximum 75. However, there were variations in household heads ages distribution among graduated, non-graduated and newly admitted PSNP households. The mean age of graduated households was greater than that of non-graduated and newly admitted PSNP households. As indicated in Table 4.35, the mean ages of graduated, non-graduated and new entrant PSNP households were 43, 41.68, and 38.58 years, respectively. The great majority of the households were in active working age category.

Table 5.6: Sample heads of households distribution by age

Household types	Number of HHs	Mean age	Minimum	Maximum
Non-graduated	71	41.68	25	58
Newly admitted	212	38.58	18	75
Graduated	94	43.02	25	65
All groups	377	40.27	18	75

Source: Own household survey, 2018

The non-graduated households` mean age was closer to the mean age of graduated households. The majority of the two groups, graduated and non-graduate households were older than the new entrants. The Mann-Whitney test for mean age differences is significant both at .05 and .025 (for the repeated test). It shows that they were older people who first joined PSNP in the previous years, and the current PSNP members were the grown-up young who formed families recently. The number of young households aged 18-31 in the new entrants was 77 (36.3%) in current PSNP households, whereas only 9.6% were found between ages 25-31 in graduated households. This is a new trend which informs that households who are adding up to PSNP program are not only the

previous backlog households but also the newly established young households. Thus, as the existing land holding is limited, the increases in population without new livelihood opportunities for the young population exacerbate the food insecurity situation of the rural population. One of the reasons for heaping up of the number of households who need PSNP was because of the adding up of the newly established households who couldn't find new livelihood options beyond agriculture by sharing limited lands with their families.

5.3.1.4 Education level of heads of study households

Households' education level is one major aspect of human capital. Accordingly, education level of the sample households was assessed through survey questionnaires. As it is depicted in Table 5.7, out of 377 household heads, 239 (63.4%) were not literate. Out of the remaining household heads, 129 (34.2%) attended up to first cycle primary school (1-4), and 8 (2.12%) household heads attended second cycle primary school (5-8). Only 1 household was found having educated above primary school.

Table 5.7: Household heads by education level

Household type	Level of education					
	Illiterate		First cycle primary (1-4)		Second cycle primary (5-8) & above	
	Frequency	Percent	Frequency	Percent	Frequency	percent
Non-graduated N=71)	52	73.2	18	25.4	1	1.4
New clients (N=212)	127	59.9	83	39.2	2	0.9
Graduated (N=94)	60	63.8	28	29.8	6	6.4
All HHs (N=377)	239	63.4	129	34.2	8	2.1

Source: Own survey data, 2018

The proportions of illiterate households in their respective categories calculated from the Table 5.7 were 73.2% from non-graduated households, 59.9% from newly admitted clients, and 63.8% from graduated households. The education attainment of newly admitted PSNP households was higher than the mean of graduated and non-graduated households; however, the difference was not significant at $p<.05$. In general, the education attainment of the overall sampled households was very minimal, out of which only 36.6% attained some primary schooling. This shows that almost all study households were poor in terms of one important component of human capital, education.

5.3.1.5. Health status of heads of study households

Health is also another important factor of human capital. Regarding households' health status and ability to work, out of the 377 sample household heads, 35 (9.3%) reported that they could not able to work due to different health problems. Among the reporting household heads, 8 were non-graduated, 12 were new clients, and 15 were graduates. The proportion of household heads that were not able to work from graduated households was high (16%), relative to non-graduates and new PSNP clients' household heads which were 11.3%, and 6.7%, respectively. This implies that graduated households were more vulnerable to income reduction due to their health problem.

5.3.2. Households' access to natural capital

According to Scoones (1998) natural capital comprises resources such as land (soil), water, air, genetic and others, as well as environmental services such as hydrological cycle and waste sinks from which resources and services beneficial for livelihoods are obtained. Land, water and environmental resources are the major natural resources upon which the majority of rural households in Ethiopia rely to derive their livelihoods. These and other related variables are assessed in this study as determinant of households' food security status.

Mean differences of some livelihood assets were compared among group of sampled households, ongoing PSNP and graduated households, after testing for the normality of data distribution and homogeneity assumption of parametric tests. Kolmogorov-Smirnov test and Shapiro-Wilk test were used to see whether data distribution was normal. Likewise, the null hypothesis for the equality of variances in different groups was tested by Levene`s test which is considered 'simple and elegant test' (Field, 2009). The tests conducted for the variables described in this section revealed that two or either of the parametric assumptions, normality of data distribution and homogeneity of variances, were violated. Therefore, for the analysis of equality of means assumption free non-parametric tests known as Mann-Whitney U test and Kruskal-Wallis test for more than two independent means were used.

5.3.2.1.1. Land resource

According to Dessalegn (2009) a household with an average family size in Ethiopia require 2.5-3.5 hectares of 'good quality land' to harvest adequate food income for its family for one harvest year. However, survey data on sample graduated, non-graduated, and newly admitted PSNP households showed that the grand mean land holding size was 0.37 hectares (0.412 for graduated, 0.345 and 0.359 for new entrant PSNP households, respectively). According to the information

from district Agriculture and Natural Resource Office, no land redistribution was made by government since PSNP was launched.

Table 5.8: Land holding size by sampled household types

Household category	Mean (ha)	Std. Deviation	Minimum	Maximum
Non-graduated (N=71)	0.34465	0.207	0.000	1.000
New clients (N=212)	0.35886	0.234	0.000	1.750
Graduated (N=94)	0.41782	0.266	0.125	1.500
Total (N=377)	0.37088	0.238	0.000	1.750
Kruskal- Wallis test				
				Total land (ha)
Chi-Square				2.441
df				2
Asymp. Sig.				0.295

Source: Own survey, 2018

A further detailed disaggregation of land holding size by sampled households shows that how they were vulnerable (see Table 5.9). Out of 377 sampled households, 64.5% had less than 0.5 hectares, 2.1% had no land. Households with land holding more than 0.5 hectare but less than 1 hectare were 29.4% where as those with holding size of 1 and more hectares were only 4% of the total sampled households. Thus, the great majority of the PSNP households, both graduated and ongoing live on what Dessalegn (2009) called 'micro-holding' which could not generate adequate crop incomes to support the average family size of 5 persons during normal harvest years even by the threshold of 0.6 ha holding size forwarded by Getachew (2018).

Table 5.9: Land holding size of all sample households

	Frequencies				
Size of land held (ha)	Non-graduated	New clients	Graduate	Total	Percent
0	1	7	0	8	2.1
0.01-0.125	9	24	14	47	12.5
0.126-0.24	8	14	1	23	6.1
0.26-0.49	28	104	41	173	45.9
0.5-0.99	24	56	31	111	29.4
≥1	1	7	7	15	4.0
Sum	71	212	94	377	100

Source: Own survey, 2018

When we look at the mean land holding data for sampled households presented in Table 5.9, graduate households had relatively better land holding size than the ongoing PSNP households (non-graduated and new entrants). However, Kruskal-Wallis test indicated the difference was not significant, H (2) 2.44, p >.5, [H is the test statistics for Kruskal-Wallis, but SPSS labeled it chi-square due to its distribution (Field, 2009)].

When land holding data was again disaggregated into sampled *kebele*s, households in Merewa Rebsu *kebele*, which is predominantly highland *kebele*, held a tiny patch of land (see Table 5.10). As it was for general population in the sampled *kebel*es, land holding size of sampled households in Medhicho-9 and Medhicho-2 was better than other two *kebele*s.

Table 5.10: Study households landholding status by kebele

*Kebele*s	N	Mean (ha)	Std. Deviation	Std. Error	Minimum	Maximum
Merewa Rebsu	45	.26238	.130625	.019472	.010	.550
Wachu Ifebas	111	.34677	.139948	.013283	.125	1.000
Medhicho- 2	85	.37797	.262802	.028505	.000	1.500
Medhicho-9	136	.42204	.293701	.025185	.000	1.750
Total	377	.37088	.238046	.012260	.000	1.750

Source: Own survey.2018

FGDs and key informant interviews informed that one of the major reasons for the PSNP households becoming chronically food insecure was due to limited or lack of landholding. The quantitative data presented in the Table 5.9 confirmed that most of both the graduated and non-graduated sample households were poor in terms of land holding. Though the statistical test shows that the difference in terms of land holding was not significant, households who were allowed to remain in the PSNP from the previous program(non-graduates) phases were poorer than graduated households in terms of mean land holding, and even they held lesser land than newly admitted PSNP households. As it was informed by FGD and key informant interviews in all the 4 *kebel*es, one of the reasons for non-graduated households' inability to graduate from the program was lack of or scarcity of landholding. The results from the household survey corresponds to this conception.

6.3.2.2.2. Land quality

Deforestation, floods and soil erosion, though qualitative information revealed significant improvements in these regards, are still environmental problems in the district. PSNP public work component was well acknowledged by the local community and participants for its significant contribution towards soil and water conservation and environmental rehabilitation. However, the public work had been done on public/community lands so that it had not been well protected. As the FGDs with graduate households in Merewa Rebsu and W/Ifebas *kebele*s as well as interview with key informants indicated, good experience was gained from public work activities to practice them on private lands. Thus, many farmers, though not all, in the sampled *kebele*s practiced soil and water conservation activities on the lands they held. However, few of the households did not apply the experiences on their lands as a result of which their lands were affected by floods and lost its fertility. Researcher`s own observation confirmed that not all households were practicing soil and water conservation activities (look the differences in the Figure 5). The individual differences in land management were also informed as a reason for some households' inability to improve their food incomes from the land they owned.

Figure 5: Partial scenery of study *kebeles* and their surrounding

Source: Photo taken by the researcher, 2018

The majority of the sampled households had access to very small patch of land, the topography of which was not suitable for farming without proper land management. Surveyed households' perception of their land quality informed that the majority, 275 (72.9%) of the households perceived that the land they held was fertile/moderately fertile. Only 93 (24.7%) of sampled households reported that the land they held was degraded and infertile (Table 5.11).

Table 5.11: Households perception of land quality held (in average)

Household type	Land quality					
	Degraded/infertile		Moderately fertile/fertile		Total	
	Number of HHs	%	Number of HHs	%	N	%
Non-graduated (N=71)	21	29.6	48	67.6	69	97.2
New client (N=212)	58	27.4	148	69.8	206	97.2
Graduate (N=94)	14	14.9	79	84	83	98.9

Source: Own survey data, 2018

According to my physical observation, c*hat/jima* was the widely observed vegetation cover on farming plots in the study *kebele*s. Though the main purpose of growing *chat/jima* in the area was for cash income generation and home consumption, the management practice adopted on *chat/jima* farm by the farmers was observed to be important for soil and water conservation. Soil and stone bunds with varying standards were also observed on plots of individual farm land. A simple physical observation of the depth of soil in farming plots of individual farms where there were better conservation practices inform better soil cover. This was probably why many of the households reported that the land they held was moderately fertile, though the great mass of land area was vulnerable to erosion. As can be observed from Figure 5, some areas vulnerable to erosion were not well conserved. This confirms qualitative information that communicated individual efforts vary in their land management practices as a result of which their crop incomes from their land and progress towards graduation differ.

5.3.3. Physical capital

According to DFID (1999), physical capital comprises basic infrastructures, productive assets and households' means of pursuing their livelihood. In this study, productive assets at household levels such as irrigation infrastructure, water pumps, water harvesting schemes, and livestock holding are important productive physical assets considered for investigation. Moreover, households' access and use of agricultural technology such as fertilizers (chemical and compost), improved seeds and pesticides are farm inputs important for improving agricultural production and productivity.

5.3.3.1 Access to irrigation

As repeatedly referred to in the preceding discussions, Chiro district has been frequently affected by drought and rainfall variability. Irrigation and water harvesting where there is potential are the envisaged adaptation strategies in the food security program intervention. According to the information obtained from Chiro District Office of Irrigation Development, the district has irrigation potential of 4653 hectares (4308 ha traditional, and 345 ha modern irrigation). Out of these, 3,619 ha (3,357 ha traditional, and 262 ha modern irrigation) was developed. Moreover, 10,602 households had access to the irrigable areas, the great majority of which (9,384 households) were using traditional irrigation, whereas only 768 households were benefiting from modern irrigation prior to the collection of this study.

However, survey data from all households in the sample survey indicated that only 38 households (10.1%) had access to some types of irrigation water. Though, the number of households in the total population using irrigation reported by the district was big, the number of sampled food insecure households who had access to water for irrigation was negligible. Among households who reported having access to irrigation, 11 households were non-graduated, 9 households were new clients, and 18 households were graduated (Table 5.12). The proportion of graduated and non-graduated households who had access to some types of irrigation water was relatively better than the newly joined PSNP households.

Table 5.12: Access to irrigation water from all sources

Household type in the program	Households with access to any irrigation water	
	Frequency	Percent
Non-graduated (N=71)	11	15.5
New clients (N=212)	9	4.2
Graduated (N=94)	18	19.1
Total	38	10.1

Source: Own survey data, 2018

5.3.3.2. Livestock holding

Livestock is an important livelihood asset in rural Ethiopia. They are store of wealth that is used as means of investment, security and incomes. They provide draught power for crop production

and serve as means of transport for moving people and goods. Better-off farmers in Hararghe zones in Oromia are known for bull fattening from which they earn a substantial amount of cash incomes. According to my key informant from West Harerghe Zone Office of DRM, as the size of land holding has been diminishing, grazing land has become scant, particularly in the high-land and mid-lands of Chiro District. Therefore, the livestock holding size per a household has been decreasing, particularly negligible or not available for the poor.

Taking the current estimate of 5 persons household size, the 2016,090 rural population estimated for Chiro district as of July 2017 (CSA, 2013) would be 43, 218 households. Accordingly, the mean livestock holding per a household in the district would be 2.12 TLU (see annex 6 for livestock population in the Chiro District).

Regarding the livestock holding status of the study households, out of 283 on-going PSNP households 62 (22%) households had no livestock of any kind (16 non-graduated, and 46 new PSNP clients). Among 94 graduate households, 36 (38.3%) households had also no livestock of any kind. Households' ownership of oxen/bulls, which are very important productive assets, not only as traction power for farming but also for fattening and generating cash income, was also limited among graduated and non-graduated households. Out of 283 ongoing PSNP households, 71.7% of them had no oxen/bull; and out of 94 graduate households, 61 (64.5%) had no ox/bull. These mean number of sampled households without oxen/bull in Chiro were by far greater than the national average of farmers without oxen, which was 40.89% in same year, 2017/2018 (CSA, 2018). The mean livestock holding for graduated, non-graduated and new entrant households in TLU[6] was 0.83; 0.84, and 0 .92, respectively. Therefore, the mean livestock holding size of both ongoing PSNP and graduated households was less than half of the mean livestock size of households in the district. The mean livestock holding size of newly admitted PSNP households was slightly better than non-graduated and graduated households; and the observed mean difference is found statistically significant at 0.05 alpha levels. This could be attributed to the new livelihood transfer which prioritized the landless and those who did not benefit from credit component of HABP. In general, both ongoing PSNP clients and graduated households were found

[6] Livestock species were converted to Tropical Livestock Unit (TLU) following FAO (Production Year Book,1979, in Jahnke, 1992): cattle=0.7; shoats =0.1; camels =1; horses=0.8; mules=0.7; donkeys=0.5; chickens= 0.01.

the poorest in terms of the livestock holding as compared to the mean livestock holding size in the district.

5.3.3.3. Access to and use of agricultural technologies

Ethiopian economy has been and is still dominated by agriculture, mainly of smallholders, accounting for about 38.5% of GDP (NPCb, 2017); 73% of employment and about 80% of export earnings (ATA, 2014). On the one hand, there has been an argument that claims households` food insecurity in Ethiopia is explained by its dependence on "unreliable and low-productivity rain-fed-agriculture" (Devereux, 2000). On the other hand, in spite of its multiple vulnerabilities, much is expected from agricultural sector to improve the food security situation at national and household levels. Current government`s policy focus has been given to ensuring food availability through agricultural productivity enhancement programs, with more emphasis on extension package and input supply such as chemical fertilizers, improved seeds, training and advising farmers to prepare composite at household level.

Of total surveyed households, 96.6% of them were engaged in farming as their main occupation, whereas the remaining 3.4% reported depending on causal labor (both skills work and manual labor) and others. Household survey conducted to obtain data on how food insecure households had access and used agricultural technologies and participated in extension package has shown that about 66% of all households reported that they used chemical fertilizers, and about same percent prepared and used compost. Use of improved seeds and pesticides were 38.7% and 13.5%, respectively (Table 5.13).

Table 5.13: Households reported use of agricultural technologies

Household type in the program		Use of chemical fertilizers	Preparation and use of compost	Use of improved seeds	Use of pesticides
Non-graduated (N=71)	Frequency	38	41	30	15
	Percent	53.52	57.75	42.25	21.13
New clients (N=212)	Frequency	153	133	72	19
	Percent	72.17	62.74	33.96	8.96
Graduated (N=94)	Frequency	59	74	44	17
	Percent	62.75	78.72	46.81	18.1
All HHs (N=377)	Frequency	250	248	146	51
	Percent	66.3	65.8	38.7	13.5

Source: Own survey data, 2018

Number of households who had access to improved seeds was 38.7%. The mean chemical fertilizer use reported by all households was 26.24 kg/ha, a year before the survey. This means chemical fertilizer application reported by the households was by far below blanket recommendation of 100kg/ ha set at regional level. Qualitative information from participant households regarding the limited amount of chemical fertilizers use was not due to shortage of supply, but households' lack of capacity to purchase, and in some cases lack of interest. As per FGDs with PSNP households, some households were forced to take fertilizer to fulfill the quota of fertilizer supply; yet those households did not use all the fertilizers they took but resold it for less of its price. This was due to government`s push to use farm technologies that it believed improve productivity without the consent of the end user farmers. Thus, taking the reported amount of fertilizers does not imply that all was applied. The low level of improved seeds usage, however, was mainly due to limited supply as informed by participants and Development Agents.

5.3.4. Financial resources

Financial resource provides different livelihood options to the households to diversify their income sources and increase their incomes. It was already learnt upon the design of HABP that food insecure households lack financial capital. Therefore, the major livelihood enhancing component of Food Security Program was designed to provide financial resources and services. Thus, the study households' sources of financial capital are loans from HABP/OFSP, off-farm and on–farm activities such as petty trade, temporal wage labor, sales of cash crop such as *chat/jima*, vegetables, livestock and livestock products, and from own savings.

5.3.4.1. Access to program supported financial sources

As it has already been discussed in the preceding sections, not all graduated households had access to OFSP/HABP before their graduation as it was envisaged. They were also supposed to be eligible to loans /credits from HABP after graduation in order to enable them to further build their asset and become fully food secure, or at least maintain their gains from their participation in FSP. The on-going PSNP households, both non-graduated and new clients, were expected to be fully supported by HABP in order to be able to engage in diversified livelihood activities, to improve their income, accumulate assets, and finally to be able to graduate from PSNP program.

Sampled households access level to financial resources and services from food security program and other sources are summarize in Tables 5.14; 5.15, and Figure 6. Tables 5.14 and 5.15 show access to financial services and products from food security program and related activities such as Village Saving and Loan Association (VSLA). Other sources of financial capital and amounts of financial income in the year prior to the household survey was summarized in Figure 6 and discussed.

Table 5.14: Households' access to financial services and products from FSP

Household type	Financial services	Frequency	Percent
Non-graduate (N=71)	Access to credit/loan	7	10
	Had saving	17	24
New clients (N=212)	Access to credit/loan	15	7
	Had saving	72	34
Graduated (N=94)	Access to credit/loan	6	6.4
	Had saving	20	21
All households (N=377)	Access to credit/loan	29	7.7
	Had saving	109	29

Source: Own survey data, 2018

As can be observed from Table 5.14, of the total 377 surveyed households, only 7.7 % had access to credit/loan, and 29% had saving (this was dominantly in VSLA). The number of ongoing PSNP households having access to credit/loan from FSP was only 7.8%; that was 22 households (7 non-graduated, 15 new clients). Those on-going PSNP households who reported to have saving were 89 (31.5%) households (17 non-graduated, 72 new clients). Graduated households who had access to credit/loan after graduation were only 6 (6.4%) households. However, 20 (21%) households reported to have saving during the household survey.

Regarding the amount of saving they had, 89 ongoing PSNP households (17 non-graduated, and 72 new clients), and 16 graduated households responded to the survey question (Table 5.15).

Table 5.15: Household`s self-reported amount of saving during survey

Household types	Number of reported HHs	Total saving (*Birr*)	Mean saving (*Birr*)
Ongoing PSNP HHs	89	100895	1134
• Non-graduate (N=71)	17	22166	1304
• New clients (N=212)	72	78729	1094
Graduated (N=94)	16	19494	1218
All households (N=377)	105	120,389	1147

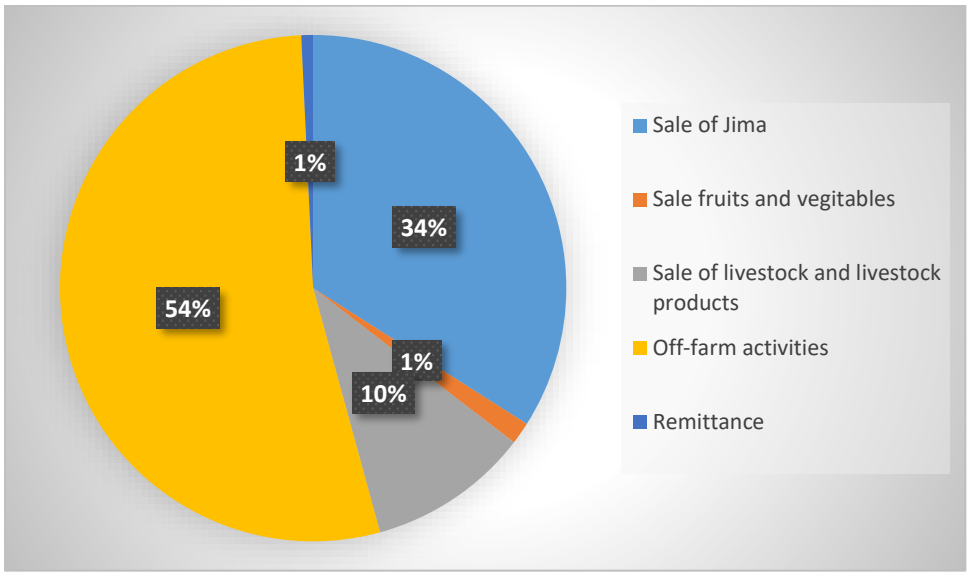
Though 20 graduated households informed having saving (Table 5.14), only 16 of them (Table 5.15) reported the saving amount they had during the household survey. Thus, the mean saving amount graduate households reported was 1218 *Birr* while that of ongoing PSNP households was 1134 *Birr* at the time household survey for this study was conducted.

However, the number of all households who had access to credit was small as compared to those who needed it. The total savings of the 105 households who reported to have saved was 120,389 *Birr*, the mean of which was 1147 *Birr* for those who reported the amount they saved. A greater number of households saved than the number of those who took loan due to the VSLA that encourages saving before lending. Observed prospect for households participating in VSLA was that CARE was working on training, coaching and finally attaching them to MFI working in the area. However, the level of service available to households was far below the number of households who needed it.

5.3.4.2. Other cash incomes and sources

Crop production, mainly sorghum and maize were produced for home consumption. *Chat/jima*, fruits and vegetables, livestock and livestock products, off-farm activities and remittances were reported as sources of cash income. Of all sources of cash income listed, off-farm activities and *Chat/jima* comprised the lion`s share of households' cash income; 54% and 34%, respectively. Cash income from livestock and livestock products was 10%, whereas 1% from each of fruits and vegetables sales and remittances (Figure 6).

Figure 6: Sources of all households` cash income



Source: Own survey data, 2018

The overall mean annual cash income per a household from all sources in *Birr*, excluding cash transfers from PSNP, was 5052.96 for non-graduated, 4668.87 for new clients, and 8674.36 for graduated households. Of these cash incomes, the overall mean cash income that was generated from off-farm activities a year prior to the household survey was *Birr* 27,24.08 (53.9%) for non-graduated, 28,05.64 (60.1%) for new clients, and 39,30.53 (45.3%) for graduated households.

The mean cash incomes differences among all household categories was significant at $p<.05$. It showed that the annual mean cash income of graduated households from all sources was significantly higher than that of the non-graduated and new entrants. The repeated Mann-Whiteny test for comparison between graduated and non-graduated here was seen against alpha.025 and found significant. The mean cash income from off-farm incomes was the same across all household categories, because the difference was not significant at alpha .05.

In general, though access to financial capital is assumed to enable households to participate in diversified income sources, the number of households who accessed the service from formal institutions such as MFI was insignificant. As the quantitative data presented in Figure 6 shows the majority of study households obtain cash income from off-farm activities, particularly from petty trade. However, as the FGD with ongoing PSNP participants in Medhicho-9 indicated, what they gain from petty trade was not more than the daily consumption needs of their household. They informed that they were constrained by financial resources to expand their business to more lucrative activities, such as livestock fattening. In fact, they acknowledged that because of high

defaulters of the loan provided from OFSP in Medhicho-9, MFI quitted providing service in the *kebele*. Therefore, government and non-governmental organizations working on food security program in the study *kebeles* need to address issues of access to financial resources for those who need it, by giving due attention to ensuring diligent financial management discipline.

5.3.5. Social capital

Social capital is social resources comprising social networks, social relations, and membership of groups upon which people depend in pursuing different livelihood strategies (Scoones, *1998*). Sometimes political capital is considered as another component of SLF assets. In this study, too, participation in *kebele* political and leadership activities was considered as an important resource for a household to access information and claim its rights of entitlement. Moreover, social networks such as participation in self-help social group such as *iqub (*saving*), afosha (self-help organization during some shocks defined by their bylaws) dabo (voluntary labor contribution to one who ask for assistance like during pick agricultural activities)* farmers' development group, farmers` cooperatives, and regular extension were important social capital of food insecure households. Accordingly, households` participation in self-help informal social groups was found high for all groups of the households, 86% for all, and 83% for graduated, 89% for new entrants, and 85% for non-graduated. Households' participation in regular extension, in farmers` development group, and in farmers` cooperatives were 62%; 52% and 18%, respectively. About 30% of the households participated in *kebele* political/leadership activities (Table 5.16).

Table 5.16: Summary of participation in various institutions (formal and informal)

Household type in the program		Institutions				
		Self-help group	Farmers development group	Regular extension	Farmers coops.	*kebele* political/ leadership
Non-graduated (N=71)	Yes	60	29	34	7	23
	%	85	41	48	10	32
New client (N=212)	Yes	188	113	136	38	56
	%	89	53	64	18	26
Graduated (N=94)	Yes	78	63	62	21	33
	%	83	67	66	22	35
All HHs (N=377)	Yes	326	205	232	66	112
	%	86	54	62	18	30

Source: Own survey data, 2018

A simple look at the means of each category households` participation in different social networks and organizations in the Table 5.16 indicates that non-graduated households were the poorest of all in participating in the three important economic institutions and networks such as in farmers` development groups, in regular extension, and in farmers` cooperatives. The participation of graduated households in all social capital components except participation in self-help groups was the best of all categories. This is in line with qualitative information obtained from FGDs which indicated that poorer households` participation in *kebele* institutions such as farmers' development groups and regular extension through which experiences, information on agricultural technologies and other services are disseminated was less than participation of other farmers. This implies that poor households lag behind in getting information and adopting good agricultural technologies and farming practices which are important for improving their incomes.

5.3.6. Livelihood asset index to measure and compare households` asset status

Asset based indicators are used as an alternative to income and consumption expenditures to measure households' wellbeing, for it is considered to be less affected by short-term changes and it provides more a long-term economic status of a household. Asset is a proxy indicator of household food security as it informs about the ability of a household to access food. Assets are observable and easily captured in rural areas. This study focused on household assets here because asset-based indicators are used for assessing households' food security and its ability to graduate from PSNP program in Ethiopia. In fact, a practice in Oromia in general and in Chiro district in particular employs a mix of asset value and income from on-farm and off-farm sources in assessing households` graduation status. Though the community-based evaluation was not guided by sustainable livelihood framework, the qualitative information conveyed that there were considerations of components of livelihood capitals.

Thus, even though the detailed qualitative and descriptive assessment of livelihood assets of the sample households in the study area has already been presented in the preceding discussion, this part aims to summarize the livelihood asset components in to the five capitals by creating composite asset indices and to provide the holistic picture of households' livelihood asset status. As the majority of graduated households perceived that there were no significant differences among graduated and ongoing PSNP households, the asset index developed from household survey here is presumed to provide relative asset status of a group of households in the study area. Thus, it would reveal, in a comprehensive way, where the future policy focus would be.

6.3.2.6. Results from Livelihood Asset Indices and discussion

The indices of the five livelihood assets were calculated separately using MCA as explained in the methodology section. The overall livelihood assets composite index is generated by summing the five capitals indices and dividing by 5. Output summary of five livelihood assets indices` weights and composite index for all surveyed households were already presented in Chapter 3 (Table 3.2).

Table 5.17: Livelihood Assets Indices

Variable	Obs	Mean	Std.dev	Min	Max
Human capital (HC)	377	.531	.199	1.08	1
Social capital (SC)	377	.294	.235	.000	1
Natural capital (NC)	368	.289	.207	.000	1
Financial capital (FC)	377	.201	.209	-2.51	1
Physical capital (PC)	377	.209	.135	1.02	.553
Livelihood assets composite index (LAC index)	368	.303	.092	.0332	.627

Source: Own household survey, 2018

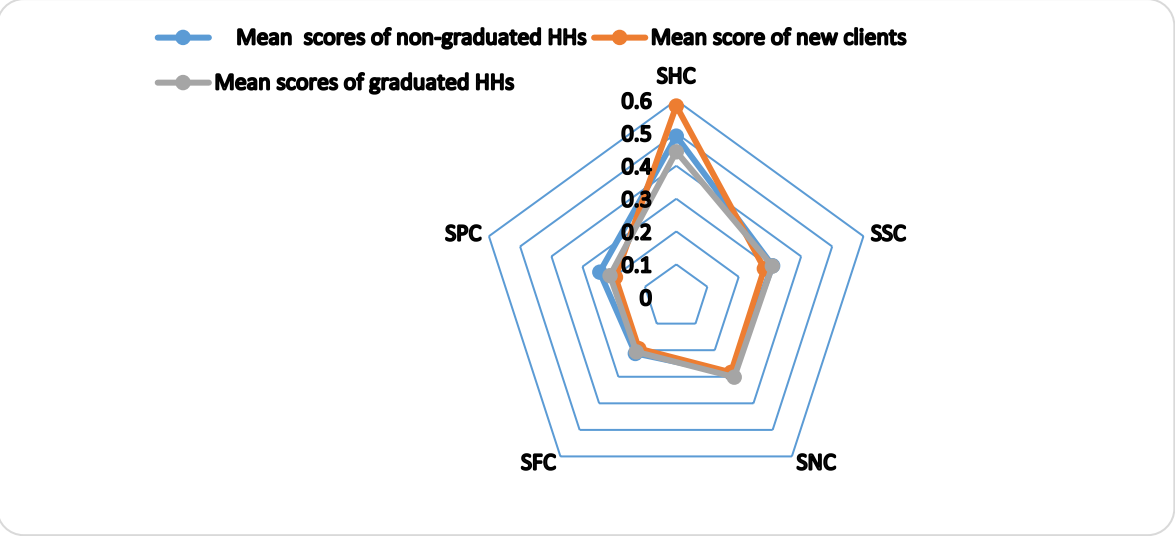
As it can be observed from Table 5.17, the mean index value of .531 for human capital was the highest score of all other livelihood asset scores out of 1. Households' mean financial capital, .201, was the least of all livelihood assets. Social capital, natural capital and financial capitals endowments were also below 30% of total scores of their respective expected values of 1. The overall mean composite livelihood index score for all sample households was .303. In fact this index by itself does not tell anything unless it is compared across other groups of households. Table 5.18 presents the mean scores of the three categories of households on the five livelihood assets. The mean scores are more meaningful when compared across the household types. Figure 7 shows the mean differences across the three groups of households.

Table 5.18: Livelihood assets index score by household types

Household type	Variables	Obs	Mean
Non-graduated	HC	71	.491
	SC	71	.309
	NC	71	.288
	FC	71	.212
	PC	71	.245
Newly admitted	HC	212	.583
	SC	212	.282
	NC	212	.284
	FC	212	.194
	PC	212	.195
Graduated	HC	94	.443
	SC	94	.308
	NC	94	.301
	FC	94	.206
	PC	94	.212

Source: Own survey data, 2018

Figure 7: Households relative asset status



Source: own household survey, 2018

Note: HC= Human Capital; SC= Social Capital; NC= Natural Capital FC= Financial Capital; PC= Physical Capital; and S denotes standardized asset index

As it could be observed from Table 5.18 and Figure 7, the mean scores of all households on the five livelihood assets was below .5 out of 1, except on human capital index for newly admitted PSNP households. The Human Capital Index was the highest for all categories of households. Of all the three groups of households newly admitted PSNP households had the highest score on human capital. However, graduated households' human capital score was the lowest of all groups of households.

Moreover, non-graduated households had the highest score of all the three household categories on Financial Capital Index, and followed by graduated households. The new clients` score was the least of all scores of the three groups on financial capital. In terms of social and physical capitals, the score of non-graduated households was found the highest, followed by that of graduated households in the scores of both asset indices.

Graduated households were found relatively the best only in natural capital ownership, which was predominantly explained by land holding. This was the preexisting asset that could not be attributable to program effect. The newly admitted PSNP households were found the poorest in terms of natural, social, and physical capitals possession.

The results presented on the scores of different livelihood assets indices help to identify which group of households was better endowed or poorer in terms of different livelihood assets. It also helps to identify which groups of the households require what more than the other groups for intervention. However, they do not show the overall picture of the difference across all households, for the differences we observed among household groups based on the five capitals was mixed. Therefore, using composite index was found more useful to compare differences across the group of households to find out whether there was significant difference across the groups of households in terms of the overall asset endowment.

Table 5.19 presents the composite livelihood assets index score for each category of households. It shows the mean differences of composite livelihood scores across the three groups of households. The mean scores of the livelihood composite index for the non-graduated and new clients (both were ongoing PSNP clients) were almost the same, whereas that of graduated households was the lowest.

Table 5.19: Summary of livelihood assets composite index by household category

Household type in the program	N	Mean	Std. Dev.
Non-graduated	69	.306	.109
New client	206	.306	.084
Graduated	93	.295	.095
Total	368	.3034	.092

Source: Own survey data, 2018

The means differences across the groups of households we have observed here needed to be tested. To decide which test to conduct, the assumptions of parametric tests, tests of normality of sampling distribution and homogeneity of variances were carried out. Accordingly, Kolmogov-Smirnov and Shapiro-Wilk test for normality of the distribution, and Levene`s test for homogeneity of variances were conducted on the livelihood asset indices created for the groups of households and learned that the parametric assumption was broken. Therefore, the Kruskal Wallis non-parametric test was conducted to test for equality of mean asset endowment. The result shows that there were no significant differences in the means of livelihood asset values across the group of households, H (2) =.674, p>.05 (see Table 5.20).

Table 5.20: Kruskal-Wallis test for equality of livelihood assets mean scores

Household type in the program		N	Mean Rank
Livelihood assets composite index	Non-graduated HHs	71	182.95
	New client	212	193.04
	Graduate	94	184.46
	Total	377	
Test statistics	Composite index		
Chi-Square			0.674
df			2
Asymp. Sig.			0.714

Source: Calculated from own survey data, 2018

As we have seen, there were some disparities across graduated, non-graduated, and newly admitted PSNP households in terms of different assets possessions measured in terms of the five livelihood capitals. However, when the whole livelihood assets were combined in terms of composite

livelihood asset index and the mean values were compared across the groups of the households, the differences were not significant. Nevertheless, it has to be born in mind that this does not mean that none of the study households were different from the other. The ranked mean in Kruskal Wallis test showed that new clients had higher rank, implying that they were somewhat better than the others; yet the effect size was not big enough to mark significant differences. As depicted in Table 5.18, it was the human capital asset score that was big for newly admitted households. In the preceding exposition of detailed household assets, it was found out that the newly admitted PSNP households were young and were better educated than non-graduated and graduated households. Likewise, graduated households` mean land holding size was significantly better than that of the other groups of households, which was the preexisting asset.

In all cases, the mean livelihood asset index values of graduated households were not better than that of the ongoing PSNP households. It has to be recognized that the result here was the livelihood assets status of graduated households at the time of the study, not upon their graduation. Some consumable assets might had been used up or lost due to different reasons after their graduation. Household survey results on graduated households` perception on their household asset status upon and after their graduation has shown that 33% of them reported that their level of asset holding was declined. About 48 % reported no change, whereas 19% testified growing.

Table 5.21: Households` perception of asset holding status as compared to upon graduation

HHs	Responses	Frequency	Percent
Graduate households (N=94)	No change	45	47.9
	Increased/growing	18	19.1
	Decreased	31	33.0
	Total	94	100

Source: Own survey data, 2018

Thus, the graduated households' current asset holding status has to be understood together with what happened to their asset since then. On average, the study confirmed that there was no significant difference between graduated and on-going PSNP households` asset endowment when the household survey was conducted for this study. This is consistent with the qualitative information obtained through FGDs and individual interviews that revealed that there was no

significant difference among graduated and ongoing PSNP households in the study area in terms of their asset possession.

5.3.7. Livelihood strategies and activities

5.3.7.1. Crop production and livestock raising

Crop production (sorghum, maize, barely, wheat, *chat/jima*) and livestock raising (rare among poor households) are the main livelihood activities of the rural population in Chiro district. Among sampled graduated and non-graduated households, 96.6% depended on mixed or crop farming. The remaining 3.6% reported that they relied on different non-farm activities such as daily labor, petty trade and others as their main source of subsistence. The crop production activity heavily relies on rain-fed agriculture. As already presented in the previous discussion, there were only 38 households (10%) of all the sampled households who had access to irrigation. The mean livestock holding for all households in TLU was only 0.89. Therefore, rain fed crop production was the major economic activity upon which sampled households relied. Food crops such as sorghum, maize, barely, wheat, pulses, oilseeds, and cash crops, largely *chat/jima* and vegetables, are grown in the study area. However, other than food transfers from PSNP or food aid, the study households covered their food requirements not only from own production but also from purchase on markets.

Table 5.22: Households grain income in the previous year from own production and purchase

Grain type	Own production (kg)	Purchased (kg)	Sum (kg)	Own production percent of total	Percent of overall production
Sorghum	137650	67010	204660	67.3	75.1
Maize	24225	8050	32275	75.1	11.8
Barely	464	0	464	100.0	0.2
Teff	100	620	720	13.9	0.3
Oilseeds	135	0	135	100.0	0.0
Pulses	16852	16851	33703	50.0	12.4
Wheat	40	575	615	6.5	0.2
Total	179466	93106	272572	65.8	100

Source: Own survey data, 2018

As depicted in the Table 5.22, the major food grain produced or procured are sorghum, pulses and maize in order of the available size. Out of the total grain households reported to have obtained

from own sources, 66% of it was from own production whereas the remaining 32% was purchased. As already discussed under financial capital and will shortly be presented under the following section, sources of income for grain procured were mainly from different on-farm and off-farm income generating activities and from involvement in daily labor.

5.3.7.2. Off-farm activities

The majority of households, particularly women, engage in different non-farm activities to generate cash income required to cover their food and other expenses. According to the household survey result, 235 (62.3%) households participated in different non-farm activities, besides the main occupation they reported. The mean annual cash income of all sampled households from non-farm activities as reported by the households was about 3071 *Birr* (2724 for non-graduated, 2806 for new clients, and 3931 for graduated).

Table 5.23: Household participation in off-farm activities

Household type in the program	Response	Frequency	Percent
Non-graduated (N=71)	No	26	36.6
	Yes	45	63.4
	Total	71	100
New clients (N=212)	No	78	36.8
	Yes	134	63.2
	Total	212	100.0
Graduated (N=94)	No	33	35.1
	Yes	61	64.9
	Total	94	100
All households (N=377)	No	137	36.3
	Yes	240	63.7
	Total	377	100

Source: Own survey data, 2018

Among the 71 non-graduate households, 43 (63.4%) households participate in off-farm activities, whereas among 212 newly admitted households 134 (63.2%) of them participated in different off-farm activities. Moreover, the number of graduate households in off-farm activities was 61 (64.9%) households. Out of the total sampled households, 137 (36.3%) reported that none of their household members participated in off-farming activities.

Different non-farm activities that households reported having participated in were, petty trade, causal/manual labor, pottery, weaving/tailor, wood work, and sale of food or beverage, in the order of the number of household members engaged in (Table 5.24).

Table 5.24: Non-farm activities and number of household members participating

	Number of household members engaged in non-farm activities						
Household type in the program	Petty trade	Causal/wage labor	Pottery	Weaving/ tailoring	wood work	Sale of food/ beverage	Total
Non-graduate	19	18	9	2	0	0	48
New PSNP HHs	45	45	25	24	2	0	141
Graduate HHs	64	18	13	2	2	4	103
Total	128	81	47	28	4	4	292
Percent of total	43.8	27.7	16.1	9.6	1.4	1.4	100

Source: Own survey data, 2018

Petty trade, which was mainly *chat* trade, was the major off-farm activity in which the great number of women (spouses) in the households engaged in, followed by causal/wage labor, mainly local labor such as harvesting and packing *chat*, working on *chat* farm for better-off farmers, manual labor in nearby towns which local communities call *kotee, oyiru jima akaafuu, kuli*, respectively. Some self-employment activities such as pottery and tailoring were also available, particularly pottery in Medhicho-2 *kebele*, in which many women specialized and supplied their products to Chiro town market.

5.3.8. Policies and institutions

Policies and institutions are significant external factors in influencing the livelihoods of people such as access to various livelihood assets, vulnerability to shocks and livelihood outcomes (FAO & ILO, 2009). Enabling policies and institutions facilitate access of people to livelihood assets they need, whereas inhibiting policies and institutions may make these accesses difficult to the people (FAO & ILO, 2009). As we have already made detailed discussion on the overall government policies related to food security, PSNP and graduation approach in Chapters Four and Five, the focus in this section is limited to investigating the delivery of program related resources and services to the eligible population.

5.3.8.1. Graduation and food security program related factors

PSNP and OFSP/HABP were designed to smooth chronically food insecure households` food consumption gaps and enhance their livelihoods in order to achieve sustainable graduation. Program related factors such as targeting, duration of stay in the program, adequacy of transfer, access to HABP/OFSP loan and services are considered to influence households' graduation from the program. These factors were explored both qualitatively and quantitatively, the results of which are presented here under.

5.3.8.2. Targeting

Targeting of eligible households and delivery of adequate transfer in a timely manner are important aspects of the PSNP program. As already indicated in Chapter Four, discussion with Food Security Task Force at district level revealed that both inclusion of ineligible households and excluding of eligible households had been the challenge of the program which was said to have gradually improved through implementation of safeguarding and claim handling systems put in place. However, discussions with both graduated and on-going PSNP households informed that the problems of inclusion and exclusion errors were still pertaining due to favoritism, nepotism and leadership malfunctioning at local levels.

The other issue in PSNP program had been whether all eligible persons in the household were targeted or not. Full family targeting and adequate transfer to cover all the months that a household had food gaps was assumed to enable households to fully engage in productive activities and preserve assets at home. Program design and implementation manuals recognized these facts and well stated. For example, in the 2010-2014 Food Security Program it was stated (MOARD, 2009:26):

> The Government is committed to ensuring that households receive their full entitlement to PSNP support over multiple years, which together with household asset building is critical for achieving graduation. Government stated… payments must be made to clients in full and that households must remain in the Programme until they graduate.

In the survey, households were asked to retrospectively report whether their household members were fully targeted and accessed full payments they were entitled to. Graduated households` mean household members targeted for the transfers was 4.53 persons, whereas the mean household members excluded from receiving transfer was 1.28 (22%) persons. Moreover, non-graduate households reported that out of 5.6 mean household members they had, only 3.72 persons were targeted, which was less by 34%. This practice would inevitably limit the consumption smoothing

and asset protection roles of the PSNP. Consequently, household's asset accumulation and progress to graduation would be limited.

Table 5.25: Household size targeted for and excluded from PSNP transfers

Description	Households` status in the program	N	Mean	Std. Deviation	Std. Error
Number of household members targeted for PSNP	Non-graduated	71	3.72	.944	.112
	New clients	212	3.23	.981	.067
	Graduated	94	4.53	1.683	.174
	All HHs	377	3.64	1.305	.067
Numbers of household members not targeted for PSNP	Non-graduated	71	1.88	1.567	.186
	New client	210	1.98	1.380	.095
	Graduate	93	1.28	1.346	.140
	All HHs	374	1.82	1.439	.074

Source: Own household survey, 2018

The issue of targeting had been an ongoing problem for the ongoing PSNP households, too. The mean household size of the current PSNP households was 5.3, whereas the mean targeted household size was 3.35 persons, which was less by almost two persons (35%). Therefore, households had been not receiving their full entitlement from PSNP which was assumed to be vital for households` graduation. The retargeting of eligible households in every planning year had not resolved the exclusion of eligible household members as available resource was inadequate to cover all eligible households. Therefore, *kebele* task forces deducted some number of the eligible household members in order to accommodate other eligible households with available resources.

However, reduction of eligible household members from receiving the required amount of PSNP transfers leads to dilution of resources made available to the household because all the members share what is at home. As clearly indicated in focus group discussion with graduate households in Merewa Rebsu *kebele,* households may also want to preserve assets for the worst time in the future, or at least to be able to continue to produce for the future. Therefore, they would not consume what they acquired at a time. Consequently, household members could not be able to acquire adequate food calorie for healthy life. On the other hand, if available resource to the household is inadequate for food consumption, households have no way of preserving assets they have at home, and not be confident enough to undertake risky business that requires them to invest additional resources. Therefore, these households could not be able to build asset and be food sufficient to graduate from the program. This is in line with Sabates wheeler and Devereux (2011:15) who stated:

If a household or individuals receives less than the full amount, and the transfer becomes 'diluted' across more household members or more households than it is supposed to be, then the impetus for building livelihood sustainability will be weakened and the potential for graduation will similarly be weakened.

5.3.8.3. Households duration in the program

Past studies on determinants of graduation and impact of the duration of households' participation in the public works of the program informed that there was significant relationship between households' year of stay in the PSNP program and their success (Berhane *et al*, 2014). This study, however, found that the great majority of graduated households who graduated from the program were stayed lesser years in the program than non-graduated households (see Table 5.26).

Table 5.26: Years households stayed in the program

Household types	N	Mean years in PSNP	Minimum	Maximum
Non-graduate	71	9.11	1	13
Newly admitted HHs	212	2.11	1	3
Graduate HHs	94	5.94	3	10
Total	377	4.38	1	13

Source: Own household survey data, 2018

As can be observed from the Table 5.26, the mean years graduated households stayed in the program was about six years (minimum 3 years, and maximum 10 years); whereas the mean number of years non-graduated households who joined the program before 2015 stayed in the PSNP was more than nine years. The new entrants were not expected to graduate at the time of the survey because they stayed in the PSNP program only for about 2-3 years. Though, this study does not tempt to disprove the positive relationship between duration of stay in the program and households' success, other factors related to households preexisting asset endowment such as land holding, household livelihood strategy choice, level of exposure to different shocks and stresses listed above, access to the right mix of supports and individual efforts need to be considered for their speed of move to graduation as the study by Sengupta (2012) in Tigray revealed. Qualitative data from key informant interviews and focus group studies informed that some of the households who were reported to have graduated soon from the program were those who had better livelihood assets (land, livestock, access to irrigation or owned water pumps), who obtained adequate livelihood support from OFSP/HABP, engaged in off-farm income generating activities and

households' innovative engagement to maximize its gain from the livelihood resources it had access to.

However, the quick removal of households who improved its asset was not acknowledged in many of the focus group discussions. They complained that owning a bull or a few number of sheep or goats might be an improvement for a household who did not have that before, but that could not be adequate for that household to immediately becoming year-round food sufficient, continue to generate adequate incomes for the next year, and hold buffer asset to withstand shocks. This argument sounds, because a single ox/ bull could generate future income only if it was used for the traction of farm plow combined with someone`s who owned only one; or if it was fattened and multiplied after it was sold. Otherwise, there could not be buffer resource to withstand shocks, continue to generate future incomes, and meet current consumption needs. This is in line with asset threshold theory discussed in literature review section of this study that claims it is not necessarily the incremental change but certain asset 'threshold needs to be crossed' for a household to transform from poverty to productive life. However, how much time is required for a household to accumulate assets adequate to graduate from the program depends not only on the number of years it stayed in the program, but on the appropriateness, types and mix of supports the household obtained, access or ownership of the right type and adequate livelihood resources and household`s effort to maximize the benefits from the supports and resources it was endowed with.

5.3.8.4. Households preexisting food gaps and adequacy of PSNP transfer

Regarding months of food gaps households had before joining PSNP, the mean, mode and median of household survey data for all types of households show about six months' gaps, with the minimum 2 and maximum 12 months. Graduated households reported that they had food consumption gaps of 2-10 months per year before joining PSNP. Among these households, 15 (18%) of them reported that they had 7-10 months of food gap. Therefore, if the support provided was the same across all the targeted households, it would be improbable to expect the same level of successes across all households, other things being equal.

However, though they complained of their prematurely graduating from the program, 60.6% of graduated households acknowledged that they were food sufficient for at least a year upon their graduation, meaning that the food gaps they had was completely covered after they joined PSNP. The remaining 39.4% of the graduated households reported that they were not food sufficient even for a year after their graduation. Therefore, in the absence of post-graduation supports and given

the vulnerable environment to which they graduated, it would be likely for the prematurely graduated households to show negative trajectory in terms of their asset holdings and food security status.

Non-graduated households were also asked if they had food gaps since they joined PSNP. However, from the 71 non-graduated households, 60 (84.5%) households reported that though the number of food gaps they had before joining PSNP was reduced, they had food gaps even after they joined PSNP. Among these, 11.3% had 1-2 months; 46.5% had 3-4 months, and 26.8% households had 5-6 months' food gap even after they joined PSNP. They were only 15.5% non-graduated households who reported not having any food gaps.

Table: 5.27: Food consumption gaps experienced by non-graduated HHS while in PSNP

Food gap months	N of HHs	Percent
0	11	15.5
1-2 months	8	11.3
3-4 months	33	46.5
5-6 months	19	26.8
Total	71	100

Source: own survey data, 2018

Among the reasons that households listed for their having food consumption gaps since they joined PSNP were transfers from PSNP did not cover the whole household members; the household could not cover the remaining months of household`s food consumption requirements from its own production and incomes; full food basket was not paid and/ PSNP cash transfer was not adequate to purchase full food basket and others. Households who experienced no food gap after joining PSNP explained that the reasons for their not being able to graduate was that they had no access to livelihood enhancing supports such as loan from HABP. Moreover, about 20 households (28%) of non-graduate households reported that they had some asset accumulated, yet indicated that it was not adequate enough for graduation and withstand climate variability problem.

It could be learned that households preexisting conditions, such as level of food consumption gaps, asset endowment, their skills and experiences should be taken into consideration to design appropriate level and types of support for graduation. The non-graduated households could have probably been graduated, other things being equal, had they received adequate food transfers for

all the months they had deficit, and had they obtained adequate livelihood enhancing supports suitable to their skills and experiences. To plan and provide such kinds of services and products, it requires adequate and reliable baseline data on each participating households and appropriate institutional setup staffed with appropriate expertise at the grassroot level than the present multi-agency, and ad hoc committee system which was found difficult to coordinate.

5.3.8.5. Access to HABP/OFSP loans

We have already repeatedly touched upon this factor in our discussion of financial capital. Just to reiterate a point, both graduated and on-going PSNP households are theoretically eligible to household asset building program credit component. However, the household survey results indicated that only 29 (7.7%) of the 377 sample households reported that they had accessed credit. Among those households, 6 households were from graduated, 7 households were non-graduated, and 15 households were newly targeted households.

Therefore, household asset building program resources which was meant to address the constraints of poor households to build confidence, access credit and diversify their income sources, or use inputs to improve their production and productivity to build up their assets to be able to graduate from PSNP was in short supply.

5.4. Summary

In this Chapter, attempt has been made to look at factors of livelihood capitals/ assets that have influences on households' food security status and graduation from PSNP program. The investigation shows that there was no significant labor constraint, across the great number of all types of households, except for few female headed households. The mean, median and mode age distribution of household heads were about 40 years, indicating that they were at active age group. Households who were above and equal to age 65 and above were only 2%. The great majority of households were characterized with high family size and dependency ratio. Non-graduated households had the highest dependency ratio as compared to other household categories. Education attainment of all households' category was very limited. About 63% of the households were non-literate, and the remaining households attended some elementary schooling.

More than 96% of the sampled households depended upon agriculture and agriculture related activities as sources of their livelihoods. These households whose mean family size was 5.47 relied

on patches of land, a mean holding size of which was about 0.37 ha, for their livelihood. The agriculture activity from which much was hoped was operated on such small land holding in highly volatile and risky environment. These households could not harvest adequate food income even if they attained the national average of 22.4 quintals/ha in the year 2017/18 from both *Meher* and *Belg* seasons (calculated from Agricultural Sample survey data of CSA, 2017/18). When seen from this perspective, the mean 0.37 ha land holding of the sampled households supplies only 8.3 quintals of cereal equivalent food income per annum per a household (or 152 kg/annum/capital) under normal production condition. This could be only 47.2% of 322 kg grain required per person per annum for average farm household (Getachew,2018:297). According to Getachew (2018), a household who cultivated land not more than 0.6 ha in Ethiopia was found to be in chronic food insecurity under normal production condition. By basing on international standard of dietary energy supply equivalent to 322 kg/person/year, he calculated that a household who cultivated 0.6 ha of land could produce 1,466 kg of cereal which could cover only 85% of the dietary requirement of the average family size of Ethiopian household (Getachew, 2018). Moreover, though livestock is an important livelihood resource in the study area, the mean livestock holding for all categories of households was below one TLU.

The asset indices created were used to analyze households' livelihood asset status. The detail analysis and the composite index revealed the study households' major livelihood asset endowment was human capital. They were constrained by lack of other resources such as natural and financial capitals upon which they could apply their labor to improve their livelihood incomes. The comparison made across household types in terms of their livelihood asset status has shown that graduated households did not significantly differ from ongoing PSNP households as presumed. Therefore, it could be understood that most graduated households in the study area were equally vulnerable to food insecurity as the ongoing PSNP households.

Households in the study area were operating in highly vulnerable environmental conditions, and experienced frequent drought and erratic rainfalls. Though the number of households in the total population using irrigation reported by the district was big in the study area, the number of sampled food insecure households who had access to water for irrigation was negligible. Very few studied households reported experiencing water harvesting or had access to water harvesting technologies. Besides, though the majority of households reported to have been using chemical fertilizers, the mean chemical fertilizer use reported by all households was 26.24 kg/ha, a year before the survey, which was by far below blanket recommendation of 100kg/ ha set at regional level.

Many households reported to have engaged in different non-farm activities to supplement their incomes. However, these activities were limited and the income they obtain from them was meager. Household asset building resources and services were very limited to satisfy the needs of the targeted households. PSNP transfer amount, coverage, timeliness, weak coordination among PSNP and other Food Security Interventions, and lack of focus and tailored support as per program design were found to be impaired institutional factors.

Food is not the only one but one of the basic materials and non-material needs that people strive to fulfill (Frankenberger & McCaston, 1998). However, as it has been seen, the major livelihood resources that the food insecure households in the study area had accessed were barely adequate to satisfy the minimum basic needs, the minimum food energy supply. Government`s support focused more on agriculture and related activities to enhance livelihood of food insecure households. The technical and resource supports from the government were found inadequate on one hand, and mismatched the vulnerability context of the food insecure households in the study area, on the other hand. Moreover, most of the households had no adequate natural resource base such as land and water that would allow them to supply their food needs from own production.

Therefore, government needs to conduct baseline study of each targeted households to document their socio-economic characteristics on which to base tailored program supports. The five persons family cap principles and premature graduation to demonstrate success need to be removed. Tailored duration, types and amount of supports needs to be area and household specific. Moreover, in the areas where there is scare natural resource base like in this study area due attention should be given to shifting the vulnerable people, particularly rural youth, from agriculture to other livelihood options. The free livelihood support introduced in the Fourth Phase of the PSNP needs to be evaluated and scaled up to cover the remaining households who needed it. For households who dare to take loan, access to MFI should be facilitated. Clear and appropriate post graduate support mechanism for graduated households needs to be devised in order to enable them to build their assets further, and to protect them at least from falling back.

Chapter 6: Food Security Status of the Graduated and Ongoing PSNP Households

6. 1. Introduction

In the Chapters 5 and 6 attempts have been made to assess livelihood asset status and livelihood activities of sampled graduated and ongoing PSNP households, and transforming policies in terms of food security program interventions. As we have seen, besides covering the short-term food consumption gaps, PSNP transfers, in complementarity with other food security program interventions was assumed to have the role of protecting assets at household level and contributing to households' food security and thereby enable graduation from external assistance. This chapter looks at the livelihood outcomes, food security statuses of sampled households, both graduated and ongoing PSNP households. The Chapter attempts to answer major research questions: *What is the food security status of graduate households after their graduation? What is the food security status of on-going PSNP households (both non-graduate and newly admitted households)? Are there any significant differences between graduated households and on-going PSNP clients in terms of their food security status? What are the determinants of graduate households` food security after their graduation?*

To answer these questions, different food security measurement techniques are used. First, to understand how households perceive their food security status, households' self-assessment responses to subjective questionnaires administered to them are analyzed. Following this, attempt is made to employ more objective measure of household food security by using Household Food Balance Model (HFBM). The HFBM was used to see the per capital food calorie available at a household level from its own production, purchase and from other sources of food income within a year between January,2017 and December, 2017. This analysis covers one year and helps to see food security status of households in a relatively longer span of time. Moreover, to investigate a short-term households' food security access, analysis of HFIAS was conducted 30 days before the survey date. Furthermore, to test whether there were any significant differences among the sampled categories of households in terms of their food security statuses, comparative analysis is conducted. Finally, analysis of determinants of sustainable graduation was carried out using binary logistic regression.

6 .2. Graduated households' food security status

6.2.1. Perception of graduated households on their food security status after graduation

Self-assessment approach has been the recently introduced food security indicator that is used to assess the current food security status in "recent recall period and the change in livelihood status over a longer period of time" (Maxwell *et al*., (2013:4). It was used to examine the food security effects of the global food price rise through Gallup poll (Maxwell *et al,* 2013). It was also used by Maxwell *et al* (20013:5) in Tigray to assess the state of food security by asking households to compare with the 'normal' food security state using five category scale: 'food secure, slightly food insecure; moderately food insecure; very food insecure; extremely food insecure.' In this study, self-assessment measure was used to assess household's subjective judgments of their food security status after their graduation as compared to their food security status upon their graduation. Five category scale questions were administered to households to identify households who continued being food sufficient since they graduated, who had never been food sufficient from year one of their graduation, and who fell back after certain time of their graduation based on their perception of enough food (Table 6.1).

Table 6.1: Households` perception of their food security status after graduation

Responses	Number of HHs	Percent
Yes, all the years	17	18.1
Yes, more of the years	9	9.6
For a few numbers of years	15	16
Not for more than a year	16	17
Not even for a year	37	39.4
Total	94	100

Source: Own survey, 2018

According to the survey data results depicted in Table 6.1, seventeen (18.1%) of the graduate households reported that they were food secure all the years after their graduation. These households were households who had the capacity to feed their household members from their own production or purchase without external supports after their graduation. Nine households (9.6 %) reported that they were food secure for more of the years they stayed out of the PSNP; 15 households (16%) reported that they were food secure for a few/less than half of the years they

were out of the program; and 16 households (17%) reported that they were not food sufficient for more than a year after their graduation. However, 37 households (39.4%) reported that they were not food secure beginning from a year one of their graduation. According to these households self-reported data, 60.6% of the sampled households were food sufficient upon their graduation for at least a year. However, out of 57 households who reported that they were food sufficient upon their graduation, 40 (70.2%) households started falling back to food insecurity after year one of their graduation. Out of the sampled graduate households, about 82% of them reported that they were not year-round food secure during the household survey. Therefore, it could be understood that 39.4 % of the households were removed from the program without being food secure, and the great majority (70.2%) of graduated households who were food secure upon their graduation fell back to needing external assistances after their graduation.

6.2.2. Graduate households' food access

Based on survey questions administered to sample graduated households, their current food security status was analyzed by using Households Food Insecurity Access Scale (HFIAS). Accordingly, analyzed survey data and results on Households Food Insecurity Access Related Conditions, Domains, Access Scale Scores, and Households Food Insecurity Access Prevalence are subsequently presented in the following sections.

6.2.2.1. Household Food Insecurity Access-related Conditions

In HFIAS, the access related conditions are indicators that provide 'specific, disaggregated information about the behaviors and perceptions of the surveyed households' (Coates *et al.*, 2007:17). These indicators help to measure what percent of households in the survey sample experienced each of household food insecurity access related conditions regardless of the frequency. Accordingly, food insecurity access related occurrence conditions of sampled graduate households in Chiro District were calculated and presented in Table 6.2.

Table 6.2: HFIAS related conditions of graduate households

Question number	Occurrence of food insecurity access conditions	Responses (N=94)	
		Number of HHs experienced the condition	Percent
1	Worry about food	49	52.1
2	Unable to eat preferred foods	51	54.3
3	Eat just a few kinds of foods	73	77.7
4	Eat foods they really do not want to eat	33	35.1
5	Eat a smaller meal	55	58.5
6	Eat fewer meals in a day	60	63.8
7	No food of any kind in the household	25	26.6
8	Go to sleep hungry	15	16
9	Go a whole day and night without eating	8	8.5

Source: Own survey, 2018

As can be seen from the Table 6.2, the number of graduate households experienced food insecure access conditions started hierarchically decreasing from question 7-9, which refers to severity levels of absence of any kind of food at home. These households who reported to have experienced the behaviors indicated in questions 7-9 were ran out of food and thus needed immediate intervention. 'Eating just a few kinds of foods' was the condition experienced by most of the graduate households, showing that many of the poor households had access to limited varieties of food, which is a typical case in Ethiopia, and thus the typical first highest response was not 'worry' but eating a few kinds of food." This was followed by behavioral responses to food scarcity; that were 'eat fewer meals in a day,' and 'eat smaller meal,' which were experienced by 63.83% and 58.51% of the graduate households, respectively. Thus, of the less severe conditions, behavioral responses were more common than perception of food vulnerability which was explained by 52.13% of the households. It has to be noticed that the sequences of the responses in this study was not as expected in HFIAS up to the sixth item in Table 6.2, implying contextual differences. As Seifu *et al.* (2015) suggested, the severity of food insecurity in chronically food insecure areas could alter households` response by adapting to food shortage and thus 'worry' may not be the immediate response than reduction of quantity and quality.

To further disaggregate and measure the frequency of each condition experienced by sample households, they were also asked to provide the number of days they remembered having experienced each of the conditions in the past four weeks. Their responses were categorized in to three groups, 'rarely', 'sometimes', and 'often', as discussed below.

Table 6.3: Graduate households experiencing HFIAS conditions at a given frequency

Occurrence of food insecurity access conditions	No. of HHs with affirmative responses	Number and percent of households by frequency of each condition (N=94)					
		Rarely		Sometimes		Often	
		N	Percent	N	Percent	N	Percent
Worry about food	49	9	9.6	20	21.3	20	21.3
Unable to eat preferred foods	51	11	11.7	23	24.5	17	18.1
Eat just a few kinds of foods	73	13	13.8	40	42.6	20	21.3
Eat foods they really do not want to eat	33	10	10.6	19	20.2	4	4.3
Eat a smaller meal	55	10	10.6	30	31.9	15	16
Eat fewer meals in a day	60	12	12.8	35	37.2	13	13.8
No food of any kind in the household	25	8	8.5	9	9.6	8	8.5
Go to sleep hungry	15	9	9.6	4	4.3	2	2.1
Go a whole day and night without eating	8	5	5.3	2	2.1	1	1.1

Source: Household survey, 2018

As can be understood from Table 6.3, the highest percentage of households who reported having experienced each of the conditions experienced them 'sometimes' except the last three severe conditions. The percent of those households who experienced each of the conditions 'often' was relatively the least, but it was not at the level that it could be overlooked. The proportion of households who experienced *worry about food, ate just a few kinds of food, unable to eat preferred food, eat smaller meal,* and *eat fewer meals in a day* 'often' presented here in a decreasing order were resulted as expected. More households opt for decreasing meal size than eating kinds of food they *did not really want to eat, because the kinds of food they did not really want to eat were* wild food collected at the time of severe hunger.

Key informants explained that most poor households in the study area often worry about where the next times food would come from, eat monotonous food, reduce their meal size and most often eat only twice in a day. The idea of '*unable to eat preferred food'* was explained as eating maize than sorghum, which does not necessarily reflect nutritional inferiority of maize but due to local preference, and sometimes understood and explained as food unable to eat foods they would like to eat such as meat and other livestock products than others.

6.2.2.2. Household Food Insecurity Access-related Domains

This measurement is done based on "households experiencing any of the conditions at any level of severity in each domain" (Coates *et al.,* 2007:6). Household food insecurity access generic questions are grouped in to three domains: 1) Anxiety and uncertainty (question 1); 2) insufficient quality, (question 2,3 and 4), and 3) Insufficient food intake and its physical consequences (questions 5, 6, 7, 8, and 9*)* (Coates *et al.,* 2007). According to Coates, *et al.,* (2005) domains are "the most core experiences of food insecurity that are common across countries and cultures," (in Coates, *et al.,* 2007:31). Prevalence of each of the domains was measured as the percent of households that affirmatively responded to any of the conditions at any level of severity in particular domain. Following Dereje (2019), the proportion of households in each domain are summarized from HFIAS questions under each domain presented in Table 6.3 with varying frequencies.

Accordingly, it was found that about 52% of graduate households were uncertain and worried about the future food supply of the household. As we will come to see, this was in line with the survey data on household food balance. Most households did not harvest adequate food supply for their household. Therefore, they knew that they did not have adequate food stock for their household members. One way of fulfilling the gaps was by purchasing; however, cash income was the constraining factor. They usually engage in different off-farm activities such as petty trades, daily labor, sales of fire wood and other income generating activities, none of which were reliable to generate adequate income to purchase the required amount of food.

Moreover, 55.7 % of the households reported about altering to insufficient quality food which was explained by being 'unable to eat preferred food', 'eating just a few kinds of food', and 'eating the food they really do not want to eat'. In the study area, for example, households prefer to eat sorghum than maize. Sorghum was more expensive than maize, and thus they purchase maize when they had inadequate income. Eating few kinds of food was common among the majority of households as it was also confirmed by FGDs and key informant interviews. They lack resource to purchase varieties they may want to eat. Likewise, 57.8 % of the reporting households responded that they experienced inadequate food intake. This was explained by *eating smaller amount of meal than they needed to eat or missing meals,* particularly experienced by adults. Thus, these behaviors indicate that the households were vulnerable to food insecurity.

6.2.2.3. Household Food Insecurity Access Scale Scores

HFIAS score is the sum of codes for each frequency of occurrence question of each household. HFIAS variable scores range from zero (zero is given for non-occurrence) to three (1=rarely, 2=sometimes, 3=often). The results range from zero to twenty-seven for the occurrence of the nine food insecurity conditions in the past 30 days for each household. The higher is the score, the more food insecurity access the household experienced. Accordingly, HFIAS score for sample graduated households in Chiro district was calculated and presented in the Table 6.4.

Table 6.4: Sampled HFIAS scores (N=94)

Scores	Number of HHs	Percent
0	15	16
1-13	60	63.8
14-27	19	20.2
Total	94	100

Source: Own survey data results, 2018

As can be observed from Table 6.4, the highest score was 27 while the lowest was 0. There was no defined cut point at which the household is considered food insecure at this point. However, as the scores increase, households' insecure food access comparatively increases. What is evident at this level is that if a household experienced none of the conditions it scores 0, and thus it could be considered food secure.

The HFIAS scores in Table 6.4 shows that 15 (16%) graduate households reported that they had never experienced any of the conditions of food insecurity access and scored 0, implying that they were food secure. About 64% of the reporting households scored less than 50% of the HFIAS scores (1-13 points), being lesser and lesser food insecure corresponding to their points down to 1. The remaining, 19 households (20.2%) experienced more food insecurity access, the severity of which increases corresponding to increase in HFIAS scores.

7.2.2.3. Household Food Insecurity Access Prevalence (HFIAP)

This is a categorical indicator for food insecurity status. It categorizes households into four levels of household food insecurity access: food secure; mildly food insecure; moderately food insecure,

and severely food insecure. As a household responds affirmatively to increasing severe conditions and experienced those conditions more frequently, the household is said to be increasingly food insecure. Accordingly, based on Coates *et al.*, (2006) categorization, sampled graduate households in this study were characterized in to their respective Household Food Insecurity Access Prevalence (HFIAP).

Table 6.5: Graduated Households Food Insecurity Access Prevalence (HFIAP)

Questions	Frequencies		
	Rarely	Sometimes	Often
Worried of not having enough food	15 (16%)		
Not able to eat food preferred		4 (4.3%)	
Ate limited variety of food			
Ate unwanted food		45 (47.9%)	
Ate smaller meal			
Ate fewer meals /day			
No food of any kind to eat			
Went to sleep hungry		30 (31.9)	
Stayed day and night without food			

Key: Food secure | Mildly food insecure | Moderately food insecure | Severely food insecure

Source: Calculated from own household survey data, 2018

According to Coates *et al.*, (2007) a food secure household experiences none of the conditions of food insecurity; or experiences worries only 'rarely'. Accordingly, Table 6.5 has shown that 15 (16%) households were food secure thirty days before the survey date. These were households who experienced none of the occurrences of food insecure access conditions as depicted in Table 6.4. Moreover, 4 (4.3%) households were found to be 'mildly food insecure'. These were households who worried about not having sufficient food 'sometimes' and/ or 'often'; and/or were households not able to eat preferred foods; and/or households who ate smaller meal than wanted; and/or ate some foods that were considered undesirable, only 'rarely'. However, these mildly food insecure

households neither reduced quantity nor experienced any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating).

HFIAS analysis result in Table 6.5 has also shown that 45 (47.9%) graduated households were 'moderately food insecure'. These were households who ate monotonous or unwanted food 'sometimes' or 'often'; and/or reduced the size of meals or number of meals, 'rarely' or 'sometimes'; and/or reduced the size of meals or number of meals, 'rarely' or 'sometimes'. However, they did not experience any of the three most severe conditions in thirty days before survey date. However, 30 (31.9%) households were found to be severely food insecure. These households were those who reduced meal size or number of meals; and/or experienced at least once one of the most severe conditions_ running out of food, going to bed hungry, or going a whole day and night without eating as defined by Coates *et al.,* (2007).

The HFIAS analysis revealed that not all graduated households were food secure as expected. The majority of graduated households (84%) were food insecure thirty days before a survey day. The number of food secure households resulted from HFIAP is less by two households from the number of households who reported that they were year-round food sufficient after their graduation. If we consider mildly food insecure households as food secure, the number of food secure households resulted from HFIAS would become more by two households. In both cases, the HFIAS and household`s self-assessment report, we learned that most graduated households were still food insecure. The survey was conducted only 3 months after major harvest.

As it was already revealed by key informant from Zonal DRM Office, the food insecure households would inevitably appeal for food aid. As the response to the appeal system usually takes time, these households might deteriorate further their asset holding, children might drop out of school, and children under age of five, pregnant women and lactating mothers might be more affected. Therefore, there needs to be much attention to follow upon the food security status of graduated households. The problem has further implication for the program. Households might lose confidence on graduation approach and may resist graduating as already some households indicated during this study. Some ongoing households reflected that they did not consider graduation model as good approach as already graduated households were in difficult circumstances.

6.2.3. Per-capital food calories available to graduated households

As described and specified in the Methodology Chapter, Household Food Balance Model was used to calculate annual food calorie available at graduated households. Major food grains consumed in the study district (both harvested and purchased food) were identified by consulting Zonal and Chiro District Agriculture and Natural Resource Offices, and household survey was conducted to calculate household annual food balance. Major food grains in the study area include Sorghum, Maize, *Teff*, Wheat, Barely, pulses (beans/*baqela*, peas/*ater*, chickpeas/*Shimbra*, lentils/*misir*, kidney beans/*ashongore)*, and oilseeds (Linseed/*Telba*, Niger seed/N*ug*, sesame seed/S*elit*, peanut/*lewz/, Ocholoni*). Kilo calories in 100 grams of these food grains without being cooked, but semi processed (flour or split food) were averaged and calculated for each net grain types available and added up to arrive at total food calorie existing at households. The available calories at a household level was divided by the number of households and then by 365.25 to arrive at per capital daily calorie available. According to UNHCR *et al* (2002), average 2100 kca/person/day maintains the health and nutritional status of an individual engaged in light work. Accordingly, 2100 kcal has been a standard set in Ethiopia which is considered to meet minimum energy for a 'moderately active adult' (Messay, 2012).

The calculation is done based on unprepared food, particularly in the allocation of food aid in the country. However, some other scientific papers in Ethiopia average and use kilo calories available in prepared food items depending on EHNRI (1995-1997) food composition Table. However, the Table contains some food items blended with other food items with different nutrient contents, the proportion of which are ambiguous unless one has data on each of the items in the prepared food[7]. It is evident that food nutrients reduced when food is prepared in different types. But average may not reduce the gaps as it is presumed. Therefore, in order to avoid complications, semi-processed uncooked food without being mixed with others, and the kilo calories in each food grain were used to summarize the available kilo calories based on Part III of Food Composition Table for Use in Ethiopia (1968-1997). Though there is still a difficulty of compromising some differences, such as the content of black and white barely, white and brown maize, when we take simply barely and

[7] For example, in Food Composition Table for Use in Ethiopia, part IV we find, 1) barely flour (roasted) +butter + spices: *firfiro* (Bale) = 232 kcal; 2) barely flour (roasted) +butter + spices: Michiro (Bale) =447 kcal; 3) barely flour (roasted) +butter + spices: Buratu, (Bale) =556 kcal. Thus, we do not know which item at what proportion and cooking standard that makes this huge difference: the 556 (the maximum) minus 232 (the minimum) = 324).

maize, unless we have disaggregated data for each, averaging may lessen the gaps. Likewise, it has to be born in mind that calories from additives and animal products while cooking, though assumed not to be more than calories reduced due to cooking, were not included in the calculation.

6.2.3.1. Results from Household Food Balance Model (HFBM) and discussion

Before converting into kilo calories, total net annual per capital grain available at a household level was calculated. Then, based on the average kilo calories of each types of grain, the total grain calories and per capital kilocalories were obtained.

Table 6.6: Net food income in kg at graduate households' level

Source	N	Net grain available (kg)	Mean	Std. Dev
Sorghum	94	56164	597.6	396.1
Maize	94	10789	114.8	191.6
Teff	94	200	2.1	20.6
Barely	94	162	1.7	16.7
Wheat	94	615	6.5	30.5
Pulses	94	3375.5	35.9	66.6
Sum of net grain available (kg)	94	71305.5	758.6	511.8

Source: Own survey, 2018

The total net annual food grain available from all sources for all the graduate households in the year 2017 from both cropping seasons (*Meher and Belg*) and other sources was 71,305 kg (713.06 quintals); the mean of which was 758 kg (7.58 quintals) per a household, with a standard deviation of 512 kg. As can be observed from the Table 6.6, the lion`s share of food income source was sorghum followed by maize and pulses, respectively. The remaining grain types, barely, *teff* and wheat were nearly non-existence, limited to small number of households.

When the net grain is converted into kilo calories, it is amounted to about 265,353,448 kilo calories. The total household size of all graduate households was 583. Accordingly, the mean annual kilocalories at household level were 2822909 with the standard deviation of 1909520 and the mean per capital kilocalories available was found to be 1322 with the standard deviation of 893.5.

Table 6.7: Distribution of food grains converted into kilocalories at household level

	N=94				
Observation	Total	Mean	Std. Deviation	Minimum	Maximum
Household size	583	6.2	1.92	2	12
Net annual grain income (kg.)	71,307	758.6	511.8	80	2860
Annual food calories available at household level	265,353,448	2,822,909	1,909,520	297,624	10,640,058
Per capital daily food calorie available at households' level	122233	1322.4	896.5	81	4891

Source: Own survey, 2018

The variation among households in terms food grains and kilocalories available was wide as can be seen from the standard deviation and range in the Table 6.7. Accordingly, out of the 94 graduate households only 15 (16%) households were found to be food secure, obtaining about 2100 and more kcal/person/a day (Table 6.8). The remaining 84% of the graduate households obtained below the minimum kilo calories required per person per a day, and thus were food insecure.

Table 6.8: Per capital daily food calories available at households' levels

Kilocalories	Number of HHs	Percent
Less than 1680	69	73. 4
From ≥1680 to <2100	10	10.6
≥2100	15	16
Total	94	100

Source: Own survey, 2018

Table 6.8, indicates that 69 (73.4%) of the graduated households were not able to obtain at least 80% of their minimum daily kilo calorie requirement, which is 1680 kcal. Ten (10.6%) households attained at least 80% of their required kcal supplies. These households could be considered as mildly food insecure. There were only 15 (16%) households who attained greater than or equal to 2100 kcal supplies per day per a person, informing that they were food secure.

The numbers of food secure households resulted from households' self-assessment measures, HFIAS, and Household Food Balance Model (HFBM), presented in Table 6.1, 6.5 and 6.8,

respectively were almost the same. They were 17 households from households' self-assessment measure, 15 households from each of HFBM and HFIAS. Therefore, it could be concluded that there were about 16-18% graduated households who remained food secure after their graduation until the household survey was conducted for this study. The finding is far below the expectation that revealed that the great majority of graduate households were food insecure after their graduation.

Moreover, a look at the means of per capital calories available to graduate households in dominantly *baddaa*/highland, *baddadaree*/midland, and *gammojjii*/lowland *kebele*s revealed the existence of wide variation by residence areas.

Table 6.9: Per capital daily food calorie available at households' level by kebeles

*Kebele*s	N	Mean	Std. Deviation
Merewa Rebsu (*Baddaa*/highland)	15	667.6	301.3
Wachu Ifebas (b*addadaree*/midland)	18	2079.3	962
Medhicho-2 (*gammojjii*/lowland)	33	1157.5	818
Medhicho-9(*gammojjii*/lowland)	28	1302.9	817
Total	94	1299.1	892.4

Source: Own survey, 2018

The mean per capital kcal of 2079 available to graduated households in Wachu Ifebas *kebele* was the highest of the mean kcal available to graduated households in the other three *kebele*s. On the contrary, the mean per capital calorie available to the sampled graduate households in Merewa Rebsu *kebele*, which is dominantly highland *kebele*, was the lowest of all.

The Kolmogorov-Smirnov test for normality of per capital calorie distributions in Merewa Rebsu, $D(15) = 0.16$, $p > .05$, and in Medhicho-9, $D(28) = 0.15$, $p > .05$ were both insignificant indicating that they were normal. However, for Wachu Ifebas, $D(18) = 0.20$, $p < .05$, and for Medhicho-2, $D(33) = 0.20$, $p < .05$, were both significantly non-normal. However, the test for the homogeneity of variances for the mean per capital calorie distribution among the households in the four *kebele*s, $F(3, 90) = 2.07$, $p > .05$ were not significantly different, meaning they were homogeneous. Because one of the parametric assumptions was broken for comparing the mean kilo calories available for the graduated households across the four kebeles, Kruskal-Walis test was used. Accordingly, the

overall mean differences among graduated households residing in the four different *kebele*s were statistically significant at p.01 level.

Table 6.10: Kruskal-Wallis equality of per capital daily food calories distribution for graduate households across sampled kebeles

*Kebele*s	N	Mean Rank Sum
Merewa Rebsu	15	22.43
Wachu Ifebas	18	73.00
Medhicho-2	33	43.32
Medhicho-9	28	49.46
Chi-squared = 29.314 with 3 degree of freedom		
Probability = 0.001		

According to researcher`s physical observation and discussions with participants and local elders, Merewa *kebele* was inaccessible except during dry seasons with some difficulties. It is accessed only through Asabot by travelling about 70 kms from the center of the district, Chiro Town. Market opportunities for input supply and access to market to sale agricultural produce was very limited. *Chat* trade was not as rewarding as it was in the other sampled *kebele*s. Land scarcity was more severe in this *kebele* as it was discussed under households` access to natural capital section. All graduated households in Merewa Rebsu did not have access to credit components of food security program before and after their graduation as a result of which many of them obtained least income from income generating off-farm activities.

Wachu Ifebas *kebele* whose graduate households mean per capital food calorie available was about 2100 is dominantly mid-land *kebele*, with some villages in *lowland/gammojji*. The *kebele* lies along the main road and has access to both Chiro and Hirna towns. Medhich-9 and Medhicho-2, whose mean per capital kilo calorie food available for graduate households was 1303 and 1157, respectively, are dominantly lowland/*gammojji kebele*s with some villages lying within mid highlands. These *kebele*s are more proximate to district/zonal town, Chiro. Particularly, one village in Medhicho-9 is nearer to Chiro town and is well known for irrigated *Chat* supply to Chiro town and travelers passing by. Most women in theses villages were more engaged in *Chat/jima trades* and other off-farm income generating activities than other sampled *kebele*s. A simple look at means

of some sources of livelihood incomes in Table 6.11 informs where the differences lie among graduate households residing in different *kebele*s.

Table 6.11: Sources of livelihood income differences by residences in previous year

*Kebele*s	Number of HHs	Net mean annual grain income	Mean land held after graduation	Mean cash from off-farm activities	Mean cash from harvested Chat sale	Mean cash from all sources
Merewa Rebsu	15	318.8	0.2583	1266.7	0	1266.7
Wachu Ifebas	18	988.6	0.4028	9558.89	3072.73	19710
Medhicho-2	33	733.3	0.4394	3183.64	3524.14	6901.8
Medhicho-9	28	872.6	0.4875	2619.64	4546.43	7355.36
Total	94	757.5	0.4178	3930.53	3872.06	8590.32

Source: calculated from household survey data, 2018

As can be observed from the Table 6.11, none of the sampled graduate households in Merewa Rebsu reported income from sale of their own harvested *Chat/jima*. Graduated households in Medhich-9 and Medhicho-2 stood first and second in terms of the mean cash income from their own *Chat/jima* harvest, obtaining 4546.43 *Birr* and 3524.14 *Birr*, respectively. Those who resided in Wachu Ifebas also had significant amount of cash income from sale of harvested *Chat/jima*, amounting to 3072.73 Birr. However, the mean cash income from harvested *Chat/jima* sales difference among graduated households in the three *kebele*s was not significant at p.05.When cash income from all sources, on-farm and off-farm activities, were considered the mean income of graduated households in Wachu Ifebas was the highest. The difference was significant at $p<.01$. However, the difference between Medhicho-2 and Medhicho-9 was not significant; yet the mean cash income difference between graduated households in Merewa Rebsu and other all *kebele*s was significant at $p<.05$, showing that Merewa Rebsu *kebele* was significantly the poorest in terms of cash income.

Though the mean landholding of graduated households in Wachu Ifebas was smaller than those households in Medhicho-2 and Medhicho-9, their mean grain income was the highest of all, amounting to 988.6 kg/a household. The Kruskal-Walis test shows that there were statistically significant differences among graduated households in different *kebele*s, at $p<.01$; implying that graduated households in Wachu Ifebas relatively acquired the highest grain incomes, whereas those

in Merewa Rebsu obtained the least amount. However, the mean difference between those in Medhicho-2 and Wachu Ifebas was not statistically significant. Graduated households in Medhicho-9 and Medhicho-2 had relatively better land holding; yet the *kebel*es in which they resided were dominantly lying within lowland, and thus they were more vulnerable to moisture stress.

6.2.4. Determinants of food security status of graduated households

For graduated households to be said 'food secure' after their graduation, they need to be able to have access to adequate food without external supports. As we have seen in the preceding analysis of food security status of graduated households, though about 59% of graduated households reported that they were food secure upon their graduation, not all these and other graduated households were able to meet the minimum per capital calories required at household level after their graduation. However, there were a few numbers of households who remained food secure after their graduation. Therefore, this part of the study is meant to analyze determinants of the food security status of graduated households after their graduation, though it does not capture 'all times access to food'. Binary logistic regression is used for the analysis. The outcome variable is food security status of a household after its graduation (coded 1 for food secure, and 0, otherwise). Per capital calorie available at a household level calculated from household food balance model is used to categorize graduate households as 'food secure- 'those who achieved equal to/above 2100 kcal; and 'food insecure- 'those who acquired below the threshold of 2100 kcal. The per capital kcal available is used to capture availability and adequacy of food supply at household level. It is also relatively objective and covered longer period, which was about a year, as compared to SAFS and HFIAS.

6.2.4.1. Test for multi-co-linearity

Predictive variables included in the regression model were tested for multi-co-linearity using variable inflation factor (VIF) tolerance test. Myers (1990, in Field 2009) suggested a VIF value above 10 indicates a serious concern for multi-co-linearity. Moreover, Menard (1995, in Field 2009) also recommended that a tolerance value less than 0.1 shows a co-linearity problem. When seen against these parameters, none of the values of the predicting variables included in the model are found beyond the suggested ranges. Therefore, multi-co-linearity was not a problem in the data (see Table 6.12).

Table 6.12: VIF test results

Variables	VIF	1/VIF
Household head`s sex (hedsex)	1.12	0.892621
Household head`s age (hedage)	1.19	0.837436
Household head`s education level by category (hededucatgory):		
1		
2	1.16	0.859280
Household size (hhsize)	1.17	0.857084
Total land holding (tlndhldinmtsq)	1.15	0.869662
Access to irrigation (acirgaftergrad)	1.28	0.782795
Livestock holding (TLUaftergrad)	1.20	0.829948
Participation in HAB (HABPaftergrad)	1.11	0.903153
Annual income from off-farm (yrloffincmaftergrad)	1.12	0.890460
Mean VIF	1.17	

Source: Own household survey, 2018

6.2.4.2. Testing for the linearity of the logit

Among the predictors used in our model, we have five continuous variables, and thus we have tested each of them to see whether they are linearly related to the log of the outcome variable, food security status of a household. To do this, we run the logistic regression using SPSS by adding a predictor that has the interaction between each predictor and the log of itself as per the suggestion of Hosmer and Lemeshow (1989, in Field, 2009). The interaction terms for the five predictors are non-significant, having the significant value greater than .05, and thus the assumption of the linearity of the logit is met, that is, it is linear for head age, household size, land holding size, livestock ownership, and annual cash income from off-farm activities (see Table 6.13).

Table 6.13: Test for the linearity of continuous variables in the logit model

Variables	B	S.E.	Wald	df	Sig.	Exp (B)
Household head age	0.226	2.253	0.01	1	0.92	1.254
Household size	-1.089	0.766	2.018	1	0.155	0.337
Land holding size(m2)	0.002	0.008	0.08	1	0.777	1.002
Livestock holding size (TLU)	2.733	2.068	1.748	1	0.186	15.382
Previous year estimated cash income from off-farm	0.002	0.002	1.779	1	0.182	1.002
Log head age by head age	-0.054	0.468	0.014	1	0.907	0.947
Log land holding by land holding (m2)	0	0.001	0.074	1	0.786	1
Log livestock holding (TLU) by livestock holding (TLU)	-1.417	1.188	1.424	1	0.233	0.242
Log previous year estimated cash income from off-farm by previous year estimated cash income from off-farm	0	0	1.693	1	0.193	1
Log household size by household size	0.437	0.972	0.202	1	0.653	1.548
Constant	-1.447	23.704	0.004	1	0.951	0.235

Source: Own survey, 2018

6.2.4.4. Results from binary logistic regression analysis

The explanatory variables described in the Tables 3.3. and 6.12 were run using Stata version 13 the results of which are presented hereunder.

Table 6.14: Summary of results from binary logistic regression

Predicting variables	**Coef.**	**Odds Ratio**	**Std. Err.**	**z**	**P>|z|**
Sex of household`s head	.5070519	1.660389	2.111877	0.4	0.69
Age of household`s head	.0351465	1.035771	0.0460067	0.79	0.429
Education level of household`s head (category)					
Not educated					
Read and write	-1.098355	0.3334191	0.5896536	-0.62	0.535
Some primary schooling and above	-.397859	0.6717567	0.690994	-0.39	0.699
Household size	-.5245364	0.5918297	0.1476724	-2.1	0.036*
Land held (m^2)	.000474	1.000474	0.0001765	2.69	0.007**
Household`s access to irrigation	1.295363	3.652323	4.051772	1.17	0.243
Livestock holding (TLU)	.193804	1.213858	0.3834726	0.61	0.54
Household`s access to HABP	2.726207	15.27484	14.27471	2.92	0.004**
Estimated annual cash income from off-farm activities	.0000934	1.000093	0.0000472	1.98	0.048*
constant	-4.369276	0.0126604	0.0358987	-1.54	0.123
Log likelihood = -24.361535 Number of obs.= 94 LR chi2 (10) = 33.80 Prob > chi2 = 0.0002 Pseudo R2 = 0.4096	**Significant at p<.01 *Significant at p<.05				

Source: Calculated from own household survey, 2018

The output reveals that the model used all the 94 observations in the data set. The iteration log shows that the model was quickly converged with an iteration of 5. The other important point to be noticed is the overall model fit. Likelihood ratio is the most commonly used model fit test. The results LR chi^2 (10) =33.80, p= 0.0002 in Table 6.14 indicates that all the coefficients in the model are altogether different than zero and thus the overall model is statistically significant with the value of p< .01.

Out of the nine predictors used in the model, however, only four of them were found significant at p<.05 in explaining the odds of households being food secure after graduation. Graduate households' total land holding size positively and significantly explained the odds of households remaining food secure after graduation, at p<.01. This is consistent with the finding of Sabates-Wheeler *et al*. (2012) and Gilligan *et al*.(2007) who found positive relationship between households' land holding and food security.

Moreover, households` participation in HABP, and amount of annual cash income from off-farm activities explained positively and significantly the odds of household`s being food secure, at p. <.01, and p<.05, respectively. These findings are also in line with the findings of Yibrah Hagos (2013) and Sabates-Wheeler *et al.* (2012), and Berihun and Hayalu (2015), who found access to credit from HABP and participation in petty trades to explain households' odds of graduating from PSNP. In fact, none of the previous studies referred to studied households' food security status after graduation.

However, household size negatively and significantly explained the odds of household`s food security at p<.05. This is consistent with the findings of Berihun and Hayalu (2015), Yibrah Hagos (2013) who reported the negative effect of household size on their graduation, which indicates households being negatively affected to become food secure.

Factors that could positively contributed for households' graduation also found to predict households remaining food secure after their graduation. Land size is an important determinant of household security. Likewise, in this study, it was found that the odds of household becoming food sufficient increases by a factor of 1.0005 with an increase of land holding by a meter square. As households' access to adequate HABP services and products, training and loan services, enhances households' graduation from the PSNP, graduated households continued access to HABP increases the odds of household remaining food secure by more than 15 times than those who do not have access. Moreover, participation in off-farm activities helps households to diversify their income sources and improve their earnings. According to this study, the majority of graduated households participate in off-farm activities. What distinguished them is not their participation, but the income level they obtain from off-farm activities. Accordingly, it was found that the odds of households` being food secure after graduation improves by 1.0001 with an increase of income by one Ethiopian *Birr* (ETB) from off-farm activities. Thus, all these three variables explained household`s food security positively as expected.

On the other hand, an increase of household size by one person is found to reduce households` odds of being food sufficient by 59.2%. This variable has also explained households' food security as expected. Therefore, other things being equal, increased land holding size, access to HABP, increased income from off-farm activities, and household size are important determinants of households' food security status after graduation. Participation in off-farm activities that provides adequate income positively impact households being food secure.

As mentioned above the findings in this study are consistent with various research findings on determinants of graduation (Berihun & Hayalu 2015; Yibrah, 2013; and Arega, 2012). This study, however, differ from the previous studies because it is not only based on categorization of households as being graduated and non-graduated without assessing their being food secure or not, but on households remaining food secure or not after their graduation. The factors identified to have significant influence on households' graduation in the aforementioned studies were also found to have influence on graduated households remaining food secure or not after their graduation. Households access to credit from HABP, households' income from off-farm activities, and land holding size positively and significantly increased the odds ratio of households being food secure. Increased household size negatively and significantly influenced households' remaining food secure after graduation, other things being equal. These results are also consistent with qualitative information discussed in the preceding section.

It implies that policy focus should be on households' access to adequate land, and/or work on options such as off-farm income generating activities. The household asset building program designed and accessed by a few numbers of households significantly improves households' food security status. Therefore, government and stakeholders should give due attention to expansion of HABP, to appropriateness of its products and services to the characteristics of targeted households, to creating well-coordinated, efficient and effective organizational and management system for the delivery of the food security programs as a whole.

6.3. Food security status of on-going PSNP households

To analyze the food security status of on-going PSNP households, the approaches and indicators used in the analysis of food security status of graduated households discussed so far are repeated here. However, theoretical backgrounds and the importance of indicators already discussed are not explained again in this section. The ongoing households were actually receiving PSNP transfers. This analysis is made to understand whether the transfer they had been receiving really covered their food gaps and protected them from distress sales of their productive assets. The analysis also helps to find out how they differ from graduated households in terms of their food security status with and without PSNP transfers.

6.3.1. On-going PSNP households' self- assessment report on their food security status

On-going PSNP households were asked about their perception of food security status after joining PSNP. This information is important as it communicates how much the PSNP transfers covered households' preexisting food gaps and protected households' assets. Subsequently, this informs households` prospects for graduation. Therefore, retrospective question was asked to understand food consumption gaps a household had before joining PSNP. Then, the household was asked how much of its food consumption gaps were covered by its own incomes and PSNP transfers. This also helps to see the impact of PSNP transfers, other things being equal, as compared to graduated households.

As the same households were reporting on their own food security status before and after joining PSNP, dependent t-test (paired-samples t-test) was used to ascertain the differences in the food security statuses of a household before and after joining PSNP, as the households reported. The equation for calculating dependent t-test is (Field, 2009:326):

$$t = \frac{Observed\ difference\ between\ sample\ means - \text{expected difference between population means}}{Estimate\ of\ standard\ error\ of\ the\ difference\ between\ two\ samples\ means}$$

Table 6.15 shows summary statistics of means of ongoing households' food consumption gaps in months before joining PSNP and the gaps they had after they joined PSNP. As it can be observed, the mean food gap months the households reported before joining PSNP was 5.87 months (Standard Dev.= .112; SE=.112). This was reduced to mean 1.70 months (Standard Dev.064; SE=.063) after they joined PSNP.

Table 6.15: Self- assessment measure of food security status before and after PSNP

Attributes	Mean	N	Std. Deviation	Std. Error Mean
Household`s food gap in months per year before joining PSNP	5.87	281	1.879	.112
Food consumption gaps experienced in months after joining PSNP	1.70	281	1.064	.063

Paired differences t test					
Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
4.167	1.806	.108	38.68	280	.000

Source: Own survey, 2018

The paired sample t-test result in the same Table shows that there was a mean difference of 4.167 months after households joined PSNP with the standard deviation of 1.799, and standard error of .108. The difference was found significant t (280) =38.682, P<.001. The result indicates, on average there was an improvement of food gaps experienced before joining PSNP by 4.17 months (71.12%) after joining PSNP. However, according to this result of households' self-assessment, the on-going PSNP households had still the mean food gap of 1.7 months.

Further analysis was made to disaggregate the number of households by months of food gaps they had after they joined PSNP. It was found that 59 households (20.8%) reported that they had no food gaps after they joined PSNP. There were 42 households (14.8%) that had reported to have food gaps of 1-2 months per a year after they joined PSNP. About 64% of the households reported to have food gaps of 3-6 months.

Table 6.16: Food consumption gaps experienced in months after joining PSNP

Food gaps (in months)	Frequency	Percent
0	59	20.8
1-2 months	42	14.8
3-4 months	110	38.9
5-6 months	72	25.4
Total	283	100

Source: Own household survey, 2018

Therefore, the majority of the households (79.2%) had no way of reserving assets that could be accumulated to achieve graduation benchmarks as their food gaps were not fully covered while they were in PSNP. A structured question was provided to identify reasons for households' food gaps experienced after they joined PSNP. The major reasons that the households responded for having the food gaps they reported were summarized in Table 6.17.

Table 6.17: Summary of reasons reported by households for not being food secure after joining PSNP (multiple response is possible)

Reasons	No. of HHs	Percent
Transfers from PSNP does not cover the whole household members	144	51
The household cannot cover the remaining months consumption from its own production and income	166	59
Transfers delay, and we borrow to repay more	47	17
Cash payments are not sufficient to cover full food basket	92	33
Full food basket is not paid	22	8
We need to save from PSNP transfers to graduate	3	1
We use some proportion of PSNP transfer for other expenses	16	6
Others	4	1
N=283		

Source: Own survey, 2018

As can be understood from the households' responses in Table 6.17, 51% of the respondents indicated that PSNP did not target full household members, and 59% of the households could not cover the remaining months` of their food requirements. Therefore, income from other sources and PSNP transfer was not adequate enough to cover full year food needs of some households. Delay in transfer costs households as they either payback more for food or cash loans they took, or the prices of food commodities they purchase at later time might be higher. To enable households to hold assets and dare to undertake investments or engage in riskier but more profitable business ventures, at least households' food requirement should have been covered. This was not the case for the majority of the households as seen from Table 6.17. It could be deduced that the prospects of these household to graduate have not been promising as their prevailing food security gap was not fully covered. Unless food consumption needs are adequately met, livelihood support resources might be diverted to cover immediate food needs.

The payments made to the households from PSNP were not amounted to the level of their entitlement and family size as we have seen in Chapter 5. Due to this fact, households were not able to have their full food gaps covered from PSNP transfers. The failure of the program to cover full entitlement to the households, be it due to resource constraint or management anomalies, was still consistent with the findings of Berhane *et al*, (2013) who found that only 44% of the sampled

PSNP public work households in Oromia reported to have received their full entitlement from PSNP.

6.3.2. On-going PSNP households' food access

Just as it was done for graduate households discussed above, on-going PSNP households' food (insecurity) access was analyzed based on data obtained through the household survey by using generic questions developed by FANTA (2007), the results and discussions of which are presented here under.

7.3.2.1. Household Food Insecurity Access-related Conditions

Responses from 283 sampled ongoing PSNP household to survey questions regarding their food insecurity experiences and behaviors in the last 30 days before the survey disaggregated and presented in the Table 6.18.

Table 6.18: Households experiencing each of HFIAS related conditions

	N =283	
Occurrence of food insecurity access conditions	Yes	Percent
Worry about food shortage	171	60.4
Unable to eat preferred foods	214	75.6
Eat just a few kinds of foods	239	84.5
Eat foods they really do not want eat	114	40.3
Eat a smaller meal	211	74.6
Eat fewer meals in a day	212	74.9
No food of any kind in the household	101	35.7
Go to sleep hungry at night	51	18.0
Go a whole day and night without eating	35	12.4

Source: Own survey data, 2018

Among different food insecurity access conditions, the majority of households experienced the conditions under insufficient food quality; particularly *ate few kinds of food* (84.5%), and were *not able to eat preferred foods* (75.6 %). The next most prevalent conditions among households were conditions related to *insufficient food intake,* such as *eating fewer meals in a day* (74.9%) and *eating smaller meal* (74.9%). Anxiety and uncertainty explained by *worry about the food for next meals* was also experienced by 60.4% of the surveyed households. The least condition experienced was 'going whole day and night without eating,' (12.4%), followed by '*go to sleep hungry at night'* (18%), '*no food of any kind in the household'* (35.7%).

Table 6.19: Number and percent of households experiencing conditions at a given frequency

Conditions experienced	Rarely		Sometimes		Often	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Worry about food	35	12.4	58	20.5	78	27.6
Unable to eat preferred foods	36	12.7	75	26.5	103	36.4
Eat just a few kinds of foods	35	12.4	91	32.2	113	39.9
Eat foods they really do not want eat	31	11.0	47	16.6	36	12.7
Eat a smaller meal	47	16.6	104	36.7	60	21.2
Eat fewer meals in a day	51	18.0	99	35.0	62	21.9
No food of any kind in the household	29	10.2	29	10.2	43	15.2
Go to sleep hungry	26	9.2	10	3.5	15	5.3
Go a whole day and night without eating	21	7.4	3	1.1	11	3.9

Source: Own household survey data, 2018

Increased frequencies of each condition reflect increased severity of that condition to the household experiencing it. About 40 % of the households ate a few kinds of foods with the increased frequency of "often," followed by unable to eat preferred foods (36.4%), and worry about food (27.6%), respectively. Going to sleep hungry, a whole day and night without eating, eating foods they do not really want to eat were the least frequently experienced by small number of households, in their respective orders.

7.3.2.2. Household Food Insecurity Access-related Domains

Ongoing households' food insecurity access occurrence conditions are categorized under three domains: *anxiety and uncertainty* about the household food supply; *insufficient quality*, and *insufficient* food intake and its physical consequences as already done for graduated households. The domains provide the summary information on the prevalence of each of the behaviors exhibited by the household under each of the domains. Accordingly, it could be understood from HFIAS questions scores in Table 6.18 that 60.4% of on-going PSNP households reported to have felt anxiety and uncertainty about the household food supply. About 66.8% of them also experienced insufficient quality, 30 days before the survey date. Moreover, 43.1% of ongoing PSNP households reported to have experienced insufficient food intake.

6.3.2.3. Household Food Insecurity Access Scale Scores

The HFIAS score informs the degree of households' insecure food access 30 days prior to the survey date. The score ranges from 0-27 points. The higher the score points the higher is the food insecurity (access). Household survey data is calculated and summarized in Table 6.20 hereunder.

Table 6.20: HFIAS Score for on-going PSNP households

Score points	Number of HHs	Percent
0	22	7.8
1-13	177	62.5
14-27	84	29.7
Total	283	100

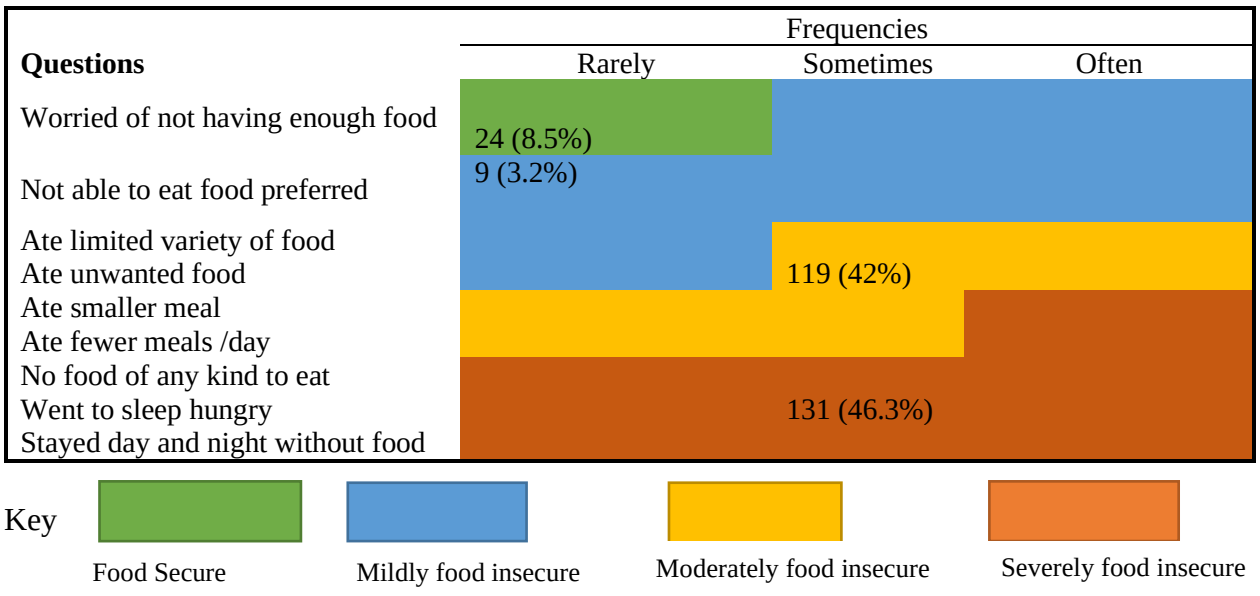
Source: Own sample household survey, 2018

According to this result, 22 households scored zero out of 27 points, which means that these households experienced none of the HFIAS conditions. Therefore, these households were regarded as food secure according to their perception of their condition, 30 days prior to the survey. Nine households scored the maximum points (27) which mean that they experienced all the nine conditions with maximum frequency, more than 10 times in the 30 days prior to the study.

6.3.2.4. Current PSNP Households Food Insecurity Access Prevalence (HFIAP)

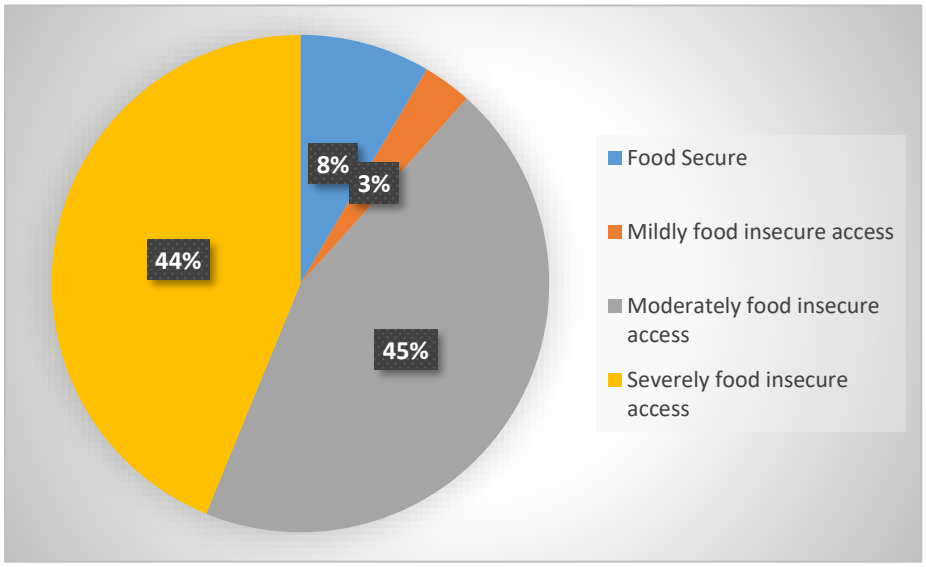
Following Coates *et al.*, (2007), data from sample current PSNP households` responses to generic question of HFIAS was categorized into the four HFIAP: food secure, mildly food insecure, and severely food insecure.

Table 6.21: HFIAP of ongoing PSNP households



As the Table 6.21 illustrates, out of 283 on-going PSNP households, 24 (8.5%) households were found to be food secure 30 days prior to the household survey date. Nine households (3.2%) were mildly food insecure access. If mildly food insecure households are considered as food secure, the total food secure households resulted from HFIAS were found to be 33 (11.7%) households. The result from self-assessment measure discussed earlier revealed that 59 (20.8%) households were food secure all the years after they joined PSNP, including the previous year. The number of food secure households resulted from HFIAS 30 days before the household survey for this study was less by 26 (9.2%) from that resulted from households' self-assessment measure. This was due to measurement differences, meaning, HFIAS included experiences such as 'worried of not having enough food' which was possibly so because most of the households complained of the delay of PSNP payments and heard the payment amount was going to be lesser by 50 *Birr*/person then than the previous years. The great number of the households resulted from HFIAS fell into moderately food insecure access (42%), and severely food insecure access (46.3%).

Figure 8: Category of ongoing PSNP households by food security status (HFIAP)



Source: Author`s own presentation, 2018

These results from HFIAS are somewhat surprising, as all these households were still benefiting from PSNP. The reasons listed under self-assessment reports could be attributed to these results on one side. The other reason could be that the previous 3 years' harvest was not good due to drought and crop pests and diseases as reported during FGDs and key informant interviews. Thus, many of my informants were anxious of their food security situation by voicing that the transfer was delayed, the transfer amount was going to be reduced by 50 *Birr* as compared to the previous years,

and full family was not targeted during the household survey for this study. Thus, most of them may have reduced quantity and quality until the payment from PSNP was made. Moreover, HFIAS categorized items 1-9 in the order of increasing severity, however, the immediate response of most households in the study area was quantity reduction than 'worry' until they receive the transfer that they expect from PSNP. This finding is consistent with Seifu *et al.* (2015) who found that the sequence was not maintained in their study, indicating item 1 in HFIAS as an example which was found to be not the first highest affirmative response but the third. In the case of this study, it is even the fifth highest affirmative response. The first highest affirmative response was 'eating a few kinds of food', which was the third in HFIAS sequence. 'Eating fewer meals in a day' was the second, and 'Eating a smaller meal' was the fourth taking the position of 'Eating just a few kinds of foods' and 'Eating foods they really do not want eat', respectively. Eating smaller meals in a day and eating fewer meals are almost the same but eating fewer meals surpassed by only one person that makes it to correspond to the finding of Seifu *et al.* (2015). Thus, this change of sequence may have led to many households` responses to be categorized in the moderately and severely food insecure access than obtained from households' self-assessment measure and per capital kcal supply that will be presented in the next section. Lastly, households may have exaggerated in their responses to the subjective questions administered to them in the expectation of immediate response, as they had long standing experience of being assessed and targeted for benefits, as suggested by Seifu *et al*. (2015).

6.3.3. Ongoing PSNP Households Food Balance and Food Calorie Available

7.3.3.1. Net annual food grain available

Food balance at a household was calculated for ongoing PSNP households by changing PSNP cash transfers, in addition to households' own production and purchase from own financial sources, to sorghum equivalent based on average market values in months of January, May and September, 2017. The market value of sorghum was obtained from Office of West Harerghe Market Development. The average value of one kg of Sorghum was 9 *Birr*. The cash transfer from PSNP per person targeted was 205 *Birr*. Thus, 205 *Birr* was multiplied by the number of household members targeted for six months and then converted to sorghum equivalent in kg. Sorghum was used because it is the most commonly used staple food grain in the district. Therefore, the household food balance calculated for on-going PSNP households presented here includes grain equivalent PSNP transfers, and all other food grain incomes from all other sources less food grain expenditures. Accordingly, the net food grain available to the 283 on-going PSNP households is summarized in Table 6.22.

Table 6.22: Summary of calculated food balance at household level

Indicator	Sum	Mean	Std. Dev	Minimum	Maximum
Annual gross grain income at household level (in kg)	309886	1095	380	373	3373
Total annual grain expenditure (in kg)	8238	29.1	50.5	0	548
Net annual grain available at household level (in kg)	301648	1066	372	363	3369
Annual per capital grain available by household (in kg)	62543	221	93	68	842

Sources: Own household survey, 2018

The mean net grain available, as can be seen from the descriptive statistics above, at a household level for on-going PSNP households from all sources was 1066 kg. The mean annual per capital grain available was 221 kg, with a standard deviation of 92. However, the per capital grain available differences across the households were wide with the range of 774 (minimum 68 kg, and maximum 842 kg).

Table 6.23: Annual per capital grain available for all household members

Net grain available (kg)	N	Percent
68-197	128	45.2
198-219	29	10.25
220-842	126	44.5
Total	283	100

Sources: Sample household survey data

Table 6.23, indicates that 29 (10.25%) of the households obtained 198-219 kgs of food grain per annum per a person. Moreover, 126 (44.5%) households acquired 220 kg and above net grain per person per annum. The remaining 128 households (45.2%) obtained less than 198kg food grain per person per annum.

Therefore, still when seen in terms of minimum food grain allocation, the number of households under PSNP who did not meet the required amount of food grain was big. This figure could be

more than this, as households might not use all PSNP cash transfers to procure food grains as it was assumed and calculated in this analysis.

6.3.3.2. Per capital food calories available

Based on the household food balance model, the net food grain available was converted to calories based on Ethiopian Health and Nutrition Institute Conversion Table, Part III (1968-1997), to calculate per capital food calories available for on-going PSNP households. Accordingly, the per capital food calories available to ongoing PSNP households as a whole and when disintegrated by non-graduated and newly admitted households was computed and presented in Table 6.24. Mean per capital kcal available from PSNP transfers and from households' own production and other sources of incomes are also separately indicated to show the sources of available Kcal to them.

Table 6.24: Annual food calorie distribution across on-going PSNP households

Households status in the program	Descriptive	Kcal available without PSNP	Kcal available from PSNP (sorghum equivalent)	Kcal available from both sources	Per capital daily kcal available
Non-graduated (N=71)	Sum	135536965	134217600	269754565	146827
	Mean	1908971	1890389	3799360	2068
	Std. Deviation	1466881	479878	1527779	1096
New client (N=212)	Sum	478017540	347745600	825763140	474229
	Mean	2254800	1640309	3895109	2237
	Std. Deviation	1105477	498831	1287541	838
Total (N=283)	Sum	613554504	481963200	1095517704	621058
	Mean	2168037	1703050	3871087	2195
	Std. Deviation	1212876	505115	1349630	910

Sources: Own household survey, 2018

The net total food calorie available from PSNP (all PSNP resource was assumed to be spent on food), own production, and all other sources was 1095517704.5 (613554504.5 kcal from their own sources, and 481963200 from PSNP transfers) to a household in the year 2017. The mean per capital daily food calorie available to all households was, thus, 2194.55 from all sources. The overall mean food calorie supply from all sources seems adequate when seen against the 2100 kcal/person/day recommended for Ethiopian adult with light work. However, the mean per capital kcal available to non-graduated households (2068 kcal) was slightly below the set standard, whereas the newly admitted households obtained above 2100 kcal. Overall, when we look at the standard deviations of the distribution, there was a wide variation across the households. Table

6.25 shows the food security status of all households measured in terms of 2100 per capital kcal available.

Table 6.25: Food security status of ongoing PSNP households in terms of 2100 per capital kcal available at household level

Food security status	Non-graduated (N=71)	%	New clients (N=212)	%	Total (N=283)	%
Food insecure	47	66.2	104	49.1	151	53.4
Food secure	24	33.8	108	50.9	132	46.6

Source: Calculated from own household survey, 2018

Table 6.25 indicates 53.4 % of the ongoing PSNP households did not get the minimum food calorie required even with the PSNP transfers. However, 132 households (46.6%) obtained greater than or equal to 2100 kcal/per day, and thus were food secure.

As we have seen in our discussion of program related issues, not all eligible ongoing PSNP household members were targeted for PSNP. Out of 1480 total household members, 537 (36.3%) eligible people in the households were not targeted for the PSNP due to inadequacy of available resource. The mean household size was 5.23 persons whereas the mean household size targeted for PSNP was 3.33. Had the available PSNP transfer amount was consumed only by the targeted number of the household members, the mean per capital daily calories would have been better. Table 6.26 indicates the likely distribution of food secure and insecure households had the available kcal at household was only for the targeted number of households. However, households shared the available resource among all members, as a result of which the PSNP resource was diluted and some households remained food insecure even while receiving PSNP transfers.

Table 6.26: Food security status of households had the transfer been only for the targeted numbers of household members

Food security status	Status in the program		Total	Percent
	Non-graduated	New clients		
Food insecure	14	21	35	12.4
Food secure	57	191	248	87.6
Total	71	212	283	100

Source: Own household survey, 2018

As it can be observed from the Table 6.26, targeting all eligible household members would have reduced the number of food insecure households from 151 (53.4%) (Table 6.25) to 35 households (12.4%), and about 87.6% would have become food secure with transfer from PSNP. The remaining percent could also be food secure if PSNP transfer amount was made according to months of households` food gap.

6.3.4. Impact of PSNP transfers on the food security status of ongoing PSNP households

To find out what differences have been resulted on food security status of ongoing PSNP households due to transfers from PSNP, comparison of mean kcal available to households with and without PSNP transfers was made. As the sample size for ongoing PSNP households was fairly big, and the differences to be seen was the difference between each household`s mean kcal supply with and without PSNP, paired–sample t test was used.

Table 6.27: Mean difference of available food kcal with and without PSNP

Variable	Obs.	Mean	Std Err.	Std, Dev	[95% conf. interval]	
Per capital daily calorie available without PSNP	283	1243	46.9	788.9	1150.3	1334.96
Per capital daily calorie available with PSNP	283	2195	54.1	910.5	2088	2301.1
diff	283	-952	18	302.7	-987.3	-916.5
Mean (diff) = mean (without PSNP - with PSNP)					t = -52.8912	
Ho: mean (diff) = 0			Degrees of freedom = 282			
Ha: mean (diff) < 0	Ha: mean (diff)! = 0		Ha: mean (diff) > 0			
Pr (T < t) = 0.0000	Pr (|T| > |t|) = 0.0000		Pr (T > t) = 1.0000			

Source: Own household survey, 2018

As depicted in Table 6.27, the mean food kcal available to ongoing PSNP households without PSNP transfer was 1243. This was increased to 2195 kcal when PSNP transfer was included. The paired-sample t test statistics depicted in Table 6.27 also revealed that ongoing PSNP households obtained 952 additional mean kcal per capital due to their access to PSNP transfers. The difference is statistically significant at $p<.001$.

Just as we have observed in SAFS analysis which revealed 71.12% average improvement of food gaps experienced by ongoing PSNP after joining PSNP, this analysis also indicated that there was

an average of 76.6% (952 kcal /person/day) improvement on ongoing PSNP households food calorie supply as a result of households access to PSNP, assuming that other things being equal.

The per capital food calorie supply calculated from household food balance model for ongoing PSNP households here shows that the greater number of households were food secure than that resulted from HFIAS and households` self-assessment report. The result from HFIAS for ongoing PSNP households discussed earlier in this chapter showed that 33 households were food secure whereas the result from household self-assessment indicated 59 households to have been food secure. The per capital kcal available computed from household food balance model, however, came up with 132 households being food secure.

The results from the three indicators in this section are not as close as the results for graduated households. As already discussed in the Methodology section, the three tools were not designed to capture similar dimension of food security of the study households. Therefore, this fact could be possible reasons for the variation in the results of the three assessment tools.

In general, though transfers from PSNP improved the food security status of ongoing PSNP households, the food calories available both from PSNP transfers and from their own sources was found inadequate for about 46.6% of them. A more astounding finding was that more than 33.8% of the non-graduated households, those who remained in the program from the previous phases were still food insecure in spite of continually receiving transfers from PSNP. This tells us that the prospect of these on-going PSNP households to accumulate adequate buffer resources to graduate, other things being equal, is unlikely. Asset protection at a household level could not be possible as these households required additional resources to cover the food needs of eligible household members who were left untargeted from the household. Moreover, the prospect looked hazy to these households to build household assets due to further reduction of the transfer amount which would be less by 50 Birr per person/month in 2018 than in 2017, as reported by both the study participants and the district officials.

6.4. Comparing food security status of groups of households: Is there any significant difference?

The programme implementation manual (PIM) issued for phase IV suggested the use of PSNP clients and graduates as comparative groups to analyze the outcomes and impact of the programme (MoA, 2016:17-17):

> In evaluations, high-level outcome indicators will be analyzed to allow comparisons between PSNP clients, a control group (or counterfactual) and those who have exited the programme (graduates). This will allow an assessment of the impact of the programme on households participating in the programme, and the contribution of the programme to achieving sustainable livelihood security.

Accordingly, this section investigates whether there were significant differences between ongoing PSNP households and graduated households in their food security status based on the mean per capital food kcal supply calculated for each group of households in the preceding section. This comparison would tell us whether the graduate households were really different from ongoing PSNP households had the on-going households not received PSNP at the time of survey. Thus, it verifies the graduate households' complaints of not being different from the ongoing PSNP households in their food security status.

6.4.1. Comparing households without PSNP transfers

Before conducting comparing and testing the mean differences between group of households in the study, normality of data distribution and homogeneity of variances were explored and tested as detailed in the methodology section. Tests of normality were conducted by using Kolmogorov-Smirnov and Shapiro-Wilk tests. Moreover, Levene`s test was used to test homogeneity of variance. The test statistic for Kolmogorov-Smirnov and Shapiro-Wilk are both significant. On-going PSNP households score per capital calories available, D (283) =.074, p<.01, and the score for graduated households per capital food calorie supply, D (94) =.111, P<.01, were both significantly non-normal (Table 6.28).

Table 6.28: Tests of normality for per capital kcal without PSNP

Household groups by graduation status	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
On-going PSNP households	.074	283	.001	.874	283	.000
Graduated Households	.111	94	.006	.856	94	.000

Source: Own survey data, 2018

Likewise, Table 6.29 shows the result of Levene`s test. As it can be observed, F (1, 375) =.265, indicating that the variance is not significantly different, or the assumption of homogeneity of variances has been met.

Table 6.29: Test of homogeneity of variance

Variable tested		Levene statistic	df1	df2	Sig.
Per capital food calorie available without PSNP	Based on Mean	1.244	1	375	.265
	Based on Median	.865	1	375	.353
	Based on Median and with adjusted df	.865	1	364.1	.353
	Based on trimmed mean	1.066	1	375	.303

Source: Own household survey, 2018

The tests show that one of the parametric assumptions, normality of data distribution, was broken, though the homogeneity of variance is ok. Therefore, as one of the assumptions of parametric tests was broken, non-parametric test for comparing equality of means is found appropriate.

According to the data presented in Table 6.27 the mean per capital calorie available to on-going PSNP households without PSNP transfers was 1243 kcal with the standard deviation of 789. Likewise, the per capital food calorie available to graduated households during the same period was 1322 kcal with the standard deviation of 896 (Table 6.7). A simple look at the means of per capital kcal available shows that graduated households obtained about 56 more kcal per capital than on-going PSNP households without PSNP transfers.

6.4.2 Mann-Whitney test for equality of means

Mann-Whitney test looks at differences between the ranked positions of scores in two different groups. Accordingly, Table 6.30 summarizes the data after they have been ranked. It tells us that the average and sum of ranks of graduated and ongoing PSNP households in terms of per capital kilo calories distribution. As Mann-Whitney test depends on scores being ranked from lowest to highest, the group with the lowest mean rank indicates that it is the group in which the greatest numbers of lower scores are found, and the highest mean rank indicates a group in which a great number of high scores are found (Field, 2009).

Table 6.30: Mean ranks of per capital kcal available to groups of households

Variables	Groups	N	Mean rank	Sum of ranks
Per capital food kcal available without PSNP	Ongoing PSNP HHs	283	188.24	53272
	Graduated HHs	94	191.29	17981
	Total	377		

Source: Own household survey, 2018

According to the output in Table 6.30 graduated households had slightly higher mean rank of 191.29 against 188.4 score for ongoing PSNP households, informing that it had a great number of high scores within it.

The next Table 6.30 provides test statistics for the Mann-Whitney test, the Wilcoxon procedure and its corresponding Z-scores. The significance test is provided in two-tailed probability, and it is not significant, p>.05. Therefore, there was no significant difference between graduated households and ongoing PSNP clients without PSNP transfer in terms of per capital food calorie distribution one year prior to this study.

Table 6.31: Test statistics for equality of mean per capital kcal available

Tests for per capital food calorie available without PSNP			
Mann-Whitney U			13086.000
Wilcoxon W			53272.000
Z			-.235
Asymp. Sig. (2-tailed)			.814
Monte Carlo Sig. (2-tailed)	Sig.		0.82
	99% confidence interval	Lower Bound	.810
		Upper Bound	.830

Source: Calculated from own survey data, 2018

6.4.1.4. Effect size

The tests for the equality of means made clear that there was no significant difference between the two groups. However, the average difference between the two means communicates that the mean per capital daily calorie available for graduated households was slightly greater (mean= 1322.4, SE=92.4) than the mean per capital daily calorie available for on-going PSNP households (m=1242.65, SE=46.90).

Field (2012) indicated that non-significant result does not mean that there was no effect, but it means the effect was not big enough. Cohen (1990) suggested that non-significant result should not be interpreted as 'no difference between means,' or as 'null hypothesis is true' (in Field, 2012). Therefore, measuring an effect size in standardized way is suggested (Field, 2012). An effect size is explained as a "standardized measure of the magnitude of observed effect" (Field: 2012:56). It provides an objective measure for how important is the effect (Field: 2012).

Among many measures of effect sizes, Cohen`s d, Pearson`s correlation coefficient r, and odds ratio are the most commonly cited (Field, 2009). Pearson`s correlation coefficient, r, effect size measure lies between 0 (no effect) and 1 (a perfect effect). Moreover, Cohen (1988, 1992) suggested, (as presented in Field, 2009), the category of the magnitude of effect as *small effect when* r= .10, medium effect when r=.30, and large effect when r=.50. In this research, therefore, Pearson`s correlation coefficient r is used as it is most commonly adopted (Field, 2009).

The calculation of effect size could be obtained by the formula provided by Rosenthal (1991, in Field, 2009: 550) is:

$r=Z/\sqrt{N}$

whereas z = z-scores that SPSS produced; N is the size of the study, and r is the effect size (Pearson correlation coefficient).

Therefore, $r= -.235/\sqrt{377}= -0.012$

This Pearson correlation coefficient, .012 is nearer to zero, indicating that there was no effect of being graduated and non-graduated in terms of mean per capital food kcal supply without PSNP transfers. The qualitative information obtained in Chiro district regarding the difference between the food security status of graduated and ongoing PSNP households made this point clear that the graduated household were identified as such not because they were fully food sufficient, but because, according to their subjective judgment, they were slightly better than the non-graduated or the newly admitted PSNP households at the time of targeting. Moreover, graduated households may have lost their assets due to different reasons since they were graduated and fell back to food insecurity as we observed in our discussion of households' self-assessment measure of food insecurity.

6.5. Summary

The Chapter has investigated the food security statuses of study households, both graduated and ongoing PSNP clients, using three different food security measurement techniques: SAFS, HFIAS,

HFBM. Moreover, based on the results from HFBM, determinants of food security status of graduated households were analyzed. It has also attempted to make some comparative analysis among the group of households to show their relative food security positions.

Self-Assessment Food Security technique revealed that 60.6 % of graduated households were food secure upon their graduation, while 39.4 % were removed from the program without attaining 'food sufficiency' as defined in the program. However, from households who reported being food secure upon their graduation, about 70% of them started falling back to food insecurity a year after graduation. Results from HFBM and HFIAS for graduated households revealed that only 16% of them were food secure when data was collected for this study. The qualitative data informed that the reasons for the falling back of graduated households were exposure to persistent drought, lack of /or inadequate continued support from food security program as anticipated in the FSP, and inadequate income sources after graduation.

Regarding food security status of ongoing PSNP households, the SAFS technique indicated on average the food security status of ongoing PSNP households was improved by 71% as compared to their food security status before their joining the PSNP program. However, the same technique revealed that ongoing PSNP households had 1.7 months of food gaps on average. According to results from HFBM, though the mean per capital daily food calorie available (2195 kcal) to the ongoing PSNP was adequate, the disaggregated distribution by a household indicated that 45.6% of them obtained below the required minimum kcal supply. The reasons for the gaps was resulted from households' socioeconomic characteristics such as the household size that the transfer from PSNP did not adequately address due to the introduction of five-persons family cap, absence of household level differentiation of duration of support, and delays in PSNP transfer. The analysis further indicated that an improvement on family cap principle alone by targeting all the eligible household members would raise the proportion of food secure households to 87.6%. The result from HFIAS, indicated that most ongoing PSNP households (88.3%) were food insecure 30 days before household survey for this study. As this technique looks at households` perceptions of food vulnerability and their behavioral responses to it, the possible reasons for the inflated number of food insecure households resulted from HFIAS for ongoing households could be attributed to the delay of PSNP transfer informed at the time of data collection; limited harvest in the previous year due to drought and crop diseases, and households being worried due to the would be reduction of 50 *Birr* from the per month/person PSNP transfer rate of the previous year.

The analysis of determinants of food security status of graduated households using logit model revealed that a unit increase of land holding size, access to HABP and income from off-farm

activities positively and significantly determine the odds of households remaining food secure after graduation. Household size, however, negatively and significantly affect the odds of households' being food secure after graduation.

The comparison of graduated and ongoing PSNP households` food security statuses without PSNP transfer using per capital mean food calorie distribution resulted from HFBM revealed that there was no significant difference. It means that graduated households should have been equally eligible to PSNP transfers when their food security status was compared to that of on-going PSNP households in terms of per capital food calorie supply at the time the survey was conducted. When households were further categorized into non-graduated, graduated and new clients, non-graduated households were found to be the neediest in terms of per capital food calorie supplies. Thus, admitting non-graduated households to continue benefiting from PSNP program was found fair. However, there was no significant difference between the graduated and newly admitted PSNP households without PSNP transfers. This confirms the information obtained from FGDs and key informant interviews that most graduated households were required to leave places for those who were equally eligible to the program but did not get the opportunity to benefit from the program.

In general, the study revealed that the food security status of most graduated households was serious that calls for the attention of government and other stakeholders implementing the FSP. Though the PSNP transfer improved the food security statuses of ongoing PSNP households, many households had food gaps that could be addressed by improving the five-persons family cap principles and addressing the differential food gap months that some households had.

Chapter 7: Conclusions and Policy Implications

7.1. Introduction

The main purpose of this dissertation was to explore and analyze factors that affected chronically food insecure rural households` progress towards graduation and graduate households` livelihood assets and food security status after graduation. In pursuit of meeting this purpose, rural livelihood approach was adopted to more comprehensively understand households` socioeconomic and demographic characteristics, their access to different livelihood assets and food security program related services and products, and their food security statuses. The study was conducted in four case study *kebele*s of Chiro District in West Hararghe Zone of Oromia National Regional State, in Ethiopia. The research design was a concurrent triangulation in which both qualitative and quantitative data were collected in parallel. The qualitative and quantitative data were used for mutual explanations and validation, and findings from each were compared and interpreted. Various graduation approach thinking, food security theories and concepts and indicators were used to explain the empirical observations from the study. This Chapter summarizes the major findings and conclusions drawn from the study. Following the conclusion, some reflections on contribution of the study, policy implications and suggestion on the ways some constraints could be addressed are presented.

7.2. Summary of major findings of the study

Graduation has been the major goal of Food Security Program in Ethiopia. However, there has been a wide conception that though PSNP in Ethiopia has improved the food security status of the people, progress towards graduation has been limited. This dissertation has attempted to answer the major research question: '*why progress towards graduation from Productive Safety Net Program in Ethiopia has been limited?* In the quest of answering this question, the study has explored the Ethiopian Government`s intention of introducing PSNP as integral part of Food Security Program with the vision of massive graduation; its practical implementation, achievements and key stakeholders' perception of the program implementation and outcomes. Moreover, attempt has been made to investigate participant households' vulnerability contexts, asset endowments, livelihood strategies, and their food security status through the lenses of Sustainable Livelihood Framework. Graduated households' livelihood assets and food security status upon and after graduation, determinants of their food security status, and their relative position as compared to the ongoing PSNP households were analyzed. Ongoing PSNP households'

current food security status, how the PSNP has improved their position, their asset holding and would be graduation were explored and examined.

The exploration of stakeholders' perceptions against program intention revealed the existence of wider gaps between program design intention and implementation. In quest to overcome the problem of chronic food insecurity and to do away with the cycle of emergency appeal system, the Ethiopian Government, in collaboration with international and local partners, designed a more predictable and multi-year program that could, by being integrated with other development interventions, move chronically food insecure households from dependence on external assistance to self-sustenance. The move from humanitarian relief system to Safety Program for chronically food insecure in Ethiopia is a positive step forward in addressing the shortfalls of relief cycle dependency by integrating those who have the potential into the local economy and prospect for growth. It was confirmed that Safety net can protect household assets and households from falling to destitution if the transfers are timely and adequate.

The study found that about 50% of the initially targeted households exited the PSNP program; at national, regional, and the study district level. However, the overall number of PSNP participants has not decreased, but has been on an increasing trend at all levels due to program expansion to new regions and new areas within the existing regions and districts. Key stakeholders' perceptions revealed a number of issues ranging from households` characteristics to program implementation irregularities. Program implementation issues such as delay in transfer, inadequacy of transfer from PSNP, limited or absence of integration of PSNP with other development interventions; environmental factors such as drought, rainfall variability and crop diseases; demographic and socioeconomic characteristics such as household size, lack of or scarcity of land and livestock holding, limited adoption of farm technology, limited participation in local formal economic institutions such farmers' development group, among others, were defined as constraining factors of households' progress to graduation.

Both qualitative and quantitative data analysis revealed that the great number of households reported having graduated from PSNP were not able to satisfy the minimum food required for their household remembers after graduation. Most graduated households failed to sustain their gains and some remained food insecure after graduation due to their being prematurely removed from the program, high level of their livelihood vulnerability to environmental factors, and limited or absence of access to other food security program support after graduation. They were removed from the program through subjective judgment of the local authorities and *kebele* food security taskforces. The local authorities and local communities were pressurized by the needs of other

eligible households who were out of the program and the push from 'above,' as they stated. Relative subjective judgments were means through which local communities predominantly used to screen graduate households. The graduation measurements, both asset bench marks and GPS were arbitrary. Neither local implementers nor the beneficiaries had confidence on its appropriateness. To borrow Degefa `s phrase (2003), *'failure to rely on reliable information and relevant theories*" of food security led to the exclusion of the people who really needed the PSNP transfer.

The comparison of graduated and ongoing PSNP households in terms of their overall livelihood asset possession and food security status without including PSNP transfer at the time of the study revealed that there were no significant differences. Graduate households significantly different from ongoing PSNP households only in terms of holding better land size. Most graduate households fell back to food insecurity after their graduation due to: 1) their premature graduation, 2) their lack of continued access to household asset building program products and services, 3) lack of undiversified income sources, 4) their exposure to persistent droughts and accompanying crop pests and diseases that affected them to continue with their productivity enhancing capacities.

Analysis of the food security status of ongoing PSNP households revealed that the transfer from PSNP made tremendous improvement on their food security status as compared to their status before joining PSNP. Results from SAFS and HFBM revealed that there was about 71.1% and 76.6% improvement on ongoing households` food security status, respectively, due to consumption transfer from PSNP. However, 53.4 % of the households did not get the minimum food calorie required even with the PSNP transfers due to family cap principle and differences in households` preexisting food gap months. The prospect of most ongoing PSNP households to graduate from the PSNP at the end of the program phase was not promising as the households' self-assessment perception. There were no adequate livelihood resources and services for most households to diversify income sources. The study households indicated that they could graduate from external assistance if they had access to adequate land, irrigation, and adequate livelihood support transfers.

7.3. Conclusions

This section presents conclusions drawn from the major findings discussed in the body of the dissertation. In quest of answering the major question, the study has first reconfirmed that though the food security program in Ethiopia has tremendously improved the food consumption gaps of the targeted rural households, the aspired massive graduation within a phased program duration

has not yet been achieved. From the detailed investigation of policy directions and its practical implementations the following conclusions are derived.

Lack of predefined program complementarity

The study has found that there has not been adequate program complementarity which was learned later on as an important factor for enhancing graduation. It could be argued that the program passed through subsequent learning process than a full-fledged program arrangement for graduation outcomes at started. First, a predefined direction for how graduation could be achieved and the required program complementarity was lacking during the first and second phases of the program, for example. It was during these phases that OFSP fine-tuned to target PSNP households on the priority base and redefined as HABP as a complementary program to achieve graduation. Second, strict micro-credit provision arrangement and management discipline was not followed in OFSP credit component at start as a result of which loan recovery was challenged, particularly in Oromia. Credit disbursement was not made by professional agency and households did not pass through learning process of micro-finance discipline to become viable MFI clients. The failure to do this has contributed for a long outstanding loan of Food Security Program in Oromia, as a result of which the region was constrained to revolve adequate financial resource for those who needed it. Third, originally it was not recognized that very poor households do not dare to take loan. Therefore, it was in the ongoing Fourth Phase that free livelihood support transfer was introduced, the impact of which was not seen by this study as it was too early when the household survey was conducted.

Irregularities in program implementation

A number of irregularities such as delay in transfer, inadequacy of transfer, and reduction of eligible household members from targeting were found in the implementation of PSNP program. These irregularities had many implications on households' path to graduation. If the transfer is not timely, people go for loan for which they are required to pay back more. Or, they may sale out some household assets, replacing of which at latter stage may become costlier. Inadequate transfer may lessen the food gaps households had, but still leaves the remaining gaps to be filled by selling productive assets, consume less, work on better-offs` farms nearby or far away than focusing on its own farm, and drop children out of school to send to work to gain income. It does not ease constraints of risk-taking behaviors to undertake entrepreneurial ventures as suggested in graduation theory. As Macord and Slater (2015:141) argued, "Irregular and delayed transfers can undermine prospects for effective microfinance participation, or local saving and borrowing

activities. This can even result in increased levels of indebtedness if anticipated transfer flows, used as security for loan, are delayed."

The focus on graduation as a measure of program success distorted the true benefit of PSNP

Most graduate households were prematurely removed from the program than truly fulfilling the true graduation criterion to show success. It could be argued that measure of success that depended only on the number of households who exited the program blurred the true graduation intention. The graduation approach at least in the study district was overambitious which did not take the local specific constraints into considerations. Above 96% of the study households relied on livelihood activities that depended on land and land related activities. The landholding size of about 67% of the study households was below 0.5 hectare which was economically unviable. It is an unimaginable to expect a household with that level of land holding and family size of 5-6 persons to survive on rain-fed, unproductive agriculture that was persistently constrained by moisture stress without external support or livelihood transformation to non-agricultural activities. Livestock asset is a liability for the poor in the absence of grazing land or with no means of obtaining livestock feed. It takes time to bring up a small livestock until it becomes productive, and resources to adequately feed it to fatten, which is the viable livestock rearing practice in the study area. Though drought and rainfall variability were the major constraints of crop production and productivity, the number of households who had access to irrigation or water harvesting technologies and practices was negligible; 8%, and 4% of all sampled households, respectively. However, local authorities were pressurized to graduate households as a result of which they prematurely removed eligible households from the program, as a result of which, other things being equal, most of them required external support. This practice compromised the vision of achieving food security for all people at all times. As a result, the intergenerational transmission of poverty by compromising child growth and education that Roelen (2015) warned against may gain foothold.

Arbitrary graduation benchmark

The researcher argue that the asset threshold established at the district level was 'arbitrary' because it did not consider differing characteristics of households such as family size and other vulnerability factors. This is against asset threshold theory that emphasizes households with different characteristics require different level of assets. The level of asset threshold established may work well for those with less family size, but may not do the same across all with varying household size. Those households with higher household size would have lesser per capital asset holding. Thus, as asset threshold scholars argue, if a household`s asset holding is low, its return is

also low which could not be more than its immediate consumption needs to invest as a result of which such a household remains in poverty trap (Carter & Barett, 2006; Barett *et al.*, 2006). Therefore, thresholds should vary depending on size of the household, gender composition, dependency ratio, socio-economic context, livelihood strategies and opportunities, and the combination of different capitals as explained by Sabates-Wheeler and Devereux (2011).

Moreover, asset holding size indicates the capacity of a household to generate future streams of income. The value of assets established as a bench-mark for graduation did not show how much income these assets could generate, say in normal years, to satisfy households` food and other consumption needs, to hold buffer resources that could enable households to resist moderate shocks for certain period, and to continue to generate adequate incomes for future needs. That was one of the reasons why most households who acknowledged that their asset and food security status was better upon their graduation complained of not being able to generate adequate income to remain food secure after their graduation. Questions such as what types of assets and level of holding, under what condition could these assets generate streams of income that households sustainably rely on for production, consumption and saving to be resilient in the face of shocks have not yet been clearly answered.

Limited land holding size and technology adoption to produce reliable farm incomes

It was found that the land holding size of most study households was inadequate to supply and satisfy the food requirements of average household size of 5-6 with the current level of productivity even under normal harvest year. Besides, the use of agricultural technologies, such as fertilizers, improved verities of seeds, and pesticides was also limited. Land fallow was none existent, and some households did not apply proper soil and water conservation activities on their land. Ongoing PSNP households in Medhicho9, for example, voiced being forced to take fertilizers to fulfill *kebele* quota, the cost of which was deducted from the PSNP transfer available to them. They resisted, because they believed that they had no adequate land on which they would apply. This is in line with Workneh (2006) who argued that land fragmentation negatively influences the application of agricultural technologies and suitable land management practices such as crop rotation, agroforestry, soil erosion control, as smallholders have limited incomes and application of these practices on small plot of land induce higher overhead costs per unit of land. Moreover, Workneh (2006) claimed that small farmers with fragmented land size operating in a risk-prone and vulnerable environment tend to be risk averse, and thus they would be food insecure. Therefore, the researcher argues that the prospect of achieving stable food security by relying only on enhancing agriculture production and productivity in such constrained context is not promising.

Unrealistic expectation from PSNP

PSNP transfer, though inadequate to bridge all food gaps that targeted households had, has reduced the number of food deficit months that households had before joining the program. However, it could be argued that the role of PSNP in ensuring households graduation is a supportive role than a standalone long-term developmental role. If other developmental interventions are lacking, there was no way for PSNP program to ensure graduation by itself. The inadequacy of PSNP transfer is a major concern by itself as it undermines the principal role of protecting the household from falling into deeper destitution. As meeting the chronic needs of today with emergency assistance year after year was criticized for not being able to curb the root cause of the problem, Safety Net Program that is not well integrated with the right mix of development intervention would never break the cycle of dependence on external assistance. Thus, the safety net beneficiaries of today would remain the food aid beneficiaries of the next day of their graduation if corrective measures are not put in place.

Agriculture could not be the only dependable way out for the study households

The study identified that the chronically food insecure households in Chiro District lacked land or held what Dessalegn (2009) called micro holdings or 'poverty' land, which is below 0.5 hectare. The household size is beyond the carrying capacity of the land they held. Drought and rainfall variability risks that households experienced most frequently would not let them to improve their income from agricultural activities. Most households had adequate human capital, yet were not skilled. Labor market opportunity for this abundant unskilled human capital was scarce in the locality.

The researcher argues that though exploiting the maximum possible output from agriculture should not be overlooked, dependence on only agriculture and related activities in the highly vulnerable areas like in this study, would not ensure the anticipated sustainable graduation. It could be deduced that the number of PSNP clients would continue to be the same or more at the end of the 4^{th} phase at least in the study area with the current approach. The number of relief beneficiaries parallel to PSNP in the past years may turn out to be chronic. To overcome this problem, the author reiterates what Gahamanyi and Kettlewell, (2015) suggested that program design features that support developmental impact need to consider micro-level social poverty, promote context specific

livelihoods, make sufficient and reliable transfers, and think through enabling macro environment such as structural unemployment issues and market conditions.

In general, it could be summarized that that households' progress towards graduation has been constrained by vulnerability factors related to households' characteristics, economic, environmental and program implementation inefficiency that failed to adequately address these constraints as stipulated in the program design. Non-graduated households remained behind because they were more vulnerable than those who graduated and newly admitted households. Most graduated households were found food insecure due to their being removed from the program without attaining food security and building the capacity to withstand shocks; and some others fell back due to lack of development deepening support and environmental factors. Though free livelihood support transfer was being made for some ongoing households to enhance their capacity to graduate, the inadequacy of consumption smoothing transfers from PSNP still left many households food insecure which may limit the progress towards graduation.

7.4. Reflections on the contributions of the study

The researcher believes that this dissertation contributes to the existing knowledge and theory of graduation from social protection and research methodology. Some of the claimed contributions are presented and discussed in the following section.

7.4.1. Documentation of contextual realities

With regard to its contribution to the existing knowledge, it has documented complex contextual realities of chronically food insecure households' livelihoods in the study area. Based on the identification of heavy reliance of the rural households in the study area on agriculture, it has investigated the causes and trends of food insecurity which was explained as the unbalanced interplay between people and environment which was exacerbated further by increased population pressure and persistent rainfall variability and drought.

As Devereux and Sabates-Wheeler (2015) noted, graduation model is new and little is known whether graduates retain their gains and are resilient to shocks they face as evaluation after the end of a program is not conducted. This study attempted to contribute to bridging this gap. The study on households` livelihood assets and food security status as compared to ongoing program participants has been scarce. This study is almost new in its kind in documenting the livelihood assets and food security status of graduated households after their graduation in Ethiopia. It has come up with new insights regarding whether the livelihood and food security status of graduates

has been improving or declining, factors that contribute to either positive or negative trajectories, and the relative significance of these factors after graduation.

The empirical study revealed that program interventions have not been able to improve the livelihood vulnerability situation of the study households further than consumption smoothing. The positive trajectories observed when households graduated started diminishing a few months after graduation. This is not to claim that graduation model does not work, but it shows that at least positive trajectory is not always possible for all households after graduation as it was claimed by graduation model due to different characteristics and dynamic nature of vulnerability. It informs that graduating households from a program is not an end by itself. Ensuring sustainability after graduation requires further strategy design. This instigates the need for policy makers to look at graduation exercises and its implication afterwards.

7.4.2. Dependency or vulnerability?

Why most households failed to graduate from PSNP program has been explained in two different perspectives: dependency syndrome and their vulnerability situation. The researcher argues that dependency syndrome may have a place in the argument as explained by some of the instances encountered during data collection, but it is the vulnerability context of the participant households that overweighs as Devereux (2010) wondered. About 70% of ongoing PSNP households reported that they had no confidence of graduating from PSNP at the end of the program phase. The major reason was that they could not able to feed their household members from their own production and income after graduation. As Degefa (2005:341) argued, "food security at household level is an economic, social and behavioral issue." According to his explanation, the behavioral dimension of a household reflected in 'feeling food secure or otherwise' is based on households' perception of its capacity to supply adequate food for its household members. The perception of food insecurity at household level is, therefore, the fear of not being able to supply food quantities adequate for the household members after graduation. This perception emanates from household`s current economic and social status, past experiences of risk factors and uncertainty due to lack of information (Degefa, 2005:341).

Thus, empirical evidence discussed under section 4.11 in this study showed that households fear graduating from the program due to their observed experience of graduated households who were not able to feed themselves after they graduated; their understanding of their own current economic and social status as inadequate to generate food supply to feed their household members year round; their knowledge of inadequacy of the ongoing support system to enable them to graduate,

and their experience of multiple environmental risk factors. Thus, the finding is also consistent with the argument of Sabates-wheeler *et al* (2017) and Degefa`s proposition of households` perception of their food insecurity. Households` perception of their food security status is based on households` understanding of objective drivers of their food insecurity when they are allowed to explain the reasons behind.

7.4.3. Theoretical and conceptual implications

Theoretical contribution of the study could be seen from the perspectives that how the documented theories in the study and the empirical findings converge or diverge. As Degefa, (2005) documented, convergence is the level of existing understanding of the issue under investigation, while divergence is the case where the theoretical insights from the current study could challenge the existing theories and add new understandings as different from the prevailing ones. Thus, the researcher contributes to the existing theories either by supporting the main suppositions of the existing theories when it has come up with the findings in line with them, or by arguing against where divergent results have emerged.

This study documented the ongoing graduation theories in social protection programs in developing countries and looked at Ethiopian practices by connecting to these theories which have been lacking in previous empirical studies in Ethiopia. Through extensive literature review in search of commonly agreed graduation theories, the study has rested on the arguments of Daidone et al. (2015) who established that there has not yet been commonly agreed definition, scope, types, most appropriate strategies, its potential impacts, and on how to define indicators to monitor and evaluate its impacts. Based on evaluation of types of graduation discussed in literature, this study has characterized the design feature of graduation model in Ethiopia as the hybrid of all types of graduation: threshold/exogenous graduation; 'sustainable/developmental graduation'; 'endogenous graduation. I argue that the Ethiopian design model has better integrated all important features of graduation models which could be termed as 'developmental graduation, at least at program design level. However, in practice, it leans much more towards 'threshold graduation' which the researcher argues that it has been arbitrary because it did not consider differing characteristics of households such as family size and other vulnerability factors.

7.4.4. Does graduation work?

There has been skeptics who questioned whether the graduation approach works as discussed in the problem statement and literature review section of this study. From the limited evidence in this study and to the researcher`s knowledge, there is no problem with graduation approach, but the

way it has been implemented and the politically motivated ambition for success. One important issue that was raised by Samson (2015) is that the problem arises when graduation is politically motivated. This is evidenced by the fact that districts were pressurized to graduate 60% of PSNP households at the end of phase III in Oromia. The researcher shares the idea reflected by Samson (2015) that the intention of prematurely removing poor people from the program with the pretext of reducing costs and dependency aggravates their food insecurity status rather than sustainably bringing them out of their plight. This finding is consistent with that of Devereux and Ulrichs, (2015) who reported that political supports focus more on graduation than safety nets, and the ambitious expectations of graduation may risk genuine and sustainable graduation outcomes. Accordingly, they revealed that evidences from Ethiopia indicated that political discussions around PSNP associated program success with the number of graduated participants as a result of which civil servants and local officials push for rapid, possibly premature graduation.

Even so, this study has come up with some evidences of successful graduation. Households who obtained appropriate and adequate transfers from OFSP successfully graduated. There were also households who exited from the program by their will after having recognized that they got the capacity to support themselves without program supports. Therefore, graduation works for most if the support system was appropriately designed, adequately resourced and effectively executed.

However, it has to be born in mind that not all households could graduate even though livelihood supports such as livestock transfers are made to them. Individual characteristic matter in some cases as reflected from some key informants. Some households may not be committed to graduate, reduce their assets in order to evade graduation, not able to multiply due to different constraints such as age and health condition. Thus, livelihood support exercise should take these into considerations. It needs to prioritize those who have capacity to actively do the business they are engaged in, save, and multiply than prioritizing consumption.

7.4.5. Some conceptual clarification: food self-sufficiency or food self-reliance?

The conceptual definition of food ‘sufficiency’ in Food Security Program of Ethiopia needs clarification (see annex 4 for definitions of food security, food self-sufficiency, and food self-reliance). The practice of the program to build the capacity of households to enable them to become ‘food sufficient’ promotes both own production and income generating activities to obtain adequate food quantity required at household level. However, according to FAO (2003), a household is said to be ‘self-sufficient’ if it is self-provision of food required at household level

from own production, but not from purchase, transfers, or gifts, which is difficult in practice. If a household is self-provisioning from its own production and other means of incomes such as labour, petty trade, sales of cash crops, livestock and others without external handouts, it is *self-reliant* than *self-sufficient*. To the best of the researcher`s knowledge, neither of the definitions compromises the concept of 'food security' that entails at least 'access by all people at all times to sufficient, safe and nutritious food that meets their dietary needs for an active and healthy life." Therefore, the government should focus on household`s food self-reliance than food self-sufficiency in highly vulnerable environment like this study area. Enabling households to become food self-reliant entails multiple development interventions to diversify income sources, skill development and opening up labor market opportunities besides agricultural production.

7.4.6. Methodological reflection

The researcher argues that this dissertation contributes to research methodology in two aspects. Firstly, different food security tools, SAF, HFBM, and HFIAS were deliberately chosen not only to capture different dimensions of food security but also to cover wider time span. SAF measures households' perception of its food security status since it joined PSNP and /or graduated to the time the household survey was conducted. Thus, it is used to cover the wider time span than the remaining two measures. HFBM was used to look at food calorie supply at a household level over a year. It was relatively objective and covered longer time span than HFIAS. HFIAS was used to capture access dimension of food insecurity prevalence thirty days before the survey date. HFIAS comprises coping strategy questions that also indicate households' future vulnerability. Thus, in addition to different dimensions of food security, the combination of these tools as used in this study can also help to capture food security status of households over a longer period of time and its trends where longitudinal data is not available.

Secondly, the study investigated graduation in the study area within the livelihood and food security framework than evaluating a simple exit of households from the program benefit. It supplemented previous studies by approaching the problem more broadly by taking food security dimensions and households livelihood assets than merely focusing on the limited objectives of PSNP. The study engaged participants more to find out their constraints and used both qualitative and quantitative approach to overcome the shortcoming of previous studies. Thus, it provides a contextual insight of the graduation approach challenges, shortcomings and would be improvements.

It argues that the inclination of the practice of Ethiopian graduation model towards threshold graduation has undermined the major objective of promoting developmental impacts that enable participants to continuously move out of food insecurity through comprehensive support as Samson (2015) argued. Moreover, I suggest the adoption of full-fledged developmental graduation model that promotes context specific livelihoods, makes sufficient and reliable transfers, and creates enabling environment that thinks through market condition and structural unemployment issues as Gahamanyi and Kettlewell (2015) suggested.

7.5. Some ways forward

Some suggestions have already been discussed and made in the theoretical and methodological section discussed above. Some of the suggestions are deduced from the reflections on literature reviews and the findings in this study. Some others are synthesized opinions from participants` view points and forwarded hereunder.

7.5.1. Ensure adequate, timely consumption smoothing transfer

The problem of ensuring adequate and timely delivery of PSNP transfers has been a long-standing issue. The introduction of five persons family cap in the fourth Phase of the program further created a loophole for local authorities to proportionally reduce the number of eligible household members from receiving their full entitlement from the PSNP transfers. The study households needed cash transfers immediately after the harvest time when grain prices are relatively cheap in the local market. Thus, both government and nongovernmental organizations working on the program need to reconsider the family cap principle; rework on how to extend the duration of support for households needing more than the average food gap months in the area; and ensure to deliver transfers at the time clients need it.

7.5.2. Expand appropriate, adequate and diversified livelihood supports

The livelihood asset endowment of a household determines its capacity to produce or to generate income. Rural households' ownership/access to productive assets, particularly adequate land, finance, farming equipment and technologies determine households' application of their human capability to generate adequate income. However, poverty, frequent natural calamities such as droughts and rain fall variability deteriorate resource endowment of households and finally reduce their capacities to fall into chronic food insecurity. Therefore, replenishment of households' resource potential to reverse the trend of chronic food insecurity is the necessary part of program interventions. Though the effort has been there, the coverage was very much limited. Thus, covering all households who need it is a must for ensuring the aspired rate of graduation. However,

as literature shows, making livelihood transfer is not an easy task that could ensure graduation by one-time injection of financial and physical resources. It requires carefully scrutinizing individual households' capabilities and shortfalls to design appropriate and adequate supports and services. Shocks and stresses that may destruct the effectiveness of the services and products rendered need to be closely monitored, and adjustments should be made as deemed necessary.

However, how could the vulnerable households be supported to graduate? Crop production or restocking may not be adequate or appropriate for some households with no/ or limited land holding size and pasture. These households may need other livelihood options or changes. Availing financial resources without appropriate capacity building to those who had no entrepreneur skill and experience may not help. Thus, training in new skills required in the local economy could be the necessary program intervention. Capacitating and opening up self-employment or location specific direct employment is another important aspect of ensuring future streams of income. These should not be limited to heads of households and/or spouses, but needs to target also those who are able and need the services in a household. Thus, program interventions designed in complementarity with PSNP should address both resource and skill constraints of participant households to ensure graduation. For some households for whom access to productive assets and other livelihood supports may not help, consumption support on a regular base should be guaranteed. Though some of these suggestions are already emphasized in the program design and implementation manual, their practical implementation has been lacking which calls for the attention of policy implementers to walk the talk.

7.5.3. Focus on developmental deepening than premature graduation

As discussed in this study, vulnerability factors of participant households are multiple, ranging from household characteristics and environmental factors that limited households progress to graduation. Moreover, ambition for success that prematurely removes households from the program, and graduate households falling back sometimes after graduation undermined the contribution of the program**.** Therefore, as equal rate of success from all households could not be expected, allowing participants who are not able to lift themselves out of the program at the end of program phase to continue, and adjusting for their vulnerability situation as suggested in endogenous graduation are important aspects to consider. Unrealistic push for graduation as a sign of achievement needs to be avoided. Development deepening after graduation should also be equally important service by way of linking the graduated households to MFI and to Food Security Program services such as capacity building, access to inputs and other agricultural technologies.

7.5.4. Ensuring evidence-based graduation

Evidence-based graduation has been emphasized in phase IV PSNP Program and Implementation Manual. The difficulty has always been the mismatch between program intention and actual implementation as discussed in Chapters Four and Five. Government and development partners need to focus on ensuring the implementation of this evidence-based principle of graduation at grass-root level. This has to begin from the planning stage. Any graduation plan should take the characteristics of targeted households, types of enabling supporting services and resources appropriate for the targeted households. To do this, there has to be baseline survey, or a simplified household profile that contains household characteristics, livelihood and asset holding during targeting. Based on these profile, services and products to enable the targeted households could be planned, implemented, monitored, and progress towards graduation should be evaluated. The benchmark has to be well studied and contextualized. An attempt to nominate households for graduation without predefined graduation enabling activities, resources, effective implementation and appropriate indicators for graduation would result in arbitrary removal of households from the program.

7.5.5. Work on options of availing water for irrigation

Drought and rainfall variability were consistently raised by study households as the major constraint to their agricultural production and productivity. Study households` access to irrigation facilities, traditional or modern, was almost nil. Households in the study area persistently suggested public irrigation development as the major means of ensuring their food security. Therefore, relevant public institution in the area should explore different means of availing water for irrigation where possible.

7.5.6. Work on households` graduation to MFI clientship

Financial capital has been major constraints to study households to engage in viable on-farm and off-farm ventures. Due to the flaw in the management of Food Security Program supported loans, there had been a large size of unpaid loans. As a result, MFI did not have confidence on the efficiency and effectiveness of Food Security Program credit component even during this study due to loosen coordination between financing agencies and MIFs. As MFI argued, financial resource requires financial literacy/ skill in financial management. Households need to pass through learning process of financial discipline, with strong coaching and follow up system in place. The pathway to graduation actually emphasized the need for financial literacy, but the implementation arrangement was loose. Therefore, there has to be strong coordination and mutual

understanding between MFI and Food Security Program Coordinating Offices to capacitate the poor households by equipping them with sustainable financial discipline and entrepreneurship skills to develop into viable MFI client-ship.

7.5.7. The need for knowledgeable and committed leadership

Degefa (2003:154) expressed his conviction that Food Security Strategy in Ethiopia (the 1996 and its revised version of 2002) did not reverse food insecurity; and he doubted it's would be success owing to its weaknesses in some design considerations and assumptions: "the failure to rely on reliable information and relevant theories, the non-participatory nature of strategy design (exclusion of the victims' voices), and the overambitious approach that paid little attention to the country's resource and financial capacity*".* He also pointed out that Food Security Programs overlooked good governance issues, policy inefficiency, market malfunctioning and lack of access to different livelihood resources as part of factors contributing to food insecurity (Degefa, 2003:150). Even though it was early to judge the performance of food security program at the time Degefa reflected his conviction, some points hold true. The implementation inefficiency and good governance issues discussed in the body of this dissertation confirms Degefa`s worry and still need to be well addressed in future programming. Many graduate households complained of being removed from the program without their prior knowledge. Resource constraint was raised by local authorities as pretext for reducing household members from program transfer. Therefore, program implementers should be well aware of program intention, implementation arrangements, and abide by program implementation guideline.

Food Security Strategy of Ethiopia and the resultant Food Security Program heavily rely on agricultural production and food self-sufficiency at household level. The access dimension through market attracted lesser attention, and the promotion of off-farm income generating activities was constrained by inadequacy of resources and administrative malfunctioning. However, not all chronically food insecure households residing in different localities are able to become food secure from own agricultural production. Though the heavy reliance on agricultural production could be seen as a comparative advantage, there needs to be concerted effort to enhancing other livelihood options such as off-farm income generating activities and employment generating schemes for those to whom agricultural land is in short supply.

As graduating from PSNP program (external assistance) and ensuring households food security are interwoven in Food Security Program of Ethiopia, there needs to be guided by food security theories in planning transfers and in assessing households to graduate. Moreover, in applying

graduation approach in Ethiopia, government needs to consider the dynamic nature of vulnerability. Based on the evidences at micro-level, graduate households should be reconsidered as program beneficiaries when they fall back. To do this, there has to be regular monitoring and evaluation system as the routine part of the program design after graduation.

7.5.8. Institutional arrangements

Some concerns were reflected on the loose coordination among implementing agencies and on the efficiency and effectiveness of program resources channeled to a number of implementing agencies. The researcher suggests that government should look at the effectiveness and efficiencies of the current institutional arrangements in terms of program service delivery and administrative costs channeled to different agencies against one institutional arrangement and what they deliver.

In general, the current PSNP improved the extent of food insecurity of participant households, but has not transformed their livelihoods and food security status to achieve sustainable graduation. A long development interventions and livelihood and income diversification needs to be sought. Population pressure and land scarcity has been very critical in the study area that should be taken into consideration for any program intervention. Though agriculture could not be ruled out in the study area, opening up other livelihood opportunities to absorb the ever-increasing young population is a critical agenda.

Graduation should not pressurize eligible households to leave the program without demonstrated improvement in livelihood incomes. The long-term developmental impact of the program must be strengthened. The current PSNP transfers should be measured not only in terms of the number of households graduated, but also in terms of human development impacts such as improved child education attendance, reduced malnutrition and improved child growth. A focus on only graduation as a success indicator may compromise future developmental impacts. The most needed infrastructures such as irrigation, water source development and water harvesting schemes, should be well planned, executed and evaluated.

7.5.9. Suggestions for further research

This study dealt with graduate and ongoing PSNP households progress towards graduation, their livelihood and food security status. Thus, the study has not covered on the food security status of households out of the PSNP. Moreover, though the PSNP program, cash transfer and public works were assumed to have spillover effect to local economy, they were not addressed in this study. Therefore, the study suggests further research on the livelihood and food security status of the rural

population outside of the PSNP program in this study area. It is also imperative to investigate the spillover effect of PSNP transfers and public works on the local economy of the study area. Particularly, the efficiency and effectiveness of PSNP public works in creating assets at community level requires separate study.

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Annexes

Annex 1: Survey questionnaires

1. Instruction for the enumerator:

1.1. The respondent (s) to this survey questions should be head of the household /his/her partner or both

1.2. Introduce yourself, and read out introductory statement to the respondent (s)

1.3. Write the number of multiple choices or responses in the spaces provided

1.4. Multiple responses are possible where indicated

1.5. Write any other response that the interviewee may provide other than the alternatives given in the spaces provided (use separate sheet in case the spaces provided are not adequate)

2. Introductory statement:

I thank you for your willingness to talk with me (us). I am conducting survey to learn about PSNP food security and livelihoods assets. Your household is one of the households selected to interview to collect data. The study is conducted as a partial fulfilment for the requirement of PhD degree in Rural Development. Your answers are completely confidential, and your name is not revealed to anybody else. Your participation is on voluntary base, and you can withdraw or ignore any part that you may think you should not answer.

A. General socioeconomic information of the household (for both graduated and ongoing PSNP households)

1	Name of the enumerator:		Response codes for multiple choices
2	Date of the interview:		
3	Identification number of the household:		
4	*Kebele* /*arada*	1.Merewa rebus 2. Wachu ifebas 3. Medhicho-2 4. Medhicho-9	
5	Village/*Mandera:*		
6	Name of household head:		
7	Sex of household head	1. Male 2. Female	
8	Age of household head		
9	Religion of household head	1. Muslim 2. Christian (Orthodox) 3. Christian (Protestant) 4. Christian (Catholic) 5. *Wakefata* 6. Other (specify)_____	
10	Ethnicity of household head	1. Oromo 2. Amhara 3. Somali 4. Afar 5. Other (specify): ----------	
11	Marital status of household head	1. Single 2. Married 3. Divorced 4. Widowed 5. Separated 6. Polygamous	
12	Place of birth of household head	1. Current place of residence 2. Another place (specify): Region _____ Zone _____ District _____	
13	Duration of stay at current place of residence (in years):		

14	If your place of birth is different from the present, reason for coming here	1. Marriage 2. Join relative 3. Displacement by drought 4. Poverty/ destitution 5. To get land 6. Divorce 7. other (specify):			
15	Household head education status	1. Not literate 2. Read and Write 3. Highest grade completed if primary (1-8) ---------- 4. Highest grade completed if attended secondary school (10-12) 5. Level completed if TVET/college---------- 6. Other (specify): ----------			
16	Spouse`s education status	1. Not literate 2. Read and Write 3. Highest grade completed if primary (1-8) ---------- 4. Highest grade completed if attended secondary school (10-12)- 5. Level completed if TVET/college---------- 6. Other specify: ----------			
17	Household size (current number of permanent household members including the household head)	Male ----------	Female ----------	Total ---------	
18	Education status of other HH members (in number)	1. Not literate 2. Read and Write 4. first cycle primary (1-4) 5. Second cycle primary (5-8) 6. Secondary school (9-10) 7. Preparatory (11-12) 8. Other specify: ----------	1 Male ---------- ---------- ---------- ---------- ---------- ---------- ----------	2. Female ---------- ---------- ---------- ---------- ---------- ---------- ----------	
19	Number of children age ≥6<15 who do not go to school	Male --------	2. Female----------		
20	If there is any who do not attend school what are the reasons? (multiple responses are possible)	1. School too far 2. HH does not afford school expenses 3. HH not able to dress them for school 4. Not able to feed enough to stay in school 5. Need one else to help at home 6. Needed to herd livestock and to farm 7. Other(specify)----------			
21	Is the head capable to work?	1. Yes 2. No			
22	If not capable, why?	1. Sick 2. Person with disabilities 3. aged 4. Other (specify)----------			

23	List of household members by age and gender:		

Age	Male	female
Under 1 year		
≥1 to <2 years		
≥2 to <3 years		
≥3 to <4 years		
≥ 4 to <5 years		
≥5 to <6 years old		
≥6 to <7 years old		
≥7 to <8 years old		
≥8 to <9 years old		
≥9 to <10 years old		
≥10 to <11 years old		
≥11 to <12 years old		
≥12 to <13 years old		
≥13 to <14 years old		
≥14 to <15 years old		
≥15 to < 16 years old		
≥16 to <17 years old		
≥17 to <18 years old		
≥18 to < 30 years old		
≥30 to <36 years old		
≥36 to <65 years old		
≥65 years		

24	Migration/movement: Has any member of your household left you since you joined PSNP to-date?	1. Yes 2. No	
25	Is there any remittance you receive from some person/persons who left you in the past 12 months?	1.Yes 2. No	

B1. Program related information and resources (for graduate households)

26	Year of joining PSNP	
27	Number of years the household benefitted from PSNP	
28	Year of a household graduated from PSNP	
29	Total number of household numbers targeted for PSNP	
30	Number of household members who were not targeted for PSNP	
31	Food consumption gaps in months before joining PSNP	
32	Total asset value estimated when joining PSNP	
33	Total asset value estimated upon graduation	

34	Was your household year-round food sufficient from own production and income sources after the year you graduated?	1. Yes, in all the years 2. Yes, in more of the years 3. For a few years (if less than half of the years since graduated) 4. Not for more than a year 5. Not at all	

B. Household asset status and livelihood strategies 'upon' and 'after' graduation'

	Livelihoods Assets	Upon graduation		After graduation	
35	Total land holding size in hectares				
35.1	Land held				
35.2	Rented in				
35.3	Arable land				
35.4	Grazing land (owned)				
35.5	Land covered with trees				
35.6	Homestead				
35.7	Access to communal land?	1.Yes 2. No		1.Yes 2. No	
35.8	Land quality in hectare				
35.8.1	Fertile				
35.8.2	Moderately fertile				
35.8.3	Poor/infertile				
36	Livestock holding (head count)				
36.1	Cattle				
36.1.1	Number of oxen				
36.1.2	Bullocks being fattened				
36.1.3	Cows				
36.1.4	Heifers				
36.1.5	Calves				
36.2	Shoats (Sheep &goats)				
36.2.1	Number of nanny goats/and ewes(*haawwolee*)				
36.2.2	Number of rams and bucks (*korpheyyii*				
36.2.3	Number of lambs and kids (*ilmoolee)*				
36.3	Equines				
36.3.1	Number of horses				
36.3.2	Number of mules				
36.3.3	Number of donkeys				
36.4	Camels				
36.4.1	Male				

36.4.2	Female				
36.5	Bee colonies				
36.5.1	Traditional beehives with bee colonies				
36.5.2	Number of modern beehives with bee colonies				
36.6	Poultry				
36.6.1	Hens *(hawwolii fi gorommi)*				
36.6.2	Cocks*(kormaa)*				
37.1	Access to irrigation	1.Yes 2. No		1.Yes 2. No	
37.2	Types of irrigation	1.modern; 2. traditional; 3. Ponds (motor pump)		1.modern; 2. traditional 3. ponds (motor pump)	
37.3	Irrigated land in hectare				
37.4	Water harvesting at HH level	1.Yes 2. No		1.Yes 2. No	
37.5	Purpose of use of harvested water at HH level	1.Human & livestock consumption,2. Production; 3.for both		1.Human & livestock consumption,2. Production, 3. for both	
38	Physical assets				
38.1	Number of animal drawn carts				
38.2	Number of water pumps				
38.3	Grain mill				
38.4	Rentable house (shelter in urban/market center)	1.Yes 2. No		1.Yes 2. No	
38.5	Handheld motorized tiller	1.Yes 2. No		1.Yes 2. No	
38.6	Bicycle (manual)	1.Yes 2. No		1.Yes 2. No	
38.7	Motor cycle	1.Yes 2. No		1.Yes 2. No	
38.8	Small tractor	1.Yes 2. No		1.Yes 2. No	
38.9	Water pump	1.Yes 2. No		1.Yes 2. No	
38.10	Roof of the household house is covered by	1. Grass/straw 2. Corrugated iron sheet 3. Other (specify): ----		1. Grass/straw 2. Corrugated iron sheet 3. Other (specify): ----	
38.11	Other (specify)				
39.	Human capital				
40.1	HH has labour constraints?	1.Yes 2. No		1.Yes 2. No	

40.2	Number of household members with marketable skills (carpentry, welding, building, concert work…)				
40.3	Number of chronically ill household members				
40.4	Number of dependents (child under age of 15, elders age 65+ person(s) with disability (s)				
41	Social participation/capital				
41.1	Participation in *kebele* political activities	0=no one 1= one person 2=two persons 3= at least one person plays leadership role		0=no one 1= one person 2=two persons 3= at least one person plays leadership role	
41.2	Participate in credit and/ saving association	0=no one 1= one person 2=two persons 3= at least one person plays leadership role		0=no one 1= one person 2=two persons 3= at least one person plays leadership role	
41.3	Participation in self-help organization (*Idir Iqub)*	0=no one 1= one person 2=two persons 3= at least one person plays leadership role		0=no one 1= one person 2=two persons 3= at least one person plays leadership role	
41.4	Participate in women/youth association	0=no one 1= one person 2=two persons 3= at least one person plays leadership role		0=no one 1= one person 2=two persons 3= at least one person plays leadership role	
41.5	Participate in farmers group (*gare*)	0=no one 1= one person 2=two persons 3= at least one person plays leadership role		0=no one 1= one person 2=two persons 3= at least one person plays leadership role	
41.6	Participate in farmers cooperatives	Yes 2. No		Yes 2. No	
42	Access to Financial Capital				
42.1	Did any of your household member take loan?	1.Yes 2. No		Yes 2. No	
42.2	How many of your household members have accessed credit from formal institution?				
42.3	If any one of your household members took loan, what was the purpose?	1.To buy agricultural inputs; 2. to buy livestock for fattening and production; 3. to engage in petty trade;		1.To buy agricultural inputs; 2. to buy livestock for fattening and	

		4. to engage in specialized skill works such as carpentry, welder; 5. to cover household food consumption requirements and fulfill cultural obligations; 6. Other (specify): ----------		production; 3. to engage in petty trade; 4. to engage in specialized skill works such as carpentry, welder; 5. to cover household food consumption requirements and fulfill cultural obligations; 6. Other (specify): ----------	
42.4	What is the loan size that your household members took for productive purpose (in Birr)?				
42.5.	Do you think the loan size adequate for the business you intend to engage in?	1.Yes 2. No		1.Yes 2. No	
42.6	Do you have repeated access to loan?	1.Yes 2. No		1.Yes 2. No	
42.7	If none of your household members have not yet taken any loan from formal institution, what is the reason?	1. we do not need 2. we are afraid of not being able to pay back 3. we do not know how to access it 4. we were refused Other (specify)----------		1. we do not need 2. we are afraid of not being able to pay back 3. we do not know how to access it 4. we were refused Other (specify)----------	
42.8	If you have not accessed any formal loan, have you accessed one from informal (local) money lender with interest?	1.Yes 2. No		1.Yes 2. No	
42.9	Why you preferred borrowing from local money lender with interest? Multiple answers are possible.	1. Procedure to access from local money lender is simpler than formal institution 2. Payment period is flexible 3. Interest rate is affordable 4. Payment mode is flexible (I can repay in kind or labour) 5. Other (specify)----------		1. Procedure to access from local money lender is simpler than formal institution 2. Payment period is flexible 3. Interest rate is affordable 4. Payment mode is flexible (I can repay in kind or labour)	

				5. Other (specify): ---	
42.10	Do you have any financial saving in formal institution (Micro finance, bank)?	1. Yes 2. No (skip to question 45.13)		1.Yes 2. No (skip to question 42.12)	
42.11	If you have saving account, what is your net saving amount?				
42.12	If you do not have any saving account in formal institutions, how do you save?	1. I do not have any saving 2. I save some at home 3. I save in kind 4. I use it for petty trade/off-farm business expansion		1. I do not have any surplus to save 2. I save at home 3. I save in kind 4. I use it for petty trade/off-farm business expansion	
42.13	If you get remittances/family support/, both from abroad and from within a country, how much Birr do you receive per year?				
43	Livelihood strategies				
43.1	What is household head`s primary occupation?	1. Mixed-farming 2. Trade 3. Causal manual work 4. specialized/skill work (carpentry, artillery, pottery, and others) 5. Other (specify)-----		1.Mixed-farming 2. Trade 3. Causal manual work 4. Specialized/skill work (carpentry, artillery, pottery, and others) Other (specify)-----	
43.2	If any of your household member engage in off-farm income generating activity, identify the type of occupation and number of a HH members engaged in it	Occupation	No of HH members	Occupation	Number of HH members
		Trade		Trade	
		Carpentry		Carpentry	
		Pottery		Pottery	
		Weaver		Weaver	
		Smith		Smith	
		Work for wage		Work for wage	
		Other----------		Other----------	
43.3	If none of your households is engaged in off-farm activities, what are the reasons (multiple answers are possible)?	1. Lack of spare time 2. lack of knowhow 3. Lack of skill 4. Lack of capital 5. Lack of off-farm opportunities 6. We have never thought of it 7. Other(specify): ----		1. Lack of spare time 2. lack of knowhow 3. Lack of skill 4. Lack of capital 5. Lack of off-farm opportunities 6. We have never thought of it 7. Other(specify): -	

43.4	What was/is your HHs approximate income per year from off-farm activities?				
44	Use of inputs				
44.1	Chemical fertilizer use	1.Yes 2. No		1.Yes 2. No	
44.2	Organic/composite preparation & use	1.Yes 2. No		1.Yes 2. No	
44.3	Improved seed use	1.Yes 2. No		1.Yes 2. No	
44.4	Pesticides use	1.Yes 2. No		1.Yes 2. No	
44.5	Estimate of fertilizer used /hectare			Amount of fertilizer used last year (kg)	
45.6	How do you use fertilizers?	1. With improved seed 2. With local seeds 3. More with improved seeds and some with local seeds. 4. Some with improved seeds more with local seed		1. With improved seed 2. With local seeds 3. More with improved seeds and some with local seeds. 4. Some with improved seeds more with local seed	
45.7	Do you participate in regular extension package?	1.Yes 2. No		1.Yes 2. No	
45.8	Do you participate in Household Asset Building Program packages?	1.Yes 2. No		1.Yes 2. No	
45.9	If you do not participate in Household Asset Building Program Packages, what is the reason?	1. I do not have information about it 2. I do not want to 3. I am not admitted to benefit 4. I couldn`t find the one I need 5. Other (specify)-----		1.I do not have information about it 2. I do not want to 3. I am not admitted to benefit 4. I couldn`t find the one I need 5. Other (specify)----	
45.10	If you participate in Household Asset Building Program package, have you had relevant training and coaching from professionals?	1. Never 2. Very limited 3. Most of the time 4. Regularly 5. I do not have answer		1. Never 2. Very limited 3. Most of the time 4. Regularly 5. I do not have answer	
45.11	How do you evaluate the package menu from which you choose to participate?	1.Very helpful 2. Helpful 3. Not appropriate		1. Very helpful 2. Helpful	

		4. I do not know		3. Not appropriate 4. I do not know	
46	Crop diversification				
46.1	How many crop types do you plant during *Mehar/Genna* Season?	1. One 2. Two 3. Three 4. Four and above		1. One 2. Two 3. Three 4. Four and bove	
46.2	Do you plant during *Belg/Arfasa* Season	1. Yes 2. No		1.Yes 2.No	
46.3	If you plant during *Belg/Arfasa* Season, how many crop types do you plant?	1. One 2. Two 3. Three 4. Four and above		1. One 2. Two 3. Three 4. Four and above	

47. Do you think the amount of cash from cash crop, livestock, and livestock products sales and from off-farm activities was adequate to cover your household's annual food consumption requirements? 1. Yes ☐ 2. No ☐

48. Do you think the food grains you harvested are adequate for your household consumption until the next harvest season? Yes ☐ 2. No ☐

49. If the food grain you harvested is not adequate for your household food consumption, how do you fill the gap?

1. Purchase☐ 2. Borrow☐ 3. Food aid ☐ 4. Support from relatives/friend/neighbor☐ 5. Other (specify): ----------

50. If you purchase, what is the source of your cash to purchase food grain? 1. Cash crop sale☐ 2. Fattened livestock sale☐ 3. Small livestock sale☐ 4. Remittance☐ 5. Saving☐ 6. Borrow 7. from relatives or friend☐ 8. Borrow cash from local lender☐ 9. Lease out land☐ 10.Working for wage (daily labour) ☐ 11.Others (specify): ----------

51. Do you get any remittance from relatives/friends away from your household? 1. Yes ☐ 2. No ☐ (skip to question 56).

52. If you get remittance from relatives/friends away from your household, how often do you get? 1. On regular base ☐ 2. Sometimes /as he/she/they find convenient ☐ 3. when you request at time of difficulty ☐

53. What is your relationship with the person (s) who send you money? 1.Son ☐ 2. Daughter☐ 3. Brother☐ 4. Sister ☐ 5. Brother- in- law☐ 6. Sister- in- law ☐ 7. Uncle☐ 8. Aunt☐ 9. Father☐ 10. Mother☐ 11. Grandfather☐ 12. Grandmother☐ 13. Non-relative☐ Other specify----------

54. Shocks and Stresses: Please list shocks and stresses that have affected your food security and livelihood assets with their frequencies in the past five years and rank the magnitude of the harms induced by each of them.

	Shocks and stresses experienced in the past five years?	Response (coded 1= 'Yes'; 2 = 'No' and skip to next question)	Frequency in the past five years	Impacts (1=disastrous/complete loss; 2= Severe; 3= Modest; 4=Less 5= No impact)
54.1	Crop loss due to Drought			

54.2	Crop loss due to floods			
54.3	Crop loss due to hailstorm			
54.4	Poor harvest due to moisture stress			
54.5	Major crop loss due to crop disease			
54.6	Livestock death			
54.7	Major market/price fall for agricultural produce			
54.8	Major price rise for inputs			
54.9	Income fall due to health failure of either of the spouses			
54.10	Fall of off-farm income			
54.11	Other (specify):			

55. Of the shocks you experienced you listed above, which is/are the modest shock you sustained without external/government or NGO supports?----------

56. Of all the shocks you experienced which is the hardest shock you have ever experienced since you graduated? ----------

57	How have the household sustained life in the face of the shocks/ and stresses experienced since its graduation? Multiple answers are possible.	1. Relied on own reserves (savings, food reserve, sale of small livestock such as sheep/goat) 2. Relied on Government/NGO food aid 3. Loan 4. Kin/friends support 5. Sold productive asset (income generating equipment and livestock such as farm ox) 6. Rented out land 7. Migrate (some member of a household) 8. Others (specify) ----------	
58	How much have you been recovered from the asset losses induced by the shocks you have experienced?	1. Not recovered yet 2. Declining further 3. Recovered to some extent, but worse than before 4. Recovered to the same level as before 5. Recovered and better off	
59	What is the level of your current asset holding as compared to when you graduated?	1. No change 2. Increased/growing 3. Decreased/ declining	
60	If it is declining, what are reasons? Give utmost three top reasons in the order of their severity.	1.---------- 2.---------- 3.----------	
61	HH members' health status after graduation	1.No change 2. Improved 3. Deteriorating	
62	Children schooling status after graduation	1. No change 2. Number/frequency of school age children dropped out from school increased 3. Number of school age children attending school improved	

63	Incidence of malnutrition of children under age of five screened by health extension/health services after graduation	1. Have child under age of 5 2. No incidence of malnutrition. 3. There is incidence of malnutrition intermittently 4. There is increased incidence of malnutrition	
64	Household income level after graduation	1. No change 2. Improved some 3. Improved much 4. Decreased to some extent but not fall back 5. Deteriorated much and become food insecure	

C. Perception questions on households` food security situation after graduation

65	Has your household been year-round food self-sufficient (from own-production or/and purchase) since its graduation?	1.Yes (skip to question 68) 2. No	
66	If your answer to question 59 is "No," for how many years you had food gaps?	1. All the years 2. For the first one year only 3. For two years 4. For 3 years 5. For 4 years 6. For 5 and above years	
67	For how long did you experience food deficit in the years you had food gaps?	1. 1_2 month 2. 3-4 months 3. 5- 6 months 4. 7-9 months 5. Above 9 months	
68	Why did you experience the food gaps you had? (multiple answers are possible)	1. Income from all sources is not enough 2. Erratic rain fall (moisture stress) 3. Drought 4. Crop disease 5. Flood 6. Hailstorm 7. Livestock death 8. Market failure for livestock 9. Low productivity of land held 10. Lack of inputs 11. Limited landholding 12. Landlessness 13. Absence of off-farm labour wage 14. Food cops price rise 15. Price fall for produces (crops/livestock) 16. High expenses on HH members medical treatment 17. Indebtedness 18. Labour constraints 19. No support 20. Other (specify) ----------	

E. Household Food Balance Model Questions (for Both Graduate and Ongoing PSNP Households)

69. How much of your households' food income has come from different sources in the previous year? Please provide grain types and quantity in quintals (from January 20017-December 2017)

	Source	Grain Type	Quantity in quantal
69.1.	Own production	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…) 8. Other (specify): ----------	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ---------- 7. ---------- 8. ----------
69.2	Purchased	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…) 8. Other (specify): ----------	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ---------- 7. ---------- 8. ----------
69.3	Support from neighbors/friends/relatives	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…) 8. Other (specify): ----------	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ---------- 7. ---------- 8. ----------
69.4	Food aid/government/ NGO	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…) 8. Other (specify): ----------	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ---------- 7. ---------- 8. ----------
69.5	Grain loan paid back to your household	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…) 8. Other (specify): ----------	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ---------- 7. ---------- 8. ----------
69.6	Other sources (specify):	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…)	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ----------

		8. Other (specify): ----------	7. ---------- 8. ----------

70. How much of the food income is spent due to the reasons provided in the following table in the previous year (from January 20017-December 2017)?

	Reasons of expenditure	Grain Type	Quantity spent in kg
70.1	Sold to cover non-food expenditures	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…) 8. Other (specify)-----	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ---------- 7. ---------- 8. ----------
70.2	Support to neighbors/relatives/friends	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…) 8. Other (specify)-----	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ---------- 7. ---------- 8. ----------
70.3	Paid food grain borrowed	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…) 8. Other (specify)-----	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ---------- 7. ---------- 8. ----------
70.4	Seed used	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…) 8. Other (specify)----	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ---------- 7. ---------- 8. ----------
70.5	Other reason (specify)	1. Sorghum 2. Maize 3. *Teff* 4. Barely 5. Wheat 6. Pulse (beans, peas) 7. Oilseeds (Linseed, Sesame.…) 8. Other (specify)----------	1.---------- 2. ---------- 3. ---------- 4. ---------- 5. ---------- 6. ---------- 7. ---------- 8. ----------

F. Perceptions on graduation experience (for graduate HHs)

71. Before you had graduated, was you aware of graduation from PSNP? 1.Yes ☐ 2. No. ☐
72. If you were aware of graduation, did you have any intention (plan) to graduate before you graduated from PSNP? 1. Yes ☐ 2. No ☐

73. How do you perceive your graduation? 1. I was self-graduate ☐ 2. I was ready to graduate and accepted my graduation decision ☐ 3. I was prematurely graduated ☐Any other *(specify)*----------
74. How do you evaluate graduation criterion/ 'asset threshold' as measure of households' food sufficiency for at least a year and having capacity to withstand modest shocks? 1. Strongly approve ☐ 2. Approve ☐ 3. Neutral ☐ 4. Disapprove ☐ 5. Strongly disapprove ☐

75. Specify your reasons for approval or disapproval----------
76. Do you think graduation approach/ (PSNP) is better than emergency response/food for work approach exercised before PSNP? Tick the boxes of the response(✓) 1. Far better ☐ 2. Better ☐3. No difference ☐ 4. Neutral ☐ 5. Worse ☐

77. Specify reason (s) for your response----------
78. What is your overall reaction to the current graduation exercise?
    1.Strongly approve☐ 2. Approve☐ 3. Neutral☐ 4. Disapprove☐ 5. Strongly disapprove☐
79. Specify your reasons----------
80. What measures should be taken to improve the current graduation approach, if you have any idea?----------

Questionnaire for ongoing PSNP households (to be continued from B, serial number 25)

B2. Program related information and resources

26	Year of joining PSNP		
27	Number of years the household benefitted from PSNP so far		
28	Total asset value estimated in Birr when joined PSNP		
29	Total number of household numbers targeted for PSNP		
30	Number of household members who are not targeted for PSNP		
31	Access to HABP resources and services	1.Yes 2. No	
31.1	Number of household members benefiting from loan		
31.2	Loan size per household received in previous year		
31.3	Do you have repeated access to credit	1.Yes 2. No	
31.4	Number of years since benefiting from HABP (specify the year started benefiting)		
31.5	Household food consumption gaps in months before joining PSNP		

C2. Households Livelihoods Assets and Strategies

	Livelihoods Assets		
32	Total land holding size in hectares		
32.1	Land held		
32.2	Rented in		
32.3	Arable land		
32.4	Grazing land (held)		
32.5	Land covered with trees		
32.6	Land for settlement		
32.7	Access to communal land	1.Yes 2. No	
32.8	Land quality in hectare		
32.8.1	Fertile		
32.8.2	Moderately fertile		
32.8.3	Poor/infertile		
32.8.4	Irrigable land		
32.8.5	Cultivated land		
32.8.6	Rented out land		
33	Livestock holding (head count)		
33.1	Cattle		
33.1.1	Number of oxen		
33.1.2	Bullocks		
33.1.3	Cows		
33.1.4	Heifers		
33.1.5	Calves		

33.2	Shoats (Sheep &goats)		
33.2.1	Number of nanny goats/and ewes (*haawwolee*)		
33.2.2	Number of rams and bucks (*korpheyyii*		
33.2.3	Number of lambs and kids (*ilmoolee)*		
33.3	Equines		
33.3.1	Number of horses		
33.3.2	Number of mules		
33.3.3	Number of donkeys		
33.3.4	Poultry		
33.3.5	Number of cocks and hens		
33.4	Camels		
33.4.1	Male		
33.4.2	Female		
33.5	Bee colonies		
33.5.1	Traditional beehives with bee colonies		
33.5.2	Number of modern beehives with bee colonies		
33.6	*Poultry*		
33.6.1	*Hens (hawwolii fi gorommi)*		
33.6.2	*Cocks(kormaa)*		
34	Access to credit	1.Yes 2. No	
34.1	Cash saving	1.Yes 2. No	
34.2.	Amount of income per annum from remittance (if any)	----------	
34.3	Another source of financial access (specify source and amount/year) ----------		
35	Physical assets		
35.1	Number of animal drawn carts		
35.2	Number of water pumps		
35.3	Grain mill		
35.4	Rentable house (shelter in urban/market center)		
35.5	Handheld motorized tiller		
35.6	Small tractor		
35.7	Roof of the household house is covered by	1. Grass/straw 2. iron sheet 3. Other(specify)----------	
35.8	Other (specify): ----------		
36	Human capital		

36.1	Do your HH has labour constraints?	1.Yes 2. No	
36.2	How many of your household members has got any skill trainings?	1.Yes 2. No	
36.3	Is there anybody of your household members with marketable skill (e.g. Pottery, smith, carpentry etc.)?	1. Yes 2. No	
36.4	If yes, how many are they?	----------	
36.5	How often do those obtained skill training sale their skill?	1. All the time (if more than 20 days/month) 2. Most of the time (if more than 15-19 days/month) 3. Sometimes (if l0-14 days/month) 4. Rarely (if less than 10 days /month) 5. Never, if 0	
36.6	Number of household members engaged in income-generating activities	----------	
36.7	Number of dependents (child under age of 15, elders age 65+, any disable person(s)		
36.8	Is there anybody in your household with chronic health problem?	1.Yes 2. No	
36.9	If there are chronically sick person in your HH, how many are they?	----------	
37	Social participation/capital	Coded "0", if no one in the household participates; 1 if at least one household member participates as a member; 2 if any household member participates in the capacity of leadership.	
37.1	Participation in *kebele* political activities		
37.2	Participate in credit and/ saving association		
37.3	Participation in self-help organization (*Idir Iqub)*		
37.4	Participate in women/youth association		
37.5	Participate in farmers group (*gare*)		
37.6	Participate in farmers cooperatives		
38	Access to Financial Capital		
38.1	Did any of your household member take loan so far?	1.Yes 2. No	
38.2	If your response is yes to question number 40.1, how many of your household members accessed credit from HABP?	----------	

38.3	If any one of your household members took loan, what was the purpose?	1. To buy agricultural inputs 2. To buy livestock for fattening and production 3. To engage in petty trade 4. To engage in specialized skill works such as carpentry, welder, 5. To cover household food consumption requirements and fulfill cultural obligations 6. Other (specify)----------	
38.4	What is the average loan size that your household members took for productive purpose (in Birr)?	----------	
38.5	Do you think the loan size adequate for the business you intend to engage in?	1.Yes 2. No	
38.6	Do you have repeated access to loan?	1.Yes 2. No	
38.7	If none of your household members have not yet taken any loan from formal institution, what is the reason?	1. We do not need 2. We are afraid of not being able to pay back 3. We do not know how to access it 4. We were refused 5. Other (specify)----------	
38.8	If you have not accessed any formal loan, have you accessed one from informal (local) money lender with interest?	1.Yes 2. No	
38.9	Why you preferred borrowing from local money lender with interest? Multiple answers are possible.	1. Procedure to access from local money lender is simpler than formal institution 2. Payment period is flexible 3. Interest rate is affordable 4. Payment mode is flexible (I can repay in kind or labour) 5. Other (specify)----------	
38.10	Do you have any financial saving in formal institution (Micro finance, bank)?	1. Yes 2. No	
38.11	If you have saving account, what is your net saving amount?	----------	
38.12	If you do not have any saving account, do you have any means of saving?	1.Yes 2. No (skip to question 40.14)	
38.13	If you have any means of saving other than formal financial institution, what are they?	1. I save at home 2. I keep it with my relative/friend 3. I save in kind 4. I use it for petty trade/off-farm business expansion	
38.14	If you get remittances/family support/, both from abroad and from within a country, how much Birr do you receive per year?	----------	

<table>
<tr><td>39</td><td>Livelihood Strategies</td><td></td><td></td></tr>
<tr><td>39.1</td><td>What is household head`s primary occupation? (multiple response is possible)</td><td>1. Mixed-farming
2. Only livestock raising
3. Trade
4. causal manual work
5. Skill work (carpentry, artillery, pottery, and others)
6. Other (specify)----------</td><td></td></tr>
<tr><td>39.2</td><td>If any of your household member engage in off-farm activities listed here, specify the number of members engaged in it</td><td><table><tr><td>Occupation</td><td>Number of a HH members</td></tr><tr><td>Trade</td><td></td></tr><tr><td>Carpentry</td><td></td></tr><tr><td>Pottery</td><td></td></tr><tr><td>Weaving</td><td></td></tr><tr><td>Smith</td><td></td></tr><tr><td>Work for wage</td><td></td></tr><tr><td>Other---------</td><td></td></tr></table></td><td></td></tr>
<tr><td>39.3</td><td>If none of your household member is engaged in off-farm activities, what are the reasons (multiple answers are possible)?</td><td>1. lack of spare time
2. lack of knowhow
3. lack of skill
4. lack of capital
5. lack of off-farm opportunities
6. We have never thought of it
7. Other(specify): ----------</td><td></td></tr>
<tr><td>39.4</td><td>What is your approximate income per year from off-farm activities?</td><td>----------</td><td></td></tr>
<tr><td>39.5</td><td>Use of agricultural inputs</td><td></td><td></td></tr>
<tr><td>39.6</td><td>Chemical fertilizer use</td><td>1.Yes 2. No</td><td></td></tr>
<tr><td>39.7</td><td>Organic/composite preparation & use</td><td>1.Yes 2. No</td><td></td></tr>
<tr><td>39.8</td><td>Improved seed use</td><td>1.Yes 2. No</td><td></td></tr>
<tr><td>39.9</td><td>Pesticides use</td><td>1.Yes 2. No</td><td></td></tr>
<tr><td>39.10</td><td>If you use chemical fertilizer, what is the average kg you use per hectare for major food crops such as Teff, wheat, sorghum, maize, barely etc.)?</td><td>----------kg/hectare</td><td></td></tr>
<tr><td>39.11</td><td>How is your fertilizer application practice?</td><td>1. With improved seed?
2. With local seeds?
3. More with improved seeds and some with local seeds.
4.Some with improved seeds, and more with local seed.</td><td></td></tr>
<tr><td>39.12</td><td>Do you participate in regular extension package?</td><td>1.Yes 2. No</td><td></td></tr>
<tr><td>39.13</td><td>Do you practice row planting?</td><td>1.Yes 2. No</td><td></td></tr>
<tr><td>42.13</td><td>Do you participate in Household Asset Building Program packages?</td><td>1.Yes 2. No</td><td></td></tr>
</table>

41.14	If you do not participate in Household Asset Building Program Packages, what is the reason?	1. I do not have information about it 2. I do not want to 3. I am not admitted to benefit 4. I couldn`t find the one I need 5. Other (specify)----------	
41.15	If you participate in Household Asset Building Program package, have you had relevant training and coaching from professionals?	1. Never;2. Very limited;3. Some times 5. Regularly	
41.16	How do you evaluate the package menu from which you choose to participate?	4. Very helpful; 2. Helpful;3. Limited ;4. Not appropriate; 5.I do not know	

41.17. If you find the HABP package menu from which you are required to choose inappropriate, what options(s) should have been given? Specify----------

42	Agricultural activity diversification	Response	
42.1	How many types of crops do you grow in the main season?	1.one 2. two 3. three 4. more than three	
42.3	Do you grow crops during *belg* season?	Yes 2. No	
42.4	If you grow crops during *belg* season how many types of crop do you grow?	1.one; 2. Two'3. three 4. more than three	

43. If you purchase some portion of your households' food consumption requirement in the previous year, what was/were the source/s of your financial income? From January 2017-December 2017

	Source of Financial income	Estimated income in the past one year
43.1	Sale of *chat*	1.
43.2	Sale of coffee	2.
43.3	Sales of fruits and vegetables	3.
43.4	Livestock and livestock products (butter, milk, cheese) sale	4.
43.5	Trade	5.
43.6	Causal/manual labour	6.
43.7	Skill labour and skill work outputs sales	7.
43.8	Support from relatives/friends	8.
43.9	Other (specify): ----------	9.

44. Major shocks and stresses since a HH joined PSNP:

	Shocks and stresses	Frequency since joined PSNP	Relative impact (coded:1=; minor 2= Mild; 3= high; 4= severe; 5= Catastrophic)	Trends in frequency and impacts in the past 10 years (coded 1=increasing, 2=decreasing, 3=same/almost same)
44.1	Drought			
44.2	Floods			
44.3	Hailstorm			
44.4	Rainfall variability			
44.5	Crop disease/infestation			
44.6	Livestock loss /death			
44.7	Major market/price fall for agricultural produce			
44.8	Major price rise for inputs			
44.9	Income fall due to health failure of either of the spouses			
44.10	Fall of off-farm income			
44.11	Other (specify):			

45. From the above listed shocks and stresses that the household experienced, which shock/stress of which year the household sustained by its own capacity without external supports (government/NGOs)?
46. Which of the shocks and stresses that the household experienced heavily affected the household?

47. What are the household`` major risk mitigating strategies (actions taken before the shock occurs in order to prevent the anticipated negative impact of the following risks?

47.1	Drought	1. Crop and livestock species diversification 2. Water harvesting 3. Irrigation 4. Multiple jobs (skilled and manual paid work, petty trade, specialized activities) 5. Saving 6. Seasonal Migration 7. Other (specify): ----------	
47.2	Floods	1. Do nothing 2. Soil and water conservation activities on own farm 3. Grow trees/food trees in the flood exposed land 4. Leave flood prone areas for grazing 5. Other(specify): ----------	
47.3	Rainfall variability	1. Plan to crop in two cropping seasons 2. Crop and livestock species diversification 3. Using irrigation 4. Multiple jobs (skilled and manual paid work, petty trade, specialized activities) 5. Saving	

		6. Seasonal Migration 7. Other (specify): ---------- -	

48. Household Risk Coping Strategies

48.1	Have you ever sold your productive assets that may put you in the disadvantaged position of accumulating assets (such as sale of draught power, cow, heifer, farm implement, land lease out) since you joined PSNP?	1.Yes 2. No	
48.2	How have the household sustained life in the face of food insecurity shocks since joined PSNP?	1. Relied on PSNP only 2. PSNP and additional food aid from government (NGO) only 3. PSNP, food aid from government (NGO) liquidated protective assets (saving) 4. Asking family or neighbor for help 5. Borrowing money for food 6. Working for payments in kind 7. switched to different income gaining activities 8. Reduced quality of food consumption 9. Reducing the quantity of food intake 10. Delaying investment in productive activities 11. Withdrew children from school 12. Send children to better off relatives 13. Migrate 14. Other(specify)----------	
48.3	How have the shocks and risk management strategies you have used affected your asset accumulation strategy to graduate?	1. Insignificant 2. Mildly affected (if it has not reduced the existing asset level, but with no increment) 3. Highly affected (If protective asset holding was completely used) 4. Severe (If productive assets are partly lost) 5. Catastrophic (If productive assets are completely lost)	
48	What is the trend of livestock holding since a HH joined PSNP?	1. Increased/growing 2. Remained same 3. Decreased/ declining	
49	If declining/remaining same what are the top three reasons?	1.---------- 2.---------- 3.----------	
50	What are the trends of your crop production and productivity since you joined?	Increased/growing Remained same Decreased/ declining	

51	If declining/remaining same what are the top three reasons?	1.---------- 2.---------- 3.----------	
52	Have you been able to accumulate asset in-kind or in cash since you joined PSNP?	1. Yes 2. No	
53	If your household is unable to accumulate asset in any form, what are the reasons? (Multiple responses are possible)	1. PSNP transfer is not adequate to cover food consumption gaps 2. Income for other consumption expenditure is not adequate to save/accumulate asset 3. No access to household package (resources and technical support) 4. Credit for livelihood support is inadequate 5. Limited land holding size 6. Limited land productivity 7. Access to selected improved technology (fertilizer, seed) is limited 8. Indebtedness 9. Repeated shocks (drought, floods, etc.) 10. Household members' health problem 11. No labor market to supplement income 12. Other(specify)----------	
54	If you are able to accumulate assets in kind or cash, why your household is not able to graduate from PSN? (Multiple responses are possible)	1. Not adequate to cover full year consumption and to continue generating food/cash income 2. Whether uncertainty to continue production and generating income in the future 3. Need extra time to add upon what I have achieved 4. If I graduate, I do not have access to HABP 5. Other (specify)----------	

55. Households perception of their food security status

55.1	What was your household's food consumption gaps in months prior to your joining PSNP?	----------	
55.2	Have you ever faced food consumption gaps since you joined PSNP?	1. Yes 2. No	
55.3	If you had any food consumption gaps, for how long you experienced this in average in each year?	1. 1-2 months 2. 3-4 months 3. 5-6 months	
55.4	What were the reasons for not being fully food secure?	1. Transfers from PSNP does not cover the whole household members 2. The household cannot cover the remaining months consumption from its own production and income 3. Transfers delay, and we borrow to repay more 4. Cash payments are not sufficient to cover full food basket	

		5. Full food basket is not paid 6. We need to save from PSNP transfers to graduate 7. We use some proportion of PSNP transfer for other expenses 8. Other (specify)----------	
55.5	Is there any child under age of five in the household who has been screened for being malnutrition in the past 5 years?	1. Yes 2. No	
55.6	If you have child/children under age of five, how often had your child/children has/have been screened for being undernutrition?	1. One year 2. Two years 3. Three years 4. Four years 5. All five years	

56.Ongoing PSNP Households Perceptions on Graduation Exercise

56.1	Have your HH ever been graduated/removed from the PSNP before?	1.Yes 2. No	
56.2	If your answer is 'yes' to the preceding question, how many times have you been removed/graduated and readmitted since PSNP started?	----------	
56.3	Do you have any intention (plan) to graduate from PSNP?	1. Yes 2. No	
56.4	How likely do you think you graduate at the end of this PSNP phase?	1. Very unlikely 2. Unlikely 3. Neutral 4. Likely 5. Very likely	
56.5	If you think it is 'very unlikely' or 'unlikely' to graduate at the end of this phase of PSNP, what are your reasons?	1.---------- 2.---------- 3.----------	
56.7	Do you have worry of falling in to food insecurity after graduating from PSNP?	1. Yes 2. No	
56.8	If you have worries, what are the risk factors you are worrying about to graduate (list three top factors)?	1.---------- 2.---------- 3.----------	
56.9	If you think you can graduate, what opportunities and strategies you have to be able to graduate from PSNP?	1.---------- 2.---------- 3----------	
56.10	Do you think you need PSNP again after graduation?	1. Very unlikely 2. Unlikely 3. Neutral 4. Likely 5. Very likely	
56.11	What is your overall reaction to the current graduation exercise?	1. Strongly approve 2. Approve 3. Strongly disapprove 4. Disapprove;5. Neutral	

57. If you disapprove, or strongly disapprove the current graduation exercises, what are your reasons?----------
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57. What measures should be taken to ensure sustainable graduation from PSNP? ----------
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Annex 2: Generic Questions of HFIAS

Q	Occurrence questions under three Domains	Response Options	Response Code	Skip rule (if the response is 'No'
	Anxiety and uncertainty about the household food supply			
1	In the past four weeks, did you worry that your household would not have enough food?	No Yes	0 1	Skip to Q2
1.1	If the answer to the occurrence of this question is 'Yes;' how often this happened in the past four weeks?	Rarely Sometimes Often	1 2 3	
	Insufficient Quality (includes variety and preferences of the type of food)			
2	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	No Yes	0 1	Skip to Q3
2.1	If the answer to the occurrence of this question is 'Yes;' how often this happened in the past four weeks?	Rarely Sometimes Often	1 2 3	
3	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	No Yes	0 1	Skip to Q4
3.1	If the answer to the occurrence of this question is 'Yes;' how often this happened in the past four weeks?	Rarely Sometimes Often	1 2 3	
4	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	No Yes	0 1	Skip to Q5
4.1.	If the answer to the occurrence of this question is 'Yes;' how often this happened in the past four weeks?	Rarely Sometimes Often	1 2 3	
	Insufficient food intake and its physical consequences			
5	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	No Yes	1 1	Skip to Q6
5.1	If the answer to the occurrence of this question is 'Yes;' how often this happened in the past four weeks?	Rarely Sometimes Often	1 2 3	

6	In the past four weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?	No Yes	0 1	Skip to Q7
6.1	If the answer to the occurrence of this question is 'Yes;' how often this happened in the past four weeks?	Rarely Sometimes Often	1 2 3	
7	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	No Yes	0 1	Skip to Q8
7.1	If the answer to the occurrence of this question is 'Yes;' how often this happened in the past four weeks?	Rarely Sometimes Often	1 2 3	
8	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	No Yes	0 1	Skip to Q9
8.1	If the answer to the occurrence of this question is 'Yes;' how often this happened in the past four weeks?	Rarely Sometimes Often	1 2 3	
9	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	No Yes	0 1	
9.1	If the answer to the occurrence of this question is 'Yes;' how often this happened in the past four weeks?	Rarely Sometimes Often	1 2 3	

Annex 3: **HFIAS food security profiling**

Questions	Frequency		
	Rarely 1	Sometimes 2	Often 3
1a. How often did you worry that your household would not have enough food?			
2a. In the past four weeks, how often were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?			
3a. In the past four weeks, how often did you or any household member have to eat a limited variety of foods due to a lack of resources?			
4a. In the past four weeks, how often did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?			
5a. In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?			
6a. In the past four weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?			
7a. In the past four weeks, how often was there ever no food to eat of any kind in your household because of lack of resources to get food?			
8a. In the past four weeks, how often did you or any household member go to sleep at night hungry because there was not enough food?			
9a. In the past four weeks, how often did you or any household member go a whole day and night without eating anything because there was not enough food?			

Source: Coates *et al (2007)*

Food Secure	Mildly food insecure	Moderately food insecure	Severely food insecure

Annex 4: Food security, food self-sufficiency, and food self-reliance

FAO (2003: N. P) has provided the following working definition of 'food security' and 'food insecurity':

> **Food security** exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern….
>
> **Food insecurity** exists when people do not have adequate physical, social or economic access to food as defined above (FAO,2003).

According to FAO (2003), the ultimate focus of food security concept is the nutritional status of each of the individuals in the household. Food sufficiency is, however, different from food self-sufficiency. FAO (1999) defined food self-sufficiency as "… the extent to which a country can satisfy its food needs from its own domestic production," (Clapp, 2015-16). As Clapp (2015-16) suggested, this definition can be applied at the level of regions, countries or individuals. According to Degefa (2005:327) food self-sufficiency at a household level is "…the ability to provide the necessary amount of food for all household members, all year round, from one's own crop or livestock production."

Therefore, according to these definitions of 'food self-sufficiency,' household food self-sufficiency refers to households' self-provision of food required at household level from own production, but not from purchase, transfers, or gifts. Food self-sufficiency at national level does not guarantee that all people have access to affordable and nutritious food as explained in FAO (2003).

According to FAO (2003), countries follow two strategies: food self-sufficiency' and food 'self-reliance' to achieve adequate level of food security. Food self-sufficiency refers to domestic production of the required quantity of food at national level. It does not consider food imports as source of supply. Food self-reliance, however, requires domestic availability of food from whichever sources, domestic production and/or international trade.

However, according to Sen, as explained in FAO (2003), individuals acquire food in one of the four ways: production-based entitlement, trade-based entitlement, labour-based entitlement, and transfer-based entitlement. Production based entitlement is for rural households who strive to produce for self-sufficiency. If a household acquires adequate food for all its household members either through trade-based entitlement, or labour-based entitlement, or through both means, including some portions from own production, it could be considered food 'self-reliant.' Therefore, if a household is self-provisioning from its own production and other means of income such as labour, petty trade, sales of cash crops, livestock and others without external handouts, it is *self-reliant* than *self-sufficient*.

Annex 5: Principles, Steps and Safeguarding Mechanism of Graduation in Ethiopia (Extracted from Graduation Guidance Note, 2007)

5.1. Core principles

5.1.1. Do not undermine core function of the PSNP

5.1.2. Transparency: the system must be transparent to external actors (donors and federal/regional government) and to PSNP beneficiaries

5.1.3. Accountable: the system must be accountable to PSNP beneficiaries

5.1.4. Simple, responsive and relevant: the benchmarks should be easy to use, livelihood specific and revised periodically to remain relevant

5.1.5. Flexible: the system should be implemented in a flexible manner (similar to targeting)

5.1.6. Balance incentives: the system needs to be responsive to both positive and negative incentives.

5.1.7. Community awareness and involvement: communities are best placed to operationalize graduation (MoARD, 2007:5-6)

5. 2. Steps of introducing graduation benchmarks and participant selection process

Step 1. Preparation of regional guidelines for graduation

Step 2. Awareness raising and training of *woreda* representatives on the graduation criteria and process.

Step 3. Awareness raising among kebele representatives, elders and CFSTF representatives on the graduation criteria and process.

Step 4. Briefing on the graduation criteria and process to all kebele members

Step 5. DA's prepare an overview of household assets of all PSNP participants who have taken a household package and credit

Step 6. Using the Graduation guidelines, CFSTF prepares the list of proposed graduates for the coming year. As outlined above this includes three sets of analysis, including a detailed assessment of household asset holdings to determine who can graduate from the Programme (see section 5 II)

Step 7. CFSTF post list of proposed graduates and seeks comments and endorsement from the general community meeting

Step 8. CFSTF finalizes the list of proposed graduates and forwards it to the KFSTF for verification and further action.

Step 9. KFSTF and Kebele Council verify the list, correct possible errors and submit the list of proposed graduates for approval to the WFSTF.

Step 10. WFSTF verifies, corrects possible errors and submits the list of proposed graduates to the *Woreda* council for final approval.

Step 11. Woreda council approves the list of proposed graduates and submits it to the Regional BoARD.

Step 12. WFSTF sends approved list of households graduated from the PSNP to KFSTF for posting at community level.

Step 13 CFSTF briefs community on the final list of households graduated from the PSNP and raises awareness that they can raise complaints through the appeals committee.

Step 14. Kebele council and the appeals committee collects graduation-related appeals, respond and correct the list of households graduated from the PSNP where appropriate.

Step 15. Kebele council submits final list of households graduated from the PSNP to WFSTF for verification and approval.

Step 16. WFSTF verifies, approves and informs the Woreda council and regional BoARD on adjustments to the list of households graduated from the PSNP based on the appeals process (MoARD, 2007:9).

5.3. Safeguarding Mechanisms to Minimize Risks Arising from Graduation

5.3.1. Community awareness of and support for graduation

5.3.2. Graduated households will be monitored through the current FSP monitoring and evaluation system.

5.3.3. Graduated household will continue to have access to OFPS packages on a priority basis

5.3.4. The current appeals mechanism will respond to appeals related to graduation

5.3.5. Graduated households who subsequently become chronically food insecure can re-enter the Programme

5.3.6. Balancing incentives for graduation (MOARD, 2007:10).

Annex 6: Livestock population in Chiro District

Livestock types	Head count	In TLU	
		Conversion factor	Units
Cattle	99,517	0.7	69661.9
Sheep	40,762	0.1	4076.2
Goats	76,047	0.1	7604.7
Horses	323	0.8	258.4
Mules	272	0.7	190.4
Donkeys	15,945	0.5	7972.5
Camels	643	1	643
Chicken	122,903	0.01	1229.03
Total	356,412		91636.13

Source: West Hararghe Zone, Office of Livestock Development, 2018

Annex 7: Food grains used in the study area, and their averaged food energy

	Description of food grains	**Local name**	**kcal/100grams**
1	**Barely**		
	Barely, black, Hordeum vulgare L.: Flour	Gerbu guracha, daakuu	370.90
	Barley, black, Hordeum vulgare L.: split, raw	Garbu, gurracha, hororamaa, kan hin fidigamin	374.80
	Barley, white, Hordeum vulgare L.: split, raw	Gargu adii,hororama, kan hin hin fidigamin	368.30
	Barley, white, Hordeum vulgare L.: flour	Garbu, adii, daakuu	368.00
	Average		370.50
2	**Maize**		
	Com (maize), yellow, Zea mays L.: flour	Boqollo, daakuu	376.00
	Com (maize), Zea mays L.: yellow, spilt,raw	Boqqollo, daakuu, kan hin findigamin	380.40
	Com (maize), Zea mays L.: white, flour	Boqollo, adii, daakuu	378 20
	Com (maize), Zea mays L.: white, spilt, raw	Boqqoollo adii, hororamaa	378.20
	Average		378.20
3	**Sorghum**		
	Sorglurm, sorghum, spp: red, flour	Mishinga, daakuu	377.40
	Sorghum, Sorghum spp: white, flour	Mashillaa adii, daakuu	374.80
	Sorghum; Sorghum spp.: mixed, flour	Mashillaa , walmakaa, daakuu	363.90
	Average		372.03
4	**Teff**		
	Tef, Eragrostis tef (Zucc.) Trott: red, flour	Xaafii diimaa, daakuu	355.10
	Tef, Eragrostis tef (Zucc.) Trott.: white, flour	Xaafii adii, daakuu	358.80
	Tef, Eragrostis tef (Zucc.) Trott: mixed, flour	Xaafii walmakaa, daakuu	358.90
	Average		**357.60**
	Wheat		
	West, Triticum vulgare Vill: black, flour	Qamadii gurraacha, daakuu	353.80
	Wheat, Triticum vulgare Vill: black, spilt grain	Qamadii gurraacha, hororamaa	362.40
	Wheat, Triticum vulgare Vill.: white, flour	Qamadii adii, daakuu	362.90
	Wheat, Triticum vulgare VIII.: white, split grain	Qamadii adii hororamaa, kan	365.00
		hin fidigamin	
	Wheat, Triticum vulgare Vill: mixed, split grain	Qamadii walmakaa, hororamaa	352.3
	Average		359.28
5	**Pulses**		
	Broad beans.Vicia faba L.:flour	Baaqelaa, daakuu	349.8
	Broad beans, Vicia faba L.:split	Baaqelaa hororamaa	353.1
	Kidney beans, Phaselous vulgaris L.: whole, dried	Ashongoree dheedhii, goggogaa	354.4
	Chickpeas, Cicer arietinum L.:flour	Shumburaa, daakuu	383.4
	Peas, field, Pisum sativum L.:flour	Atara, daakuu	352.2
	Peas, field, Pisum sativum L.:split	Atara, hororamaa	353.8
	Average		**357.8**

Source: Extracted and calculated from Food Composition Table for Use in Ethiopia, Part III, EHNRI (1968-1997)