

**INDIRA GHANDHI NATIONAL OPEN UNIVESITY  
SCHOOL OF COUNTNIUNIG EDUCATION**

**THE EFFECT OF THE EXPANSION AND OUTSOURCING OF  
SUGARECANE PRODUCTON ON THE FARMERS' LAND IN  
IMPROVING THE INCOME OF THE HOUSEHOLDS**

**A Case study of Boset Woreda, East Shewa Zone,  
Oromia Regional State, Ethiopia.**

**BY**

**SOLOMON YILMA**

**April, 2016**

**ADDIS ABABA, ETHIOPIA**

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**The Case study of Boset Woreda of East Shewa Zone of  
Oromia Region, Ethiopia.**

**MA thesis**

**BY**

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**April 2016**

**Addis Ababa, Ethiopia**

**A thesis submitted to the Department of Rural  
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**In partial fulfillment of the Requirement for the  
Degree of MASTERS of ART in Rural Development**

**By**

**Solomon Yilma**

**April 2016**

**Addis, Ababa, Ethiopia**

## **DECLARATION**

I hereby declare that the Dissertation entitled THE EFFECT OF THE EXPANSION AND OUTSOURCING OF SUGARECANE PRODUCTION ON THE FARMERS' LAND IN IMPROVING THE INCOME OF THE HOUSEHOLDS

Submitted by me for the partial fulfillment of the M.A. in Rural Development to Indira Gandhi National Open University, (IGNOU) New Delhi is my own original work and has not been submitted earlier either to IGNOU or to any other institution for the fulfillment of the required for and course of study. I also declare that no chapter of this manuscript in whole or in part is lifted and incorporated in this report from any earlier work done by me or others.

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## **CERTIFICATE**

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Which he/she is submitting, is his/her genuine and original work.

Place: ----- Signature-----

Date: ----- Name: -----

Address of the supervisor-----

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## **ACRONYMY AND ABBREVIATIONS**

AGP'S- Agricultural Growth Program

CAADP- Comprehensive Africa Agricultural Development Program

CSA-Cane supply agreement

EU –European Union

ESISC-Ethiopian Sugar Industry Support Centre Share Company

FAO- Food and Agricultural Organization

GDP- Gross Domestic Product

GNP- Gross National Product

GTP2- Ethiopian Second Growth and Transformation

HIV /AIDS- Human immunodeficiency virus/ Acquired Immune Deficiency Syndrome

IV- Interviewed Households

KSCL- Kilombero Sugar company in Tanzania

NGO – Non Governmental Organization

PG- Productivity of grain per hectare

PIF- Policy and Investment Framework

RAIS- Annual report of Social Information

SNNPR- South Nations, Nationality and Peoples' Region

TB- Tuberculosis

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## **ABSTRACT**

The government of Ethiopia has developed a Growth and Transformation Plan and strategy which encompass different development programs including the agricultural sector for five years. From the agricultural sector, Sugarcane production on 85,333 ha of land to produce beyond 800,000 tones annually through developing new land expansion and outsourcing of the existing Sugarcane Production Estate farms by the end of 2015 as part of the plan.

To this effect, a study was conducted to assess the effect of the expansion and outsourcing of sugarcane production on the farmers' livelihood as the Case study in Boset Woreda , East Shewa Zone of Oromia Regional State Ethiopia. A simple random sampling method was used to collect primary data from one kebele out of four, three extension agents out of seven Woreda Administrator, farmers and women, Wonji Sugar Growers Cooperatives and Wonj Sugar Cane Estate Farm Planning. Interview was done with three extension agents, Woreda Administrator while group discussion was made with members of farmers and women associations and Wonji Sugar Growers Cooperatives. Secondary data was collected from Wonji Sugar Growers Cooperatives.

The Data collected was analyzed with descriptive statistics. The study reveled that the farmers annual net income from grains production on their own same size plot of land was better than the annual income generated from the newly government driven approach of expansion of Sugarcane production on farmers land. The annual farm household income generated from maize and chickpeas production was 270% times larger than the income produced from outsourcing of sugarcane production on farmers the same land, the 20% increment of expansion of sugarcane production on farmers land had lead also to reduce 6% the previous annual income of farmers generated from grains such as Teff (*Eragrotis teff*). In addition, the program decreased the availability of crop residues and farm land forestry used as animal fodder, energy source for household purpose and construction, shortened the grazing land which affected live stock production, limited land use right and displacement of farmers. It was also found that 80% of the responds do not support the outsourcing program.

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# CHAPTER ONE: INTRODUCTION

## 1.1 Background

Ethiopia is the second populous country in Africa next to Nigeria. Currently, it is one of economically emerging countries in East Africa with two digit economical growth. The Country's economy is based on Agriculture which accounts 45% of the GDP. More than 85 % of the populations are engaged in agriculture and allied activities ([CIA World Fact book](#), June 30, 2015)

In light of the market lead economy, the overall national development and economic transformation for a structural change, the Federal Democratic Republic of Ethiopia has formulated a policy and strategic documents with succinct objectives that gives a clear understanding on prioritized sectors. The policy and the strategic documents among others capture the agricultural sector of the country that focus on strengthening the agricultural labor force, proper use of land, preparing area compatible development packages, working towards market lead agricultural development and promoting private sectors participation in agricultural development and agro industry development. In GTP I period emphasis has been also given to rural development, industry, infrastructure, social and human development good governance and democratization (Growth and Transformation Plan (GTP). 2010/11-2014/15). GTP I was with scenarios, the base and high level scenarios. The high level is doubling the achievement of 2009/10 by 2014-15 and the base case scenario is 11.2% growth on average for the five years period through maintaining agriculture as major source of economic growth. To achieve this it was planned to intensify commercial agricultural production by encouraging large farms and smallholder commercialization as a main source of agricultural growth using the previous experience. In addition to this, agricultural marketing network and investment was planned to be enhanced while best agricultural models scaling up for all other farmers; small, medium and large scale irrigation was planned to get special attention. Agriculture and allied activities was planed 8.5% for GTP I and achieved 6%, while it was planed 8% for the GTP II ..

To realize policy and strategy packages of the GTP, the government has established, agricultural transformation Agency with a clearly defined program guided by the national plan document called Ethiopian second Growth and transformation plan /GTP.

The program is designed to help all partners meet targets. The Agency measures its contribution to the effort through the metrics established in the GTP document as well as in other strategic guidance such as the CAADP / Comprehensive Africa Agricultural Development Program/ compact and the corresponding policy and investment framework /PIF/. The agency's work to support the GTP I and II organized under AGP's/ Agricultural Growth Program/with the following goals:

- ❖ Achieve a sustainable increase in agricultural productivity and production
- ❖ Accelerate agriculture commercialization and agro-industries development
- ❖ Reduce degradation and improve production of natural resources and
- ❖ Achieve universal food security and protect vulnerable households from natural disaster

Following the government direction, expansion and outsourcing of sugarcane production is taken as one of the major investment area of Agro- processing industry. Previously, the country has three state owned sugar mill factories namely: Metehara which has started sugar production, with currently annual capacity 136,692 tones per year since 1970 (Methera Sugar Factory Profile 31 July 2015), Wonji has been commencing production since 1954. It is the oldest and pioneer in the history of Ethiopia's sugar industry, currently its production capacity per year is estimated 75,000 tones (Wonji Shoa Sugar Factory Profile, 31 July 2015) and Fincha has started sugar production since 1998. Its current annual capacity is estimated 110,000 tones (Ethiopian Sugar Corporation - Finchaa sugar factory Profile 31 July 2015). The overall total annual production of 321,692 tones capacity. In addition to these, ten new sugar mill factories have been under construction in different regions of the country, Tana Beles in Amhara National Regional State , Welkayte in Tgray National Regional State, Kesem and Tendaho in Afar National Regional State and the rest six factories in SNNPR. Tendaho is the largest of all with expected annual capacity about 600,000 tones per year. The Country aim is to increase its total sugar production beyond 800,000 tones per year by the end of 2015 which can cover more than 85,333ha of land (EI Mamoun Amrouk, Manitra A, Rakotoarisoa and Raison Chang, FAO No.37 2013).

. The Sugar cane plantation as well as the processing factories in Ethiopian have number of contribution in reducing poverty through creation of job opportunities for both rural and urban population where unemployment is a rampant problem in the country, contributes on Gross

National Product/ GNP/, producing ethanol and molasses as by product which directly and indirectly substitutes a part petroleum importation and generate foreign currency as by product used for fattening animals (FAO, 2013 Working paper No.37)

Thus, the Ethiopian Government has strategic plan to expand and outsourcing the sugar cane plantation and on farmers' land particularly in lowland areas where rivers for irrigation are available and agro climatic condition is favorable. Though it is believed that the development of sugarcane production linked to Sugar factories development improves the living standard of communities, the sought system in place may cause injustice and inequality as the expense of the others stakeholder which can bring displacement, unfair compensation and less income(FAO 2013 Working paper No.37)

Since, the effect of Government strategy on the expansion and outsourcing of sugarcane production on farmers land in enhancing the income of household, the living standard, the communities participation, ownership, sustainability is not assessed and this research is designed to fill this gap .

## **1.2 Statement of the Problem**

Sugar production has started with Awash River valley development in Wonji and Methera in 1954 and 1970 respectively. The Wonji was established by Dutch Company, HVA (Handlers - Vereenging Amsterdam) as joint venture between this company and the Ethiopian government. The production of the firm has continued until the failure of the Imperial government in 1974 as a joint venture. Since the imperial government failed, the sugar factories have been nationalized and continued until now as a state property.

Ethiopia is endowed with large areas of suitable low lands, rivers and conducive climate for sugar cane growth. The climate and soil types in the country have both proven to be highly conducive for sugar cane growth and productivity. Various pre- feasibility and feasibility studies of sugar projects conducted by the Ethiopian Sugar Industry Support Center Share Company (ESISC) have indicated that many potential sites at the main river basins are suitable for sugar cane plantation. These include 303,500 hectares of already identified suitable net areas in 7 sites. However, the total area developed for the production of sugar cane in the country is only about 8% of the total identified suitable areas

As the majority of Ethiopian industries are agro- based, the expansion and outsourcing of sugarcane production is one of the Government strategies to reduce poverty, unemployment and enhance the Gross Domestic Product./GDP/. In line with this expansion in different location/ regions and outsourcing of sugarcane production around already established Sugarcane Estate Farms has been taking place this the beginning of GTPI.

The Government plan and implementation of an expansion and outsourcing of sugarcane production on farmers land has been on progress since the last four years in research area. Wonji Sugar Estate Farms as one of the oldest firm is under taken expansion and outsourcing on farmers land around its peripheries.

Since, the effect of Government strategy on the expansion and outsourcing of sugarcane production on farmers land in enhancing the income of household, the living standard, the communities participation, ownership, sustainability is new area of research and not assessed yet, this study is designed to fill this gap as the case study on Dongre Fureda Kusaaye Kebele of Boset Woreda of East Shewa Zone of Oromia region, Ethiopia, was assessed in depth to forward alternative solutions for identified challenges and obstacles in enhancing the income and the living standard of the local communities, particularly, in Boset Woreda. This approach in general may also help through replicating and sharing the good experience both at the region and national level where the expansion of sugarcane production on farmers land is implemented.

The findings and recommendation of this study can give vital information to the policy makers in general and to Wonji Estate Farms and farmers, cooperatives in particular on the Effect of expansion and outsourcing of Sugarcane Production.

### **1.3 Research Question**

What is the effect of the expansion and outsourcing of sugarcane production on your land in improving your annual income relative to grains per the same hectare of land?

### **1.4 Objectives of the Study**

#### **1.4.1. General objective**

- To assess the socioeconomic effect on out growers due to the expansion and outsourcing of sugarcane production to the farmers land by Wonji Sugar Estate Farm. .

#### **1.4.2 Specific Objectives of the Study**

- To assess the effect of expansion and outsourcing of sugarcane production on individual farmers and cooperatives (out growers) who are participating in the program
- To assess the relationship and effect of sugarcane production on farmers land and allied agricultural activities.
- To assess the level of participation and ownership of out growers in relation to sustainability of the expansion of sugarcane production on their farm land

#### **1.5 Significance of the Study**

Expansion and outsourcing of Sugarcane production on farmers land is one of the newly introduced huge agro industrial development sector in Ethiopia. This has got a considerable contribution to the national GDP and creation of job opportunities for thousands. This sector has also prompted technology transformation and modernization of the local economy through facilitating infrastructural development and social services. On the contrary, the poor management of expansion of sugarcane production on farmers land might have also caused undesirable results mainly related to insufficient compensation to farm land owners, low income generation, displacement, discouraging livestock production and inactive participation of local communities in planning, implementing, benefiting, monitoring, and evaluation of the development program for its sustainability.

Hence, the specific bottlenecks that have been hampering the expansion of sugarcane production on farmers land and benefits of farmers should be assessed in depth and alternative solutions should be forwarded for all key stakeholders/ Policy makers, planners. Administration bodies, farmers etc for alternative and improved strategies and approaches. Besides this thesis would academically help as the stock of knowledge and reference to devise new application .and can also be the input for further research related to the sugarcane production

#### **1.6 Scope and Limitation of the Study**

Currently, the expansion and outsourcing of sugarcane production on farmers land has been widely undertaken in Oromia, Amhara, Tigray, Afar, Southern Nations, Nationality and People's Region/SNNPR/ regions in Ethiopia. Depending on the available budget, time and labor, this



research was conducted only in Boset Woreda of Oromia region as the case study. It doesn't cover all Districts/Woreda of regions where the expansion of sugarcane production on farmers land is undertaking.

The assessment was done in depth and in detail in the research area to identify the effect of expansion of sugarcane production on farmers land in improving the income of farm household and major bottlenecks that have hindered the expansion of sugarcane production on farmers land and its benefits. The findings may represent more the expansion of sugarcane production in particularly Boset District and in general Oromia region rather than the nationwide projects. However, mainly the implementation of expansion of sugarcane production on farmers land in different Regions being is driven from the same government policy and strategies, the findings can be replicated and adopted in others regions.

### **1.7 Organization of the Study**

This research report is organized in five chapters: Chapter one includes Introduction /background, research problems, objectives of research, scope and limitation of the study etc/ Chapter 2: Review of literature, Chapter three: Research Methodology :Methods and tools used for data collection, collection of data, processing data, analyzing and interpretation data, Chapter 4: Result and discussion; Analysis of interviewed households, productivity of grain per hectare, cost of major inputs, analysis of income from expansion of sugarcane production , contribution of wage/salary, comparison of income and graphic representation, and Chapter 5: contains Conclusion and recommendation.

### **1.8. Operationalization of Concepts**

#### **Definition of variables in the context of research topic:**

- Keble : Grass root administration in Ethiopia
- Key stakeholders: Farmers engaged in sugarcane productions, Sugar growing Union Non-sugar farmers, transporters, concerned Government bodies, sugar factories management & staff, consumers of sugar, farmers and Women association
- Out growers :Contract farming involves sugarcane production being carried out on the basis of an agreement between buyer and farm producer

- Outsourcing: Sourcing sugarcane plantation work to farmers relatively close in distance based on agreement made between Wonji Sugar Factory on the behalf of Government as buyer and Wonji Sugar Grower Cooperative union on the behalf of farmers as seller..
- Temporary compensation: Compensation paid by government for farmers engaged in expansion of sugarcane production on their land until sugarcane production is harvested and sold. Currently, it is 1,250 birr paid for household farmer per Month per hectare.
- Teff (*Eragrotis teff*): The staple food cereal commonly growing in Ethiopia
- Woreda : Administration at District level

## **CHAPTER TWO: REVIEW OF LITERATURE**

### **2.1 Historical Background and Potential of Sugarcane Production in Ethiopia.**

#### **2.1.1 Historical Background of Sugarcane production in Ethiopia**

Sugar production has started with Awash River valley development in Wonji and Methera in 1954 and 1970 respectively. The Wonji was established by Dutch Company, HVA (Handlers - Vereenging Amsterdam) as joint venture between this company and the Ethiopian government. The production of the firm has continued until the failure of the Imperial government in 1974 as a joint venture. Since the imperial government failed, the sugar factories have been nationalized and continued until now as a state property. (Ethiopia Sugar Industry Profile, 2015)

Its production in Ethiopia started with the first factory called Wonji Sugar Factory that has been commencing production.. It is the oldest and pioneer in the history of Ethiopia's sugar industry, currently its production capacity per year is estimated 75,000 tones. The second, Metehara sugar Factory which has started sugar production, with currently annual capacity 136,692 tones per year since 1970 (Ethiopian Sugar Factory Profile 31 July 2015), and third, Fincha has started sugar production since 1998. Its current annual capacity is estimated 110,000 tones . The overall total annual production of 321,692 tones capacity. In addition to these, ten new sugar mill factories have been under construction in different regions of the country.

The Country aim was to increase its total sugar production beyond 800,000 tones per year by the end of 2015 which can cover more than 85,333ha of land (EI Mamoun Amrouk, Manitra A, Rakotoarisoa and Raison Chang, FAO No.37 2013).

The harvested sugarcane production as the result of expansion and outsourcing of sugar cane production on farmers land in Oromia, Ethiopia in two Wored namely :Adama in East Shewa Zone and Dodota Woreda in Arsi Zone has been started since 2002 on 552 hectare of land while in Boset Woreda started in 2010. (Group discussion with Wonji Sugar Growers Cooperative Union).

### **2.1.2 The Potential of Sugarcane Production in Ethiopia**

Ethiopia is gifted with large areas of suitable low lands, rivers and conducive climate for sugar cane growth. The climate and soil types in the country have both proven to be highly conducive for sugar cane growth and productivity. Various pre- feasibility and feasibility studies of sugar projects conducted by the Ethiopian Sugar Industry Support Center Share Company (ESISC) have indicated that many potential sites at the main river basins are suitable for sugar cane plantation. These include 303,500 hectares of already identified suitable net areas in 7 sites. However, the total area developed for the production of sugar cane in the country is only about 8% of the total identified suitable areas. Experiences of existing sugar factories show that because of the suitable soil, adequate water and conducive climate, an average sugar cane production per hectare per month of the land under irrigation is very high as compared to other countries i.e.9-11 tons against 6-8 tons. This would make Ethiopia a very attractive location for private investors to invest in the production and processing of sugar cane. (Investment opportunity profile for sugar cane plantation and processing in Ethiopia, 2012)

## **2.2 Related Empirical Studies**

### **2.2.1 The Effect of Outsourcing Sugarcane Production on out growers in Different Countries**

**Ethiopia:** Domestic sugar consumption in Ethiopia is considerably higher /1.26 times/ than its production. Therefore the country imports about 150,000MT of sugar per year to satisfy domestic demand. The sugar sectors in Ethiopia faces several challenges such as: satisfying local demand at stable and relatively low consumer price ,its current production level still can not keep with fast growing demand for both sugar and ethanol , stemming its complex sugar trade policies and trading average market at both regional and global level and un predictable changes in the world of sugar market ,international sugar price significantly and consumers in Eastern part of the country rely on illegal and cheaper imports coming through the Djibouti and Somalia coasts affect the Ethiopian sugar industries (FAO COMMODITY AND TRADE POLICY RESEARCH WORKING PAPER No. 37, FAO 2013)

According to the FAO Commodity and Trade Policy Research Working Paper No.37, the expansion and outsourcing of sugarcane production on farmers land shows that the higher the share of land occupied by sugar plantation, the lower the total household and per capita income:

one percent increase in sugar acreage share leads to a 0.3 percent reduction of the income. The higher the price of non-sugar crops, the higher the income: one percent increase in the index price of non-sugar crops leads to about 0.5 percent increase in the income per capita. But the higher the wage income from working in the sugar sector, the higher household income and per capita income. It also the cause for displacement of farmers from their land (FAO COMMODITY AND TRADE POLICY RESEARCH WORKING PAPER No. 37, FAO 2013).

The Wonji Sugarcane Out grower scheme in Ethiopia, was the oldest out grower scheme in Ethiopia.. As the plantation of the Wonji-Shoa Sugar Factory was established in an area where the surrounding agricultural land was already in use by local communities, the factory could not expand the land area for sugarcane production without displacing small-scale farmers . In order to increase the supply of sugarcane, the factory initially proposed to the government and then Ethiopian Sugar Enterprise to resettle the households who were using the surrounding land, but this plan was not approved because of intense resistance from local communities. Thus, the resettlement plan was changed to an out grower scheme which was considered to be a win-win solution for both local communities and the factory. To make the scheme amenable to mechanization, the factory decided that all households who had land along the Awash River adjacent to the factory's plantation had to participate or leave their land (*Mengistu Assefa Wendimu , Arne Henningsen, Peter Gibbon, 2015/06*)

The research study on Sugarcane Out growers in Ethiopia shows that tomato and onion production generates four to seven fold higher net incomes per hectare per season than sugarcane even before taking into account the frequency with which different crops are harvested. While tomatoes and onions can be produced twice per year, sugarcane takes 14-24 months to harvesting. Teff, which is produced once per year under rain-fed conditions, generates a similar net income per hectare to irrigated sugarcane production. Non-out growers have significantly higher net incomes per adult equivalent than out growers (*Mengistu Assefa Wendimu, Arne Henningsen, Peter Gibbon, 2015/06*)

Many donor agencies, nongovernmental organizations and governments of developing countries were increasingly pushing for contract farming and out grower schemes as an instrument to commercialize small-scale farming. Their desire for such arrangements was further reinforced by

the recent rush for large-scale agricultural land acquisitions in most developing countries, often described as land grabbing,' because contract farming and out grower schemes can result in the same advantages as large-scale farming, but avoid its main drawback, namely the displacement of the current land-users. The participation in out grower schemes has a huge negative effect on the income and asset stocks of out growers whose land had a high potential for income generation due to access to irrigation prior to participation in sugarcane schemes . If governments encourage or even force smallholder farmers to participate in out grower schemes and if they also want smallholders to benefit from participating in out grower schemes, they should at least properly address the price setting issue. (Mengistu Assefa Wendimu ,Arne Henningsen,Peter Gibbon,2015/06)

**Tanzania:** The inclusive business models in Tanzania aim to ensure that the existing land users did not lose their rights to access, control and own land. They are meant to empower communities to have a voice in business decision making processes and share benefits and risks resulting from the business activities. Kilombero Sugar Company Limited (KSCL) in Kilombero District, Tanzania, provides an example of some elements of inclusive business models and their challenges. KSCL has been partnering with sugarcane smallholder farmers to produce sugarcane that is processed, marketed and distributed by the miller (KSCL). The partnership is based on a Cane Supply Agreement (CSA) which was signed between the company and the farmers' associations every three years. Based on these adjustments, out growers are paid less if the sucrose level of their cane is too low; and all out growers are paid based on final sales. Payment was done on the ratio of 57 percent to 43 percent of the profits for out growers and the company, respectively (Emmanuel, 2014).

The inadequately planned and executed expansion of sugarcane production in the area was causing problems for the out growers and the company. This was because the production levels have overshot the company's processing capacity, leaving

Farmers with sugarcane that is un harvested and unsold, and no options rather than being indebted. Recently, farmers have also registered complaints around the measurements of their sugarcane weights and sucrose levels by the company (Emmanuel, 2014).

**Nigeria:** The most of the areas in the Northern States where water for irrigation is available; sugarcane cultivation in large quantities is feasible. Out-growers scheme farming is gradually increasing as shown by the level of experience recorded. These percentages would increase over time as more mobilization; sensitization and incentives are provided such as : the communities living within and around the company, appropriate pricing policy of their produce, provision of rural infrastructure like: access to school, clinics, water supply, electricity, feeder roads for ease of movements of goods and services within and around the neighboring communities or villages (\*A.A. Girei and D.Y. Giroh,2012)

The survey conducted on analysis of the Factors affecting Sugarcane (*Saccharum officinarum*) Production under the Out growers Scheme in Numan Local Government Area Adamawa State, Nigeria shows that most of the respondents engaged in sugarcane production had average farm size of between 1 – 2 hectares followed by those with average farm size of 3 – 4 hectares. Also those with 5 – 6 hectares constituted 4.2% with only 3.3% of them had up to between 7 – 8 hectares. The most important constraint were: inadequate and late allocation of farms constituting 33% of the total respondents, inadequate credit facilities constituting 25% of the respondents. Inadequate funds hinder the development of irrigation schemes as stressed by Von — Pischke (1991). Inadequate water supply was ranked the third (3rd) most important factor militating against high yield with 20% of the total respondents. (15%) of the total respondents reported that farm inputs such as inadequate/high cost of fertilizer, sells. as major constraints and inadequate labour for out growers. It is generally known that small scale farmers find it very difficult to source for farm inputs and the limited number they could lay their hands on are extremely expensive. The constraints of high input cost need to be address through government intervention by provision of subsidy (\*A.A. Girei and D.Y. Giroh, 2012).

**Mozambique:** The municipality was categorizing the farms into small, medium and large farms. Small are the farms that are less than one hectare, medium between one and five hectares and large all above five hectares. Maragra company has a sugar mill factory and sugarcane plantations in the administrative region of Manhiça. The out grower farmers were important for the company since the company was not planning to lease more land themselves but wanted to expand, to the fully capacity of the factory(.Emelie Muntrakis,2014).

The company had been trying to have a good impact on the society and eliminate negative environmental impact. Among others they have a school and a health centre that can be used by their employees and their children. These facilities were though inside the area of Maragra and were not accessible. The out growers: small, medium and large were employing people for working with the sugarcanes.. The permanent employees receive benefits such as housing, healthcare and education allowances which also cover family members but there were no benefits for the seasonal agricultural workers. Lack of land right, insufficient land availability for cultivating food crops, low paid for employees, migration and a lot of chemicals spread in the nature and big quantities of water used were major problems in the program.( Emelie Muntrakis,2014).

**Kenya :** The research conducted on the Effect of Muhoroni Sugar Company's Practice on Livelihood of Sugarcane Out-Growers, Muhoroni District indicates that most sugarcane out grower were not satisfied with remuneration offered by the company in terms of delay in remitting the cash and reluctance as a result, majority of the sugarcane out-growers were unable to sustain their children in school due to lack of school fees also majority of sugarcane out-growers find the cost of affordability of education as very high, the sugarcane out-growers cannot afford the minimum number of three meals per day and health facilities, their roof were in poor condition due to low remuneration paid by Muhoroni sugar cane company (Osieko Daniel Odhiambo ,2013).

**Kenya:** The Economic Valuation of the Proposed Tana Integrated Sugar Project shows that sugar project would have both direct and indirect positive and negative impacts. Employment creation, production of sugar, electric power and ethanol would benefit both local and National economies. The local economies would be transformed as rising numbers of workers and their families increase demand for goods and services, such as food, clothing, shelter and entertainment. Sugar cane farming would involve construction of flood protection dykes. That would restrict supply of rich silt deposits to the whole of the floodplain. It was fundamentally affect even the floodplains that would not be converted to sugarcane farming, ecological cycle of the whole of Tana Delta leading to loss of biodiversity resources. The sugar cane project would involve clearance of indigenous vegetation with medicinal values as well as important sources of honey, timber, wood fuel and charcoal, which disrupting the livelihood systems of the local communities. Loss of these resources would not be adequately compensated by the proposed



sugar project as the local communities were not adequately prepared to gainfully participate in the sugar economy (Client Nature Kenya Consultants Dr. Caleb Mireri Dr. Joseph Onjala Dr. Nicholas Oguge,2008Dr. Nicholas Ogug , 2008 ).

**Southern countries:** The study on Sugarcane in southern Africa under A sweeter deal for the rural poor shows that in theory, the rural poor in developing countries could benefit from investment in the sugar cane industry in contrary the outsourcing sugarcane production on farmers land caused boosting national tax revenue, land grabbing , labour exploitation and creating inequality in distribution of benefits from sugarcane production ( Ben Richardson, 2010) .

### **2.2.2 International Experience of Sugarcane Production**

The average worldwide yield of sugarcane in 2015 was 60-70 tons per hectare. Sugarcane is produced in tropical and sub tropical countries in the world. Approximately 80% of sugarcane 's production has been used for sugar but now it has been playing as means of energy sources (ethanol ) , reduce green house gas emission ,keep environment clean, recently it is also used for bio- hydrocarbon and bioelectricity .

Table 2.1 shows that among top ten sugar producers in the world in 2015 , Brazil led the world in sugarcane production with a 728,130 TMT harvest, India was the second largest producer with 349,560 200 TMT tons, and China the third largest producer with 123,460 TMT tons harvest. The most promising region for high yield sugarcane production were in sun drenched, irrigated farms of northern Africa, and other deserts with plentiful water from river or irrigation canals.

The most productive farms in the world were in [Peru](#) with a nationwide average sugarcane crop yield of 133.71 tons per hectare.

**2.5 Table 2.1. Top Ten Sugarcane Producers in 2015**

<b>Rank</b>	<b>Country</b>	<b>Production of Sugarcane in 2015(Metric tones)</b>
1.	Brazil	728.13
2.	India	349.56
3.	China	123.46
4.	Thailand	96.50
5.	Pakistan	58.49
6.	Mexico	51.73
7.	Colombia	38.75
8.	Philippines	32.90
9.	United States	28.00
10.	Indonesia	27.40

Source: <http://www.perfectinsider.com/top-10-largest-sugar-producing-countries-in-the-world/>

In Brazil the sugarcane industry including cultivation, processing and refined products represents an important segment of the economy. As instance, in 2012, the sugarcane sector contributes US\$43.8 billion to Brazil's gross domestic product (GDP) equivalent to almost 2% of the entire Brazilian economy and higher than the GDP of a European country like Czech Republic (US\$ 42.5 billion), the entire sugarcane agro-industrial system generates gross revenues totaling more than US\$86 billion annually, the sugarcane industry employs 1.09 million workers, according to

2011 data from the Ministry of Labor and Employment's Annual Report of Social Information (RAIS), salaries for sugarcane industry workers are among the highest in Brazil's agricultural sector(<http://sugarcane.org/the-brazilianexperience/impact> on brazils-economy, Impact on Brazil's Economy, Sugarcane.org, 2012).

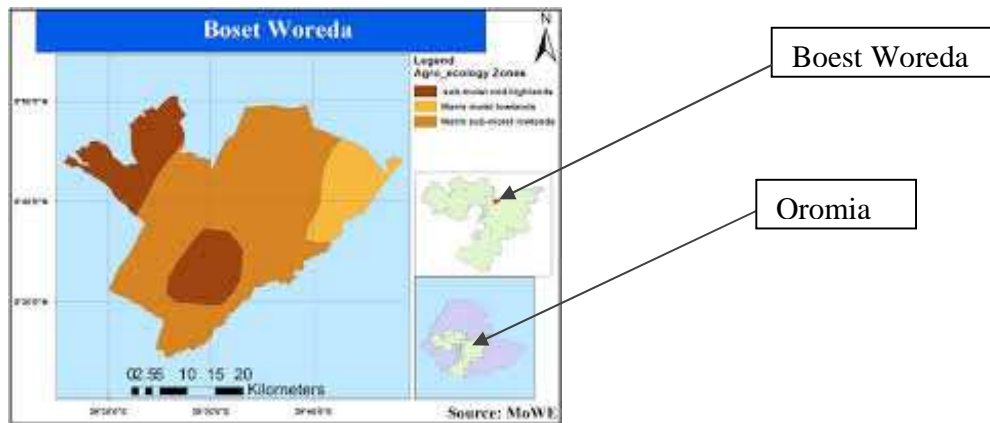
## CHAPTER THREE: RESEARCH METHODOLOGY

### 3.1 Description of the Study Area

Boset woreda is 125 km far from Addis Ababa, Ethiopia. According to Ethiopian 2007 census, the woreda has 142,112 populations out of which 73,925 male and 68,187 female.( Ethiopian Census, 2007 )A survey of the land in this woreda shows that 26.1 % is arable or cultivable, 30% pastures, 15.8 % degraded or otherwise unusable. There are 31 farmers association and 7 farmers' service cooperatives. The predominant agricultural practice is pastoralist. Camel, goat and cattle are dominant livestock. Boset is one of the woreda of the East shewa zone of Oromia region in great rift valley , Ethiopia which is bordered on South by Arsi zone, on West by Awash river that separate it from Adama woreda. on the North by the Amhara region, on the East by Fentale woreda. Its administration centre is Welenchiti, other towns in Boset includes, Bofe, Bole and Doni.( <https://en.wikipedia.org/wiki/Boset>) With Latitude: 8° 39' 59.99" N and Longitude: 39° 29' 59.99"E. (latitude. to > Articles by country > Ethiopia, Boset)

Dongre Furda Kussaye kebele in Boset Wored is randomly selected research area from four kebeles/grass root administration where the expansion and outsourcing of sugarcane production on farmers land is practiced . In this kebele there are about 904 households that have been engaged in expansion of sugarcane production on 619 hectare of their farm land. Out of 619 hectare of land only 264 hectare is covered by Sugarcane production scheme while 355 hectare of land remain idle for upgrading its natural fertility and due to shortage of availability of water to cover from irrigation system which is currently in place. Practically, the 386 (Universe of study) homogenous household population who are now active in cultivation of sugarcane production on 264 hectare of land are paid both temporary compensation and labor benefits on the bases of workdays while the land of 518 households which is 355 hectare being idle as a fallow have only been paid temporary compensation .(Group discussion with Farmers and women association ,2015)

**Figure 1: Map of Boset Woreda/, East Shewa, Oromia and Ethiopia**



Source: <http://www.ikimap.com/map/administrative-area-Boset-Ethiopia>

### 3.2 Research Design

Depending on the existing actual limiting factors, alternative way outs, point of views, and objectives of the research, the sample size, the type of the data to be collected, time and finance available, the process that have been followed and their effects and the developing trends, the survey design which is the component of descriptive and applied research was selected as research design

Dongre Furda Kussaye Kebele of Boset Woreda of East Shewa Zone of Oromia region, Ethiopia, was selected randomly from four kebles namely: Dongre Furda Kusaye , Dire Degaga, Hurufa Kukurfa and Kechachule Guja engaged in expansion and outsourcing of sugarcane production on their land in large scale in Boset Woreda. The selected research area covers 25 % of the area covered by the expansion and outsourcing of sugarcane production in Boset Woreda

The case study of Dongre Furda Kussaye Kebele of Boset Woreda of East Shewa Zone of Oromia region, on the effect of expansion and outsourcing of sugarcane production on farmers land as government strategy has been assessed. The effect of expansion and outsourcing sugarcane production on farmers land in improving the income of households was selected as the Topic of the research.

### **3.2.1 Data collection and Sampling Techniques.**

Dongre Furda Kussaye Kebele of Boset Woreda of East Shewa Zone of Oromia region, Ethiopia, was selected randomly from above mentioned four kebles engaged in expansion and outsourcing of sugarcane production on their land in large scale in Boset Woreda. The selected research area can cover about 25 % of the area covered by expansion and outsourcing of sugarcane production in Boset Woreda. Sample of the research area represents the probabilistic of homogeneity of population. Technology exposure, soil type, agro-climate conditions, culture, and Language of communities is similar for research selected inhabitants of Dongere Fureda Kussaye Kebele , Boset woreda of East Shewa, Oromia, Ethiopia. Therefore, randomly 21 households who have been engaged in sugarcane production/out growers on their land were selected from 386 homogenous households' population for an in depth interview. The sample size was adequate and representative as the population were homogenous in character for collecting primary data. Besides the primary data was collected from local government administration bodies, farmers and women associations, agricultural experts, Wonji Sugar Factory, Wonji Sugar growers Cooperative Union. The secondary data which represents the whole population of three Woreda engaged in the expansion and outsourcing sugarcane production on their land including the research area, was collected from Wonji Area Sugar Growers Cooperative Union and Wonji Sugar Factory. The secondary data consists twelve years(since the expansion and outsourcing started) data of sugarcane productivity and production per hectare, farm gate price, cost of production , net income and area in which sugarcane production was harvested which was relevant to research paper.

Constructions of tools for data collection were: questionnaire, an open ended interview, focus group discussion and observation. Collection of data includes: mainly interviewing the key stakeholders and verifying the accuracy of the data gathered..

The interview was mainly focused in-depth and detail on the effect of expansion and outsourcing of sugarcane production on farmers land, grain and sugarcane productivity per hectare, production, livestock ,out put price, input costs, wage, compensation, household annual income, displacement, positive & negative effect of sugar mill factories, level of community participation in sugarcane development. Besides, the focus group discussion was made in detail with Wonji Area Sugar Growers Cooperative Unions, Farmers and Women associations members.

### **3.2.2 Data Analysis**

Quantitative and qualitative Primary and secondary data collected was Processed and analyzed by tabulating and graphing the data. Analyzing of the data, interpreting the results and reporting the findings of the research was done by using of Computer soft ware like: Word and Excel. In this research, the element of data processes like: the editing, coding, computing of the scores, to enhance the quality of data were done to give meaningful information.

In this study, descriptive of statistical methods was used in the analysis and interpretation which focused on generalization to the particular observed groups of individuals. This analysis describes only one single group. The computed statistical values provided valuable information about the nature of particular groups. The methods used in Descriptive Analysis were: Measures of central tendency(Mean, Median, Mode),Measures of variability( Range, variance, standard deviation) ,Measures of relation ship (Correlation and Measures of relative positions, coefficient of correlation). The comparative advantageous of farmers generating income from grains against sugarcane production proved not by complicated and sophisticated method instead by using simple mathematical techniques easily understandable by report users.

## CHAPTER FOUR: RESULTS AND DISCUSSIONS

### 4.1. Profile of Households

The proportion of the households measured in sex, age family size, and educational background of the study population is indicated on table 4.1. and described item by item below.

**Table 4.1: Proportion of Sex, Age, Family Size and Educational Background**

<b>S.n</b>	<b>Component</b>	<b>Range</b>	<b>Frequency</b>	<b>percent</b>
1	Sex	—		
	Male		18	86
	Female		3	14
	<b>Total</b>		<b>21</b>	<b>100%</b>
2	Age			
		23 to 43	11	52
		44 to 64	8	38
		65 and above	2	10
	<b>Total</b>		<b>21</b>	<b>100</b>
3	Family size			
		1 to 5	8	38
		6 to 10	10	48
		11 and above	3	14
	<b>Total</b>		<b>21</b>	<b>100</b>
4	Educational background			
		Reading & Writing	12	57
		1 to 4	3	14
		5 to 8	4	19
		8 and above	2	10
		<b>Total</b>	<b>21</b>	<b>100</b>

Source: Survey Result



#### 4.1.1 Sex of Respondents

86 % of interviewed household were led by male while 14% by women. Almost all the interviewed households said that women had active participation in agricultural activities like: sowing, planting, weeding, harvesting. But they were not still fully empowered in deciding agricultural resources. They have been mainly participating in house management and child care and handling.

#### 4.1.2 Age Distribution of Respondents

The minimum age of respondent was 23 while the maximum was 75 years old From the table mentioned above, we can observe 90 % of the age of respondent was between 23 and 64 years that can be reproductive age group, the remaining 10% was above 65.

#### 4.1.3 Household Family Size and Educational back ground:

Minimum interviewed household family size was 1, maximum 12 and on weighted average 7 members per households while the country average rural house holds size were 5.1. Educational level of interviewed households: reading and writing: 57 %, (1 to 4): 14%, (5 to 8): 19% and( 8 to above) 10%.

#### 4.2 Land Holding of the Household

**Table 4.2: Proportion of Land holding, Land under Sugarcane Production of Sample Size**

S.N	Land holding	Range	Frequency	Percent
1	Land holding in hectare			
		0.5 to1.5	17	81
		1.6 to 2.6	2	10
		2.7 and above	2	9
2	Land under sugarcane production	0.25 to 0.75	13	62
		0.76 to 1.26	6	29
		27 and above	2	9

Source: Own Survey Result

The Minimum land holding per household was 0.5 hectare and the maximum was 3 hectare. The 81% of interviewed households had land ranged from 0.5 to 1.5 hectares, 10% of them had between 1.6 to 2.6 hectare and 9% of them had equal or above 2.7 hectares. Furthermore, The Average Land holdings of interviewed households was 1.27 hectare while the report of survey conducted jointly by the central statistics agency of Ethiopia and world bank in may 2013 indicates the average land holding in rural area was 1.37 hectare.

Table 4.2 shows that the minimum land holding of households under sugarcane production was 0.25 hectare while maximum was 1.27 hectare. on average 0.76 hectare or 60% of the farmers land were under the expansion and outsourcing of sugarcane production, the reaming 40 % was still used for cultivating other crops rather than sugarcane production. But, it has been planned to come under expansion of sugarcane production.

The interviewed house holds and the inhabitants of the area have been engaging in sugarcane production, since 2011/ 2012. As the Government strategy to upgrade the natural fertility and productivity of land for sugarcane production, the land become idle or fallow without any crop growing on average for at least 2 years. The average numbers of the interviewed household lived in the area was 44 years. This indicates that the majority of the residents are permanent dwellers in the area for the long time. They develop their own culture and have different social value in the area.

**Table 4.3: Summarized Grain Productivity and its Value in Research Area, December/2015**

<b>S.n</b>	<b>Grain type</b>	<b>Productivity Per hectare In quintal</b>	<b>Producer price per quintal in birr</b>	<b>Average gross annual household income per hectare In birr</b>	<b>Remark</b>
1	White teff	18 quintal	1762 birr	31,716 birr	
2	Maize	68 quintal	451 birr	30,668 birr	
3	Chickpeas	24 quintal	1889 birr	45,336 birr	

Source: Interviewed Households

### 4.3 Analysis of Average Annual Productivity, Price and Income by Three major Grains

According to information collected from interviewed farm households, the three major growing crops in Dongere, Furda and Kussaye kebele, Boset Woreda of East Shewa zone, Oromia, Ethiopia, the research area are: White Teff, Maize and Chickpeas. In Table 4.3 annual productivity, average producer price and income generated from these grains were described. Primary data collected from interviewed households indicates that under normal weather condition the average annual productivity of three major grains per hectare in quintal for White Teff was 18, Maize 68 and Chickpeas 24 respectively. The average producer price of three grains in birr per quintal in Wolenchite town, the research area, in December/2015 was for White Teff 1,762 birr per quintal, Maize 451 birr while for Chickpeas 1,889 birr per quintal.

It is common practice in research rural area of Ethiopia that the maize and chickpeas grain production are harvested in one year production cycle on the same land which enables the farmers to earn more money rather than only white Teff producer. As mentioned in the above Table 4.3, the annual Gross average household income for white Teff producer was birr 31,716 birr per hectare. While the sum for Maize and Chickpeas producer can be estimated to birr  $(30,668 + 45,336) = 76,004$  per hectare which was 2.4 times as large as the gross annual household income from white Teff. The opportunities cost for Maize and Chickpeas was greater than income from White Teff.

In addition, for both white Teff producers and Maize & Chickpeas producers, the crop residues and farm land forestry using for animal fodder, firewood and construction were extra benefits that should be added to average annual farm household income generating from grains production. Keeping these facts in mind, the average gross annual household income from grain production was more than the estimated value mentioned in the above Table 4.3. The annual net income was calculated by reduction of grain cost of production per hectare. The cost of fertilizer, pesticide, improved seed are the major production cost per hectare, his/her own family labor was assumed as his/her income not as cost.

In the research area, there were two income options from grains.

**Option 1:** As mentioned above, it is common practice in some part the country to cultivate Chickpeas grain after Maize is harvested within the same One year production cycle on the same

land. This implies that in research selected area, the annual gross income of majority of households per hectare can be the sum of income from Maize and Chickpeas, as confirmed above in Table 4.3, it can be estimated to be  $30,668 + 45,336 = 76,004$  birr.

**Option 2:** if only White Teff is harvested annually from hectare of land the annual average gross income of households was birr 31,716. In addition to the two options, the farmers have opportunities such as :crop residues and farm land forestry for animal fodder , fire wood and land grazing for the livestock production .But it is very difficult to explain this opportunities in terms of money in this research paper as there was budget constraints to collect all information in depth and detail. The concerned stakeholders should underline the fact that the farmers can earn the Gross average annual income from 31,716 to 76,004 birr per hectare depending on the grain types and plus the contribution of crop residues and farm land forestry.

**Table 4.4: Average Labor Costs Per Hectare by major Grains in Birr**

<b>S.n</b>	<b>Household code</b>	<b>Labor costs in birr from Preparation land to harvest grain per hectare</b>
1	3.001	3200
2	3.002	4000
3	3.003	3600
4	3.004	2000
5	3.005	2500
6	3.006	2600
7	3.007	5200
8	3.008	3500
9	3.009	2500
10	3.010	3452
11	3.011	3200
12	3.012	3500
13	3.013	3600
14	3.014	2000
15	3.015	3200
16	3.016	2300
17	3.017	4000
18	3.018	3400
19	3.019	6400
20	3.020	2800
21	3.021	3000
	<b>Average</b>	<b>3212</b>

Source: Interviewed Households, N.B: USD=21.5365 Birr

The average annual household net income from grain per hectare was calculated by reduction of cost of production like: fertilizer, pesticides, improved seed etc. The farmers do not reconsider their family labor as cost. Instead, they assume as if it's their income, from Table 4.4 the average labor cost was estimated to 3,212 birr per hectare per grain type, other cost of production was calculated below.

**Table 4.5: The Average Quantity and Cost of Major Inputs per Hectare / Excluding labor**

S.n	Types of input per hectare	Quantities	Average cost in birr
1	Fertilizer	2 quintals/Dap & Urea	2,100
2	Pesticide	liter	150
3	Improved seed by major grain types growing in research selected area		
	White teff	25 kilo	575
	Maize	25 kilo	150
	Chickpeas	80 kilo	1,440
	Average cost for each grains		
	White teff		2,825
	Maize and Chickpeas		6,090
	Average for three grains		2,972

Source: Agricultural Expert in Boset Woreda

After the reduction cost of production, the average annual household net income for white Teff producers  $(31,716 \text{ birr} - 2972) = 28,744 \text{ birr}$  while for Maize and Chickpeas producers  $= 76,004 - (2972 + 2972) = 70,060 \text{ birr}$ . This was 2.44 times as large as the average annual household net income from only white Teff producers. The maize and chickpeas producers in one production cycle on the same land were more advantageous than only white Teff producers. In the research selected area, 62 % of interviewed farmers were Maize and Chickpeas producers in the same year on the same land. When compensation package due to expansion and outsourcing of sugarcane production was estimated & calculated, these conditions, the benefits of crop residues and farm land forestry should be reconsidered.

Not only in research area, but also in some Ethiopian rural area it is common practice that the crop residues of Teff, Chickpeas, Maize and Sorghum is used for animals fodder, particularly the residues of maize and sorghum used in firewood for cooking, heating and lighting. Thus, these

benefits should not be forgotten when always the expansion and outsourcing of sugarcane production on farmers land is implemented.

### 4.3.1 Temporary Compensation

**Table4.6: Average Annual Household Income from Temporary Compensation**

Phase	Budget year	Monthly house hold net income per hectare	Annual house hold net income
1	2010/2011	1,250 birr/temporary compensation	15,000 birr
1	2011/2012	1,250 birr/temporary compensation	15,000 birr
2	2012/2013	$1,250 + (999 \text{ from wage}) * 1.67 =$	35,012
2	2013/2014	$1,250 + (999 \text{ from wage}) * 1.67$	35,012 birr

Source: Interviewed Households

Basically in research area, the interviewed households said that the annual income of farmers from sugar cane production were driven from three main sources, namely Temporary compensation, sales from sugarcane production and wages/salary by working in sugarcane production several activities which needs semi-skilled and skilled labor that can be gone well with for both literate or illiterate farmers. Furthermore, 1.67 represents the number of workers engaged in sugarcane production per household and 999 birr was average net wage/ salary per worker per Month.

Currently, this compensation has been given for households per hectare which was equivalent to birr 1,250 per month for each households land holding, depending on the average productivity of land which was equal per hectare for all farmers in the all Woreda. This benefits cover almost for four years. This can be seen in detail in two phases: phase1 and phase 2.

**Phase 1:** This period of Temporary Compensation covers the first two years since the land became newly under expansion and outsourcing of sugarcane production Program. This time, the land becomes idle or fallow so as to increase and upgrade its natural fertility of land in order to enhance sugarcane productivity and production per hectare. It is stayed under this condition at least for two years. Currently, during this period, the average annual household net income per hectare was birr 1,250 per month, annually birr 15,000 birr( $1,250 * 12$ ). It was fixed by

government depending on the average grain productivity of land per hectare. But the same in all woreda.

During this period, as the land is idle and fallow, it is difficult for farmers to get other work opportunities in the given time interval. Thus, the major source of average annual household income was mainly from Temporary Companions the amount mentioned above. Some times, as the reason of mismanagement the land can stay idle for more than two years, for instance, with the problem connected to the shortage of irrigation water availability.

**Phase 2:** This period covers from plantation of sugarcane production to harvesting sugarcane production. The information from interviewed households' shows that it covers from 18 months to 24 months, which means the production cycle of sugarcane production is approximately nearly two years. During this period, the farmers have the opportunities to work in sugarcane production several activities. That means, the average annual household income was the sum of temporary compensation birr 15,000 and the wage/ salary estimated annually birr 20,012 /Table4.7/per households, totally estimated to birr 35,012.

In research area, the farmers land has become under sugarcane production since 2010/2011.Hence, the households annual net income related to sugarcane expansion and outsourcing program on farmers land until the sugarcane production is harvested.

Average of phase 1 and phase 2 annual household net income per hectare related to Temporary Compensation for the first four years was estimated to birr 25,006.



**Table 4.7 Different Information Related to Sugarcane Production**

<b>S.n</b>	<b>Types of Information</b>	
1	Average income earned from sales of sugarcane production per hectare in 2 years in birr	25,334
2	Average income earned from sales of sugarcane production per hectare annually in birr	12,667
3	Average number of workers in family who were involved in sugarcane different activities	1.67
4	Average net Wage/ salary earned per person and Month due to engagement in sugarcane production in birr	998
5	Average annual net Wage/salary per household for 1.6 workers involved in sugarcane production in birr	20,012
6	The average sugarcane productivity per hectare in quintal	1,912

Source: Interviewed Households

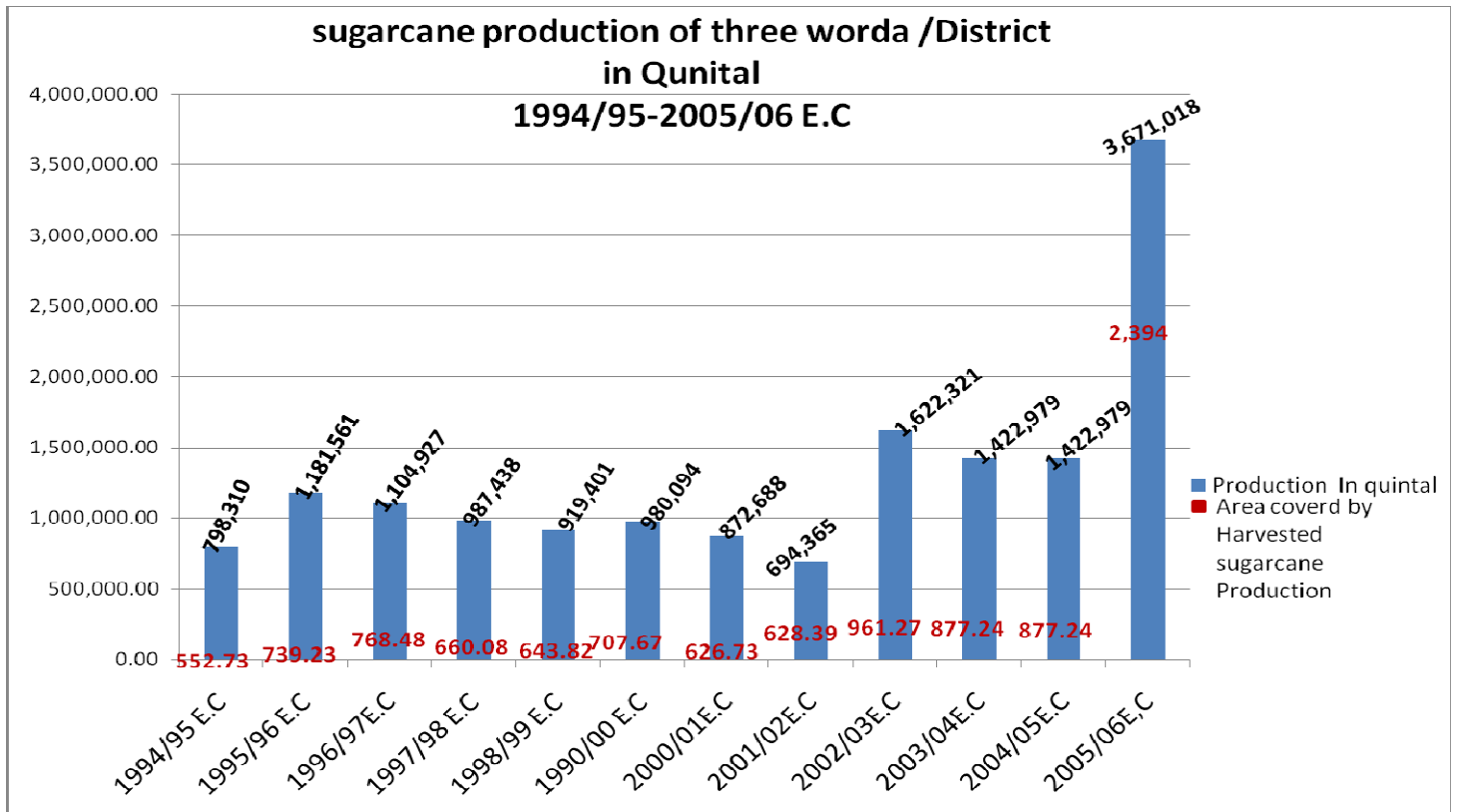
Table 4.8: Area Covered by Harvested Sugarcane, Production, Cost, Price of Sugarcane Production of Three Woredas

Budget year in E.C	Area covered by harvested sugarcane production in hectare	Sugarcane Production In quintal	Cost of Sugarcane production in quintal in birr	Farm gate sugarcane price fixed by government per quintal in birr	Productivity of sugarcane in quintal Per hectare	Farmers net income In birr from sales of sugar per quintal/ 2 years	Farmers net income in birr from sales of sugar per quintal/year	Average household income per 2 Years from sales of sugar per hectare in birr	Annual household average net income from sales of sugar per hectare in birr
A	B	C	D	E	F=C/B	G=E-D	H=G/2	I=H*C	J=I/2
2002/03	552.73	798,310.00	6.10	8.64	1444.30	2.53	1.27	3,660.38	1,830.19
2003/04	739.23	1,181,561.00	5.56	8.69	1598.37	3.14	1.57	5,011.59	2,505.80
2004/05	768.48	1,104,927.00	7.41	10.77	1437.81	3.36	1.68	4,832.46	2,416.23
2005/06	660.08	987,438.00	5.93	10.90	1495.94	4.97	2.48	7,434.13	3,717.06
2006/07	643.82	919,401.00	6.49	10.79	1428.04	4.30	2.15	6,144.26	3,072.13
2007/08	707.67	980,094.00	9.60	16.00	1384.96	6.40	3.20	8,868.60	4,434.30
2008/09	626.73	872,688.00	11.22	16.00	1392.45	4.78	2.39	6,652.85	3,326.43
2009/10	628.39	694,365.00	14.81	16.00	1104.99	1.19	0.60	1,314.98	657.49
2010/11	961.27	1,622,321.00	18.75	35.00	1687.69	16.25	8.12	27,422.75	13,711.38
2011/12	877.24	1,422,979.00	14.53	24.45	1622.11	9.91	4.96	16,081.85	8,040.92
2012/13	877.24	1,422,979.00	14.53	35.00	1622.11	20.47	10.23	33,197.91	16,598.95
2013/14	2,394.00	3,671,018.00	36.75	50.00	1533.42	13.25	6.63	20,317.88	10,158.94
<b>Total</b>	<b>10436.88</b>	<b>15678081</b>	<b>152</b>	<b>242</b>	<b>17752</b>	<b>91</b>	<b>45</b>	<b>140940</b>	<b>70470</b>
<b>Average</b>		<b>1306507</b>	<b>13</b>	<b>20</b>	<b>1479</b>	<b>8</b>	<b>4</b>	<b>11745</b>	<b>5872</b>

Source: Driven from Wonji Area Sugarcane Growers Cooperative Union/secondary data/

Fig 4.1: Graphic Representation of Area covered by Harvested Sugarcane Production in Hectare and Sugarcane Production of Three Woreda /Table 4.8/

From 2002/03—2013/14/



Source: Wonji Area Sugar Growers Cooperative Union/ 2002-2014/

The mentioned graph shows that the minimum area of three woreda covered by sugarcane production was 552 hectare in 2002/03 while the maximum was 877 hectare in 2013/14. On The other hand the minimum sugarcane production was 694,365 quintal in 2009/10 while the maximum was 3,671,018 quintal in 2013/14.

In the research area sugarcane production is harvested once in two years budget year (18-24 Months) .From this condition, it was divided for two to get annual household income from sales of sugar cane production.

From Table 4.7, the information gathered from farmers who sold their sugarcane production to Wonji Sugar Factory indicated the average two years income from sales of sugarcane production

per hectare was birr 25,334. When this was changed to annual household income it became  $(25,334/2)=12,667$  birr per hectare. As the area was newly become under the expansion of sugarcane production, its betterment in natural fertility contributes for better sugarcane productivity per hectare which was equivalent to 1912 quintal per hectare. The latest revised farm gate price fixed by government per quintal of sugar cane production was 50 birr, on the other hand the average sugarcane production cost per quintal was birr 36.75. When the cost of sugarcane production per quintal was deducted from farm gate price the net income of households per quintal became,  $(50-36.75) = 13.25$  birr per quintal.

The secondary data of three woreda including the selected research area which was collected from Wonji Area Sugar Growers Cooperative Union/ Table 4.8/ that can cover twelve years data related to sugarcane production, different farm gate price, different cost of sugarcane production, land covered by harvested sugarcane production in hectare shows the average productivity of sugarcane per hectare was 1,479 quintal, on the other hand, with current farm gate price and production cost the average household net income from sales of sugarcane production for two years  $= (1,479 * 13.25) = 19,597$  birr while the average annual household net income was  $(19,597/2) = 9,798$  birr per hectare.

The average annual household net income from primary data collected from interviewed household was greater than the average household net income driven from secondary data by 30%  $(12,667/9,798)$ . As the land in the research area was new for production of sugarcane, its natural fertility mainly contributes for better productivity per hectare. In addition, as the sugarcane production was immature during the research conducted, some of the farmers did not know the exact income from sales of sugarcane production, this incompleteness data may have contributed as the reasons for variation.

#### **4.4 Contribution of Wage on Average Annual Household Income from Sales of Sugarcane Production**

One of the advantages of expansion of sugarcane production is the opportunities of creating job for semi-skilled and skilled unemployment and underemployment who are the resident of both the rural and urban communities. From the response of interviewed households (Table 4.7), it was observed on average, 1.67 family members per household have been engaging in sugarcane

different production activities almost for the whole year. The Table 4.7 indicates that the average annual wage/salary net income per household was birr 20,012 after tax was deducted.

When the wage/salary was added to primary data the average annual household net income (12,667,sales from sugarcane) +(20,012, wage) becomes birr 32,679.The contribution of wage/salary for annual household income was 61% while sales of sugarcane was 39%.

When the wage/salary was added to the income from secondary data the average annual household net income becomes = 9,798 + 20,012 = 29,810 birr, the contribution of wage/salary was 67% while sales of sugarcane 33%.

In both case the contribution of wage/salary to average annual household income was greater than the average annual house hold income generated from sales of sugarcane production; which indicates that the farmers who do not have work opportunities in sugarcane farming are extremely disadvantageous in expansion of sugarcane production on their land. These underprivileged groups can be like: elders, disabilities, patient, young youth etc.

**Table 4.9: The 5 Years Average Annual Household net Income from Expansion of Sugarcane Production on Farmers Land**

S.n	Budget year	Source of income	Income per Month and hectare in birr	Annual net income in birr	Source of information
1	2010/2011	Temporary compensation	1,250	15,000	Interviewed farmers/household
2	2011/2012	>> >>	1.250	15,000	>>
3	2012/2013	Temporary compensation + wage/salary	1,250+(999*1.6)	35,012	>>
4	2013/2014	Temporary compensation + wage/salary	1,250+(998.65*1.67)=	35,012	>>
5	2014/2015	Sales from sugarcane production +wage/salary		29,810	Wonji area sugar growers union & interviewed households
Average				<b>25,967.00</b>	

Source: Survey Result

The five years average annual household net income in connecting to the expansion of sugarcane production per hectare was birr 25,967 in research selected area and can be also the same for other woreda/districts (Wonji area sugar grower's cooperative, 2015)

In different budget years, the farm gate price, the cost of production and the net income per quintal of sugarcane production is not the same as indicated below.

**Table 4.10 Farm Gate Price, Cost of Production and net Income per Quintal for Three Woreda/Boset, Adama and Dodota/ from 2002/03--2013/14 /**

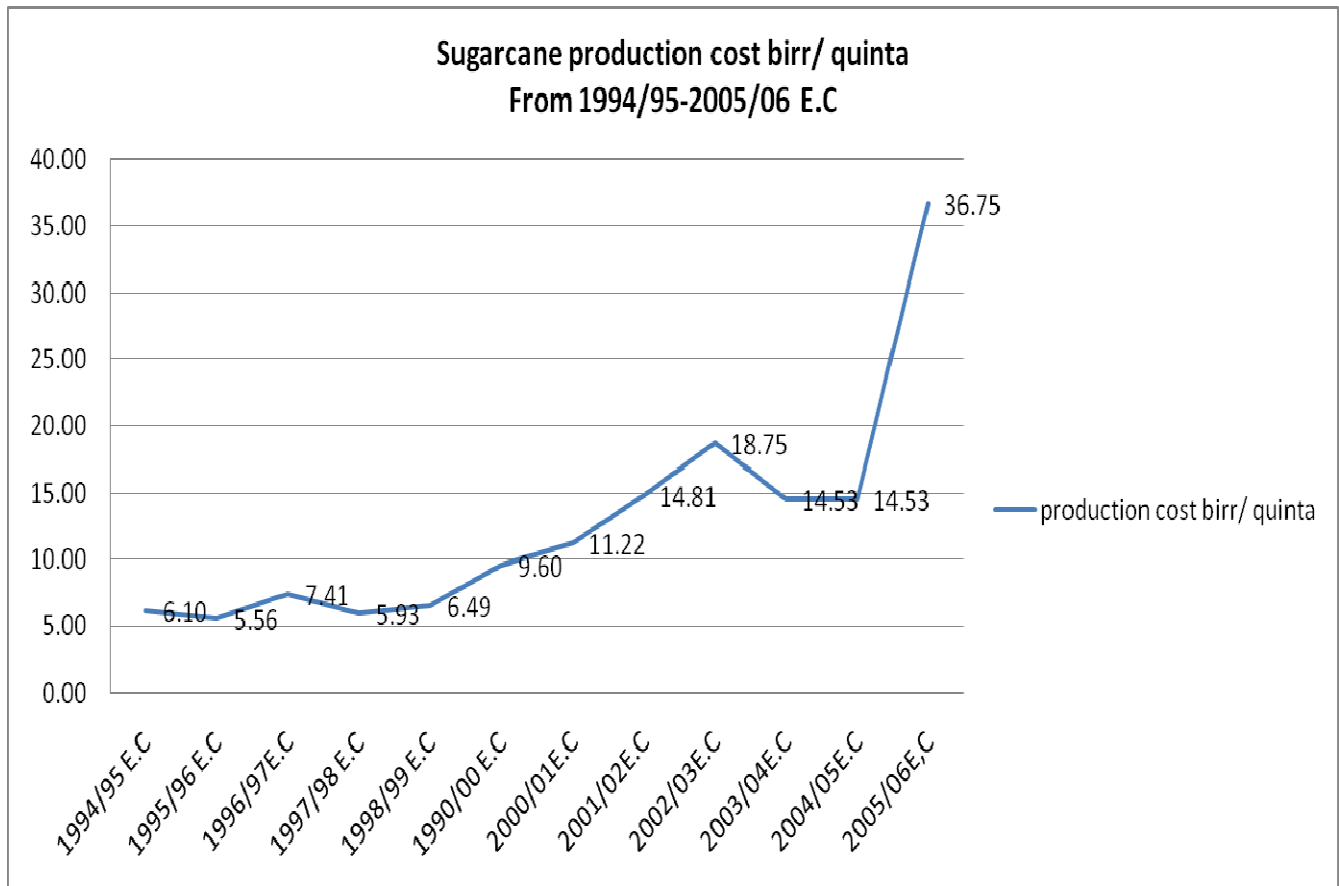
S.n	Budget year	Farm gate sugarcane price per quintal fixed by government in birr	Cost of production per quintal in birr	Net income per quintal
		A	B	C=A-B
1	2002/03	8.64	6.10	2.54
2	2003/04	8.69	5.56	3.13
3	2004/05	10.77	7.41	3.36
4	2005/06	10.90	5.93	4.97
5	2006/07	10.79	6.49	4.30
6	2007/08	16.00	9.60	6.40
7	2008/09	16.00	11.22	4.78
8	2009/10	16	14.81	1.19
9	2010/11	35	18.75	16.25
10	2011/12	24.45	14.53	9.91
11	2012/13	35	14.53	20.47
12	2013/14	50	36.75	13.25

Source: Wonji Area Sugar Growers Cooperative Union/ 2002-2014(Secondary data)

From the Table 4.10 mentioned above the farm gate price, cost of production and net income per quintal from sales of sugarcane production varies from year to year. Thus, it is difficult for each budget year, to compare the annual household net income generated from sugarcane production to annual household income from grains. Therefore, in this research report, the comparison was

done for Current and recent year farm gate price cost of production and net income which was birr 50, 36.75 and 13.25 respectively.

Fig4.2: Graph of Cost of Sugarcane Production per Quintal for Three Woreda /2002/03-2013/14/ (Table 4.10)

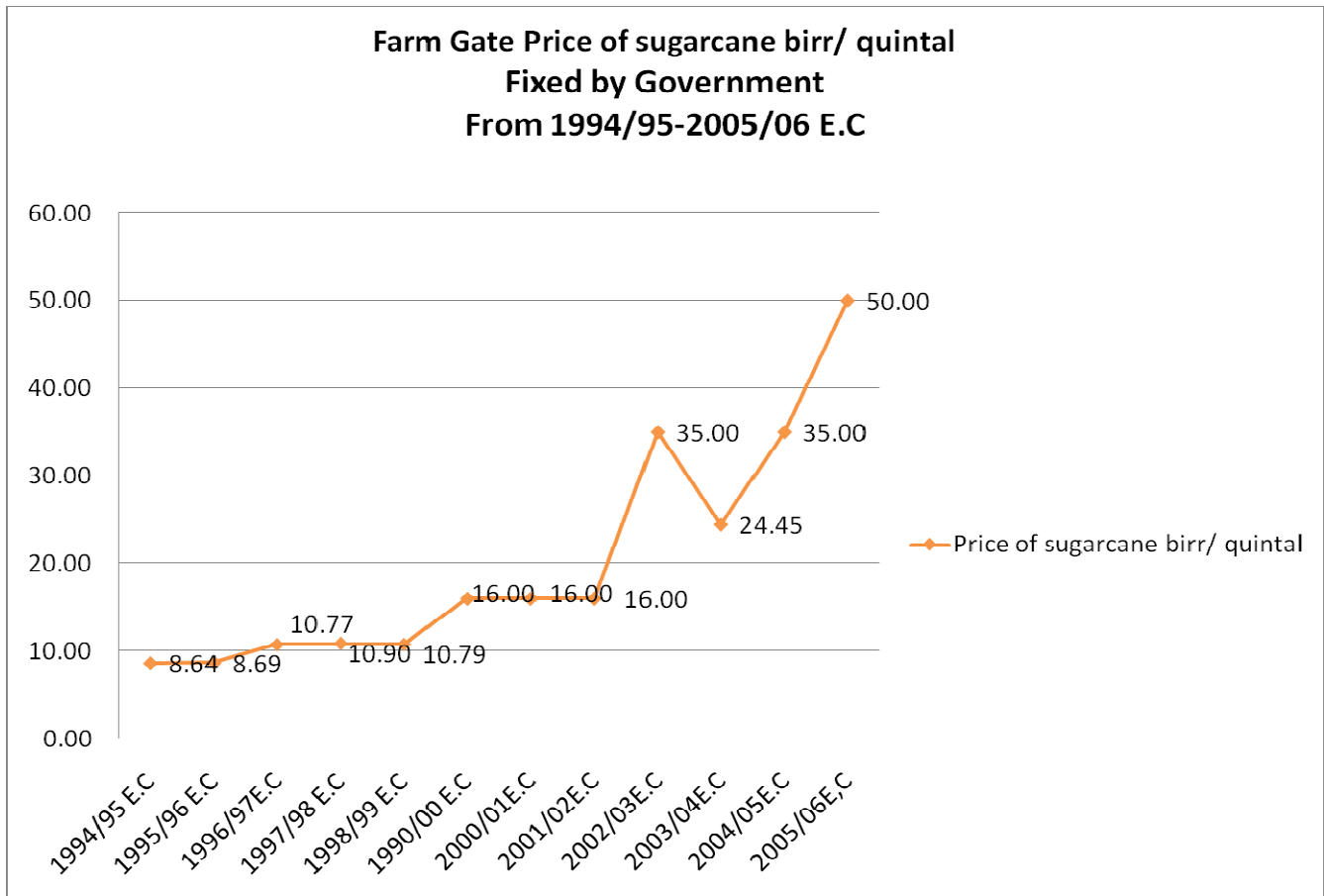


Source: Wonji Area Sugar Growers Cooperative Union/ 2002-2014/

The graph indicates that the minimum sugarcane production cost per quintal was birr 5.56 in 2003/04 while the maximum was birr 36.75 in 2013/14. The trend showed that the cost of sugarcane production had been increasing.

Fig 4.3 Graph of Farm Gate Sugarcane Price per Quintal fixed by Government

From /2002/03—2013/14/(Table 4.10) for three Woreda



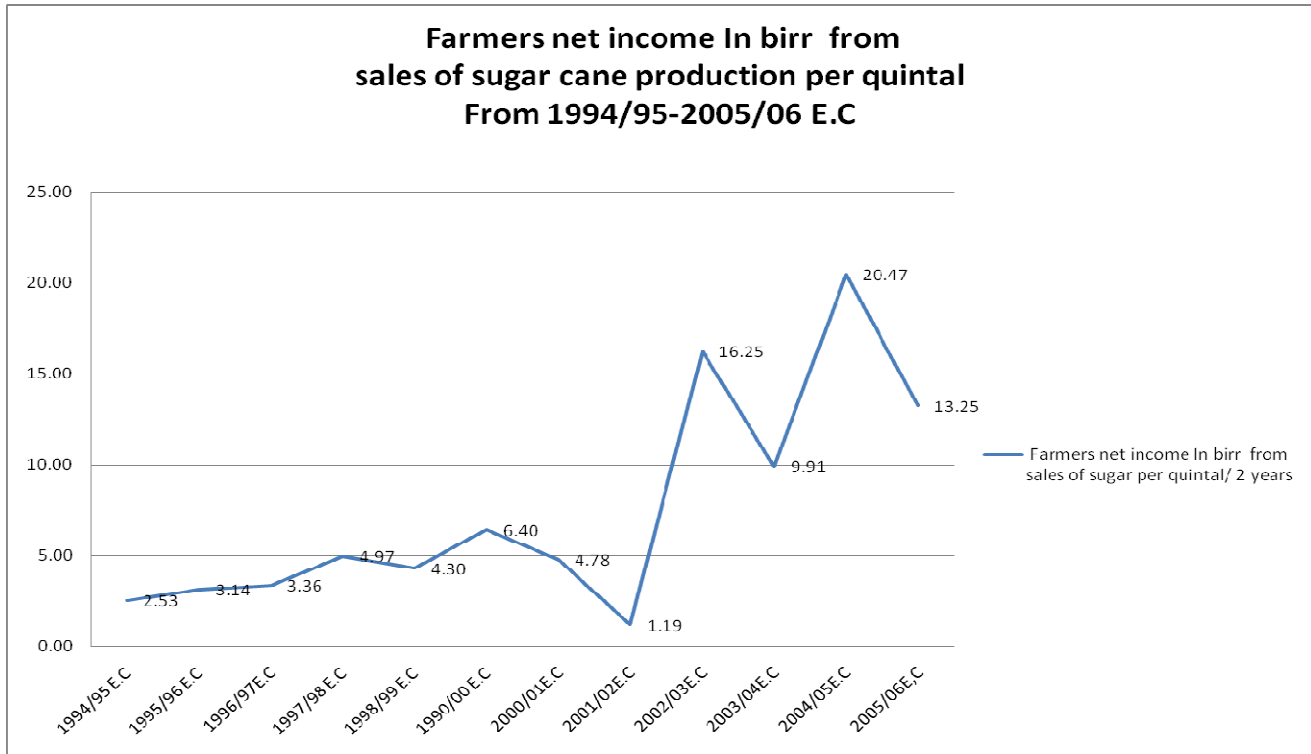
Source: Wonji Area Sugar Growers Cooperative Union/ 2002-2014

The graph shows that the minimum sugarcane farm gate price fixed by Ethiopian government per quintal was birr 8.64 in 2002/03 while the maximum was birr 50 in 2013/14 .

:



Fig 4. 4 Net Annual Household Income per Quintal from Sales of Sugarcane/ Table4.10/



Source :Wonji Area Sugar Growers Cooperative /2002/03—2013/14/

From the above mentioned graph it is understood that the minimum annual household net income from sales of sugarcane per quintal was birr 1.19 in 2009/10 while the maximum was birr 13.25 in 2013/14.

**Table 4.11 The Average Annual Household Net Income per Hectare by Sources of Income**

S.n	Source of annual household income	Annual household net income in birr	Remark
1	White teff producer	28,744	18 quintal productivity per hectare with average producer price birr 1762 per quintal, average cost of production birr 2,972 is assumed
2	Maize and Chickpeas producer	70,060	
3	Sugarcane production producer	25,967	Average of temporary compensation, sales of sugarcane production and wage/salary of 5 years data

Source: Own Data Collection

#### **4.5 The Comparison of Annual Net Income from Expansion of Sugarcane Production vs. Annual Net Income from White Teff**

From the Table 4.11, when the average annual household net income from White Teff birr 28,744 per hectare was compared to the annual average household net income from sugarcane production birr 25,967, it becomes greater by 11% than the average annual household net income from sugarcane production. Currently, any producer price of white Teff per quintal greater than birr 1,607 makes the farmers more advantageous in cultivating white teff rather than cultivating sugarcane production on their land.

#### **4.6 The Comparison of Average Annual Household Net Income from Expansion of Sugarcane Production vs. Annual Net Income from Maize and Chickpeas**

As frequently explained in this research paper, it is common in some part of Ethiopia to cultivate and harvest chickpeas after Maize production is harvested in one year production cycle on the same land. From Table 4.11, the average Maize and Chickpeas produced by interviewed household in one year have value estimated to birr 70,060 per hectare. When we compare the

average annual household net income generated from Maize and Chickpeas grains against to income generated from sugarcane production which was on average birr 25,967 , it was grater by 270 % than the income generated from sugarcane production. Maize and chickpeas producers had advantage more than double. In the research selected area, 62 % interviewed farmers were engaged in harvesting both Maize and Chickpeas in the same year on the same land. Besides, the benefits from crop residues, farm land forestry makes the farmer households more gainful in cultivating grains rather than sugarcane production on their land.

This implies that in existing compensation packages system for farmers engaged in expansion of sugarcane production on their land, the average household income generated from expansion of sugar cane production such as: temporary compensation, sales from sugarcane production and wage/salary was smaller than the annual income generated from cultivating grains per hectare. Thus, facts should force the concerned bodies again to revise the compensation packages for farmers related to the expansion of sugarcane production on their lands so as to continuously improve the income of farmers, enhance the communities' owner ship ness, sustainability and encourage the development by solving bottleneck on time in transparent way.

#### **4.7 Comparison of Annual Household Income from Temporary Compensation vs. from Sales of Sugarcane Production**

As mentioned above the monthly income the household earns per hectare from Temporary compensation was birr 1,250, and annually birr 15,000, on the other hand from interviewed households, the average annual income earned by household from sales of sugar per hectare was birr 12,667, also the brochures of Wonji Area Sugar cane Growing Cooperatives Union of twelve years data indicates the annual net income from sales of sugarcane production per hectare in 2013/2014 was birr 10,158. With the latest net income birr 13.25 per quintal, by assuming that the wage/salary was constant, the comparison of average annual household net income from sales of sugar cane production which was 12,667 birr from interviewed households and 10,158 birr from secondary data collected from cooperative Union to temporary compensation annually birr 15,000, in both condition, relatively, the average annual household income from sales of sugarcane was even less than the income from Temporary Compensation by 32%. (10,158 /15,000).

In existing productivity, cost of production, above all farm gate price fixed by government the expansion of sugarcane production does not have major advantageous for farmers. There fore, the farm gate price should be revised, depending on free market and consumption goods.

#### **4.8 Correlation between Annual Average Household Net Income and Productivity, Farm Gate Sugarcane Price fixed by Government, Cost of Production and Net Income per Quintal per Hectare**

Correlation measures the degree of either positive or negative relation ship or no relation ship between two variables, dependent and independent; it ranges from -1 to +1. if it is equal to 1 the two variables have strong positive relation which , the changes in independent variable automatically changes the dependent variable in the same direction while the -1 , indicates the changes in opposite direction, the increase in independent variable decrease the dependent variable. Correlation equal to zero means no relation ship between the two variables

from the Table 4.8 the correlation between productivity of sugarcane production per hectare and annual household net income from sales of sugarcane production was 0.69, the correlation between farm gate price per quintal and annual household net income from sales of sugarcane production was 0.83, also the correlation between cost of production and annual household net income from sales of sugarcane production was -0.55 and the correlation between net income per quintal and annual household net income from sales of sugarcane production was 0.99.

The correlation between productivity, farm gate, price and net income per quintal with annual average household income is positive while the correlation between cost of production and annual household income is negative.,

The positive correlation shows the increase in productivity, farm gate price and net income per quintal increase the average annual household income from sales of sugarcane production. But, 0.99 correlations indicate that the correlation between net income per quintal and annual household net income is very positive and strong. This means the increase in farm gate price and decrease the cost of production radically increase the average annual household net income.

The negative correlation between annual household net income and cost of production means the increase in cost of production decrease the annual household net income; the more the cost the less the annual net income by assuming the others factors constant.

#### **4.9 Analysis of the Major Factors affecting the Annual Income of Households from Sales of Sugarcane Production**

The annual income of house holds from sales of sugarcane production is mainly affected by four factors such as productivity of sugar cane per hectare, area covered by sugar cane production, cost of sugarcane production and farm gate price of sugar cane fixed by government

##### **4.9.1 Productivity of Sugarcane Production per Hectare**

The productivity of sugarcane production per hectare mainly depends on its natural fertility, proper application of fertilizer, improved seed, pesticide, watering using irrigation system and good treatment from plantation to harvesting the sugar production. Efficient management system and commitment, community ownership ness and active participation, attractive market prices have paramount importance in increasing its productivity per hectare. If the contribution of the other three variables like Farm gate price, land covered by sugar cane production and cost of sugar cane production is assumed constant, the effect of either increasing or decreasing the productivity per hectare can be seen easily.

To see the effect of average annual household net income by increasing the productivity by 10 %, seeing the following simple calculation is important.

- A. Let the old average annual household net income is  $Y_1$  /before productivity increase/
- B. Let the new average annual household income is  $Y_2$ / after productivity increase by 10%
- C. Assume  $Q_1$  is the productivity of sugarcane per hectare which is for the last twelve years on average 1,479 quintal as the sugarcane production is harvested per two years it represents two years
- D. Let P the farm gate price of sugarcane, currently birr 50.00 per quintal
- E. Let C the cost of sugarcane production, currently birr 36.75 per quintal
- F. The net income per quintal is  $D-E=13.25$  birr

$$Y_1 = Q(P-C)/2 + \text{Wage/salary}$$

$$Y_2 = (Q+10\%Q)(P-C)/2 + \text{wage/salary}$$

Substituting Q for 1,479, P for 50 and C for 36.75

$$Y_1 = (1479(50-36.75)/2) + \text{Wage/salary}$$

By assumption wage/salary is constant

$$Y_1 = 9,798 \text{ birr}$$

$$Y_2 = (1479+1479*10\%)(50-36.75)/2$$

$$Y_2 = 10,778$$

$Y_2/Y_1 = (10,778/9,798) = 1.10$  which implies that the 10% increase in productivity of sugarcane production can increase the average annual household net income by similar 10 percent and vice versa.

Here, the question is: really is it possible to increase the productivity of sugarcane production per hectare rather than average productivity of twelve years which was 1,479 per hectare. From Table 4.8 it is observed that the minimum productivity per hectare was 1,104 quintal and maximum was 1687 quintal. In the research area the average productivity of sugar cane per hectare of interviewed households was 1,912 quintal this mainly due to the land was new and fertile for sugar cane production. Information from the majority of interviewed households, after the second round production cycle, the trend of sugar productivity per hectare was decreased.

It is not deniable the increase in productivity increase the income of households, but as the proper application of fertilizer, pesticide, improved seed and good treatments etc on sugar cane production is practiced and the sugar cane production trend after the second round was practically decreasing (interviewed households), thus, it is very difficult and hopeless to improve significantly the annual income of farmers from sales of sugar cane production by increasing the productivity and production per hectare more than 1479 quintal per hectare which was the average of twelve years of three Woreda including research area. Therefore the other alternatives factors affecting the annual income of farmer from sales of sugar production should be assessed.

## **4.9.2 The Effect of increasing Area covered by Sugarcane Production on Annual**

### **Household Net Income**

It is clear that the annual household's income from two hectares under sugar production is higher than the income from a hectare. But the question is really the increase the area coverage by sugar cane production increase the income of farmers when compared to the income of grains. To answer this question, the following information should be analyzed.

The twelve years average sugarcane productivity per hectare was 1,479 quintal, the current farm gate price was birr 50.00, cost of production 36.75 birr, net income per quintal birr 13.25 per quintal. As the sugarcane production is harvested per two years, the mention productivity was divided for two to get annual productivity per hectare. For white Teff producer, the annual household net income per hectare was estimated to birr 28,744. To see the effect of expansion and outsourcing of sugarcane production on the farmers land, suppose a farmer has two hectares of land and cultivate it, one hectare for white teff and the second for sugarcane production. From this assumption the average annual income of this farmer was the sum of income generated from two sources that was the income from expansion of sugarcane production and cultivation of white Teff. The 20% increased in the expansion and outsourcing of sugarcane production on farmers land means automatically, decreasing of the cultivation of white Teff land by 20% which means the 20% increased in expansion of sugar cane production changes the previous hectare covered by sugarcane to 1.2 hectare. The average sugarcane productivity of twelve years per hectare was 1,479 for two years while the current farm gate sugarcane price per quintal was birr 50.00, cost of production birr 36.75, the net income per quintal was 13.25 birr.

As the average sugarcane productivity of twelve year was 1,479 per hectare, the average productivity of 1.2 hectare becomes  $(1479 \times 1.2) = 1,775$  for two years, with current farm gate price, the annual farmer net income from sales of sugarcane production before 20% increased in expansion of sugarcane production was  $(1,479 \times 13.25 / 2) = 9,798$  birr per hectare and the average annual farmer net income from sales of sugar and wage/salary was  $(9,798 + 20,012) = 29,810$  birr. For this farmer the annual net income from hectare of sugarcane production and hectare of white Teff production was  $(29,810 + 28,744) = 58,554$  birr. After 20% increased in expansion of sugar cane production, for this farmer also the annual net income from a 1.2 hectare of sugar cane production, was equal to  $(1775 \times 13.25 / 2) = 11,759$  birr.

The farmer earned new annual net income from sales of sugarcane and wage/salary equal to  $(11,759+20,012)=31,771$  birr. Which means the 20 % increased in expansion and outsourcing of sugarcane production on his land decreased the white Teff cultivation land by 20% which changed the white Teff coverage to 0.8 hectare. From one hectare cultivated white teff the farmer earned annually average net income birr 28,744 which can be for 0.8 hectare birr  $(28,744*.80)=22,995$  birr as the reason of the 20% increased on the expansion of sugarcane production on farmers land the average annual new income of this farmer from a hectare of sugarcane and a hectare of white Teff became  $(31,771+22,995)=54,766$  birr. When the new average annual net income of this farmer was compared to previous income it becomes  $(54,766/58,554)=0.94$ . Which implies that the 20% increased in the expansion and outsourcing of sugarcane production on farmers land decreased the average annual net income of farmer by about 6 %. If the farmers were maize and chickpeas producers in the same year this gap was very wide. Hence, in this direction also, the expansion and outsourcing of sugar cane production on farmers land can not improve the income of farmers in current existing productivity, farm gate price and cost of production of sugarcane. In addition, here also the contribution of crop residues and farm land forestry should be reconsider.

#### **4.9.3 The Effect of Cost of Sugarcane Production on Annual Household's Income by Assuming the other Factors Constant**

Preparation of land plantation to harvesting sugarcane production has various types of costs incurred. Cost of fertilizer, pesticide, improved seed, plough, construction of irrigation system, watering, harvesting, labor cost etc are majors cost activities among the others. The price rise of materials, the foreign currency, and poor management are also common challenges in increasing cost of production of sugarcane production. From table 4.10 the twelve year data shows the minimum sugarcane production cost was birr 5.56 birr while the maximum was birr 36.75 per quintal.

The 10% decreased on production cost  $(36.75-3.68)$  per quintal changes the previous production cost to 33.08 birr per quintal. Depending on this data we can calculated the old income before the reduction of production cost and the new average annual household income from sales of sugar cane production became that old average two years household income before reduction of 10 %



production cost was  $1,479 \times (50 - 36.75) = 19,598$  birr per hectare while new average two years household income after the reduction of 10% production cost was  $1,479 \times (50 - 33.08) = 25,024$  birr.

This implies that the 10 % reduction in sugarcane production cost can increase the average annual household's income ( $25,024/19,598$ ) by 28 % if only if the other factors like productivity per hectare, farm gate price and area covered by sugarcane production were constant.

Table 4.10 shows that the trend indicates, the cost of production are increasing. If the cost decreased, the household's income increased and vice versa. As the trend shows the increasing of production cost per quintal, it is not expected to minimize the cost of sugarcane production that enables to improve the annual income of households. However, the effort of minimizing the cost of production is not deniable that it contributes in improving the income of farmers. Therefore the cost of sugar production should be assessed in detail and depth by concerned stake holders so as to increase the annual household income from expansion of sugar production. But, from the analysis of the past data, the possibility of radically decreasing the cost of production which enables to improve the income of household was not hopeful.

#### **4.9.4 The Effect of Farm Gate Price of Sugarcane Production on the Annual Income of Households**

Before seeing the effect of the price on the average annual household income some assumption were made: The average productivity of sugarcane production per hectare was constant /1,479 quintal//Table4.8/, the current production cost per quintals was the same 36.75 birr per quintal, the area covered by sugar cane production was constant and also assume the wage/salary was constant.

The average annual households income from sales of sugarcane production excluding wage/salary from interviewed households/primary data/ was 12,667 birr while the average of twelve years was 10,158 birr per hectare/secondary data/. The income in research area was better than average might be due to the fact that the area was an newly covered by sugarcane production.

Currently, the farm gate price of sugarcane production fixed by government per quintal was birr 50.00 and the production cost was 36.75 birr per quintal. The net income per quintal was  $50.00 - 36.75 = 13.25$  birr per quintal/Table 4.10/. Besides 12.25 kilo of sugar is produced from one

quintal of sugar cane production by sugar factories (Interviewed wonji factory planning staff), the production cost of producing one quintal of sugar in 2014/2015 was 745.00 birr per quintal . (Interviewed Wonji Sugar Factory Planning staff) a quintal of sugarcane production can produce 3.6 kilo of molasses ,28 kilos of baggas the production of ethanol was not practiced in Wonji Sugar Factory. During research period, the whole selling price of sugar factories for a quintal of sugar was birr 1.130.00 before VAT ( Interviewed wonji factory planning staff),the whole selling price of 100 kilo molasses was birr 70 birr before vat and the whole selling price of a quintal of sugar was revised by government, after the research information had been collected, so its implication was not reconsidered in this research. The farm gate price of sugarcane production is not determined by demand and supply in free market, instead it is determined and fixed by the Ethiopian government. It may revise, but not significantly. In twelve years, the minimum of farm gate price per quintal was birr 8.64 and maximum was birr 50.00/Table 4.10/.

The farm gate price fixed by Ethiopian government without the principle of free market is one of the factors affect the annual household income from sugarcane production. To show its effect clearly the others important factors like, productivity per hectare, cost of production, and area covered by sugarcane production and wage/salary were assumed constant.

The increase in 10% the farm gate price changed the current farm gate price birr 50 per quintal to  $50 \times 1.10 = 55$  birr per quintal. As mentioned above the average 12 Years productivity of sugarcane production per hectare was 1,479 quintal and the net income per quintal was  $50 - 36.75 = 13.25$  birr per quintal. When the farm gate price is increased by 10% the net income changed to  $55 - 36.75 = 18.25$  birr per quintal.

For comparison purpose, from this information, it can be calculated the new income and old income before price change which was at farm gate price birr 50  $(1,479 \text{ Quintal} \times 13.25) = 19,597$  birr for two years while new income after farm gate price was increased by 10% was  $(1,479 \text{ quintal} \times 18.25) = 26,991$  birr for two years.

This implies that the 10% increase in farm gate price per quintal can increase the average two years household income by 38%,  $(26,991/19597)$  per hectare. Here the question was, what was the effect of increasing the farm gate price by 10% on the production cost of producing one quintal of sugar in sugar factories. To answer this ,to produce 12.5 kilo of sugar in Wonji Sugar Factor needs a quintal of sugarcane as input. From this fact , one quintal of sugar needs as input

8 quintal of sugarcane production  $(8 \times 12.5) = 100$  kilo of sugar. The 10% increase in farm gate price changes the current farm gate price which was 50 birr to 55 birr per quintal which means the extra expense of 5 birr per quintal for sugar factory as 8 quintal of sugarcane production is needed to produce one quintal of sugar, the 10% increase in farm gate price creates  $(8 \times 5 = 40)$  birr 40 extra cost per quintal on producing sugar in factory. The extra cost 40 birr per quintal to produce sugar can also raise the previous production cost which was 745 birr per quintal raised to  $(745 + 40) 785$  birr per quintal. During the research time, the sugar factory whole selling price before VAT was birr 1,130 per quintal (interviewed Wonji sugar factory planning staff) while its production cost was 745 birr per quintal. From this data the difference between the selling price and cost of production  $(1,130 - 745)$  per quintal gives birr 385 birr. The amount of getting 385.00 birr per quintal after production cost was very wide and indicates high profit for factory. The extra Factory cost 40 birr per quintal due to 10% increase in farm gate price changes this condition to  $(1,130 - 785)$  to 345 birr per quintal which was still huge indication of profit per quintal.

On the other hand, Sugarcane production is very important to increase GDP, create job opportunities for thousand of unemployment and underemployment for both rural and urban communities, it is the means of the source of currency, it the source of energy, it is used as input for soft drink factors, it brings modernization by facilitating the development infrastructure, it is one of the means of technology transformation etc.

As the country has huge potential for sugarcane production, the sector should be encouraged by solving closely bottle neck problems in sustainable way. For every development sustainability, the community ownership ness and active participation of community in planning, implementing, benefiting, evaluating the project/program has paramount importance. The development at the cost of the others can not be sustainable it can be the cause from minor administration grievance to area instability, movement and can become big political issue and agenda unless it is not solved on time.

The interest and the benefits of all key stakeholders in sugarcane cane expansion and outsourcing should be kept healthy and smoothly. For distributing fair benefits and income among key stakeholders mainly for farmers, the price of farm gate should be revised without increasing the

sugar factory whole selling price which indicates very huge profit per quintal. As mentioned above the average annual households income related to the expansion and outsourcing of sugar production was less than the average annual household income generated from grains particularly for farmers producing maize and chickpeas on the same hectare of land in one year production cycle. When interviewed farmers in selected research area, some of them cried, and became nervous as one of their reasons was that the farm gate price was small. Therefore it should be revised in line to improve the annual household income from the sugar development by concerned government body.

The 10% increased in farm gate price increased the average annual household income by 38% by assuming the other factors constant. Hence, the minor percent increase in farm gate price can radically improve the annual household income from expansion of sugarcane production.

#### **4.10 The Effect of Sugarcane Production on the Household**

##### **4.10.1: The Encouraging of sugarcane production**

The expansion of sugarcane production increase the GDP of the country, create job opportunities for thousands skilled and unskilled unemployment and underemployment for both rural and urban communities,

It generates currency from export, gives the extra source of energy for human beings, used as input for soft drinks, used to produce ethanol for mixing to petroleum so as to decrease the price of fuel. Facilitate the modernization and technology transformation, expand infrastructural development etc. Particularly in Kebele of Boset Woreda where this research was conducted, the expansion and outsourcing of sugarcane production on farmers land gave advantageous for farmers like : continuous means of income, create job opportunities, availability of water for human being and animals, and facilitate the development of infrastructure like: road. Water, electrification, communication, education health and modernizations etc( interviewed households)

As Ethiopia has huge potential land for expansion of this sector, agro-based industry to fulfill the high demand in the country, it should be encouraged by closely and by seriously solving the

problems identified by the research paper directly associated to the expansion of sugarcane production particularly on the farmers land.

#### 4.10.2 Effect on Livestock Holding and Displacement

Table 4.12 The Average Distribution of Livestock Production Responded by Households

S.N	Average livestock production per interviewed households	quantity	Percent
1	Cattle	4	44
2	Sheep	2	22
3	Goat	1	11
4	Camel	0	0
5	Horse	0	0
6	Donkey	2	22
	<b>Total</b>	<b>9</b>	<b>98</b>

Source: interviewed households

##### 4.10.2.1 The Effect of Expansion of Sugarcane Production on Farmers Land vs. Livestock Production & Farm Land Forestry

Land grazing, animal fodder and marketing etc are the necessary and sufficient condition for livestock production in rural area. Live stock production is not only used for increasing income generating but also they give high nutrition value like meat and milk product. The production of livestock is also used for different agricultural activities, and the means for generating currency for national economy. This sector has high contribution in increasing the GDP and creates job opportunities for thousands of rural unemployment .its used as input for industries.

The interviewed households had on average/ Table 4.12/ 4cattle, 2 sheep, 1 goat and 2donkeys per households. As mentioned above the availability of land grazing and animals fodder are very important to increase the livestock production.

The interviewed households responded that the expansion and outsourcing of sugar cane production on farmers land can demolish the existence of crop residues and farm land forests as the result created the shortage of animal fodder, land grazing, and firewood and construction materials. This condition may discourage the livestock production where the expansion and outsourcing of sugarcane production was implemented in. Of course, the Molasses which is the by product of sugar uses for animal fodder, but it was not easily available and accessible for the rural farmers in sufficient amount. Therefore the expansion of sugarcane production on farmers land has negative effect on livestock production.

If the livestock production decreases, in particular the milk availability for children becomes in shortage as the result the children would be exposed for calcium deficiency and low life expectance at birth.

Thus, the expansion and outsourcing of sugar cane production program on farmers land should reconsider these conditions and arrange the solutions in sustainable way. Like developing market networking to others area, increase purchasing power of farmers, develop and prepare community land for grazing, and facilitate highbred system etc.

#### **4.10.2.2 The Effect of Sugarcane Production vs. Displacement**

One of the negatives effects of expansion and outsourcing of sugar cane production on farmers land is its displacement. Fortunately, the interviewed house holds who are the inhabitant of the research selected area living on average for more than 44 years were not displaced. But they were told to prepare them selves for displacement .Displacement is common practice in other neighboring area where there is the expansion of sugar cane production on farmers land.

In sugar cane production program for displaced farmers, there was other benefits like the construction of houses and other infrastructures such as : development of road, water, electrification, telecommunication, education, health centre on the other places. But the communities had complaints on its implementation quality relative to its cost. Some farmers were unsatisfied .Therefore the problems should be solved with active participation of concerned local communities transparently with government body.

Table 4.13: Community Participation Level in Expansion of Sugarcane Production responded by IH

<b>S.n</b>	<b>Level of participation</b>	<b>Frequency</b>	<b>Percent</b>
1	Excellent	1	5
2	Very good	1	5
3	Good	2	10
4	Weak	17	80
<b>5</b>	<b>Total</b>	<b>21</b>	<b>100</b>

Source: interviewed households

#### **4.11 Analysis of Participation Level of Local Communities in the Program**

For every development, the active participation of communities in planning, implementing benefiting and evaluating the project/program is paramount important for ownership ness and sustainability of the development .The communities Know its need, problems and its solution .if we mobilize communities properly, they have knowledge, skill, money, materials used for continuous development. However/table 4.13/, 80% the interviewed households gave witness that they did not actively participate in expansion and outsourcing of sugar cane production on their land. Insufficient temporary compensation, less income from sales of sugarcane production, delay of benefits, lack of irrigation facilities for other crops rater than sugar cane production as previously committed by government body were the major reasons for their complaints and weak participation. Some interviewed households became nervous and cried when interviewed about the program.

As the majority of farmers depend on the income generated from land, the delay of benefits and insufficient income from the sector might expos some farmers for credit, hunger, migration, different socio- economic crisis.

Unless the problems are given attention and solved step by step on time, through time, the conditions and complaints can grow and can be the major causes for instability, movement and big political issues which can under questions the sustainability of this huge development program.

## **4.12 The Findings of the Study**

### **4.12.1 The Strength of the Expansion and Outsourcing of Sugarcane Production on Farmers Land**

- The expansion of sugarcane production has high contribution in increasing the GDP of the country
- It creates job opportunities for thousands skilled and unskilled households.
- It can be one of the sources to generate foreign currency when exported
- It is the sources to in rich the food basket of communities
- It is the input for the majority of soft drink factories in the country
- It facilitates the other infrastructural development like: rural road. Water, electrification, telecommunication, education , health etc
- It facilitates the irrigation system for farmers outside of the research area who can be engaged in other alternative agricultural activities like crop production and fodder for animals.
- It increase the availability and accessibility of water both for human consumption and livestock production
- The ethanol produced from sugar cane production can also contribute to decrease the price of petroleum
- The molasses as the byproduct of sugarcane used for animals fodder and
- It is used for technology transformation and modernization

### **4.12.2 The Weakness of Expansion and Outsourcing of Sugarcane Production on Farmers land**

- ❖ Insufficient temporary compensation compared to previous income from grain production, currently birr 1,250 per month and per hectare paid for households
- ❖ 15-45 days delay of payment of temporary compensation for farmers was a demotivating factor



- ❖ High sugar cane production cost currently 36.75 birr per quintal
- ❖ Low farm gate price being fixed by government not on market principles, currently birr 50 per quintal
- ❖ Low household annual net income from sales of sugar cane production, currently  $(50 - 36.75) = 13.25$  birr per quintal which makes the household not to earn more than average annual net income from sales grains. When wage/salary assumed constant, average annual household net income from sales sugarcane production birr  $(1,479 * 13.25) = 9,798$  birr that was less than even the white teff producers that can earn from white teff on average annual income birr  $(18 * 1726 - 2,972) = 28,744$  birr. The maize and chickpeas producer on the same hectare of land within the same production cycle can earn annually from both grains about birr 76,004 which was very higher than annual household income from sales of sugarcane production
- ❖ From 6-8 Months, Extreme delay of payment of sales of sugar cane production for households which exposed some farmers for hunger and different socio-economic problems and discouragement.
- ❖ No compensation for farm land forestry, trees growing on the farmers land, and benefits from crop residues
- ❖ Decrease the availability of crop residues particularly teff, maize, sorghum and chickpeas which is commonly used for animal fodder and fire wood in rural area
- ❖ Destruction of farm land forestry used for firewood and construction
- ❖ Undermines the availability of land grazing for livestock production as result discourages the livestock production
- ❖ Hinders other income generation means and limits the opportunities of the availability of high value nutrition foods like meat and milk product.
- ❖ It dimensions the right of farmers on their land such as: to rent ,sell, .change, mortgage etc when compared to the previous farmers' right on land
- ❖ Unfair distribution of income among key stakeholders particularly farmers on expansion of sugar cane production and government sugar factories. A quintal of sugarcane

production produce 12.25 kilo of sugar, the farmers earn net income after cost of production per quintal or for 12.25 kilo of sugar was birr 13.25 while the factory net income after cost of production per quintal was 385 birr which can be for 12.25 kilo of sugar or birr 47.

This implies that currently, the farmers earned net income from a quintal of sugarcane production was birr 13.25 or for 12.25 kilo of sugar birr 13.25 while the sugar factory , after cost of production earned birr 47 from 12.25 kilo of sugar or birr 385 from a quintal of sugarcane production. The net income of sugar factory was  $(47/13.25) = 3.5$  times as large as the net income of the farmers. This clearly showed the distribution of benefits from expansion and outsourcing of sugarcane production on farmers land was not fairly distributed among key stakeholders.

- ❖ Low awareness and low level of active participation of communities in planning, implementation, benefits and in review and solution of the problems related to the expansion of sugarcane production dis -empower farmers to negotiate for the better.
- ❖ Poor progress on infrastructure development did not much the needs of local communities
- ❖ There was no enough exercise to review and to reconsider the inflation rate of consumer goods during farm gate price was decided.

## **CHAPTER FIVE: CONCLUSION AND RECOMMENDATION**

### **5.1 Conclusion**

In this research report, the average annual household net income from white Teff production was birr 28,744 per hectare while the average household income from expansion and outsourcing of sugar production including wage/salary was birr 25,967. When the annual income per hectare from White Teff birr 28,744 was compared to the annual income from expansion of sugarcane production per hectare which was birr 25,967, the annual net income from white Teff production was superior to income from sugar cane production by 11%. On the other hand, in similar way, the average annual household net income from maize and chickpeas production was estimated to be 70,060 birr while the average annual net income from expansion of sugarcane production was birr 25,967. When the annual household income from maize and chickpeas birr 70,060 was compared to annual household net income from expansion and outsourcing of sugarcane production birr 25,967, the net annual household income from Maize and Chickpeas was 270% times larger than the income generated from expansion and outsourcing of sugarcane production. The 20% increase in expansion and outsourcing of sugarcane production on farmers' land decreased the annual household net income by 6%. The net income of Wonji Sugar Factory was 3.5 times as large as the income of farmers from a quintal of sugarcane production showing unfair distribution of benefits among stakeholders.

In addition, as the expansion and outsourcing of sugarcane production on farmers' land, reduced the availability of crop residues which was used as animal fodder and firewood, decreased land right, destructed farm forestry, discouraged livestock production, caused displacement as well as the delay of payment of temporary compensation from 15-45 days and income from sales of sugarcane production from 6-8 Months, the 80% of interviewed households responded that they did not want actively to participate in that development program.

### **5.2 Recommendation**

Based on the findings of the study the following recommendations were forwarded

- The delay of temporary compensation from 15-45 days and delay to collect sales income from sugarcane production from 6-8 Months was very difficult for farmers fully to depend on income from this arrangement. Administratively, the problems should be

solved involving key stakeholder like: local government body, sugar growing Union cooperative, sugar factories, peasant association and federal government body as per the agreement made related to the implementation of expansion of sugarcane production

- For sustainability of expansion of sugarcane production, a smooth & healthy relation among key stakeholders including farmers is one of decisive factors. The benefits should be distributed among the stakeholders fairly. This should be amended and corrected by introducing a fair income distribution mechanism that can be adjusted periodically and regularly.
- The development at the cost of farmers through time can cause grievance, instability, movement and can turn into as big political issues unless it is solved by concerned bodies on time. In current context, from the analysis of this research report, we can understand that the annual average household's income per hectare from grains was better than the annual average household's income from expansion of sugarcane production which discourages the farmers to actively participate in plantation of sugarcane production on their land.
- To see in detail, the production cost of sugar factory per quintal was 745 birr while the whole selling price was 1,130 birr per quintal. The difference  $1,130 - 745 = 385$  birr per quintal. This indicates that the factory earns huge profit Margin while farmers were getting the little. So to make the distribution of income fair among stakeholders is a key issue for the health of the whole arrangement;
- To increase the fair share income of Sugar cane producers, can be done either by decreasing the production cost or by revising to increase the farm gate price Sugar Cane which is currently fixed by government without changing the selling price in order not to increase the price on consumers.
- The potential of different grain crops harvest on the same land within one year production cycle should be reconsider while the benefits from expansion of sugar cane production is calculated, the single grain may underestimate the benefits of farmers
- The contribution of crop residues, farm land forestry should also be reconsidered while the benefits package is planned

- The inflation rate and cost of consumers goods, should be reconsidered when the benefits package is designed
- As land ownership right of farmers is limited due to the expansion of sugarcane production other than land right to rent, sell, change, mortgage being the compensation packages determined, the benefit package should consider the forgone income opportunities.
- A joint committee composed of different key stakeholder including communities should be established at each Administrative level who can be responsible to negotiate issues of a common nature for a timely solutions before it causes as impediment factor for the expansion of sugarcane production on farmers land
- For any issues connected to expansion of sugarcane production on farmers land, community's awareness level should also be improved using different capacity building techniques including workshop, training, group discussion etc
- The infrastructural development for displaced farmers due to expansion of sugarcane production such as: road, potable water, electrification, education, health, housing etc should be planned, implemented, and evaluated by active participation of local communities for enhancing its quality and transparency among stakeholders
- Shortage of milk supply, as one of nutritional food for children, can also be a problem as the livestock production is discouraged due to expansion of sugarcane production in the area. Therefore improved milk cows with limited population should be considered.
- Develop community forestry which can replace farm land forestry in area where the displaced farmers settled.

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Annex I

Survey questionnaires for different stakeholders

**1. Questioners on the effect of the expansion and outsourcing of sugarcane production on farmers land in improving the income of households**

**Quiz 1: For interviewing sugarcane producers/Farmers**

Country----- Region----- Zone----- Woreda/District-----  
kebele-----

Name of respondent: -----Sex----- Age---Occupation:-----family size--

Education level ----- land hold -----ha, land covered by sugarcane-----for others crops/cereals, vegetable etc/------ land for grazing-----ha

1.1 Have you engaged in sugarcane production? Yes, No

1.1.1 If yes, for how long? -----

1.1.2 For how long have you involved in agricultural cultivation in this area-----

1.2 The productivity of land by major cereals, vegetables and fruits with its value per hectore /per year and cost of production

1.2.1 The productivity of land by major cereals with its value

S.n	Name of major cereals	Production per year/ha	Value per quintal in birr	Total	Cost of production per hectare in birr				
					Fert	pestic	Preparation & harvesting	others	Total
1									
2									
3									
4									
5									
Total									

### 1.2.2 The productivity of land by major vegetables with its value

S.n	Name of major vegetables	Production per year/ha	Value per quintal in birr	Total	Cost of production per hectare in birr				
					Fer	pestc	Preparation & harvesting	others	Total
1									
2									
3									
4									
5									
Total									

### 1.2.3 The productivity of land by major fruits with its value

S.n	Name of major fruits	Production per year/ha	Value per quintal in birr	Total	Cost of production				
					Fer	pest	Preparation & harvesting	others	Total
1									
2									
3									
4									
5									
Total									

### 1.3 livestock information

S.n	Type of livestock	Number of livestock	Average price per livestock/in range	Income by selling live stock per year in birr	
1	Cattle				
2	Sheep				
3	Goat				
4	camel				
5	Horse				
6	donkey				
7	Hens				
8	Others				

2. Sugarcane production cycle /harvesting year -----
3. Sugarcane yield per hectare-----
- 3.1 Trend of sugarcane productivity per hectare :increase or decrease
- 3.1 Why ?-----
4. Currently the price of one tone of sugarcane-----in birr
5. Quantities sold in 2007 E.C in tone -----
6. Income obtained from selling sugarcane per year in birr -----
7. Number of workers in family involved in sugar cane production-----
8. The wage/salary and incentive earned per month/person -----
9. The Number of the months the workers engaged in sugar farming in the year-----

10. What is your incentive packages from Government in expansion of sugarcane production on your land?/compensation, other benefits etc /

-----  
 -----  
 -----  
 -----

11 What are the criteria for compensation?-----

-----  
 -----  
 -----

12.1 Amount of compensation in birr per hectare and per Month/year-----

12.2 Compensation is paid for ----- years, why? -----

13. What is your level of participation in expansion of sugarcane production on your land? A. Excellent B. very good C. Good D. satisfactory E. weak

13.1 If Excellent or weak, why? -----

-----

12. What is your opinion in expansion of sugarcane production on farmers land?

Strength: -----

-----

Weakness: /displacement, compensation etc/-----

-----

-----Opinion for weakness: -----

-----

13. Any comments related to the topics of the research: -----

-----

-----

-----

## Annex II

### Questioners on the effect of the expansion and outsourcing of sugarcane production on farmers land in improving the income of households

#### Quiz 2: For interviewing Concerned administration bodies

Country----- Region----- Zone----- Woreda/District-----  
kebele-----

Name of respondent: -----Sex----- Age----Occupation/position: -----  
-----

Education level -----

2.1 Total population of the woreda ----- M----, F----, Number of households engaged in sugarcane farming: -----, Average family size-----, average household land -----ha

2.2 The major occupation of communities in percent

Agricultural cultivation -----

Pastoralist: -----

Traders: -----

Workers: -----

Others: -----

2.3 land covered under sugarcane production in Woreda in ha : Public----- ha, community:-----  
----ha, Farmers land -----

2.4 What are the criteria for compensation of farmers engaged in sugarcane production ?  
-----  
-----

2.5 On average per hector how much the farmers paid compensation in birr?-----

2.5.1 For how many years: ----- Why? -----

2.6 On average, what is the productivity and value of farmers land per hector in major three grains in quintal?

Grain type	yield /ha-	value/quintal/birr
------------	------------	--------------------

-----	-----	-----
-------	-------	-------

-----	-----	-----
-------	-------	-------

-----	-----	-----
-------	-------	-------

2.6.1 Production cost per hector by major three grains

Grain type	production cost
------------	-----------------

-----	Fertilizer (-----, pesticide-----, plough ----, harvesting----- others-----
-------	---

total---birr	
--------------	--

-----	>-----	> -----	>-----	>-----	>-----
-------	--------	---------	--------	--------	--------

>-----					
--------	--	--	--	--	--

----- >----- > ----- >----- >----- -----

2.6.2 The major three grains growing in the woreda:

Name of grains                      Share in percent

-----  
-----  
-----

2.7 What is the production cycle of sugarcane production? ----- Years

2.7 The average productivity/yield of sugarcane per hector-----

2.8 Who is the market potential of sugar cane production ?

Name of market client                      market share in %

-----  
-----

2.9 Mechanism of price decision for sugarcane production: -----

2.10 What is the price of one tone of sugarcane production on farmers land? ----- Birr

2.10.1 Average number of workers from family engaged in sugar farming -----

2.10.2 Average wage per month/person ----- in birr other incentives: ----- in birr

2.10.3 Number of average Months that the workers engaged in sugar farming in a year -----

2.11 What percent is the share of farmers from sugar production? -----% government-----  
--%

2.12 What is your opinion in implementing the expansion of sugar production on farmers land?

Compensation: -----  
-----

Displacement: -----  
---

Income: -----  
---

Others :-----  
-----  
-----

2.13 Do you have any documents like report, minutes, records regarding the research topic ? –  
Yes,No-----

2.14 Any comments :-----  
-----  
-----  
-----

### Annex III

#### Questioners on the effect the effect of the expansion and outsourcing of sugarcane production on farmers land in improving the income of households

#### Quiz 3: For interviewing sugar factories management & staff

Country----- Region----- Zone----- Woreda/District-----  
kebele-----

Name of respondent:-----Sex----- Age---Occupation:-----

Education level -----

3.1 What area is covered under sugar cane production in Boset Woreda ?

Stat owned land: -----ha

Community land: -----ha

Farmers land: -----ha

Others: -----ha

3.2 The average productivity of sugarcane per hectare in Tone: -----

3.3 The harvesting Production cycle/period-----years

3.4 Mechanism of price setting: -----

3.5 The price of one tone of sugarcane of farmer's production: ----- in birr

3.6 Packages of incentives for farmers engaged in farming sugarcane: /Compensation, wage,  
70% income from selling sugarcane etc/-----

3.7 Criteria for compensation: -----

3.8 The amount of compensation per hector in birr ?----- Compensation for years----

3.9 One tone of sugarcane can produce on average -----quintal of sugar, -----liters of ethanol,  
and ----quintal of molasses -----others

3.10 Selling mechanism of sugar:-----

3.11 Average selling price of one tone of sugar in birr: -----

3.12 Average selling price of one tone of barrel of ethanol: -----

3.13 Average selling price of one tone of molasses in birr: -----

3.14 currently ,Average Production cost of one tone of sugar in birr:-----

3.15 indirect cost per one tone of sugar: -----

3.16 Strength and weakness in expansion of sugarcane production on farmers land

Strength: -----

Weakness: -----

Recommendation: -----

3.17 Any documents related to the topic: -----  
-----

3.18 Any comments related to topic: -----  
-----  
-----

**Annex IV**

**4. Questioners on the effect of the expansion and outsourcing of sugarcane production on farmers land in improving the income of households**

Quiz 4: Group discussion with **Farmer and Women association , youth, cooperatives and NGO/**

Country----- Region----- Zone----- Woreda/District-----  
kebele-----

Name of Association: -----

4.1 Do you have knowledge about the expansion of sugarcane production on farmers land ?

Yes, No

If yes, What is its strength and weakness for improving the income of households ?

Strengths :-----

Weakness :-----

Recommendation for weakness :-----

4.2 How do evaluate the implementation of compensation?

Strength:-----

Weakness :-----

Recommendation for weakness: -----

4.3 What is the strengths and weakness in displacement of communities due to sugarcane production?

Strengths :-----

Weakness :-----

Recommendation :-----

4.4 How do you evaluate the income from farming sugarcane production?

Strengths :-----



-----  
-----

Weakness :-----  
-----

Recommendation :-----  
--

4.5 The level of communities participation in expansion of sugarcane production on their farm land

A. Excellent B. Very good C, good D, satisfactory E. weak

4.5.1 If weak, why? -----  
-----  
-----

4.6 Any comments related to the topic :-----  
-----  
-----  
-----

PROFORMA FOR SUBMISSION OF M.A (RD) PROPOSAL FOR APPROVAL

Signature :-----

Name & :-----

Address of Guide :-----

Name & Address of the student :-----

Enrollment No :-----

Date of submission :-----

Name of study centre :-----

Name of Guide :-----

Title of the project :-----

Signature of the Student :-----

Approval/Not Approval

Date: -----

**THE RESEARCH PROJECT PROPOSAL ON THE EFFECT OF THE  
EXPANSION AND OUTSOURCING OF SUGAR CANE PRODUCTION ON  
FARMERS' LAND IN IMPROVING THE INCOME OF THE HOUSEHOLDS**

**The Case study of Boset Woreda of East Shewa Zone  
of Oromia Region, Ethiopia**

**BY**

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**December, 2015**

**ADDIS ABABA, ETHIOPIA**

## **THE PROJECT PROPOSAL**

### **1. Project Title**

Depending on the relevance , availability of literature, finance, feasibility of data-collection with limited time frame, Distance of research area, knowledge of local language ,culture , norms of local communities and contacts available in the research area , the project Title selected for this research paper is “The effect of the expansion and outsourcing of sugar cane production on the farmers’ land in improving the income of the households” , as the Case study of Boset Woreda of East Shewa Zone of Oromia Region, Ethiopia.

### **2. Introduction**

Ethiopia is the second populous country in Africa next to Nigeria. Currently, it is one of economically emerging countries in East Africa with two digit economical growth. The Country’s economy is based on Agriculture which accounts 45% of the GDP. More than 85 % of the populations are engaged in agriculture and allied activities ([CIA World Fact book](#), June 30, 2015)

In light of the market lead economy, the overall national development and economic transformation for a structural change, the Federal Democratic Republic of Ethiopia has formulated a policy and strategic documents with succinct objectives that gives a clear understanding on prioritized sectors. The policy and the strategic documents among others capture the agricultural sector of the country that focus on strengthening the agricultural labor force, proper use of land, preparing area compatible development packages, working towards market lead agricultural development and promoting private sectors participation in agricultural development and agro industry development. In GTP I period emphasis has been also given to rural development, industry, infrastructure, social and human development good governance and democratization (Growth and Transformation Plan (GTP). 2010/11-2014/15). GTP I was with scenarios, the base and high level scenarios. The high level is doubling the achievement of 2009/10 by 2014-15 and the base case scenario is 11.2% growth on average for the five years period through maintaining agriculture as major source of economic growth. To achieve this it was planned to intensify commercial agricultural production by encouraging large farms and smallholder commercialization as a main source of agricultural growth using the previous

experience. In addition to this, agricultural marketing network and investment was planned to be enhanced while best agricultural models scaling up for all other farmers; small, medium and large scale irrigation was planned to get special attention. Agriculture and allied activities was planned 8.5% for GTP I and achieved 6%, while it was planned 8% for the GTP II ..

To realize policy and strategy packages of the GTP, the government has established, agricultural transformation Agency with a clearly defined program guided by the national plan document called Ethiopian second Growth and transformation plan /GTP.

The program is designed to help all partners meet targets. The Agency measures its contribution to the effort through the metrics established in the GTP document as well as in other strategic guidance such as the CAADP / Comprehensive Africa Agricultural Development Program/ compact and the corresponding policy and investment framework /PIF/. The agency's work to support the GTP I and II organized under AGP's/ Agricultural Growth Program/with the following goals:

- ❖ Achieve a sustainable increase in agricultural productivity and production
- ❖ Accelerate agriculture commercialization and agro-industries development
- ❖ Reduce degradation and improve production of natural resources and
- ❖ Achieve universal food security and protect vulnerable households from natural disaster

Following the government direction, expansion and outsourcing of sugarcane production is taken as one of the major investment area of Agro- processing industry. Previously, the country has three state owned sugar mill factories namely: Metehara which has started sugar production, with currently annual capacity 136,692 tones per year since 1970 (Methera Sugar Factory Profile 31 July 2015), Wonji has been commencing production since 1954. It is the oldest and pioneer in the history of Ethiopia's sugar industry, currently its production capacity per year is estimated 75,000 tones (Wonji Shoa Sugar Factory Profile, 31 July 2015) and Fincha has started sugar production since 1998. Its current annual capacity is estimated 110,000 tones (Ethiopian Sugar Corporation - Finchaa sugar factory Profile 31 July 2015). The overall total annual production of 321,692 tones capacity. In addition to these, ten new sugar mill factories have been under construction in different regions of the country, Tana Beles in Amhara National Regional State , Welkayte in Tgray National Regional State, Kesem and Tendaho in Afar National Regional State

and the rest six factories in SNNPR. Tendaho is the largest of all with expected annual capacity about 600,000 tones per year. The Country aim is to increase its total sugar production beyond 800,000 tones per year by the end of 2015 which can cover more than 85,333ha of land (EI Mamoun Amrouk, Manitra A, Rakotoarisoa and Raison Chang, FAO No.37 2013).

. The Sugar cane plantation as well as the processing factories in Ethiopian have number of contribution in reducing poverty through creation of job opportunities for both rural and urban population where unemployment is a rampant problem in the country, contributes on Gross National Product/ GNP/, producing ethanol and molasses as by product which directly and indirectly substitutes a part petroleum importation and generate foreign currency as by product used for fattening animals (FAO, 2013 Working paper No.37)

Thus, the Ethiopian Government has strategic plan to expand and outsourcing the sugar cane plantation and on farmers' land particularly in lowland areas where rivers for irrigation are available and agro climatic condition is favorable. Though it is believed that the development of sugarcane production linked to Sugar factories development improves the living standard of communities, the sought system in place may cause injustice and inequality as the expense of the others stakeholder which can bring displacement, unfair compensation and less income(FAO 2013 Working paper No.37)

Since, the effect of Government strategy on the expansion and outsourcing of sugarcane production on farmers land in enhancing the income of household, the living standard, the communities participation, ownership, sustainability is not assessed and this research is designed to fill this gap .

### **3. Statement of the problem**

Sugar production has started with Awash River valley development in Wonji and Methera in 1954 and 1970 respectively. The Wonji was established by Dutch Company, HVA (Handlers - Vereenging Amsterdam) as joint venture between this company and the Ethiopian government. The production of the firm has continued until the failure of the Imperial government in 1974 as a joint venture. Since the imperial government failed, the sugar factories have been nationalized and continued until now as a state property.

Ethiopia is endowed with large areas of suitable low lands, rivers and conducive climate for sugar cane growth. The climate and soil types in the country have both proven to be highly conducive for sugar cane growth and productivity. Various pre- feasibility and feasibility studies of sugar projects conducted by the Ethiopian Sugar Industry Support Center Share Company (ESISC) have indicated that many potential sites at the main river basins are suitable for sugar cane plantation. These include 303,500 hectares of already identified suitable net areas in 7 sites. However, the total area developed for the production of sugar cane in the country is only about 8% of the total identified suitable areas

As the majority of Ethiopian industries are agro- based, the expansion and outsourcing of sugarcane production is one of the Government strategies to reduce poverty, unemployment and enhance the Gross Domestic Product./GDP/. In line with this expansion in different location/ regions and outsourcing of sugarcane production around already established Sugarcane Estate Farms has been taking place this the beginning of GTPI.

The Government plan and implementation of an expansion and outsourcing of sugarcane production on farmers land has been on progress since the last four years in research area. Wonji Sugar Estate Farms as one of the oldest firm is under taken expansion and outsourcing on farmers land around its peripheries.

Since, the effect of Government strategy on the expansion and outsourcing of sugarcane production on farmers land in enhancing the income of household, the living standard, the communities participation, ownership, sustainability is new area of research and not assessed yet, this study is designed to fill this gap as the case study on Dongre Fureda Kusaaye Kebele of Boset Woreda of East Shewa Zone of Oromia region, Ethiopia, was assessed in depth to forward alternative solutions for identified challenges and obstacles in enhancing the income and the living standard of the local communities, particularly, in Boset Woreda. This approach in general may also help through replicating and sharing the good experience both at the region and national level where the expansion of sugarcane production on farmers land is implemented.

The findings and recommendation of this study can give vital information to the policy makers in general and to Wonji Estate Farms and farmers, cooperatives in particular on the Effect of expansion and outsourcing of Sugarcane Production.

## **4. Objectives of the study**

### **4.1 General objective**

- To assess the socioeconomic effect on out growers due to the expansion and outsourcing of sugarcane production to the farmers land by Wonji Sugar Estate Farm. .

### **4.2 Specific objectives of the study**

- To assess the effect of expansion and outsourcing of sugarcane production on individual farmers and cooperatives (out growers) who are participating in the program
- To assess the relationship and effect of sugarcane production on farmers land and allied agricultural activities.
- To assess the level of participation and ownership of out growers in relation to sustainability of the expansion of sugarcane production on their farm land

## **5. Universe of the study**

As this case study is planned to conduct in Boset Woreda/District of East Shewa Zone of Oromia Region, Ethiopia, the whole households practically engaged in the expansion and outsourcing of sugar cane production on their farm land and who are the inhabitants of randomly selected Kebele/grass root administration from Boset woreda/District for this research, are considered as the Universe/ population of this study.

## **6. Sample**

Depending on resource availability such as cost, time, labor, availability of data, the significance of the research topics, the nature of population whether they are heterogynous or homogenous , the type of the data , the interviewed respondents will be selected from Kebele administration/ randomly selected for this study, by using simple random sampling techniques which gives equal chance for interviewee. In addition, for the researcher judgment the non-probabilistic sampling will also be applied. The sample size should be representative and adequate. If the populations are homogenous the small size can be adequate and representative of the Universe.



## **7. Tools for Data Collection**

1. Preparing questioner for interviewing different key stakeholders relating to grain and sugarcane productivity, production, livestock , price, input costs, wage, compensation, net income, displacement, positive & negative impact of expansion of sugarcane production
2. Observing at the site how to plant and manage the sugarcane production, store, sell the sugarcane
3. Interviewing randomly selected farmers/households engaged in sugarcane production on their farmers from randomly selected kebele
4. Interviewing panning staff of Wonji sugar factory
5. Group discussion with, Farmers association, women association, youth association and NGOs/if any/ in the local area related to the research topic
6. Group discussion with Boset Woreda /District government administration head and concerned staff
7. Group Discussion with Wonji area sugar growers cooperatives Union about achievement strength and weakness in the implementation of expansion of sugar cane production on farmers land.
8. Interviewing the local concerned Agricultural expert in Boset Woreda

## **8. Analyzing and interpreting data**

After quantitative and qualitative data of this research is collected and processed it should be analyzed and interpreted. The objective of the data analysis and interpretation is to prepare data as model where relationships between variables can be studied,. Analysis of data will be made with reference to the objectives of the study and research questions. It involves the categorization of variables, tabulation, explanation and casual inference.

For making descriptive statistical analysis, the establishment of frequency distribution, graphic presentation using different techniques like: histogram, frequency polygon etc will be done.

In this research topic descriptive statistical methods will be used in the analysis and interpretation. Descriptive analysis focuses on generalization to the particular observed groups of individuals... This analysis describes only one single group. The computed statistical values

provide valuable information about the nature of particular groups which includes Measures of central tendency(Mean, Median, Mode),Measures of variability( Range, variance, standard deviation ),Measures of relation ship( Correlation and coefficient of correlation).

### **9. Tables**

This research may have Tables, Figures and Graphs for facilitating and simplifying analysis of primary and secondary data collected from key stakeholders.

### **10. Chapter plan**

The thesis is planned to organize the research reports under five Chapters such as: .Chapter one: Introduction, Chapter two: Review of Literature, Chapter three: Research Methodology, chapter four: Results and Discussion and Chapter five: Conclusion and recommendation

### **11. Report writing**

The research report is important to make people to know about the area of study, it helps either to know new knowledge or to add additional knowledge, finding, results, solution for problems, generalization, utilize for further research. It also helps for planner and police makers to modify and re plan projects, programs and to establish new strategies to solve the problems. For that reason, the research report should be documented. This Research report contains the three main parts namely: the Beginning, the main body and the end.

The beginning part includes: cover or title page, Acknowledgement, table of contents, list of tables, list of figures and glossary

The main body covers: introduction of research, Review of literature, Research Methodology, Results and Discussions and Conclusion and Recommendation as well as the End contains reference and appendix.

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Mengistu Assefa Wendimu ,Arne Henningsen ,Peter Gibbon, 2015/06Sugarcane Out growers in Ethiopia: 'Forced' to Remain Poor?