EXAMINING FARMERS' KNOWLEDGE AND IDENTIFYING SIGNIFICANT FACTORS AFFECTING IT IN WOREDAS WITH DIFFERENT LEVELS OF DEVELOPMENT: THE CASE OF *DALOCHA* AND *LANFORO* WOREDAS IN SNNPRS

A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES
OF THE
ADDIS ABABA UNIVERSITY

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF ARTS IN REGIONAL AND LOCAL DEVELOPMENT STUDIES

MERGIA BEKELE

JUNE 2002

ADDIS ABABA

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
REGIONAL AND LOCAL DEVELOPMENT STUDIES
(RLDS)

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A Thesis Submitted to the Shool of Graduate Studies, Addis Ababa University In Partial Fulfillment of the Requirements of the Degree of Masters of Arts in Regional and Local Development Studies

Approved by Board of Examiners	**Signature**
1. Solomon Mulugeta (Ph D) Chairman, Graduate Committee	
2. Alula Pankruhst (Ph D) Advisor	
3. Yeraswork Admassie (Ph D) Internal Examiner	
4. Tadesse Dadi (Ato) External Examiner	

ACKNOWLEDGEMENTS

The completion of this thesis would have been very difficult without the help of my Almighty God and unreserved assistance of many people and institutions. First of all my profound gratitude goes to my thesis adviser, Dr. Alula Pankhurst, (Associate professor) for his invaluable critical comments, suggestions and guidance with patience which contributed to the successful realization of the study.

My special and heart felt gratitude is due to Ato Birhane Tareke, Dr. Tegegn G/Egziabher, Dr. Yeraswork Admassie, Dr. Workineh Nigatu, and Dr. Tenkir Bonger who have contributed in one way or another to this study. I would also like to express my indebtedness and gratitude to the SNNPRS and Regional Investment Office for offering me an in-country scholarship.

Action Aid Ethiopia assisted me financially to cover the costs of this study. Its support is gratefully acknowledged. Moreover, the assistance, interests and encouragement of the field staff of AAE are also acknowledged. The role that *Silte* Zone, *Dalocha* and *Lanforo wereda* administrations play in facilitating legal grounds during data collection phase of the study was great. Special notes of thanks are also due to all colleagues in Awassa Investment office. The assistance Melkamu Tekle, Mulatu Assore, Jaefer Mohamed, Lema H/michael, and Victor Elias who are friends in Addis, in one or another way in completing the two-year stay in AAU and this study is unforgettable.

Last but not least, I am very grateful to my wife Yiketelush Elias in managing our home and children without my presence and who has been always encouraging and wishing my success. The contribution of my sons Yonatan and Nahum and sister Woinishet to this study in one way or another is also unforgettable.

Mergia Bekele

June 2002

Addis Ababa

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Acronyms

AAE – Action Aid Ethiopia

ACCESS – Appropriate Cost Effective Centers for Education With in the School System.

AIDS – Acquired Immunity Deficiency Syndrome.

BOPED – Bureau of Planning and Economic Development;

CBD – Community Based Distributors

CHA – Community Health Agent

CSTC – Community Skill Training Centers;

HH(s) – Household (s);

HIV – Human Immune Virus;

KM/km- Kilometer;

MFI-Micro Finance Institution;

NGO – Non Governmental Organization

PA(s) – Peasant Association(s);

REFLECT – Regenerate Ferreira Literacy through Empowering Community Techniques;

SAC – Saving and Credit;

SNNPRS – Southern Nations Nationalities and Peoples Regional State;

Sq. Km(s) – Square Kilometer(s);

TBA(s) – Traditional Birth Attendant(s);

VHW(s) – Village health Worker(s);

Abstract

Though farmers' knowledge plays a substantial role in the process of rural development, in actual planning practice, however, it is only passively integrated into development plans. Local level studies are hardly made so far to search for the level of knowledge that the farmers have about different development aspects, and significant factors affecting it.

Comparative analysis was employed to know the knowledge pattern of farmers found in two words. The selection of the woredas was based on their level of development and with and without NGO development intervention.Accordingly, one with higher development level and having NGO development intervention and the other with lower development level and without NGO development intervention were selected and compared. Based on this, sample household head farmers were selects and were asked by using open and objective type questions, believed to be useful to understand their knowledge about elementary techniques, causation of diseases agricultural practices, nutrition, human fertility control, local credit and saving institutions and marketing situations.

Multiple regression analyses and focus group discussions were employed to filter out, those hypothesized, the variable strongly significant in explaining the aforementioned aspects of farmers knowledge. Focus group discussions were also carried out.

Based on multiple regression analysis and results of focus group discussions congruence is seen between the level of socioeconomic development of the woredas and empirical knowledge of the farmers. Moreover, the analyses revealed education level, exposure to mass media, spatial mobility and NGO development intervention to be the most relatively significant independent variables, which explain farmers' knowledge.

In accordance with the findings, encouraging farmers' confidence to different sectoral policies that affect their life, incorporate agricultural marketing and basic health education in the new extension program, grain banking to avert market risks was recommended. In addition to these, extension agents should perform their intended primary job, cultural treatment for taboos existed in knowledge about human fertility control and nutritional aspects and incorporating significant independent variables in the categorization of development levels of woredas for the purpose of budget allocation were also recommended

PART ONE

CHAPTER I. INTRODUCTION

1.1Motivation

Everybody has certain things and situations that motivate them to study one subject rather than the other. Past experience, personal interest, natural skill, friends, life style, school teachers and the environment among others, once choice for example to study rural development issues than urban development. Choice is not a one-time practice. It is rather an on going event. In the year 2000, when I decided to study regional and local development studies at Addis Ababa University, I never thought of studying "farmers' knowledge"[1]. However it happened. The main development resource of Ethiopia is its people particularly the rural people. Knowledge is important in general and for rural people in particular in utilizing of the existing scarce resources and to bring conscious participation of farmers in the process of rural development. However, rural people in some areas suffer from different dimensions of poverty not because they lack resources but knowledge to utilize the resource that they own efficiently in order to be benefit from it. This is a phenomenon, which I observed and perceived while I am working in the SNNPRS for almost a decade. This influenced me to deal with the knowledge aspect of rural development. Besides this aspect, a new interest emerged in my mind that integrating farmer's[2] knowledge and budget allocation formula[3] used for allocating annual budget among woredas in SNNPRS. With this regard, socioeconomic variables, which are significantly affecting the farmers' knowledge were

[1] It is defined in the 3.1.2 section of this study in such a way that the technical knowledge and knowledge about attributes that are acquired augmented and stored through indigenous and/or scientific channels, which is synthesized with in the farmers themselves

[2] Farmers are the basic actors to bring any significant development change in the region. About 92% of the total population of the region live in rural areas. Thus, the socioeconomic factors that influences their day to day activities could make a difference in their level of knowledge and in turn in the level of development of an area.

[3] In SNNPRS *Woredas* are categorized for budget allocation using formula. This formula encompasses the size of population, revenue collection efficiency and development levels of the woreda having aggregate weights of 60% 15% and 25% respectively.

identified and used to be incorporated in development level part of the formula in order to depict the development image of the area. This is because development level of woreda is taken as one factor that is used in the formula by considering different socioeconomic factors. Hence, as development studies student, I settled to write my MA thesis in the aforementioned rural development aspect i.e. farmers' knowledge and factors affecting it. Taking *Dalocha* and *Lanforo woredas* that have different levels of development as the case study areas for this research work.

1.2 Outline of the Thesis

The thesis has two parts. Part one encompasses from chapter one to chapter four and part two from chapter five to eight. After this introductory chapter, chapter two deals with the background of the research problem. In addition, it provides a brief description of the study area, general and specific objectives and significance of the study; research problems were identified and stated based on the background and the study area. Chapter Three presented reviews of related literatures about knowledge its conceptual definition, its characteristics and factor affecting it. Moreover it also includes the grant (budget) formula experience of other countries and existing budget allocation formula in Ethiopia and in the region. Chapter four describes the entire research process: methods and techniques of data collection, analysis and interpretation. Chapter five explores the socioeconomic development levels of the woredas based on the socio- personal and economic characteristics of the respondents in both *woredas*. Chapter six gives descriptive and comparative accounts of the patterns of knowledge. In chapter seven, the relationship between the socioeconomic characteristics (independent variables) of respondents and the variation in their knowledge is examined. Besides this in this chapter, regression analysis and the result of focus group discussions in both *woredas* is also presented. The last chapter, besides giving a summary of the main findings of the study, also gives some recommendation for practical implementation.

CHAPTER-II BACKGROUND OF THE RESEARCH

2.1 Background of the Research Problem

Meeting the challenge of significantly reducing poverty in Ethiopia in the coming generation, wide as it is, will not come about easily. It requires a holistic approach to development that tackles development problems on a broad front. The holistic nature of development incorporates social, economical, political and cultural dimensions. In spite of its importance, the cultural aspect of development was passively taken as input for development process. As knowledge is a cognitive aspect of culture, it is only a recent phenomenon taken into account in different development undertakings. However, there is an increasing institutional awareness of importance of knowledge for economic growth and development in both developing and industrial countries. The comparison of Ghana and the Republic of Korea is a tale of disparate growth that is frequently told. In 1960 both countries had the same income per capita; today Korea's is seven times higher. More staggering than the gap in economic performance is the in ability of analysts to single out its causes. Only a three-fold difference in per capita income difference is justified by the accumulation of physical and human capital. The remaining $4000 gap is yet to be explained. Many analysts agree that knowledge could be the hidden factor of production that drove Korea's growth (World Bank 1999 and Rodriguez-Clare 1997).

Alexander and Kumeran (1992) also stated about the importance of knowledge along with motivation and resource in the process of development. They depict their relevance in such a way that strong desire in large section of society for an improved level of living, improvement in diet, improvement in physical well being, improvement in housing and environmental sanitation, and freedom from diseases is a basic requirement for development. To realize these goals, the

aforementioned factors are needed these are: motivation for achieving improved well being, knowledge for practicing the particular pattern of life, and resources required to lead a life in accordance with the motivation and knowledge. Among these, the requirement of resource is well known, and the role of motivation also will not be considered here. But an emphasis will be made to consider the requirement of knowledge for development.

Generally in the country and particularly in the project area, there is scarcity of financial resource to invest on different development facilities, most of the areas are food insecure and other social, economic and institutional backlogs hampered the process of rural development. In the existence of such development constraints in a given area, the role of knowledge in leading the daily life in utilizing the existing resource could be important. It could be sound when one sees the situation from the rural poor perspective. As rural household is an "enterprise" that many decisions are decided daily so as to make life sustainable. If a farmer is knowledgeable about different factors affecting his daily life, it could enable him to decide rational decision in order to achieve optimum benefit from the activities he accomplishes and consequently maximizes his benefit ultimately could improve his wellbeing. Thus knowledge could be an important input in rural development process in order to enhance its pace.

Though farmers' knowledge is important in the process of rural development its level is affected by many socioeconomic factors. Therefore, in order to deal with rural development from a farmers' knowledge perspective in general and incorporating socioeconomic factors significantly affecting it as a criterion for categorizing *woreda* into their development levels, the knowledge of farmers' about different aspects of development should be examined. The most determinant factors that affect the variation of knowledge are also identified.

Thus, this study examines and compares the pattern of knowledge in two *woredas* of SNNPRS one with higher and the other with lower average development indices[4] categorized for budget allocation purpose. It also identifies factors significantly affecting farmers' knowledge.

2.2 Background of the study area

2.2.1 General

The study was conducted in *Dalocha* and *Lanforo,* two of the six *woredas* of *Silti* zone in SNNPRS. The population of the zone in 2001 was 694,254 (BOPED 2001). *Dalocha* town serves as a temporary capital of the zone. With regard to the total population of the two *woredas*, of *Dalocha* and *Lanforo* are 123,303 and 80,075, respectively (CSA, 1994). Both *Woredas* are located on the central south west part of the country. *Dalocha*, town is the capital of *Dalocha woreda*, located 180 kms of Addis Ababa. *Tora,* the Capital town of *Lanforo woreda* and located at the distance of 207 kms south of Addis Ababa.

2.2.2 Agricultural Development

The main crops of both *woredas* are maize, *teff*, wheat, sorghum, and pepper. *Teff*, wheat and pepper are the main source of cash for farmers. The total hectare of land covered by annual crops in *Dalocha* and *Lanforo* is about 35,972 and 36,816 respectively (source: *Dalocha* and *Lanforo* woreda agricultural offices). Out of these total hectares of annual crops the total land area cultivated by the new extension program *is* 6,862 ha (19.9%) in *Dalocha* and 4,360.25ha (11.8%) in *Lanforo*. Notwithstanding this, the numbers of farmers that are targeted by the new extension program with different packages in both *woredas* has decreased in the past three years.

[4] These are indices that are calculated by BOPED using health, education, water, road density, telecommunication and electric power coverage to depict the development level of the woredas for the purpose of budget allocation.

Table- 1 Number of farmers targeted in the new extension program

Woreda	Number of Participants		
	1991	**1992**	**1993**
Dalocha	20553	18988	9617
Lanforo	13255	12975	4368
Total	**33808**	**31963**	**13985**

Source: Agricultural offices of *Dalocha* and *Lanforo woredas*, March 2002.

The above table depicts that participant farmers of *Dalocha Woreda* decreased about 53.2% in 1993 as compared to 1991 and the figure is 67% in *Lanforo woreda*. Though, the intention of the program is increasing production and productivity of the farmer, the participation rate in the program of both *woredas* decreased at increasing rate in the past three years. Along with the number of participants in the new extension program, the annual consumption of chemical fertilizers also decreased by 4,992 and 2,346.5 quintals in 1993 as compared to1992 E.C. in *Dalocha* and *Lanforo woredas* respectively. With regard to improved seed, the same is true in *Dalocha*, decreased by 1,117.9 quintal where as it is increased by 1,331.7 quintals in *Lanforo woreda* in the same year. As it was learnt from the *Lanforo* woreda agricultural office, there was high demand for wheat in the year 1999/2000 and this demand motivated farmers in *Lanforo* woreda to consume more improved seed so as to increase their wheat production in the year 2000/2001.

2.2.3 Health and Education Sector

2.2.3.1 Health

There are 2 health centers (one constructed by Action Aid Ethiopia -AAE), 1 clinic and 15 health posts are operating according to the standards set by the government in *Dalocha woreda*. However there are also health posts constructed by AAE using local cost-effective materials that give efficient health services to the area. Different health professionals are serving the *woreda*.

Among 77-health professionals, there is only one doctor, 23 are junior health professionals and 53 are trained farmers.

In *Lanforo woreda*, there are 2 health centers, 2 clinics and 4 health posts. 44 health professionals out of which 25 junior health professionals and 19 trained farmers serving the entire population.

Though malaria is the main disease in both *woredas*, lung diseases, internal parasites, unidentified fever, malnutrition and dysentery are also found to be serious in the past three years. Other diseases also occurred in less magnitude as compared to the above ones. It is known that polygamy is practiced in both *woredas*. This is because the majority of the population are Muslim and this religion also permits this. However, the key point is not the type of marriage that exist in particular area, but the attitude and practice towards implementing human fertility control measures. In this respect human fertility control activity in both *woredas* is less practiced. The following table shows the level of fertility control activity in both *woredas*.

Table-2 Family Planning service (1991-93 E.C)

Description	**Number of women in year**					
	Dalocha			*Lanforo*		
	1991	1992	1993	1991	1992	1993
Eligible	27887	28543	29186	18067	18626	19201
Plan to address the service	2068	7129	2919	120	372	271
Achievement	807	1441	1171	187	426	518
Coverage (%)	**3**	**5**	**4**	**1.03**	**2.3**	**2.7**

Source: - From Health offices of both *woredas* March 2002

As one can see from the table, though, the contraceptive coverage and activity is relatively better in *Dalocha woreda* (probably because of AAE intervention) than *Lanforo*, an effort is needed in creating awareness towards the use of contraceptives in both *woredas*.

2.2.3.2 Education

With regard to the education sector in *Dalocha woreda*, there are 10,262 elementary school students learning in 119 classes. A students-classroom ratio is 86:24 and a student- teacher ratio is 82:76. Besides elementary students, there are also 297 high school students in the woreda.

Elementary and secondary school participation rates of the woreda are 31.04 and 2.02 respectively (BOPED 2001). Non-formal basic education is also practiced in the *woreda* in 50 centers; about 6,978 children have access to basic education, out of which 1,218 are girls. Yet this informal educational participation is incorporated in the total primary educational participation rate of the *woreda*. Adult education is also another practice. Accordingly 1,138 men and 348 women farmers have access to basic education through FAL / REFLECT program, which is carried out by AAE (AAE, 1999).

In *Lanforo woreda* there are 10 elementary schools having a total number of 6,656 students. There are also one high school and one secondary school having 1,056 and 1,335 students respectively. The elementary and high school participation rates of the *woreda* are 31.44% and 0.85% respectively. The average (elementary and secondary) education participation rate is 31.06% (BOPED 2001). Though it is not widely used as that of *Dalocha* woreda, informal education is also practiced in the *woreda* with the help of government institutions. Accordingly there are 5 centers having 23 teachers and about 828 children have access to primary basic education.

2.2.4 Level of Development of *Dalocha* and *Lanforo woredas*

Here, the term level of development refers to the criteria used by the BOPED of SNNPRS to categorize *woredas* based on their social and economic infrastructures. It is calculated using the indices of combined development level indicators like education, health, coverage of safe drinking water, road density, electric light and telephone service indicators. The indicators were assumed to reflect both development level and expenditure needs of each *woredas*. To attain the index for each the aforementioned indicators different variables[5] for each indicator were taken into account

[5] the variables considered for each indicator are shown on 3.5.2 section of this paper.

and calculated. To determine the average development index of the *woreda*, the indices attained from the above six development indicators that are calculated based on their respective variables are added and divided by six (numbers of indicators). The following table shows the average level of development indices for both *woredas*.

Table-3 Level of development of the *woredas* based on combined development indices

No	*Woreda*	Education indicator index	Health indicator index	Road indicato r index	Water indicato r index	Tele indicato r index	Light indicato r index	Total level of development average value.
1	*Dalocha*	0.0116	0.0105	0.0104	0.0361	0.0006	0.0000	0.0115
2	*Lanfoaro*	0.0122	0.0130	0.0088	0.0053	0.000	0.0000	0.0066

Source: Regional Bureau of Planning and Economic Development 2001.

2.2.5. NGO Development Intervention in the Study Area

NGO development intervention is practiced only in *Dalocha woreda*. It is found to be one of the development areas of AAE that has been functional since 1989. According to AAE, (1999) the area development program is addressing more than 65,000 people covering about 55% of *Dalocha woreda*. Food security, saving and credit, health, education, and rural water supplies are activities accomplished and considerable achievements have been made. Among the activities food security was the major one. Under this program environmental conservation, livelihood promotion, Community Organization and saving and credit, and training and extension service are undertaken. Since 1994 to 1999 regarding to food security aspect, 320 farmers grew (horticultural and cereals) seeds, 4,800 farmers adopted different types of improved seed, 2,550 women adopted vegetable gardening, and 429 farmers were trained out of which 15% are women. Two-grain stores were constructed; 12,028 hectares of land treated with physical and biological conservation measures, 3,100 households gained access to roads was accomplished. With regard to community organization, capacity building, and saving and credit service, 181 groups were organized for SAC, 5174 HHs were provided with loan for Oxen, livestock, petty trade, seed and fertilizer and

emergency loans. A total of Birr 8,300,030 was provided to 15,000 HHs and 60 women grain mill operators were trained.

In the health sector interventions since 1989, one health center, and 21 health post (6 made of local materials) are constructed and 65,000 people accessed health services. 65% of children under 1 year were fully immunized, 4% and the target population are family planning clients, and 174 peoples gained access to information i.e. trained on VHW, CHAs, and CBDs.

The education sector has four major strategies. These are expanding access of school age children to basic education through ACCESS program, improving access of adults to basic education through Functional Adult Literacy (REFLECT); improving the formal schools through government institutions and improving the functional skills in the community through community training. Based on these strategies in 38 ACCESS centers established, 52% of 9,333 children access to basic education and 26% of 4,743 adults accessed basic education and 13% of 2,681 women participated. Moreover, 5 formal schools were constructed, 6 rehabilitated and 5 teachers trained. 36% of 235 people also acquired skill through CSTC. Since 1991 the water development sector accomplishments include bore holes drilled, 1 spring developed, 3 spring protected, 7 reservoirs constructed, 70 kms of pipe line distributed, 10 pumps and 3 generators were installed, as the result of these, about 6,8437 people accessed safe clean water.

From the above activities one can easily perceive that the development interventions made by AAE could play a significant role in the enhancement of the socioeconomic development of the *woreda*. Moreover the intervention could bring positive changes in the socioeconomic situations of farmers in general and acquiring knowledge about different development aspects in particular.

Thus this intervention also could make a difference in categorizing *woredas* into their level of development because in *Lanforo* woreda there is no such interventions were carried out.

2.3 Statement of the problem

The importance of integrating cultural variables into development programs and project planning has been increasingly recognized since the 1968 UNESCO proclamation. This was largely due to the realization that people do not fully commit themselves to a development undertaking unless that undertaking corresponds to their deeply felt needs (Serageldin and Taboroff, 1992). In line with this increased recognition, a substantial literature has evolved on the place of knowledge in the process of development. Even if knowledge plays a substantial role in the development process in general and rural development in particular, in actual planning practice, however, people's knowledge is only passively integrated into development plans.

In examining the dimensions of people's knowledge as an input into development, Falas-Borda's in Oakley *et al.* (1991) pointed out that it is still somewhat in its infancy and few substantial development initiatives have incorporated people's knowledge as a major component. In many cases there is lack of appreciation of the significance of continuously assessing the effect of socioeconomic development programs and projects on farmers' knowledge. Assessing the knowledge that rural poor have about different development aspects will help in prioritizing the development intervention and will help understand how to tackle the problem that the farmers' have in a particular situation, which eventually leads to efficient utilization of resources and maximizing benefits. For instance we know that resources are scarce in countries like Ethiopia, but keeping one's house and environment in a clean and tidy manner does not require much resources. It does not require much effort and expense for rural household to dig a latrine and create a little privacy

around it. Adoption of such practices is often influenced by knowledge about diseases caused through lack of environmental sanitation and lack of personal hygiene.

Therefore, assessing such knowledge of farmers helps one to understand how to address the environmental and sanitation problems in a particular area. Thus, examining the farmers' knowledge and factors affecting it in particular area enable to understand the level of perception of the people about specific development plans and/or projects so as to adjust the method of intervention to ensure real popular participation and sustainability.

Another aspect of the problem is that in the Southern Nations Nationalities and Peoples' Regional State (SNNPRS) of Ethiopia, *Woredas* are categorized for budget allocation based on size of population, revenue collection efficiency and development levels (expenditure need) having aggregate weights of 60% 15% and 25% respectively.

To determine the development levels (25%) of the *woredas*, development indicators like education, health, road density, safe water supply, electric light and telecommunication services are taken into account and analyzed. However, the variables incorporated within some of the indicators did not show the internal development variation. For instance the variables used in health indicators is, number of health professionals and constructed institutions (clinics, health posts etc.). Notwithstanding this, some NGO that intervene in the health sector of a particular area could not construct health facilities according to the standards set by the government. Rather utilize cost effective local material for the construction and make the service efficient to benefit the people found at grass root level. Though these grass root level institutions bring positive impact on the health situations of the area, their services were not measured in the health coverage

of the woreda and not incorporated in the budget formula. Hence, probably, health knowledge and situations that peoples in one *woreda* might be high even if there is no standardized constructed health institutions. Therefore, the internal health variation of people like their health know how that was probably acquired from the institutions should be taken into account and eventually factors that brought about this difference should also be incorporated in the budget formula. Furthermore, when we come to education, informal education programs implemented by NGO or governments have their own impact on development levels variations of the *woredas*, yet are not considered but only variables of formal education are incorporated in the formula.

Thus, in order to have relatively the real development variations of the woredas, factors that show the internal development variations of the *woredas* should be identified and considered in the development level (25%) part of the formula. In this instance, the assumption is that the less developed and relatively developed *woredas* get the budget according to their level of development. Failing to consider factors that show the internal development variations, it will leave room for budget discrimination among *woredas*. Hence, incorporating factors affecting farmers' knowledge along with other factors, depict the internal variations and help in categorizing the development level of that particular area/woreda. Thus giving attention to these factors could be a desirable opportunity to incorporate them in budget allocation formula that could increase relatively the real development position of the *woredas*.

2.4. Significance and Justification of the Study

Incorporating farmers' knowledge is an appropriate instrument in enhancing different rural development interventions in a given area. Thus examining the level of farmers' knowledge and

identifying factors that significantly affecting it could help in prioritizing development intervention and in incorporating them in categorizing areas to their development levels.

Therefore, from this study it is expected to provide first hand information on indicating the most significant factors contributing to the variations of farmers' knowledge for different aspects within the areas. Secondly, it will also show the variation of knowledge and whether this is significantly related to the socio-personal characteristics of farmers. Thirdly, it can contribute to theoretical approaches of researchers concerning whether farmers' knowledge is the component of their social - economic system, and influencing their way of life in rural Ethiopia. Finally, it can help the region in identifying additional factors that could be pertinent to categorize *woredas* in their development levels with emphasis on internal variations for the purpose of intra-regional budget allocation. Moreover, the outcomes of the study will be of use to public authorities, Non Government Organizations (NGO), policy makers and development practitioners to incorporate the knowledge of farmers in development programs and project planning so as to enhance active popular participation in the planing and implementation process.

2.5. Objectives of the Study

2.5.1 General Objectives

This study has two general objectives. These are:

1. To examine, analyze and compare the level of farmers' knowledge about different aspects of their day-to-day life in *Dalocha* and *Lanforo woredas* of the Southern region.
2. To identify factors significantly affecting the knowledge of farmers and to come up with recommendations some of them to policy makers can use in categorizing *woredas* in to different development levels for the purpose of budget allocation formula in the SNNPRS.

Specific objectives

The specific objectives of the study are:

1. To assess the levels of farmers' knowledge about elementary pre and post harvesting techniques and skills, marketing situations, agronomic practices, nutrition and health matters, rural credit and savings, causation of common diseases, human fertility control methods, and compare these between the two *woredas*.
2. To consider the significant socioeconomic factors those affect farmers' knowledge in the two *woredas* and give recommendations to incorporate some of them for the criteria for budget allocation in the region.
3. To examine the degree of variation in different aspects of knowledge of farmers that will be caused by the socioeconomic factors.
4. To suggest policy recommendations for policy makers and for further research.

2.6. Research Hypothesis

The major hypothesis of the research will be that the pattern of knowledge in an area with less developed area (*Lanforo woreda*) is likely to be characterized by low level of farmers' knowledge about various aspects of day-to-day life. And those in relatively higher developed area (*Dalocha woreda*) are likely to be characterized by higher levels of knowledge.

Moreover, there are also minor hypotheses that are to be tested by this study. These are:

1. There is a relationship between the farmers' level of education and their level of knowledge.
2. The educational status that the father of the farmers' has influenced the level of knowledge that the farmer has by now.
3. If the farmer is exposed to different components of mass media, then his level of

knowledge is in a better position as compared to non-exposed farmer.

4. If the peasant is a member to formal associations, then the level of acquiring knowledge is greater as compared to the non-member farmer.
5. There is a relationship between spatial mobility of a farmer and his level of knowledge. If the farmer is more mobile then, his level of acquiring knowledge is assumed to be higher than the non-mobile one.
6. If the new extension program targets a farmer then, it is assumed that his level of knowledge will be higher as compared to the non- targeted farmer.
7. The per capita annual income of the farmer influences the level of knowledge that he could acquire. The higher the per capita income, the farmer could has an access to move to urban areas, to exposition of different mass media, to be ordinary and/ or executive member in different rural associations than the farmer with lower per capita income.
8. Farmers who have access to NGO development interventions will acquire more knowledge than farmers do not have access.

2.7. Delimitation and Limitations of the Study

Initially, this study confines itself to interviewing and observing the sample farmers found in two *woredas*. Moreover due to limited time and resources to undertake the study it was impossible to carry out the study on a wider scale. Because of these factors the size of the sample *woredas* and farmers is limited. However, even if the study is limited both in sample size and area coverage, the results of the study will be expected to be useful in designing appropriate policies and undertaking similar research in other areas.

CHAPTER-III LITERATURE REVIEW

3.1.1 The Concept of Knowledge

Many social scientists in the field have been predominantly concerned with the patterning aspect of culture; it was sociologists, particularly Talcott Parsons (1951), who analytically separated its components. He identified that cultural or belief system can be classified into four segments through two cross cutting principles of whether the beliefs are concerned with cognitive or evaluative ideas, and whether those ideas are empirically verifiable or not.

According to the former principle, a cultural system can be broadly divided into those concerned with cognitive ideas and those, which are evaluative ideas. Cognitive perspective of culture is one of the conceptions of culture which focuses on ideas, concepts, blue prints, beliefs, values or norms that are seen as the core of the complex and multifaceted phenomenon called "culture". In anthropology and sociology these cognitive aspects of culture that are empirically verifiable have also been described as knowledge. These cognitive and empirically verifiable ideas as Sackmann (1991) stated are the form of things that people have in their minds; their models for perceiving integrating, and interpreting them; the ideas or theories that they use collectively to make sense of their social and physical reality. An examples of cognitive ideas that Alexander and Kumaran (1992) pointed out are beliefs like the shape of the earth, the formation of day and night, methods of control of human fertility, causes of misery, and so on, which are also verifiable through scientific methods.

As knowledge is concerned we gain it, only in so far as we develop our ideas in such a way that their correspondence with reality is proved and tested. Only then can we lay claim to knowledge. In line with this, Conforth (1963) stated that the development of knowledge is therefore the

development of a special quality with in the total development of our ideas, theories and views about things. And knowledge is the process of knowing of individual cognition. It also resides in people. It is created in the minds of individuals as a result of each person's perceptions of the environment or through communication with others.

According to the World Development Report (1998/99), knowledge is given conceptual definition in terms of knowledge about technology and knowledge about attributes. Knowledge about technology is also called technical knowledge or simply know-how. Examples are knowledge about nutrition, birth control, different levels of techniques, accountancy etc. In most case less developed countries and areas with in a country have less of this know-how than developed countries and areas. Knowledge about attributes includes, such as the quality of the product, the efficiency of a worker (farmer), the credit worthiness of a household or a firm and marketing information about goods and services.

Moreover, based on the source from where knowledge about particular thing is generated by a given part of society is also divided into Indigenous and Scientific or Western Knowledge. According to Warren, the term indigenous knowledge (IK) is used to distinguish the knowledge developed by a given community from international knowledge systems or scientific knowledge. Universities, government research centers and private industry generate the latter, sometimes referred to as 'Western' knowledge system. On the other hand, indigenous knowledge can also refer to the technical insight or wisdom gained and developed by people in a particular locality, through years of careful observation and experimentation with the natural phenomena around them (Warren 1991).

However, the intention of this study is not to go through each of these knowledge types or to draw sharp line between both knowledge systems, but to see the synthesized form of them in a given

part of a society i.e. farmers. Knowledge, be it indigenous or scientific, is essential for rural development when it is, acquired and utilized by farmers for their rural activities. For example, farmers in developing countries have quite a sophisticated knowledge of agriculture and natural resources. This knowledge is based on many generations of insights gained through their close interaction with the natural and physical microenvironment (indigenous) and through different socio economic institutions (scientific) which assist the life of the farmers (Amusan & Warren 1996; Osunade 1988; Atte 1991, Rajasekaran *et al.* 1991).

3.1.1 Farmers Knowledge

It is mentioned from the above that knowledge could be generated from two sources. What maters is not from where the source of particular knowledge is, but at what extent it is acquired by the farmers and utilized effectively to bring positive change in their pattern of life. Though the above mentioned knowledge systems have their own epistemological grounds, they are acquired and stored within farmers in a synthesized form at different levels. In this regard, it could be difficult to draw a sharp line between these types of knowledge that the farmer has about different things as dynamic nature of knowledge is concerned. Regardless of this, an attempt will be made to deal with in its synthesized form with in the mind of farmers.

To understand what farmers' knowledge is we will give working definition for both terms farmers' and knowledge. The term "farmers'" is defined in such a way that who live in rural areas as a member of peasant association and who are the head of their household; produce agricultural production primarily for their own consumption and some of it for market. The new extension program might target them or not. They could grow one or more than one crops and rear livestock or not. In the other hand, the term "knowledge" refers to the technical knowledge and knowledge about attributes that are acquired augmented and stored through indigenous and/or scientific channels, which is synthesized with in the farmers themselves. To decide and practice rural

activities that affect their daily life, farmers will use this synthesized knowledge. Warren (1996) indicated that the knowledge systems upon which farming decisions are based must be both reactive and proactive, relying on indigenous experimentation and innovation, as well as technologies made available through external channels, to cope with and adopt to changes.

3.1.2. The Characteristic of Knowledge

Many people have believed that the goal of knowledge is to attain a complete rounded off system, encompassing knowledge of every thing that exists to be known. And a few have believed that they themselves had actually attained such a goal. Social scientists such as Cornforth noted neither as a whole nor in any of its various departments can human knowledge ever be finished, finalized and rounded- off. Knowledge is always growing and developing. Indeed, this is obvious when we consider that our knowledge all arises from and is tested in practice, and is derived from the sense perceptions we gain in practical activity. We shall never have done every thing that can be done, or have examined every aspect of everything that can be done, or have examined every aspect of every thing that every existed, exists or will exist (1963). There will always be more to do, more to find out in doing it, and therefore more to know.

Thus knowledge is always expanding, or, at least, capable of expansion and therefore always incomplete. Furthermore Cornforth (1963) identified two aspects of this expansion and incompleteness of knowledge. The first aspect is a quantitative one. New knowledge is always being added to old knowledge, so that we come to know more. And this expansion takes place in two dimensions, so to speak- in breadth and depth of knowledge. We get to know about new things, which we did not know about before; and we get to know more about the things concerning which we already knew something. In this way we can always know more, but never know all.

The second aspect is a qualitative one. When we get to know more, the addition of this more to what we already know does not leave what we already knew unaffected. On the contrary, knowledge of new things and more knowledge of old things throw a new light, so to speak, on what we already knew. As a result, we can find new implications and new significance in what we had already established; and at the same time we find that, in the light of the new knowledge; certain implications drawn from the old were wrong, and it must be reconsidered and reformulated in various ways.

With regard to characteristics of knowledge, the World Bank (1992) also stated that knowledge can be gained through accidental discoveries or it can emerge from systematic, rational inquiry and observation, but in all cases knowledge products are distinctive rather than homogeneous goods. In addition to being highly differentiated, an extreme form of indivisibility characterizes knowledge; it is sufficient at least in principle, to acquire a specific piece of knowledge once.

To sum up, in no field is knowledge ever perfect, final and complete. Consequently, whatever knowledge has been established must be accepted only as a point of departure for further advances of knowledge. Just as whatever has been achieved in practice should not be regarded as a final achievement but only as a point of departure for further gains. This means that we must also be prepared to recognize that all knowledge is always limited, and incomplete, and so requires not only supplementation but also criticism in orders to carry it forward and advance to new achievements.

3.2 Knowledge for Development

The notion of development is a holistic and global undertaking with multiple dimensions incorporates different indicators. Gross National Product (GNP) per-capita is an important indicator of development. It is a measure of average income of each member of the entire population. And it is basically a reflection of the level of productivity of an economy. Some of the other indicators of development are longevity of life, and mortality and fertility rates.

In addition to these core indicators, there are other factors which contribute to the realization of the central indicators, such as the productivity of various productive activities, level of literacy and education, health, condition of housing, water supply, environmental sanitation, roads, power and communication. Such factors jointly with internal situation of an area contribute to a pattern of living, measured to fall at deferent levels of development indices.

The existing levels of development expressed by different indicators can influence the knowledge level of a given society. In the areas where relatively high level of development, factors that are used for disseminating, acquiring and absorbing knowledge is found to be accessible and perform efficiently than less developed area. Consequently, the state of knowledge about different things for that particular society could be relatively in a better position. It is also an important requirement for development. Arthur Lewis (1957) drew attention to the fact that the accumulation of knowledge was an important proximate cause for economic growth. He stated that technical knowledge about man and his relations with others made significant contributions to development. As compared to less developed countries, developed countries have an upper hand in utilizing technology with the help of cumulative knowledge that they already have. This is because in countries with higher per capita incomes hold larger stocks of measured knowledge and it travels/expands cheaply and fast. The combination of these two elements reveals why technology

is likely to be important for economic growth and development. For example, to utilize effectively the socioeconomic services and other development resources found in a particular area, the existing level of knowledge that enables to utilize and use best out of them is important. In this respect, knowledge contributes additional value to utilize resources and make development sustainable. The World Development Report (1998/99) indicated the importance of knowledge for sustainable development in such a way that:

> *" Simply to live, we must transform the resources we have into the things we need, and that takes knowledge. And if we want to live better tomorrow than today, if we want to raise our living standards as a household or as country-and improve our health, better educate our children, and preserve our common environment- we must do more than simply transform more resources, for resources are scarce. We must use those resources in ways that generate ever-higher returns to our efforts and investments. That too takes knowledge, and in ever-greater proportion to our resources".*

With regard to efficient resource allocation at any level of development knowledge plays a significant role. Harvey (1986), stated that existing resource levels, existing resource use patterns', depends on the proposition that the application of little science can provide solutions that have eluded thousands of farmers over many generations and that the major contributor to inefficiency in resource use is lack of knowledge. In the promotion of economic efficiency of a country, a region or locality it is the use of knowledge that is important, not its generation. The existence of motivated and effective dissemination of knowledge and its use about different development aspects enable the user to maintain economic efficiency in productive activities.

It is more important when we take account for knowledge's role in rural development particularly in less developed countries and areas. This is because any activity that is carried out by the farmer involves many decisions, in accordance with this, knowledge about day-to-day life help farmers in order to make rational decisions in allocating scarce resources so as to maximize their benefits. For example to decide what crops to plant, one should have adequate knowledge about their characteristics. For what inputs to use, one should have adequate knowledge about how to utilize and advantages of chemical and natural fertilizers, improved seed and other inputs. To cultivate, to harvest and for post-harvest management, one should have adequate knowledge about agricultural practices and elementary technical knowledge. Moreover, for maintaining good health, farmers' should have some understanding of the importance of nutrition for health and the nutritive value of different food items. Von Oppen, Rao and Rao (1985) stated the usefulness of knowledge about various factors related to agricultural markets. Accordingly, they emphasized that such awareness about the seasonal fluctuation of prices, and variations in the prices offered by different traders and markets, would contribute to the optimization of farmers' incomes that ultimately leads to better life.

Tirfe (1995) also elaborated that the knowledge of the rural poor about economics, marketing, local credit and saving system and food processing etc will enable sustaining life through taking care of scarce resources. Therefore, the level of knowledge about productive activities, production techniques, markets for various products, and so on, that the farmers have would go a long way in the more efficient use of rural resources and a better level of productivity.

Knowledge exerts great influence on the way in which one keeps one's house and environment. Keeping the house and its environment in a clean and tidy manner does not require many resources. It does not require much effort and expense for a household to dig a latrine and create a

little privacy around it. Similarly, with a little effort one can keep oneself clean and tidy. The adoption of such practices is often influenced by knowledge about diseases caused through lack of environmental sanitation and lack of personal hygiene (Alexander and Kumaran 1992). Knowledge about personal hygiene and environmental sanitation significantly reduce diseases and mortality rates and improve the well being and longevity of life of a given society at large and rural peoples in particular. Knowledge about how to treat such a simple ailment as diarrhea has existed for centuries. However, millions of children continue to die from it because their parents do not know how to save them. Better knowledge about nutrition can also mean better health, even for those with little to spend on food. Knowledge about how to prevent the transmission of AIDS can save millions from debilitating illness and premature death. Moreover, people may eat more poorly than their incomes allow because of ignorance. Nutrition education may induce behavioral change – thus enabling families to improve their diets even with out additional income is often the most cost effective way to improve nutritional status.

Though knowledge is an important stimulant of development, however, it could not be the exclusive source of development particularly in less developed countries. Thus, the role of other factors like capital, technology, market and socioeconomic infrastructure in economic development cannot be ignored. But the effectiveness of these resources can be more if social values in general and knowledge about them in particular encourages high productivity, high earnings and the rational utilization of resources ultimately leads to sustainable development. Hence, approaching development from a knowledge perspective that is, adopting policies to increase both types knowledge, know-how and knowledge about attributes can improve people's lives in myriad ways besides higher incomes.

3.3 Factors affecting the expansion of knowledge

The acquisition of knowledge, and the build-up of knowledge, is by its very nature always a process of the passage from ignorance to knowledge, from not knowing things to knowing them. Whether we consider our knowledge in general, or our knowledge of some particular thing, it is always the case that first we knew nothing and then gradually acquired knowledge. This is done, and can only be done, through our sensuous interaction with things. It is done by human brains, which are the organs of the most complicated relations between man and his external world.

Knowledge is transmitted and expanded through communication channels that are the result of the relation between man and his external environments. It could be transmitted through indigenous communication systems that are developed locally, under local control, and use low levels of technology. In the contrary, scientific knowledge is also transmitted by exogenous communication channels such as mass media (radio, television, newspapers, magazines, and the like) and such bureaucratically organized net works as firms, schools, banks, postal and telephone services, agricultural extension services and other government agencies (Brokensha *et al.* 1995). Even though the purpose of this study is giving attention to only exogenous communication channel, however, in some cases there exists over lapping of indigenous and exogenous communications in transmission of knowledge. Mundy and Compton in Brokensha *et al.* (1995) pointed out that indigenous communication channels might transmit exogenous messages though some are more likely than others are. For instance, news about a successful new crop variety will spread quickly through direct observation and unorganized channels. Lent in Brokensha *et al.* (1995) also gives examples of successful use of indigenous opinion leaders in spreading family planning and other innovations.

On the other hand exogenous communications also transmit indigenous information. Among the examples stated in Brokensha *et al.* (1995) is the emphasis given to farming systems research in many countries, and with in this, the movement toward farmer - managed research. Technology emerging from field surveys and on-farm trials is inserted into the scientific information system, and from there may filter through to the extension services or is disseminated directly to neighboring farmers.

Socioeconomic factors in general are one of the external factors that influence the level of knowledge of human beings. Education as socioeconomic factor develops a person's capability for learning, for interpreting information, and for adapting knowledge for local conditions. It has also an effect on economic productivity and on other aspects of life such as health, and helps in determining a person's well being. In spite of this, Mundy and Compton in Brokensha *et al.* (1995) pointed out that in many countries, the school system is the main channel for technical knowledge. Technical information is a small part of most mass media fare; they also emphasized on the extension service in delivering scientific knowledge to farmers through interpersonal contacts and the mass media. Daniel Lerner (1964) also examined the process of modernization in the Middle East and indicated that modernization was associated with an increase in literacy, increase in media exposure; increase in per capita income, and political participation.

The ability and capacity to read at first acquired by relatively few people enabled them to perform different tasks required in the modernizing society. Literacy was the important personal skill that underlined the whole modernizing sequence. With literacy, people acquired more than the simple skill of reading. The written word equipped men with a Trans-personal memory. Man's activities and power were roughly extended in proportion to the increased use of written records. Literacy

became the socio- logical pivot in the activation of psychic mobility. Thus, he argued literacy and education, through which it spread, become the basic component in the transformation of the mental outlook of the members of a traditional society.

Foster and Rosenzweing in the World Bank report (1998/99) also identified that more educated farmers adopted green revolution techniques more rapidly and that returns to education among farmers rose in those areas with the greatest potential gains from adoption new varieties.

Educated farmers were better equipped to find out about the new varieties in the first place, and to learn the changes in cultivation practices needed to make the most of them. In addition, education has also a spill over benefits on passing knowledge on. The education of one individual often increases the learning of others in the family and the community. Best known is the inter-generation impact. The most reliable predictor of children's educational attainment is the level of education of their parents. Alderman Orazem, and Paterino (1996) justified that children of more-educated parents get more education than do children from households with similar incomes but less education, and they generally do better tests.

Furthermore, Alex Inkles, in his cross-cultural study of modernization, found that men in a given society changed in quite fundamental ways even after they reached adulthood and, therefore, no man needs to remain traditional in outlook and personality, merely because he was raised in a traditional setting. In the six countries studied by him, education was found to be the most powerful force shaping man's modernity. Exposure to mass media and occupational experience shared the second rank more or less equally. The city (urban influence) failed to qualify as an important independent modernizing influence. Ethnic origin and religion also proved to be relatively unimportant. If the influence of modernizing institutions changed men, then they did so by incorporating the norms implicit in such organizations into their own personality and by

expressing those norms into their own attitudes, values and behavior. It was stressed by Inkles that neither could rapid economic development take place, nor could effective development be sustained with out wide spread diffusion in the rank and file of the population of those qualities, which were characterized as that of modern man. These are, an informed participant citizen who was marked for some personal efficiency, who was independent and autonomous in his relations with traditional source of influence, and who was relatively open minded and cognitively flexible. As an informed participant citizen, the modern man identified with the newer, larger, entities of region and state, took an interest in public affairs, joined organizations keeping himself informed about major events in the news, and took part in the political process. His sense of efficacy was reflected in his belief that he might take actions that shaped the course of his life and that of his community, in his refection of passivity resignation and fatalism towards the course of life's events. He was independent of traditional source of authority, like the village headman, priests, and parents. His openness to new experiences was reflected in his interest in technical innovation, his openness to scientific exploration of hitherto sacred or tabooed subjects, his readiness to meet strangers, and so on. Inkles also found that the different aspects of the personality affected by contact with modernizing institutions did not change in a random way relative to one another. The changes in one realm tended to be significantly related to changes in other realms in such a way as to create a modernity syndrome (Inkles and Smith, 1974).

Alexander and Kumaran (1992) in their study of cultural patterns in an areas of uneven development also identified that exposure to mass media is the most important variable contributing to variation in knowledge. The importance of mass media as a source of change was found in all relatively developed and less developed areas. Though the most important factor bringing about change in it was found to be exposure to mass media, in the area where education

has spread, it has become the prominent source significantly contributing to expansion in knowledge.

Moreover, Thomas, Strauss and Henriques in the World Bank Report (1998/99) using 1986 data from northeastern Brazil found that, parents who regularly made use of mass media for example who read newspaper and listen on the radio had healthiest children. Traditional channels of communications also will remain important, the new information and communication technologies hold great potential for broadly disseminating knowledge at low cost, and for reducing knowledge gaps with in different development areas. Brokensha *et al.* (1995) indicated that the communication based on spatial mobility made by farmers in one area with another could influence their knowledge about a particular thing. In the case of Sahelian farmers where the study carried out, Muslim holly men, who are typically widely traveled, can be one source of new ideas. Other sources documented in the case studies involving short-cycle millets were: village kin, neighbors, and friends; also, visits to and from kin and friends throughout the area; market vendors and shoppers everywhere, and employees on farmers' temporary wage-labor jobs.

Alexander (1985) made a study of agricultural development and social transformation in four areas of India. In this study he examined the knowledge of the respondents from four areas representing four stages of agricultural development in the country. It was found that the level of knowledge about natural phenomena, agricultural practices, elementary skills and values about occupations varied significantly with the level of agricultural development of an area. Therefore, to sum up, knowledge could be expanded through different ways. The levels of development of the factors that affect expansion of knowledge also affect the rate and area coverage of knowledge transmission. It is mentioned earlier in the objective section of this paper that significant factors

affecting the knowledge level of farmers will be recommended to be incorporated in the intra-regional budget allocation formula. To do so one has to deal with some aspects of public finance that are pertinent to the issues. Thus, the next section reviews relevant literatures.

3.4. Grant[6] : it's meaning and Economic Rationale

One way to resolve the conflict between central and lower levels of government over taxing authority and expenditure responsibility is a system of transfers from the center shared taxes and grants - to lower levels (Bahl and Linn 1992). Such a transfer system is justifiable due to the fact that different regions have different revenue generation capacity on the one hand and even the resource base of some regions may not be sufficient to develop and provide the necessary infrastructure and services.

With regard to the economic rationale of grants, Shah (1994) stated that through grants the federal government plays the best of its redistribute role in some services like social insurance, health care, education and welfare. Grants also can be used to correct for inefficiencies arising from inter jurisdictional spillover. Fiscal equalization will be also maintained using grants to reduce differential net fiscal benefits across the system. Shah further elaborated that grant could increase in periods of slack, economic activity to encourage local expenditure and diminish during the upswing of the economic cycle. By doing so it maintains economic stabilization. In order to achieve the stated economic rationale of grants, however there is no firm conclusion that is made

[6] In Ethiopia it is the main source of budgets for the regions. It has interchangeable meaning with subsidies and at regional level it is sometimes also called budget coming from central government. If one wants to talk about inter and/or intra- regional budget allocation at this time, it is use full to see what grant mean and the way it is distributed to regions. This because almost all regions (except Addis Ababa administration) have low revenue generating capacity to cover their expenditure needs from own sources. Hence majority of their budget comes from central government and distributed to lower level administrations (woredas) based on certain criteria (e.g. formula in SNNPRS). Moreover some regions (e.g.
SNNPRS) practiced the same formula for intra- regional budget allocation as that of the central government, which was used for, grants allocation among the regions.

by economic theory about the best division of fiscal responsibilities between central and local governments (Bahl and Linn 1992).

3.4.1. Typology of Grant Programs for Inter States

There are approaches that are concerned with, inter state distribution of grants. Some countries deal with both the size and the divisible pool of grants and how it is allocated among recipient (E.g. U.S.A). Some want to refer to vertical fiscal balance [7]between the central and sub national governments and allocation as having to refer with horizontal fiscal balance[8] (Bahl and Linn 1992). Moreover Bahl and Linn also indicated an alternative forms of inter governmental grant programs that takes both the above mentioned dimensions. The forms are also classified based on the method of allocating the divisible pool among eligible units. The current practice suggests three basic approaches: a specified share of national (or state) government tax revenues, an ad hoc decision (such as an annual appropriation voted by parliament), or reimbursement of approved expenditures.

The first thing that should have to be done here is determining the pool. Once it is determined, allocation among local governments typically is done in four ways by returning shares to the jurisdictions from which the taxes were collected. These are using a derivation principle; by formula; Ad hoc or by reimbursing costs. The intention of this paper is not to give details about each of the grant allocation ways but only the formula way is pointed out and discussed.

3.4.1.1 Formula Grants

Formula grant is an alternative to the pure shared to distribute the grant pool among eligible local units on the basis of some formula. They are differentiated whether the total grant fund is determined as a shared tax or on ad hoc basis.

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[7] Measures the degree of fiscal autonomy given to sub national governments

[8] Indicates the solvency of sub national government by comparing their own revenue with their total expenditures.

4.1.2 Determining the Formula for grant Allocation

Bahl and Linn (1992) stated that determining formula for allocation of the pool varies widely among local governments. It seems to reflect some combination of the desire to equalize fiscal capacity or to reduce disparities in the levels of developments (public services) and to encourage local governments to mobilize resources. In almost every country the formula developed is constrained by the availability of data at the state or local level. The primary motivation for formula grants is the desire to balance regional inequalities in the level of public services. Even though the idea of giving more funds to poor jurisdictions is straightforward enough, the practice is disappointing. The doubt is to have an operational measure for making an equalizing equation. Measure of personal income is commonly used for this purpose in developed countries but it is rarely available below the national level in developing countries.

3.4.2 Experience of Other Countries

The experience of many countries and other studies show that general purpose grants from federal/ central government to states/ regions are generally made through four types of generic formulae (MEDAC, 2000). These are:

A. Formulae that allocate transfers based on revenue raising capacity and expenditure need of states: In this formula case the federal government will fill the gap between each state's expenditure need and revenue rising capacity. This is in order to ensure that with reasonable tax effort will be able to provide a reasonable level of public services. Australia, Korea, Switzerland, England, Japan, and to some extent Germany practice this type of formulae.

B. **Formulae that allocate transfers to the states based only on revenue raising capacity of states:** The formulae provide only compensation for revenue raising capacities with reference to average revenue base and standard tax rate on each revenue item. It ignores the expenditure needs across states. Canada represents this type of formula.

C. Formulae that distribute transfers on an equal per-capita basis: Here population is used as a prime indicator in transferring grant to sub-regional governments. In practice countries do not apply per-capita transfer in its pure form. Indonesia is representative country for the application. This formula is also used in Germany's Value Add Tax (VAT) sharing, in Canada's Established program Financing (EPF) and England's income transfer from Non-Domestic Rates (NDR).

D. Formula that allocates transfers to states based on selected need indicators of states: In this respect, there are a number of indicators that can reflect the fiscal needs of regions, and these are used in combination with weights. The choice of indicators depends on the government objective and other social and political factors. Countries like India, Argentina, Colombia, China (in previous years), and USA (for specific purpose grant) is using this type of formula. Italy and Spain also operate this type formula. In some countries typical indicators used to determine states' fiscal needs include per capita income level, poverty incidence, school enrollment rate; Infrastructure (e.g., length of roads and railways).

In general, as it was summarized by MEDAC (2000), the experiences of other countries in general purpose grant show that transfer formulas can be characterized, more or less, by the formulae of four countries, namely: Canada, Australia, Indonesia and India. Moreover, the mechanism and transfers distribution criteria's also differ from country to country based on its state structure (federal / Central), development level and peculiar situation exist. Table-4 shows the mechanism and grant distribution criteria for some countries follow federal and central government structures.

Table -4 Federal/central transfers to lower levels of government for selected developing and transitional economy countries.

Country	Mechanisms	Distribution criteria
Argentina 1991)	To Provincial Governments: 1.EarmarkedtransfersincludetheHighway Development Fund 2.Discretionary grants Discretionary earmarked transfers come from the Regional Development Fund, Special Fund for Electrification, the National Housing Fund and the Energy Development Fund.	Different criteria by provinces. Most common: fiscal efficiency, provincial population, surface area, equal shares, indications of finder development, poverty, and unsatisfied basic needs. Amount of non-reimbursable discretionary grants is restricted to 1% of the revenue obtained from co predicated taxes. Annually assigned; criteria differ by provinces
Bangladesh (1991)	1.Rural Works Program 2.Matching Block Grants for Collaborative projects	Area (1/3), Population (2/3). Population (20%),Area(20%),Backwardness(30%),Work progress(30)
Ethiopia (2001)	subsidy transfer to regional states	Formula based considering indicators of population, revenue collection effort, and development level disparity among regions.
India (1991)	Finance Commission: 1.Unconditioal Transfers made outside the Finance Commission 2.Planning Commission (plan assistance)	Projected budget deficits for the next five year period For schemes approved by the commission. population (60%), Income relative to national average(25%) Performance (7.5%) this is the aggregation of Tax effort (2.5%) fiscal management (2%) ,National objectives like Universalisation of primary education and adult education (1%),population control maternal and child health(1%), on time completion of externally Aided projects (0.5%), and land reform (0,5) special problems (7.5%)
Indonesia (1993)	Specific purpose grants: 1.Soil Conservation Program 2.Development of Primary School Program 3.Health Services Program 4.Road and Bridges Construction ProgramBlock grants 5.Village Development Program 6.Municipal Development Program 7.Provincial Development Program	Land to be re greened, Area to be covered Funds are disbursed against school bills paid by school boards Financial supervision; population criteria Formula based on length and condition of the road and unit cost of construction. RP 4.5 million per village RP 4000 per capital, RP 750 million minimum subsidy per municipality Equal shares
Philippines (1991)	Central Government grants	Ad hoc criteria
Romania (1991)	General Purpose transfers	Transfers are allocated to local government on the basis of negotiation and bargaining.

Source: Adapted from MEDAC (2000), Wasse (1999) and Planning Commission of India (1991).

From the above table one can observe that countries employ different mechanisms and criteria. For example Bangladesh used the transfer mechanism based on rural work programs, India transfer the grant using per capital income that gives relatively the development level's of states so as to make the distribution fair. Additionally India used efficiency criteria i.e. based on the performances achieved by states in terms of tax effort, achievements on primary education and population control

in relation to national achievements is also incorporated in the grant formula. Indonesia also used soil conservation, education, health, and road construction and village development program as a mechanism for grant distribution to states by attaching to specific purpose grants.

Bahl and Linn(1992) justified that the choice of the formula depends on the level of development of the country, the degree of its focus on transfer equalization and the availability of data for the formula. Many developing countries are mostly constrained by the availability of data. For example formula grants ideally would include per-capita personal income in the allocation. Estimates of local personal income, however, are rarely available in developing countries. Therefore, the development of the formula in most developing countries lacks pertinent data that could increase the fairness of financial resources distribution among the inter and intra- states.

Hence, in countries like Ethiopia at least basic need indicators, which reflect expenditure needs of the Regional Governments should be included (MEDAC 2000). Along with the expenditure need, efficiency of the services that were provided from the existing facilities should be taken into account. Considering the level of service provided could help in deciding how much to expend in that particular sector. Moreover, in a country where a spatial aspect of development is given an emphasis, equity should be the pivotal point of grant distribution along with efficiency. In order to attain equity distribution considering internal variation most likely based on the output of infrastructures is important.

3.5.The Ethiopian Experience of Grant (Budget) formula

Excluding Addis Ababa City Administration, federal government grant is the main source of revenue for regional governments in Ethiopian. The existing fiscal dependence of regional

governments on federal government grants draw forth disjoining an effective transfer system. According to (MEDAC 2000) transparency, equity should be the major characteristics of an effective transfer system among others. In Ethiopia, the right is constitutionally given to The House of the Federation to decide on the formula how the federal government transfers allocated to regional states (Article 62/7 of-proclamation 1/1995). The responsibility was given to the former Ministry of Economic Development and co- operation (MEDAC) and Ministry of Finance to review and forward recommendations and demand from national government to council of ministers.

The inter- regional grants allocation formula have been developed and amended through time since the formula start- up period 1994/95.The following table shows the situation.

Table-5 Stages of development of formula for grant allocation to regions.

No	Years	Stages of Development
1	1992/93 and 1993/ 94	Grants were ashore in nature, based on approved projects of the regions and an assessment of required assistance for the individual projects.
2	1994/95	Formula based grant introduced. Grants for capital expenditures of the regions were determined on the basis of five indicators. These are: populations/30 percent/ tax collections effort/ 20 percent/ capital expenditure grants were determined on the vas's of the number of administrative units at the sub-regional levels, the structure of bureaus and affixes and own revenues of regions.
3	1995/96	Total expenditure of the regions was determined on the indicators having equaled weights i.e. population, I- distance and budget revenues of the regions.
4	1996/97	The indicator of distance substituted with a development index compressing five indicators / number of health clinics number of primary schools, number of telephone lines, electricity consumption and road length/.
5	1997/98	The formula were changed in terms of weighting, population/ 60 percent/, development index/ 25 percent/ and the revenue collection effect / 15 percent/.
6	2000/01	New formula is proposed to be implemented in the future i.e. population /55 percent/ , poverty level / 10 percent/ development index/ 15 percent/ and index of revenue performance/ 15 percent/

Adopted from: MEDAC 2000 and Wasse 1999.

As one can see from the above table there was an amendment of the formula through time in order to increase equity and efficiency of the inter regional grant (budget) allocation.

3.5.1. Intra- Regional Budget Allocation Formula of SNNRPS

The concern of intra- regional budget allocation is directed towards budget allocation with in regions. Its concern is with the allocation of budget between zones and *woredas*. Though the existing regional budget formula is formulated based on policies and strategies implemented at the federal state level, regions could also develop their own formula. However, lack of professionals and data pertinent to the formula forced many regions to employ the existing federal formula. In view of this, the SNNPRS used the previous federal formula (formula developed in 1997/98) in the budget year of 2001/2002 due to the fact that shortage of relevant data about the *woredas* (SNNPRS, BOPED 2001). This formula incorporated population, development variation and revenue indicators of the *woredas* and weighted 60, 25 and 15 percent respectively. For the purpose of this research only level of development variation of the *woredas* is considered and seen briefly. Before we deal with the development indictors that were used to categorize *woredas* into their levels, we have to give working definition to the term development. Stewart in Kotze (1996:1) defined in broad terms that as a positive social, economic and political change in a country or community. He elaborated further development is concerned with positive change in existing human societies, and the success of development efforts is measured by the results seen in society.

From the above definition we learnt that development have a multidimensional aspect, which could bring a positive change to the society in terms of economic, social, political and cultural aspects. With this regard, development is seen in such a way that the positive changes brought through a process from different interventions and seen its effect in the people. Adequate infrastructure, (physical or economic, social and institutional) is treated as the basic pre- requisites

for sustained development to bring these positive change in given community, in *woreda* or in region.

However, what matters is not the availability of infrastructures in particular area but their impact[9]on the community to improve their wellbeing or to bring the intended positive changes. Accordingly Infrastructures found in a particular area measured in different ways in order to show the role they play in improving the level of development of an area.

Finance commission of India (1994) indicated that infrastructures could be measured in terms of investment, out puts or results and in terms of availability of facilities. India measured infrastructure interns of availability of facilities to develop development indices that depict inter-state deferential of infrastructures. This way of measurement is easy to have quantified data for a certain area for the formula. However it does not depict the internal variation of that area and also does not show the impact (positive or negative) that the facilities brought about. Thus, along with facilities, their services should be measured and incorporated in the formula. Doing so, help to know how efficient and quality the service are and eventually leads to identify the development image of the area in terms of the services rendered by the facilities to the people of that area.

In view of the above notion, the formula that employed in the SNNPRS for categorizing *woredas* into their development levels for budget allocation measures some of socioeconomic facilities in their availability in a particular area but not on the basis of the services they render. In this case the impact they have on different sectoral variation is missed. Hence, to show the development level in terms of this variation so as to decide the expenditure need of an area for that particular sector,

[9] Impact is considered quantitatively or qualitatively. Notwithstanding quantitative impact, the qualitative aspect also play significant role for development of certain area qualitative impacts could be the positive or negative change on the thinking and knowledge of people towards particular activity that was intended to bring positive impact on a particular area.

the available number of physical facilities alone should have not be incorporated in the formula. But also their impact on people in term of social, economic development in general and peoples knowledge in particular also should have to be taken in to account.

3.5.2. Development Indicators/ variables used/in the budget formula of SNNPRS

The indictors employed for the budget allocation formulas in (BoPED2001) are:

a. **Education Indicator:** This indicator is incorporated with consideration of the budget needed in human capital formation in this particular sector.

   The variables used in education indicator are six in number. These are- number of students in high and elementary schools, number of elementary teachers, number of classes in elementary schools and participation rate. Unit cost for constructing elementary school is not taken in to account due to lack of data.

b. **Health Indicator:** The reason why this indicator was included in the formula is it help to know the health expenditure need of the *woredas*. The variables incorporated in the indicator are the number of nurses, health assistants, and health centers, clinics and health posts that are found in the *woreda*.

c. **Safe drinking water coverage:** safe drinking water is incorporated because it is the bases for healthy community and also needs high investment cost. The ratio of people access to safe water to the total population of each *woreda* is taken into account.

d. **Road Indicator:** Road is basic infrastructure for development. The road density of the *woredas* is calculated and incorporated. The total length of RR-30, RR50, and asphalt roads is divided to the total area of the woreda.

e. **Electric light indicator:** this indicator is incorporated with the assumption that it is one of the indicators that attract social and economic activities in the *woredas*. Thus the ratio of total clients of electric to total population of the *woreda* is taken into account.

f. **Telephone Indicator-** population of telephone users in relation to total population in the *woreda* is incorporated in the formula.

The inverse index ratio of the above combined development level indicators of each *woreda* was used in categorizing development level of woredas for budget allocation purposes.

CHAPTER IV- RESEARCH METHODOLOGY

Generally, a comparative analysis has been employed to understand the pattern of farmers' knowledge in the two *Woredas.*

4.1. Research Design

Quantitative and qualitative research methods have been employed. For quantitative method cross-sectional and approximating longitudinal using cross-sectional survey method was used. The reason why survey method is the preferred method is that its advantages such as in the economy of design, the rapid turn around in data collection, and the ability to identify attributes of population from a small group of individuals as cited by Fowler in Creswell (1994).

Regarding qualitative method, focus group discussion with the resource and knowledgeable farmers was done to cross check the results obtained from the survey method. Some of the focus group members were selected randomly from those who do not respond to the questionnaire. Moreover, trained farmers were included in the group to understand the impact of training on the knowledge of farmers. Direct observation also has been employed.

4.2.Methods of Data collection

Both primary and secondary data collection methods were used in this study. The primary data are collected through face-to-face interviewees using questionnaires. In addition to this formal and informal discussions and interviews were held with focus groups in each of the selected peasant associations. The secondary data were obtained from different published and unpublished documents.

4.3. Sampling Design and Selection

The sampling design of the study has combined non-probability and probability sampling techniques. Two from the six woredas of *Silti* zone were selected purposively. The bases for the selection were firstly, it is the development level categorization of woredas made by the regional BOPED in the year 2001 for the purpose of budget allocation. Accordingly, *Dalocha* woreda was with higher *a*nd *Lanforo* with lower average development indices. The reason why this factor was used as a criterion is that it could help to compare the pattern of knowledge between areas with different levels of development. The second criterion for the purposive selection of the woredas was the presence and absence of NGO development intervention. This factor also taken into account because it could help to see the NGO development intervention on farmers knowledge. With this regard *Dalocha* woreda was with and *Lanforo* woreda was with out NGO development intervention. To select peasant associations from *Dalocha woreda,* PAs were stratified based on with and without NGO development intervention. Accordingly, out of the total 25 PAs 16 of them are with and 9 of them are with out NGO development intervention. Then, three peasant associations were selected randomly, from the sixteen with NGO development intervention PAs.

In *Lanforo* woreda also three peasant associations were selected randomly out of the total PAs found in the woreda. The rural household heads from the selected peasant associations also were selected randomly after they are stratified based on male and female household heads. Lottery method was used in the two woredas to select the samples pas and household heads. Numbers were attached to each of the PAs and drawn a draw three times to select three PAs out of the sample frame. The sampling frame of the household heads in *Dalocha* and *Lanforo woredas* were the list of farmers from educational sector census of AAE in 2001 and the list of farmers who pay rural land tax in 1993 E.C. from *woreda* finance office respectively.

4.4 Sample Size determination

Usually the Sample size is determined after due consideration is made on inter-farm variability, the complexity and coverage of the questionnaire, the time available and the funds that are feasible (Tesfaye, 1977). When a variability of rural population in different aspects are found to be relatively low at micro level as in our case, the experience of others data generating institutions and previous research could provide good approximations on the required sample size. In this regard, Tesfaye (1977) indicates that usually 2.5-5 percent of the total farm household from relevant peasant association can be considered to be fair representatives of the populations for a micro level study.

In this study, the size of the sample from each PA is determined on the bases of male-headed and female -headed households living in that specific PA in order to avoid gender bias. 262 household heads representing approximately 8.5% of the total household head population in each PA heads were randomly drawn. A sample quota has been also allotted to each peasant associations proportionate to the size of the households

Table-6 The sample size of the household heads

Woredas/PAs	Sample population			Sample size		
	Male	Female	Total	Male	Female	Total
1.*Dalocha*						
1.1. *Burka Dilapa*	545	132	677	46	12	58
1.2. *Glocheba*	377	164	541	32	14	46
1.3.*Dange Jigena*	426	117	543	36	10	46
Sub total	**1348**	**413**	**1761**	**114**	**36**	**150**
2.*Lanforo*						
2.1.*Wonte Lola*	367	36	403	31	3	34
2.2.*Wonte Sostero*	435	47	482	37	4	41
2.3.*Archuma Gola*	376	59	435	32	5	37
Sub total	**1178**	**142**	**1320**	**100**	**12**	**112**
Grand Total	**2526**	**555**	**3081**	**214**	**48**	**262**

4.5. Methods of Data Analysis

Data that have been collected using survey method was analyzed using the following techniques. The descriptive analysis (such as frequency distributions, cross tabulation, and mean) of all independent and dependent variables in the study was conducted. The mean scores obtained by the respondents of an area on each components of knowledge are computed by giving a score. The respondents with knowledge about various aspects are shown in percentage and given in tabular form and described. Further, the mean scores obtained by the respondents of each *woreda* on each component of knowledge were computed, by giving a score of 0 for a response indicating lack of knowledge and a score of 1 for a response indicating knowledge about an item. Mean score is used to compare the differences of knowledge levels between *woredas*. Apart from developing seven separate indices of knowledge using the responses on all the 45 items also developed an Aggregate Index of knowledge contained in the seven individual components of knowledge. This shall help to understand the general situation of knowledge jointly for the two *woredas* and separately for each *woreda*. Here, also the scoring procedure was the same as the case of the individual components, so that the score of a respondent could vary between 0 and 45. However, all other components of knowledge were analyzed only for the respondents of the two *woredas*. The influence of eight independent variables on the dependent variables was examined. Social variables have been quantified interns of scores for the purpose of regression analyses.

Following this, the analysis of independent variables related to the variation to knowledge, multiple regression analysis is employed because it postulate a causal relationship between each dependent and one or more independent variables. Here, it is assumed that dependent variables are a linear function of independent variables. Therefore, through regression analysis, it is possible to estimate how much variation in the dependent variable (aspects of knowledge), is

caused by the independent variables. R^2, the regression coefficients, the relative contribution of independent variables and F- values are computed for interpreting the data. Moreover to determine the fitness of regression, R^2 is used, which gives the percentage of variance explained by the regression. Therefore, R^2 is a measure of how much effect a given change in the independent variable has on dependent variable. For example, the R^2 value of 0.4562 indicates that 45.62 percent of the variance in the dependent variable has been explained by the independent variables. The remaining variance will be unaccounted and may be described as unexplained variation. Statistical package for social science (SPSS) for windows (version 10) was used to analyze the raw data.

In the analysis of the qualitative data, categories developed are those enabling making comparisons and contrasts. The collected data were reduced to certain patterns that could assist in testing the hypothesis.

4.6 Variables used in the study

The following variables are used in the understanding of farmers' knowledge and identifying significant factors affecting it.

4.6.1 Dependent variable: is the knowledge [10]that the farmers have about: elementary techniques and skills agricultural practices, nutrition, human fertility control, causation of diseases, credit and saving, and marketing situations.

Knowledge about elementary technique: to understand their technical knowledge farmers were asked whether they know or not about the following:

- Are short or long handled spades desirable for heavy tilling?

- Are large or small donkey cartwheel is easy to ply on village road?
- Do you know about drawing water form well using Pulley?
- Do you have special skills like (carpenter, masonry and hand drafts)?
- Do you know about managing modern grain store?
- Have you seen a Sheller and/or combine before and know how they operate?

❖ **Knowledge about agricultural practices:** both livestock and crop production practices are Considered. The farmers are asked whether they know or not about the following:

- Row or broadcast sowing increases yield of maize?
- Late or early application of fertilizer is appropriate for cereals?
- Does chemical fertilizer application adversely affect soil?
- Have you ever tried to know the soil composition of your field?
- Do you know and/ or have practiced modern method of animal castration?
- Do you know maximum time with in which milking of local animals done?
- Do you know and/ or practiced Artificial Insemination?
- Is it possible to prevent of animal disease through vaccination?
- Have you ever-heard of hatching eggs through machines?

❖ **Knowledge about nutrition:** knowledge about the nutritive value of different food items and related dietary practices contributes to a healthy life. Thus, farmers were asked whether they know about the following aspects.

- Have you ever heard about balanced diet?
- Does eating large quantities of food improve health?
- Should a child less than six-month be given *injera* or bread?

[10] the technical knowledge and knowledge about attributes that are acquired augmented and stored through indigenous and/or scientific channels, which is synthesized with in the farmers themselves

- The price of butter is double than the price of oil. Does butter have nutritional value double than oil?
- Do fruits and vegetables or meat and egg prevent diseases more?

❖ **Knowledge about human fertility control:** this variable deals with knowledge about the biological process related to human fertility and methods of controlling it. Farmers' were asked whether they knew about woman menstruation and modern methods contraceptives.

- Do you know why woman menstruates?
- The time of menses cycle when pregnancy likely to occur?
- Do you know about use of male contraceptives?
- Do you know the (rhythm) safe period?
- Do you know about IUD/loop?
- Do you know about female oral pills?
- Do you know about male sterilization?
- Do you know about female sterilization?
- Do you know about induced abortion?
- Do you know about use of condom?

❖ **Knowledge about causation of Disease:** it helps one to prevent and control diseases thorough various measures. To understand the level of the knowledge of farmers' in this respect, the responses sought on whether they know the causes of cholera, malaria, typhoid, polio and AIDS or not. Moreover, they were asked the harm of drinking water from a village-unprotected pond and harm of defecating in the open in the village.

❖ **Knowledge about, credit and saving institutions:** this variable incorporates the following issues of micro finance. These are, the benefits of to be member of local credit and saving association, the

benefits of to be member of *Idir* (indigenous insurance institution) and the benefits of to be member of *Iqub* (indigenous saving institution).

- **Knowledge about marketing situations:** knowing about marketing situation help farmers to increase their income. To understand their level of knowledge with this regard, they were asked the following questions.

- Does the price of agricultural produces in your area decrease or increases compared to last year's price?
- What are the causes for price change?
- Would privately or using co- operatives supply of agricultural produces to the market increase bargaining power?
- Where do you decide the price of your marketable produces?

4.6.2 Independent variables: These variables include: educational of the respondent and his father, member ship to association, exposure to different mass media, spatial mobility, per capita income, access to extension service and development intervention of NGO in the area. Operational definitions of the variables used in the study are shown here under.

- **Educational level of the respondent:** it is the level of education attained by the farm household head. It is measured whether he is illiterate, read and write, grade 1-6, 7-8, 9-12 and above grade 12. This variable was selected in the assumption is that the higher the level of education of the farmer is then; the level of his knowledge also could be higher as compared to the less educated farmer.
- **Father's education:** it is the level of education attained by the father of the household head. It is measured as that of the educational level of the respondent. If the level of education of the father of

the respondent was higher then, the assumption is that the knowledge level of the respondent will be higher than the farmer whose father is less educated.

- **Membership in associations**: this variable refers to the membership of the household head in different formal associations. It is measured in a way that the farmer is asked whether he is a member (ordinary or executive) of the following associations service co- operatives, development associations, credit saving associations, water usage associations and political organizations. If the farmer is a member of one or more associations then, the assumption is that his level of knowledge will be higher than a farmer with less or non-membership.
- **Exposure to mass media:** this variable refers to how extent that the farmers are exposed to different mass media. It is measured by asking the frequency of listening radio, reading newspapers, and watching educational films and television. The assumption here is that the farmer that exposed more to the media will have more knowledge than the less exposed one.
- **Spatial mobility:** Refers to the frequency at which the farmers move to small and large towns annually and with in the *woreda* /peasant associations/within a month. The assumption is that if the farmer move spatially more then he acquires more knowledge than the less or non-movable one.
- **Access to extension services:** This variable refers to the farmers are asked whether the extension services that are provided by the government contributed to their knowledge about their daily life or not. It is measured using six levels scales of no, very low, low, medium, high and very high.
- **Per capita income:** This variable refers to earning generated by the household from off -farm activities and by converting all types of crop produced and live stock owned in the year 1993 E.C to market value multiplying each item by average market price of that year in the area. Then the amount resulted is divided by the number of household members to have annual per capita personal income. Here it assumed that the higher the per capita earning that the farmer gets, the higher his

access to different knowledge generating and disseminating media. Consequently, he would acquire more knowledge than the farmer would with less per capita earning.

- **Development intervention of NGO:** This variable is taken into account because there are different "software" development interventions made by NGO besides construction of "hardware" aspects of development. Among this, training (on and off-farm) and other skill developments could have positive impact on the knowledge of farmers. In accordance with this, the farmers are asked whether the NGO development intervention in their locality contributes to their knowledge about each components of knowledge or not. It is measured using six level scales of no, very low, low, moderate, high and very high contribution and giving a score of 0,1,2,3,4,and 5 respectively. The farmer is asked for each component of knowledge.

PART TWO- EMPIRICAL STUDY

Chapter -V Socioeconomic Development situations

In this section the main features of the respondents from *Dalocha* and *Lanforo woredas* are described in a comparative framework so as to give a picture of the relative level of development of these areas. This is based on information derived through interviews of the respondents.

5.1 Socio- personal characteristics

5.1.1 Age and sex: - The average age of the respondents was 39.4 years in *Dalocha* and 40.8 years in *Lanforo* out of the total respondents of *Dalocha* male76 percent and female are 24 percent. In *Lanforo* the percentage for male is 89.1and female is 10.9.

5.1.2 Religion: - Among the respondents 96.7 percent from *Dalocha* and 100 percent from *Lanforo* were Muslims. Orthodox Christians constitutes 3.3 percent in *Dalocha woreda* only.

5.1.3 Marital status: - From the total respondents, married constituted 84 percent in *Dalocha* and 91.8 percent in *Lanforo*. And single 14 percent and 3.6 percent, widowed 2 percent and 4.6 percent in two areas respectively.

5.1.4 Language: - *Seltigna* speakers constituted 76.5 percent in *Dalocha* and 85.5 percent in *Lanforo. Amariga* and *Siltigna* speakers are 23.5 percent and 14.5 percent in both *woredas* respectively.

5.1.5 Household size: - The average size of the households in *Dalocha* and *Lanforo woreda* is 5.14 and 6.5 respectively. Among the households 14.7 percent of the respondents have family member who lives in urban areas in *Dalocha* and 17.3 percent in *Lanforo woreda.*

5.1.6 Educational Situation

5.1.6.1 Formal Education: - the level of education of the respondents, and that of their fathers was inquired. Among the fathers of the respondents, illiterates formed 90.2 percent in *Dalocha*

and 88.2 percent in *Lanforo* compared to this, among the respondents illiterates constituted 66.4 and 74.4 percent respectively in the two *woredas*. A comparison of the illiteracy of fathers with that of the respondents indicates that illiteracy has declined by 24.8 percent in *Dalocha* and 14.9 percent in *Lanforo*. Among the respondents, those with "read and write" accounted for 16 percent in *Dalocha* and 12.6 percent in *Lanforo*. Primary (1-8) level of education was 17.6 percent and 13.2 percent, secondary (9-12) no secondary level is found in *Dalocha* but 0.9 percent in *Lanforo*. The educational details of the respondents and their father's in both *woredas* are shown on table 7.

Table -7 Percentage of household heads and their fathers with different levels of Education

Level of education	*Dalocha* N=150		*Lanforo* N=112	
	Fathers	Respon.	Fathers	Respon.
Illiterate	90.2	66.4	88.2	73
read and write	7.7	16	6.3	12.6
primary (1-8)	2.1	17.6	5.6	13.2
secondary (9-12)	-	-	-	0.9

5.1.6.2 Informal education: Out of the total respondents 20.6 percent have access to informal education in *Dalocha* and only 2.1 percent in *Lanforo*

Table-8 Number and percentage of respondents accessed to informal education

Type of Inf. Education	*Dalocha* (N=138)	*Lanforo* N= 112)
Adult education	15.5	1.1
Skill development	5.1	1.0

5.1.7 Membership in Associations

A. Formal association

The respondents from both *woredas* were found to be members of political organizations proportionately. However, the respondents from *Lanforo* constitute 54 percent of being a member of service co-operatives. Member to water users association is higher in *Dalocha* than *Lanforo*.

Table -9 Percentage of respondents who are member to different associations

Type & Assignation	*Dalocha* N=150	*Lanforo* N=112
Service Co-operative	25.9	54.5
Development association	21	10.9
credit and saving	12	4.5
water usage	21	4.5
political organizations	48	48.2

5.1.7.1 The Number of formal associations in which respondents belong: Among the respondents 26.4 and 39.1 percent in *Dalocha* and *Lanforo woredas* were not members of any associations respectively. 34 and 15.1 percent were members in one association, 25.7 and 32.7 percent in two, 11.8 and 10 percent in three, 1.4 and 2.7 percent in four respectively 0.7 percent of respondents from *Dalocha* were members of five associations

B. Informal associations

5.1.7.2 Membership in association

Among the respondents 24 and 28.2 in *Dalocha* and *Lanforo* woredas were not member to any informal associations (*Idir Iqub* and *Dado*(religious association) respectively. However, 72.6 and 70 percent were ordinary members and 3.4 and 2 percent were executive members in both woredas respectively.

5.1.7.3 Types of associations the respondents belong

Among the respondents 75.2 and 85.7 percent were members of *Iddir* in *Dalocha* and *Lanforo* woredas respectively. On the other hand, members in *Iqub* were 12 and 26 percent in both woredas respectively. However, with regard to membership in *Dado* (religious organization), the respondents of *Dalocha* were found to be half that of *Lanforo.* The following table shows the details.

Table -10 Percentage of respondents who are member to informal associations

Type of association	*Dalocha*N=150	*Lanforo*N=112
Iddir	75.2	85.7
Iqub	12	26
Dado(Religious)	18.6	37

5.1.8 Response to Exposure to Mass media

5.1.8.1 Frequency of Lessening Radio: Among the respondents of *Dalocha* 46.4 percent never listened to radio; 22.2 percent listen sometimes 10.4 percent listen occasionally and 21 percent listen every day. The figure in *Lanforo woreda* was 60.4, 18.8,6.2, and 14.6 percent respectively.

Table-11 Percentage frequency of listening of the radio of respondents

Level of listening	*Dalohca* N=-150	***Lanforo*** N=112
Never listening	46.4	60.4
listening some times	22.2	18.8
listening occasionally	10.4	6.2
listening every day	21	14.6

5.1.8.2 Reading newspapers: Never reading constituted 71.9 percent of the respondents in *Dalocha woreda*. Reading once in a week 14.6 and a few days in a week 10.1 percent and reading every day 3.6 percent. Whereas, the respondents of *Lanforo woreda* constituted never reading 78.2 percent; reading once in a week 16.4; reading in a few days 4.5; and reading daily 0.9percent.

Table -12 Percentage of respondent reading newspaper

Level of reading	*Dalocha* N=150	*Lanforo* N=112
Never reading	71.9	78.2
Reading Once in week	14.6	16.4
Reading few days in a week	10.1	4.5
reading every day	3.6	0.9

5.1.8.3 Watching film: Never watching respondents constituted the higher ratio in *Dalocha* and *Lanforo*, respectively, 79.2 and70.9 percent. Once, twice a year 7.6 and 19.1 percent, 3-11 times a year7.6 and 2.7 percent, once or twice a month 4.2 and 7.3 percent and once or more a week watch 1.4 and 0 percent in *Dalocha* and *Lanforo woreda* respectively. as shown on table-13 that *Lanforo woreda* is more exposed to watching films than *Dalocha woreda*.

Table -13 Percentage of respondents watching films /television

Level of watching	***Dalocha***N=150	***Lanforo*** N=112
Never watching	79.2	70.9
Once twice a year	7.6	19.1
3-11 times a year	7.6	2.7
once or twice a month	4.2	7.3
once or more a week	1.4	-

Generally, the mean scores obtained by the respondents on the three items of mass media exposition are 1.64 in *Dalocha* and 1.57 in *Lanforo*. The value of F-ratio shows that the mean scores differed significantly at the 1- percent level: $F(2, 259) = 3.967$ $P < 0.01$.

5.1.9 Spatial mobility

As shown on table among the respondents of both *woredas*, the respondents in *Lanforo woreda* move more to small and large town than the respondents of *Dalocha woreda.*

Table- 14 Percentage of spatial mobility of respondents

Level of mobility	Small towns		Large towns	
	Dalocha	*Lanfor*	*Dalocha*	*Lanfor*
Never visited in previous year	19.1	30.6	67.3	79.2
visiting 109 times	41.7	41.7	32.7	18.1
visiting 19-24 times	18.2	26.3	-	2.1
visiting 25-40 times	6.4	1.4	-	0.7

Mobility within district among respondents was found to be relatively proportional (Table 15). The majorities of the respondents in the two areas move four times a week with in the district.

Table-15 Percentage of spatial mobility with in district

Level & mobility	*Dalocha* N=150	*Lanforo* N=112
Never moved in previous yr.	21.5	13.6
Once a week	19.4	24.5
Twice a week	16	15.5
Three times a week	19.4	16.4
Four times a week	23.7	30

The mean scores obtained by the respondents on the items of spatial mobility are 3.29 in *Dalocha* and 3.65 in *Lanforo.* The value of F-ratio shows that the mean scores differed significantly at the 1- percent level: F (2, 259) = .071 P< 0.01. Hence, the respondents of *Lanforo* more spatially mobile as compared to respondents of *Dalocha.*

5.1.10 Training for Skill Development: Among the respondents of *Dalocha* 36.4 percent are trained in different skill development activities within and out of the *woredas*. The percentage for training in *Lanforo woreda* is 2.9 percent. Hence, the respondents of *Dalocha* were trained in greater proportion than the respondents in *Lanforo* do. Out of the trained respondents *Dalocha* respond that 89.8 percent were trained by the NGO found in their locality and the remaining percentage were trained by government and development association. In *Lanforo* the whole training was given by government institutions

5.2 Economic Characteristics

5.2.1 Occupation: - In Table-16 the main occupation of the respondents is given. Agriculture is the main occupation in both *woredas*. The percentage is 91 in *Dalocha* and 97.7 in *Lanforo*.3.6 Percent engaged in petty trade in *Dalocha* and 1.4 percent in *Lanforo*. Both agriculture and petty trade constituted 6.5 percent and 0.9 percent in both areas respectively. Handicrafts are the least occupation only 0.9 percent practice in *Dalocha*

Table-16 Percentage of Respondents in Different occupations

Occupation	*Dalocha* N= 150	*Lanforo* N= 112
Agriculture	91	97.7
Petty trade	3.6	1.4
Handicraft	0.9	-
Agriculture and petty trade	6.5	0.9

5.5.2. Income: To calculate per capita income of the respondents individually and at aggregate level, the crop produced and livestock that the responds own are changed in to monetary value at the market price of the area and income from off farm activities also taken in to account.

5.2.2.1 Market Value of crop production: As one can see from the table -17, the income gained from crop production in *Lanforo* is greater than *Dalocha woreda* by 17%. But, income by crop diversification is better in *Dalocha* than *Lanforo*.

Table-17 Market value of crop production (1993 E.C.) (In Birr)

Crop Type	*Dalocha* Birr	*Lanforo* Birr
Maize	28910	29380
Wheat	8560	18495
Teff	12921	2930
Sorghum	6027	6614.6
Chat	4289	3920
Coffee	2874	-
Fruit and vegetable	1278	-
Pepper	1220	7487
Total	**51902**	**61025.6**

5.2.2.2 Market value of livestock: As that of crop production, market value of livestock from respondents of *Lanforo* is greater by 9 percent

Table -18 Market Value of live stock (in Birr)

Type of live stock	*Dalocha*	*Lanforo*
	Birr	**Birr**
Oxen	69660	88020
Calves	19380	20330
Heifer	6450	6300
Cow	37454	38682
Sheep/Goat	11904	5890
Poultry	1022	1032
Equine	7680	8160
Total	**153550**	**168414**

5.2.2.3 Earning from off-farm activities: - Table-19 shown that Income from off- farm activities is greater in *Dalocha* as compared to *Lanforo*. It is Birr 8,152 and 1,040 respectively

Table -19 Earning from off - farm activities in 1993 E.C (Birr)

Activities	*Dalocha*	*Lanforo*
Casual Labour	1430	300
Migration to town during slack period	1965	-
Selling fuel wood	325	-
Petty trade	4432	540
Remittance	-	200
Total	**8152**	**1040**

5.2.2.4 Annual Per capita income: Table-20 depicts that annual per capita income of *Lanforo* is greater than *Dalocha woreda*. This shows that income wise the respondents of *Lanforo* were relatively in better condition than the respondents of *Dalocha*.

Table -20Aggregate per capita Income of the Respondents from different sources (In Birr)

Source	*Dalocha*	*Lanforo*
Crop production	51902	61025.6
Live stock	153550	168414
Off farm activities	8152	1040
Total	213604	230479.6
Household size	740	715
Per capital Income	288.6	322.3

5.2.2.5. Personal per capita income: 80.6 percent of the respondent in *Dalocha* earn less than 100 Birr per capita earning and 71.6 percent in *Lanforo*.

Table-21 Percentage of Annual per capita income of the respondents

Annual Earning (Birr)	*Dalocha* N=150	*Lanforo* N=112
Less than 100	80.6	71.6
100-200	7.3	15.05
201-300	9.9	5.45
301-400	0.6	2.5
401-500	1.3	3.6
501-600	0.6	1.8

5.2.3 Household Utensils and Type of houses

5.2.3.1 Household Utensils: 58 percent of the households in *Dalocha* and 78.6 percent in *Lanforo* cooked food in earthen vessels. The percentage of households using aluminum vessels was 69.9 in *Dalocha* and 51.2 in *Lanforo*. 37.8 percent of the respondents in *Dalocha* own working radio and 23 percent in *Lanforo*. Tape recorder 7.6 and 3.6 percent; chemical sprayer 2.8 and 2.7 percent; animal cart 6.9 and 4.5 percent; oxen plough 74.3 and 95.5 percent own respondent of both *woredas* respectively.

5.2.3.2 Types of Houses: The percentage of the respondents whose house is made of wood and mud-wall constituted 93.1 and 41.8 percent; and thatch roof constituted 96.5percent and 100 percent in *Dalocha* and *Lanforo woredas* respectively. Whereas, corrugated iron roofs with wood thatch wall and thatch roof were 2.8 percent in *Dalocha woreda*.

The percentages of respondents who have windows were 16 percent in *Dalocha* and 12.7 percent in *Lanforo*. 81.3 percent of the respondents in *Dalocha woreda* their animal spent the night in the same room with them and 89.1 percent in *Lanforo*.

5.2.4 Environmental sanitation and access to safe drinking water

5.2.4.1 Environmental sanitation: Among the respondents 95.6 percent in *Dalocha* and 100 percent in *Lanforo* defecate in open. Only 4.4 percent in *Dalocha* use latrines. Throwing waste in

garden is the main waste disposal method in both *woredas* that is good for compost and a few respondents use communal dumpsite.

Table-22 Percentage of respondents using different waste disposal methods

Methods of waste disposal	*Dalocha* N= 150	*Lanforo* N=112
Burning	-	10.9
Throw in the river	2.1	-
Throw around house and street	31.3	53.6
Throw in the ditch	2.8	-
Throw in communal dump site	10.4	28.2
Throw in the garden.	53.5	7.3

5.2.4.2 Access to safe drinking water: Among the respondents 76.2 percent have access to safe drinking water in *Dalocha woreda* and only 30.6 percent of the respondents in *Lanforo woreda.* The main water sources of *Dalocha* and *Lanforo woreda* are pipe water and river water respectively.

Table 23 Sources of drinking water by percentage & respondents

Sources of water	Distance to fetch water									
	<1hr		1-2hrs		2.01-3hrs		>3hrs		Percent of respondents	
	Dalocha	*Lanfor*	*Dalocha*	*Lanforo*	*Dalocha*	*Lanf*	*Dal*	*Lan*	*Dal.*	*Lan.*
Pipe	58.7	14.5	11.3	16.1	1.3	-	2.0	-	73.3	30.6
unprotected well water	4.7	8.2	1.0	5.5	-	-	-	-	5.7	54
protected well water	2.7	-	-	-	-	-	-	-	2.7	13.6
unprotected spring	-	8.2	-	5.5	-	-	-	-	11.3	-
river water	7	40	-	26.4	-	-	-	-	7	-
Pond water	-	1.8	-	-	-	-	-	-	-	1.8

5.2.5 Pattern of Agriculture

In this section, the basic features of and agricultural production landholding improved practices used and the new extension program in the two areas are examined

5.2.5.1. Land holding size and Years of practices in agriculture

i. Landholding: The percentage of the respondents according to the size of land holding is given in Table- 24. The average land holding of the respondents' was0.17 hectare in *Dalocha* and 1.4 hectare in *Lanforo.*

From the above table one can perceive that maize, wheat and pepper are produced more in *Lanforo* than *Dalocha* on the other hand Teff, sorghum, coffee and vegetables produced by the majority of respondents in *Dalocha*. Based on the sales of 1993 E.C. in *Dalocha* wheat and Teff are produced for market and maize and sorghum mainly for consumption. In *Lanforo woreda*, wheat and pepper are the main cash source. Maize in this *woreda* is not sold proportionate to its production

5.2.5.3 Household Food Security: Among the total respondents 13.8 percent meet their family's annual food requirement in *Dalocha* and 18.2 percent in *Lanforo*. 36.4 percent meet less than half the requirement; 32.6 percent about half and 30.3 percent about three fourths of the household requirement in *Dalocha* and 20,26, and 37.3 percent in *Lanforo woreda.*

With regard to coping mechanisms, 25.2 percent of respondents cope by decrease the number of daily meal; 55 percent purchase from market and 13.7 percent gain food from aid in *Dalocha, Woreda.* The copping mechanism percentage in *Lanforo woreda* is 14.5 decrease number of daily meal; 44.5 purchase food from the market and 11.8 percent expect from aid.

5.2.5.4 Livestock production: livestock production formed an integral part of agricultural production in both *woredas*. Oxen, calves, cow heifers, sheep and poultry were the important livestock maintained by the respondents. Details of the number of respondents keeping different animals and their number are given in table 27. It is seen from this table that large animals like cattle and equine were owned in larger numbers in *Lanforo* than *Dalocha woreda.* Accordingly, out of the total respondents 78.6 percent owns either of the livestock in *Dalocha* and 87.2 percent in *Lanforo woreda.* The respondent who own oxen in *Lanforo* were greater than that of *Dalocha* by 11.3 percent

Table-27 Details of live stock owned by respondents

A. Percent of Respondents owning livestock	***Dalocha* N=150**		***Lanforo* N=112**	
• Oxen	62		77.3	
• Calves	43.3		50	
• Heifer	28.7		24.5	
• Cow	55.3		63.6	
• Sheep /goat	24		14.1	
• Poultry	37		32.7	
• Equine (Horse, mule & donkey)	33.3		39.5	
B Number of animals owned	**No.**	**Market value**	**No.**	**Market value**
• Oxen	129	69660	163	88020
• calves	102	19380	107	20330
• Heifer	43	6450	42	6300
• Cow	122	37454	126	38682
• Sheep /goat	192	11904	95	5890
• poultry	213	1022	215	1032
• equine	48	7680	51	8160
C. Birr gained from the sales of Livestock	**Total**	**Average unit price**	**Total**	**Average unit price**
• Oxen	8100	540	1280	540
• calves	1333	190	720	190
• Heifer	300	150	-	-
• Cow	2150	307	1150	307
• Sheep /goat	1569	62	1012	62
• poultry	63.5	4.80	52	4.80
• equine	650	160	160	160

5.2.5.5 Use of Improved Agricultural Practices

Most of the improved agricultural practices were exercised in both *woredas*. The majority of the respondents practiced compost making and zero grazing in both *woredas*. The respondents of *Dalocha* practice livestock vaccination and terracing more. On other hand crop rotation and recommended seed rate application was used more by the respondents of *Lanforo*.

Table-28 the percentage of respondents practicing improved agricultural practices

Type of practice	*Dalocha* N= 150	*Lanforo* N= 112
Crop rotation	72.1	70.9
Recommended fertilizer application	59	54.5
recommended seed rate	62	53.6
recommended planting rate	16	9.1
composite making	60	57.3
terracing	28	19.1
tree planting	10	12.7
vegetable growing	9.3	0.9
forage production	0.7	3.6
Live stock vaccination	34.7	27.3
Improved poultry farming	2.7	3.6
zero grazing	60	60.2
chemicals application	45.3	45.5

5.2.5.6 The New Extension Program: Among the respondents the new extension program in *Dalocha* and *Lanforo woredas* targets 22 and 36.4 percent respectively. Almost all targeted respondents practiced less than five packages. Out of targeted respondents 72.7 percent of the respondents in *Dalocha woreda* had practiced less than three years in the extension program. Moreover 12.1 percent were 3 to 5 years and 15.1 percent more than 5 years. In *Lanforo* the duration percentage of respondents in extension program was 26.3 less than three years; 60.5percent 3-5 years and 13.2 percent more than 5 years.

Out of the total targeted respondents 29 percent respond that they did not get benefit out of the program and 71 percent benefited in *Dalocha woreda*. The percentage in *Lanforo woreda* is 37.5 and 62.5 respectively. With regard to not benefited respondents, fertilizer and seed loan burden were seen as the main constraint in both *woredas.* The main benefit gained from the extension program, in both *woredas* is production increment. Different respondents in both *woredas* give different reasons why they were not targeted by the new extension program. 23.5 percent of respondents reason out that their level of poverty constrained them from being targeted by the program in *Dalocha* and the percentage is 40.8 in *Lanforo woreda*. This is because as they pointed

out that the program was favoring the rich. Moreover, those not willing to be targeting in the program constituted 33 percent in *Dalocha* and 26.5 percent in *Lanforo*.

Table -29 the percentage of respondents with factors affecting not to be targeted by the extension program

Factors /Reasons	*Dalocha* N=150	*Lanforo* N=112
Being poor	23.5	18.2
Have not enough land	26.1	8.2
Have not enough livestock	3.5	2.7
Not willing	33	11.8
Drop out	5.9	-
fear of loan burden	3.7	-
Need it but did not get it	4.3	0.9

Among the respondents, 29.7 and 31.8 percent respond that there was discrimination among farmers in the process of targeting them in the program in *Dalocha* and *Lanforo woredas* respectively. Meanwhile, 25.4 percent respond no discrimination and 44.9 percent they don't know in *Dalocha*. The percentage in *Lanforo* is 10.9 and 57.2 percent respectively. Furthermore, respondents who respond that the basis for the discrimination was political constituted 28.2 percent; wealth status 38.5 percent and land size 10.3 percent in *Dalocha woreda*. In *Lanforo woreda* 13.6 percent of the respondents' claim that the basis for the discrimination was clan differences, corruption 4.5 percent and political constituted 7.3 percent.

Loan burden of inputs, bribery, lack of technical advice and obligation of taking inputs beyond capacity of farmers behind the program is the main problem of the extension program in both *woredas*. Additionally erratic rainfall was found to be a problem in *Dalocha woreda*.

5.2.6 Access to different social and economic services

Among the respondents of *Dalocha* more than 50 percent have access to different social and economic services within a distance of less than an hour. In case of safe drinking water and schools the percentage are 89.4 and 90.8 respectively. On the other hand, the majority of the respondents of *Lanforo woredas* are provided the services within a distance of 1-2 hours except

school and extension services. Thus from the table one can deduce that the respondents of *Dalocha* are found to be in better access to health institutions, telecommunication, and safe drinking water as compared to respondents of *Lanforo* woreda. The accessibility of different services are expressed in terms of time traveled to get the services and shown on the following table.

Table-30 Time (hr) taken to reach deferent services

Types of service giving institutions	*Dalocha*				*Lanforo*			
	<1hr	1-2hr	2-3hr	>3hr	<1hr	1-2hr	2-3hr	>3hr
Health institutions	63.4	28.1	6	2.3	-	84.5	13.6	1.8
Market place	51.8	34	12.1	2.1	9.1	75.5	13.6	1.8
Extension offices (DA)	65.9	12.1	14.4	7.6	64.5	24.6	9.1	1.8
Telecommunication	52.5	33.8	11.2	2.5	-	0.9	30.9	68.2
Schools	90.8	6.4	2.8	-	86.4	13.6	-	-
Safe drinking water	89.4	5.6	2.2	2.8	17.3	9.1	73.6	-
Near by town	49.3	32.8	15.8	2.1	27.3	57.3	13.6	1.8

5.3 Positive Development Changes Achieved

This section focuses on the positive development Changes that are achieved in the two *woredas* during the last 10 years. The changes measured are categorized in four groups namely: economic, social, empowerment and gender relationships. Each measurement has 7-8 variables to be measured.

Here, the levels of assessment focus on change at individuals level. Accordingly, positive economic, social improvement and gender changes helps to observe firstly the efforts made in the past ten years to bring these changes from government or NGO in the *woredas* other things being constant. Secondly, if helps to understand development level of the respondents in their respective *woredas* based on the under mentioned indicators. The percentage of respondents with their responses of the indicators is shown in the table.

5.3.1 Economic Changes: The indicators used here help to measure the improvement level of material wealth of the respondents in the two *woredas*. According to table-31 indicates that the average percentage of the respondents who achieved no economic changes on the eight measurements were 33.5 and 38.6 percent in *Dalocha* and *Lanforo woredas* respectively. Moreover, the average percentages of the respondents who achieve little improvement on the issues were32.3 and 35.3, medium change 24.9 and 21.6,higher change 9.2 and 4.4 in *Dalocha* and *Lanforo* woredas respectively.

Table -31 achievement percentage of respondents by level of economic changes

Economic change measurements	*Dalocha* N=150				*Lanforo* N=112			
	Level of changes				Level of changes			
	No	Little	Medium	Higher	No	Little	Medium	Higher
Additional Job creation	39.4	28.2	19.1	13.3	46.4	43.6	9.1	0.9
Asset formation	32.6	30.6	22.9	13.9	40	37.3	16.4	6.4
Housing status	29.2	35.4	29.2	6.3	44.5	20	32.7	2.7
Household expenditure consumption	27.8	34.7	31.3	6.3	31.8	39.8	24	4.4
food security	24.3	38.9	26.4	10.4	20.9	44.5	31.8	2.7
Ability to cope with crisis	22.9	37.5	29.4	10.2	46.4	20	32.7	0.9
credit and saving	59.7	18.1	13.9	8.3	46.4	30	7.3	16.4
additional income generating	32.6	35.1	27.4	4.9	32.7	47.3	19.1	0.9
Average percentage of he respondents	**33.5**	**32.3**	**24.9**	**9.2**	**38.6**	**35.3**	**21.6**	**4.4**

5.3.2 Social Changes: This encompasses indicators of social well being or human capital measures. These terms refer to health status, child mortality, water and sanitation and education - specifically literacy and school- attendance rates. Accordingly the average percentages of the respondents who achieve no improvements on the issues were accounted for 17.7 and 41.2 in *Dalocha* and *Lanforo* woredas respectively. The average parentage of the respondents who achieved little improvements were 26.5 and 50.2, medium improvements 20.1 and 6.1, higher improvements 35.7 and 3.4 in *Dalocha* and *Lanforo* woredas respectively.

Table -32 percentage of respondents by level of social changes

Social change Measurements	*Dalocha* N=150				*Lanforo* N=150			
	No	Little	Medium	Higher	No	Little	Medium	Higher
Literacy and education	28.5	20.8	18.1	32.6	33.6	63.6	1.8	0.9
House hold health situation	11.8	36.1	25.7	26.4	43.6	55.5	0.9	-
Environmental health	12.5	33.3	29.6	24.3	50.9	30.	18.2	0.9
Family planning	35.4	29.2	18.1	17.4	35.5	53.6	10	0.9
School attendance rate of children	17.4	26.4	16.7	39.6	51.8	36.4	10.9	0.9
Child mortality	21.5	33.3	13.9	31.3	47.3	50	0.9	1.8
Reliability of safe drinking water	8.3	20.1	11.1	60.4	33.6	61.8	0.9	3.7
Motivation Towards Development	6.3	12.5	27.8	53.5	33.6	35.5	10	20.9
Average percentage of he respondents	**17.7**	**26.5**	**20.1**	**35.7**	**41.2**	**50.2**	**6.1**	**3.4**

When we deal specifically for particular indicators like improvement in reliability of safe drinking water, school attendance rate, child morality, the percentage of respondents who achieved higher changes constitutes 60.4 percent, 39.6 percent and 31.3 percent in *Dalocha*. However, the figure in *Lanforo* was 3.7 percent, 0.9 percent and 1.8 percent respectively. Moreover, higher motivation that the respondents have towards development constituted 53.5 and 20.9 percent in *Dalocha* and *Lanforo woredas* respectively.

5.3.3 Changes in Empowerment: This aspect deals with the changes achieved on the political capital measures in the past ten years between the two *woredas*. In accordance with this, the average percentages of the respondents who achieve no improvements on the issues of empowerment were accounted for 25.3 and 38.2 in *Dalocha* and *Lanforo* woredas respectively. The average parentage of the respondents who achieved little improvements were 38.9 and 34.1, medium improvements 16.3 and 8.6, higher improvements 9.1 and 5.4 in *Dalocha* and *Lanforo* woredas respectively.

Table-33 percentage of respondents by level of empowerment in social economic and political changes

Empowerment change Measurements	*Dalocha* N=150				*Lanforo* N=112			
	Level of change				Level of change			
	No	Little	Mediu	High	No	Little	Medium	Higher
Perception of well being & quality of life	16	52.8	19.4	11.8	43.6	38.7	12.7	4.9
Participation in decision making that affect their life	22.2	52.3	15.3	10.3	46.7	40.9	6.2	6.2
Access to public services /resources	40.3	38.9	13.2	7.6	47.2	42.7	6.3	3.8
Ability to accept/reject factors that influence their life	26.4	41.7	18.1	13.9	43.1	40.2	9.4	7.3
Perception and understanding of constitutional rights	30.6	46.5	18.1	4.9	36.2	39.9	17.7	5.2
perception of accountability and responsibility of local public officials to them	41.7	40.3	11.8	6.3	50.4	36.6	8.2	4.8
Average percentage of he respondents	**25.3**	**38.9**	**16.3**	**9.1**	**38.2**	**34.1**	**8.6**	**5.4**

The empowerment situation of the respondents is relatively better in *Dalocha* woreda as compared to *Lanforo* woreda.

5.3.4 Changes in Women's Empowerment: Here gender relationships within the community and family in the process of an ability to make meaningful choices and decisions and to influence others is considered and compared between the *woredas*. In line with this, the average percentages of the respondents who achieve no improvements on the issues of gender empowerment were accounted for 32.4 and 11.9 in *Dalocha* and *Lanforo* woredas respectively. The average parentage of the respondents who achieved little improvements were 32.8 and 42.6, medium improvements 21.6 and 9.6, higher improvements10.4 and 0.25 in *Dalocha* and *Lanforo* woredas respectively.

Table -34 Percentage of respondents by level of women empowerment change

Empowerment change measurements	No	Little	Medium	Higher	No	Little	Medium	Higher
Involve in income generation activities	42	45.5	9.1	3.5	57.3	34.5	7.3	0.9
Ownership and control over assets	37.5	36.1	19.4	6.9	55.5	37.3	7.3	-
economic dependence on husbands	33.3	43.1	19.4	4.2	50.9	39.1	10	-
perception of own well being	33.3	41	20.8	4.9	50.9	49.1	-	-
Mobility	31.9	41.7	18.1	8.3	59.1	36.4	4.5	-
Participation in local institutions	34	7.6	53.5	4.9	45.5	45.5	9.1	-
Educating girls	14.6	14.6	30.6	40.3	13.6	56.4	29.1	0.9
Average percentage of he respondents	**32.4**	**32.8**	**21.6**	**10.4**	**11.9**	**42.6**	**9.6**	**0.25**

In general when we go through each of the indicators separately, the improvement achieved in the process of gender relationship by the respondents of *Dalocha woreda* was found to be relatively better as compared to the respondents of *Lanforo woreda* (Table- 34).

CHAPTER-VI CHARACTERISTICS OF EMPIRICAL KNOWLEDGE

In this chapter, the pattern of empirical knowledge prevailing in the two *woredas* is examined to understand the variations in knowledge along with the variations in development. The level of empirical knowledge about the following were examined: elementary technical knowledge; knowledge about agricultural practices; knowledge about nutrition; knowledge about human fertility control; knowledge about causation of diseases; knowledge about credit, saving and insurance; and knowledge about marketing situations. The level of knowledge on these aspects prevailing in the two *woredas* shall be seen.

6.1 Knowledge about elementary techniques

Information was obtained on elementary technical knowledge among the respondents. The questions asked for this purpose and the percentage of respondents with knowledge about these matters is given in Table- 35. The first two questions inquired whether the respondents knew some aspects of post harvest techniques. Those who knew how to manage modern grain store formed 34 percent in *Dalocha* and 24 percent in *Lanforo woreda*. The percentage of respondents who had seen Sheller and combines and know how they operate constituted 20.4 in *Dalocha* and 41.8 in *Lanforo*.

Table-35 Percentage of Respondents with knowledge about Elementary technique

No.	Items	*Dalocha* N=150	*Lanforo* N=112
1	Do you know how to manage modern grain store? yes	34.6	24.2
2	Have you seen a Sheller and combine how they operate in the field before? yes constituted	20.4	41.8
3	Small or large type of donkey cartwheel is easier to ply on village road? Large donkey cartwheel	44.9	37.3
4	For heavy tilling, is a spade with a long or short handle desirable? Long handled spade	70.1	52.7
5	Have you seen a pulley used for drawing water from a well? yes	53.1	38.2
6	Do you have skills like carpeting, masonry and handcraft ?yes	17	5.4

Those who knew that a cart with a larger wheel was more efficient on village roads formed 44.9 percent in *Dalocha* and 37.3 percent in *Lanforo* (Item 3). Item 4 inquired whether a spade with a long or a short handle was efficient for heavy tilling of the soil. There who knew that a spade with a longer handle was more efficient for this purpose formed 70.1 percent of the respondents from *Dalocha* and 52.7 percent from *Lanforo*. Item 5 inquired whether the respondents were aware of simple equipment, which made work easier. 53.1 percent of the respondents of *Dalocha* had seen pulleys used for drawing water and the percentage for *Lanforo* is 38.2.

Item 6 inquired whether respondents knew some skills. Most of the respondents did not have the above mentioned skills. Only 17 and 5.4 percent of the respondents have either of the skills in *Dalocha* and *Lanforo woredas* respectively. These responses indicate that the elementary technical knowledge of the respondents from the two areas vary.

Responses to the 6 items were scored according to the procedure described earlier. The mean scores obtained by the respondents were 2.39 in *Dalocha* and 2.09 in *Lanforo*. The F ratio shows that the variation among the mean values were significant at the 1- percent level of significance:

$F(2, 259) = 6.354$ $P < 0.01$. Thus, the elementary technical knowledge is lower in *Lanforo* than *Dalocha*.

6.2 Knowledge about agricultural practices

The respondents were asked nine questions to understand their level of knowledge about agricultural practices. These questions and the percentage of respondents with knowledge of these practices are given in Table-36. The responses show considerable awareness about various agricultural practices in the two areas. Item 1 inquires whether the respondents knew that row sowing gave higher yields than broad casting of maize seed. This knowledge becomes widespread in the two areas. The second and the third questions are about the application of chemical

fertilizers. Those who knew that it was better to fertilize the maize crop at an early stage than at a later stage constituted 100 percent of the respondents from *Dalocha* and 86.4 percent from *Lanforo*. Those who knew that the application of chemical fertilizers did not adversely affect the quality of the soil formed 85 percent and 44.9 percent respectively, in the two areas. In *Dalocha* 35.4 percent had tested the soil of their fields (Item 4). In *Lanforo* 29.1 percent of respondents had conducted soil testing.

Table-36 percentage of Respondents with knowledge about Agricultural practices.

No.	Questions	*Dalocha* N=150	*Lanforo* N=112
1	Row sowing or broad casting increases maize yield? Row sowing	78.2	71.8
2	Is it better to give fertilizer for maize crop at an early stage or at a later stage? Early stage	86.4	76
3	Would the application of chemical fertilizer adversely affect the quality of the soil? No	85	44.9
4	Have you ever tried to understand the composition of the soil in your field? Yes	35.4	29.1
5	Do you know of any modern method of castrating a bull? Yes	53.7	50
6	Do you know that there is an optimum time with in which milking of animals should be done? If so, what is the maximum time?Yes,180-270 days	81	58.2
7	Is it possible to control animal disease through vaccination? Yes	85.4	70.2
8	Do you know that cattle can be made pregnant through artificial insemination? yes	18.2	16
9	Have you ever heard of hatching eggs with a machine? Yes	24.5	20

Items 5,6, and 7 inquire about respondent's knowledge about modern practices of castration of bull, artificial insemination and animal vaccination. 53.7 percent of the respondents in *Dalocha* and 50 percent in *Lanforo* knew about modern methods of castrating animals. Knowledge about artificial insemination was known by less than 20 percent of the respondents in both areas. However control of disease through vaccination was known to more than 70 percent of the respondents in the two areas.

Item 8 inquires whether the respondents were aware that there was an optimum period within which a cow should be milked to get the best quantity of milk. 81 percent of the *Dalocha* respondents and 58.2 percent knew this from *Lanforo*. Item 9 was concerned with hatching of

eggs. 24.5 percent in *Dalocha* and 20 percent in *Lanforo* knew hatching of eggs through incubators

Responses to the 9 questions in Table-36 were scored as described earlier. The mean scores obtained by the respondents on the 9 items were 5.03 in *Dalocha* and 4.88 in *Lanforo*. The F ratio shows that the variation among the mean values were significant at the 1- percent level of significance: F (2, 259) =2.608 P< 0.01.Thus, the level of knowledge about agricultural practices among the respondents was lower in *Lanforo* as compared to the respondents of *Dalocha*.

6.3 Knowledge about Nutrition

Knowledge about nutritive value and related dietary practices contributes to a healthy life. To understand the level of knowledge of the respondents about dietary practices and items, five questions were posed. These questions and the percentage of respondents with knowledge about these items are given in Table-37. The first item in the table inquired whether the respondents have some ideas of the concept of balanced food. It was seen that the concept of balanced diet was known to 85.7 percent of the respondents from *Dalocha* and 70 percent from *Lanforo*. Item 2 shows that also 78.9 percent and 51.8 percent of the respondents from the two *woredas* knew that over eating did not contribute to better health.

Table-37-Percentage of respondents with knowledge about nutrition practices

	Questions	*Dalocha* N=150	*Lanforo* N=112
1	Have you ever heard about the need to take balanced diet? Yes	85.7	70
2	If one eats very large quantities of food, would it improve his health? No	78.9	51.8
3	Can child less than six months be given *injera*, or bread? No	99.1	90.5
4	The price of butter is more than double that of oil. Does butter contain double the nutritive value of oil? No	36.4	32.6
5	Meat and egg or fruits and vegetables help more for disease prevention? Fruits and vegetables	24.5	30.4

Item 3 inquired from the respondents whether a child of less than six months can be given solid food, like *injera* and bread. 99.1 and 90.5 percent in *Dalocha* and *Lanforo* woredas knew this respectively. Item 4 shows that 36.4 percent of the *Dalocha* respondents and 32.6 percent of those from *Lanforo* knew that butter doesn't contain double nutritive value commensurate with its price. Item 5 indicates that 24.5 percent of respondents in *Dalocha* knew vegetables and fruit play a greater disease prevention role than meat and egg. The percent from respondents of *Lanforo* is 30.4. Responses to the 5 items were scored as earlier. The average scores obtained by the respondents on the 5 items were 2.94 in *Dalocha* and 2.83 in *Lanforo*. The F ratio shows that the variation among the mean values were significant at the 1- percent level of significance: $F(2, 259) = 11.341$ $P < 0.01$. In this view, the knowledge about nutritional practices is greater in *Dalocha woreda* than *Lanforo*.

6.4 Knowledge about Human Fertility Control

The importance of fertility control for a better level of living was stressed earlier. For fertility control one should have some knowledge about the biological processes related to human fertility, and the methods of controlling it. For understanding the level of knowledge about fertility control prevailing in the two areas, 10 questions were posed to the respondents. These 10 questions and the percentage of respondents from the two areas with knowledge about these items are given in Table-38. Items 1 and 2 show that respondents with a rational understanding of the process of menses formed 47.9 average percent in *Dalocha* and 44.5 percent in *Lanforo*. Item from 3 to 10 inquired about the knowledge of the respondents regarding various techniques for controlling fertility. That Fertility can be controlled through the use of contraceptives was known to 42.2 percent of the respondents from *Dalocha* and 20 percent from *Lanforo* (Item 3). However, knowledge about rhythm (safe period) method, and the loop method of fertility contort are not so

well known. The former was known to 29.9 percent and 9.1 percent of respondents, and the latter to 6.1 percent, and 9.1 percent of the respondents from the two areas, respectively. Those who know about the used pills for fertility control constituted 49.7 percent in *Dalocha* and 37.3 percent of respondents of *Lanforo*.

Table -38 Percentage of respondents with knowledge about Human Fertility

No	Questions	*Dalocha*N=150	*Lanforo* N=150
1	Do you know why a woman menstruates? Yes	49	50.9
2	Can you indicate roughly the period in the menses cycle when pregnancy is likely to occur? 9-14 days	46.9	38.2
	Do you know about the following methods of fertility control?		
3	use of the male contraceptives ? yes	42.2	20
4	Rhythm (safe period) method? Yes	29.9	9.1
5	IUD/loop? Yes	6.1	9.1
6	Oral female pills? Yes	49.7	37.3
7	Male sterilization through vasectomy? Yes	17.7	7.3
8	Female sterilization through tubectomy? Yes	21.8	10
9	Induced abortion? Yes	29.9	17.3
10	Use of condom? Yes	47.6	51.8

While 17.7 percent and 7.3 percent of the respondents knew of vasectomy (item 7) and tubectomy was known 10 percent and 21.8 percent (Item8) respectively. Item 9 shows that those who were aware of legal sanction for abortion constituted 29.9 percent and 17.3 percent of the respondents from the two areas. 47.6 and 51.8 percent in both *woredas* also knew the use of condom respectively.

The foregoing examination indicated the variation in the knowledge about the biological processes related to fertility controlling, methods in the two *woredas* is proportionately the same. However considerable variation is seen on the knowledge about modern contraceptives. In accordance with this, knowledge about these matters was particularly low in *Lanforo* compared to *Dalocha*.

Responses to the 10 items were scored in accordance with the earlier procedure. The mean scores obtained by the respondents were 3.28 from *Dalocha* and 2.48 from *Lanforo*. The F ratio shows that the variation among the mean values were significant at the 1- percent level of significance: $F(2, 259) = 6.731$ $P < 0.01$. This indicates that *Dalocha* have considerably better knowledge on the items than *Lanforo woreda*.

5.5 Knowledge about Causation of Diseases

A healthily, disease free life is desired by everybody. Knowledge of the cause of diseases helps one to prevent and control diseases through various measures.

For understanding the level of knowledge of the respondents in this respect, their responses were sought on 8 items which, along with the percentage of those with the correct knowledge about the causes of diseases, are given in table- 39. Items 1-5 inquired whether the respondents knew the cause of diseases such as cholera, malaria, typhoid, polio, and ways of AIDS transmission. These are contagious diseases, which can be prevented through appropriate measures. Responses to these items show the poor understanding of the respondents from both areas about the causes of these diseases. Those who knew that cholera was caused through unhygienic water and food was known to only 24.3 and 13.6 percent of the respondents of *Dalocha* and *Lanforo woredas* respectively.

Table-39 Percentage of Respondents with knowledge about the cause of Diseases

No.	Questions	*Dalocha* N=150	*Lanforo* N=112
1	Do you know how cholera is caused? Yes	24.3	13.6
2	Do you know how malaria is causes? Yes	44.9	39.1
3	Do you know how typhoid is caused? Yes	39.5	7.3
4	Do you know how polio is caused? Yes	29.3	16.4
5	Do you know how AIDS transmitted? Yes	66.1	69.1
6	Is there any harm in drinking water from a Village-unprotected pond? Yes	66.7	48.6
7	Is there any harm in villages defecating in open? Yes	51.7	38.2
8	Is healthier to live in a house with windows or with out any windows ? With windows	70	68.7

Malaria is caused by mosquitoes was known to 44.9 and 39.1 percent of the respondents from both areas respectively; that typhoid is caused by unhygienic water and food was known to 39.5 percent of *Dalocha* respondents and 7.3 percent of the *Lanforo* respondents. 29.3 and 16.4 percent of the respondents of both woredas knew virus is the cause of polio respectively. The main ways of transmission of AIDS i.e. (free sex common use of sharpen materials, and through blood transfusion) is known by 66.1 percent respondents of *Dalocha* and 69.1 percent respondents of *Lanforo*. Items 6 and 7 inquired about respondents' knowledge of hygienic practices, for instance, that water in open ponds and defecating in open places might cause health hazards. Items 6 shows that 66.7 percent of the *Dalocha* respondents and 48.6 percent of the *Lanforo* respondents knew that drinking water from open wells might cause health hazards. In Ethiopian villages, very few households have latrines, and people generally defecate in open places. It was in this context that the question whether they were aware of the harmful effects of defecting in the open was made to them. Those who know of the harmful effects of this practice constituted 66.7 percent in *Dalocha* and 48.6 percent in *Lanforo*. Ignorance of the health hazard cause by defecting in the open may be one of the reasons why 95.6 percent of *Dalocha* and 100 percent of *Lanforo* respondents do not bother to construct latrines in their houses. Hence measures should have to be taken that converts knowledge to action to be benefit the knowledgeable farmers out of their knowledge.

On the other hand, the relatively widespread knowledge about the health hazard cause by defecating in the open may have prompted households in *Dalocha woreda*. Responses to Item 8 showed that the importance of air circulation and ventilation was known to 70 percent and 68.7 percent of respondents' form *Dalocha* and *Lanforo woredas* respectively. The forgoing examination indicates considerable variation in the level of knowledge about the causes of diseases and awareness of hygienic practices in the two *woredas*. Responses to the 8 items were scored, as earlier. The mean scores obtained by the respondents on the 8 items were 3.48 in

Dalocha and 2.83 in *Lanforo*. In this view, compared to *Lanforo woreda* there was relatively greater knowledge about the causes of various contagious diseases in *Dalocha woreda*.

6.6 Knowledge about credit, saving and insurance

The role of micro financing in development process in general and in rural development particular is well understood. To attain the role that micro financing play, knowledge about it among the users (in our case farmers) should be taken in to account. For under standing the level of knowledge of the respondents from the two *woredas*, about the benefits gain from local micro financial institutions 3 questions were posed (Table-40). The first question was whether the respondents know the benefit of being a member in local credit and saving associations. Most of the respondents in both *woredas* didn't know the benefit gained from the credit and saving associations. Item 2 and 3 inquire about respondents knowledge about indigenous insurance institution (*Iddir*) and indigenous saving institution (*Iqub*) respectively. 80.5 percent of the respondents in *Dalocha* and 87.8 percent in *Lanforo* knew the benefit and role of *Iddir*. Knowledge about benefits and role of *Iqub* was known to23.1 and 43.6 percents of respondents of *Dalocha* and *Lanforo woredas* respectively.

Table-40 Percentage of respondents with knowledge about the benefits of credit and saving institutions

No	Questions	*Dalocha* N=150	*Lanforo* N=112
1	What are the benefits of to be a member of local credit and saving institutions? Know the benefits	8.2	20.4
2	What're the benefits of to be a member of *Iddir*?	80.5	87.8
3	What are the benefits of to be a member of *Iqub*?	23.1	43.6

The responses to the three items in Table 40 were scored according to the procedure described earlier. The mean scores obtained by the respondents on the 3 items were 1.36 and 1.55 in *Dalocha* and *Lanforo* respectively. The F ratio shows that the variation among the mean values were significant at the 1- percent level of significance: $F(2, 259) = 2.119$ $P < 0.01$. Thus, though

respondents from both woredas have relatively low level of knowledge about the issues, the level of knowledge about credit and saving was relatively widely distributed in *Lanforo* than *Dalocha*.

6.7 Knowledge about agricultural marketing situations

Knowledge about various factors relates to agricultural markets, such as awareness about the seasonal fluctuation of prices, and variations in the prices offered by different traders and markets, would contribute to the optimization of farmers incomes, and to increase in agricultural productivity and production. In accordance with this notion, to understand the knowledge about marketing aspects 4 question were posed to the respondents of the two *woredas* (Table-41). The first item was asked whether the respondents aware the seasonal price fluctuation of agricultural produces in their area comparing with the last year's price. It is understood that the price of the produces in the area totally decreased in 1993 E.C as compared to price of 1992 EC. With this respect most of the respondents are aware that there was decrease in price in 1993.

Table -41 percentage of respondents with knowledge about marketing situations

No.	Questions	*Dalocha* N=150	*Lanforo* N=112
1	Has the price of agricultural produces decreased or increased as compared the last year's price? Decreased	98.2	97.1
2	If decreased what were the main causes for the price change? Know the cause	28.6	20
3	Co-operative or private supplying produces to the market increases bargaining power? Co-operative	45	44.5
4	Where did you decide the price of your produce? gathering information from previous market and from neighbors	63.8	67.3

Accordingly 28.6 percent of the respondents in *Dolocha* and 20 percent in *Lanforo* respond the cause for decrease in price was production increment and lack of crop diversification. However, most of the respondents in both areas pointed think the other way round. They pointed out that the change in zonal administration (*Silte* zone became independent zone from *Gurage* zone in 1993 E.C) and deliberate measure taken by the government in order to enable them food self sufficient

were assumed to be the causes for decrease in price. With regard to item three 45 and 44.5 percent knew that co-operative or communal supplying of produce will increase their bargaining power.

Item 4 inquired whether the respondents decide their selling price with regard to their advantage in terms of determining based on the existing market price or not. 63.8 percent in *Dalocha* respond that they decide the price of their produce based on the previous market price and gathering information from the farmers the road to the market. The percent for respondents of *Lanforo* is 67.3. These responses indicate that as in most aspects of empirical knowledge, knowledge about marketing situations of the respondents from the two woredas vary .The mean score obtained by the respondents on the 4 items is 2.62 in *Dalocha* and 2.29 in *Lanforo*. The F ratio shows that the variation among the mean values were significant at the 1- percent level of significance:

$F(2, 259) = 1.070$ $P < 0.01$. This indicates that the respondents of *Dalocha* have considerably better knowledge on the items than *Lanforo woreda.*

CHAPTER-VII REGRESSION ANALYSIS AND FOCUS GROUP DISCUSSION OF EMPIRICAL KNOWLEDGE

In chapter six, the salient characteristics of knowledge were examined. It was seen that the characteristics of knowledge varied in areas with different levels of development. In this chapter, an attempt is made to study the variables related to the variations in the empirical knowledge of the respondents. It will also give an estimate of the relative contribution of different independent factors to the variation in knowledge. Moreover, the chapter presents the discussion made with the focus groups in both *woredas*.

7.1 Correlates of Empirical knowledge

7.1.1 Correlates at Aggregate level

The analyses to establish the relationship between the variations in knowledge and the factors related to it are done at different levels. The analysis has been done, treating the total scores obtained by a respondent on each item as a dependent variable aggregately. It has been done by aggregating the sample from the two *woredas* treating 262 respondents as in to a single group, as also by desegregating the sample based on area into two groups.

While the level of knowledge of respondents reflected by the scores obtained by them was the dependent variable. The independent variables assumed to effluence the level knowledge were: education of the respondents; their fathers' education; membership in formal associations; exposure to mass media; spatial mobility; NGO development intervention; per capita house hold income and targeting by the new extension program.

In Table 41, the results of regression between the aggregate index of knowledge and the eight independent variables are given. These regressions have been computed for the aggregate sample

of 262 respondents, and separately for the sample of respondents from *Dalocha* and *Lanforo woredas*. While the regression coefficients indicate the strength of the relation between each independent variable and the dependent variable, the F value indicated whether the variation among the independent variables in explaining the dependent variable is significant. As mentioned earlier, R^2 indicates the variation explained by the independent variables together.

Table -42 Results of Multiple Regression Analysis between Aggregate Index of knowledge score and Socioeconomic characteristics

No	Characteristics	*Dalocha* No = 150	*Lanforo* No = 112	Aggregate N= 262
		2	3	4
1	Father's Education	-0.112 (1.3)	0.162 (2.6)	0.003 (0.00)
2	Education of self	0.488** (29.3)	0.099** (17.1)	0.527** (20.7)
3	Membership in association	0.247 (0.1)	0.186 (0.0)	0.177 (0.0)
4	Exposure to mass media	0.326** (10.6)	0.184* (3.4)	0.272** (7.4)
5	Spatial mobility	0.313 (9.8)	0.122** (7.5)	0.223** (5.7)
6	NGO development intervention	0.472 (21.3)	-0.078 (0.8)	0.367** (16.3)
7	Targeted by New extension Program	-0.090 (0.2)	-0.209 (0.4)	-0.098 (1.0)
8	House hold per capita income	0.129 (0.7)	0.130 (2.3)	0.123 (0.5)
		R^2 =0.362 F = 9.705	R^2 = 0.237 F= 2.499	$R=^2$0.428 F= 9.191

Note: Figures in brackets indicate percentage of variance explained by an independent variable ** P < 0.01; * P<0.05

The values in brackets indicate the relative contribution of each independent variable to the total variation in the contribution of the dependent variable.

In column 4, the regression coefficients R^2 and F ratio for the combined sample (N= 262) are given. The R^2 value of the regression is 0.428, indicating that the independent variables have jointly explained 42.8 percent of the variation in the level of knowledge. The values of regression coefficients indicate that among the eight independent variables, respondent's education, level of exposure to mass media, and spatial mobility, and NGO development intervention are related

significantly with variation in the level of knowledge. Targeting by the new extension program showed a negative association with the level of knowledge. However, education of father, membership in formal associations and household per-capita income of the respondents are not significantly related with the variation in the level of knowledge of the respondents.

Among the five variables significantly related with variation in the level of knowledge, the most important one was variation in the respondent's education, which contributed 20.7 percent to the total variance. The second most important variable, which contributed 16.3 percent to the variation in knowledge, is NGO development intervention. Exposure to mass media and spatial mobility are also significant factors, which contributed 7.4 and 5.7 percent to the total variation in the level of knowledge respectively.

Dalocha: In column 2, the results of regression in the case of respondents from *Dalocha* are given. Among the eight independent variables, education of the respondents, NGO development intervention, and exposure to mass media and spatial mobility are related with the variation in the level of knowledge at the 1- percent level of significance. R^2 of 0.363 indicates that eight variables together explain 36.2 percent of the total variation in knowledge. As in the case of the aggregate respondents, the variation, which contributed the most to the variation in knowledge of the *Dalocha* respondents, is education of self - it contributed 29.3 percent to the total variation in the level of knowledge. The NGO development intervention contributing 21.3 percent and exposure to mass media contributing 10.6 percent follow this. Some of the other variables which made small contributions to total variation in knowledge are membership in association (0.1 percent), household per capita (0.7 percent) and father's education (1.3 percent).

Lanforo: In the case of *Lanforo* respondents (column 3), R^2 of 0.237 indicates that the eight independent variable together explained 23.7 percent of the variation in the level of knowledge. Among the eight independent variables, education of self at one percent, spatial mobility at one

percent and exposure to mass media at five percent level of significance were related with variation in knowledge. Their level of contribution to the variation was - education of self explained 17.1 percent of the variation, spatial mobility 7.5 percent and exposure to mass media contributed 3.4 percent. Though education of self contributed significantly in *lanforo* woreda, its level of contribution is high in *Dalocha* as compared to *Lanforo.* This is due to the fact that the level of literacy (influenced by formal and informal education) is high in *Dalocha* than *Lanforo.* Hence, education has become an important source for the spread of knowledge in respondents of *Dalocha* as compared to *Lanforo.*

7.1.2 Correlates of Variation in Components of knowledge

7.1.2.1 Knowledge about elementary technique and socioeconomic characteristics

In Table-43, the correlation coefficients between the scores obtained on the 6 items of technical knowledge and the eight socioeconomic characteristics of the respondents are given. The R^2 and F values of the regression are also given on table-43.

Table -43 Results of Multiple Regression analysis between knowledge about Elementary techniques and socioeconomic characteristics.

No	Characteristics	*Dalocha* No = 150	*Lanforo* No = 112
	1	2	3
1	Father's Education	0.028 (0.1)	0.070 (0.5)
2	Education of self	0.199* (3.9)	-0.001 (0)
3	Membership in association	0.014 (0)	0.103 (0.2)
4	Exposure to mass media	0.217** (4.7)	0.153 (2.3)
5	Spatial mobility	0.254 (6.4)	-0.021 (0)
6	NGO development intervention	0.159 (2.5)	0.154 (1.2)
7	Targeted by new extension Program	0.069 (0.5)	-0.052 (0.3)
8	House hold per capita income	-0.027 (0.1)	0.204 (2.1)
		R^2 =0.131 F = 2.76	R^2 = 0.113 F= 1.208

Note: - Figures in brackets indicate percentage of variance explained by and Independent variable **= $P < 0.01$, *= $P < 0.05$

In the case of the *Dalocha* respondents, the R^2 value of 0.1310 indicates that 13.0 percent of the variation in the dependent variable is explained. The F value of 2.76 percent is significant at the 1-

percent level, indicating that the difference in the relative contribution of the independent variables to the variation in elementary technical knowledge is significant.

Among the eight independent variables, the characteristics related with the variation in technical knowledge score and this relative contribution are spatial mobility (6.4 percent), exposure to mass media (4.7 percent) and education of self (3.9 percent). In the case of the *Lanforo* respondents, the R^2 0.113 indicates the 11.3 percent of the variation is jointly explained by the eight independent variables. The F value of 1.208 is significant at the 1- percent level, indicating that the contribution of different independent variables to the variation of the dependent variable is significant at the 1- percent level. Among the eight characteristics of the respondents, their exposure to mass media and household per capita income are related to carnation in knowledge at the 1 percent level and contributed, respectively, 2.3 percent and 2.1 percent to the variation.

7.1.2 .2 Knowledge about Agricultural Practices and socioeconomic characteristics

In Table-44, the results of regression coefficients between the scores obtained by the respondents on the five items of knowledge about agricultural practices and their socioeconomic characteristics R^2 value and F value are given, for the respondents from each of the two *woredas*.

In the case of *Dalocha* respondents, the R^2 value 0.27 indicates that 27 percent of the variation in the level of knowledge about agricultural practices has been contributed by the eight independent variables. The F value of 6.328 is significant, indicating that the difference in the relative contribution of the independent variables to the variation in knowledge is significant.

Table-44.Results of Multiple Regression Analysis Between knowledge about agricultural practices and socioeconomic Characteristics

No	Characteristics	*Dalocha* No = 150	*Lanforo* No = 112
	1	2	3
1	Father's Education	-0.062 (0.4)	0.149 (2.2)
2	Education of self	0.419** (17.6)	0.017 (0.00)
3	Membership in association	0.075 (0.5)	0.207* (4.3)
4	Exposure to mass media	0.194* (3.7)	0.103 (1.1)
5	Spatial mobility	0.235 (5.5)	0.119 (1.4)
6	NGO development intervention	0.370 (12.1)	0.021 (0.0)
7	Targeted by new extension Program	0.066 (0.4)	-0.151 (2.5)
8	Household per capita income	0.020 (0.6)	0.153 (2.3)
		R^2 =0.270 F = 6.328	R^2 = 0.147 F= 1.633

Note: - Figures in brackets indicate percentage of variance explained by an independent variable ** =P < 0.01; *= P< 0.05

Education of self, NGO development intervention and spatial mobility are significantly related with level of knowledge about agricultural practice by 17.6 percent, 12.1 percent and 5.5 percent respectively. However the F value of other factors are not significant (at the 5 percent level) indicating that there is not much variation in the level of knowledge about agricultural practices of the respondents in *Dalocha* along with the variation in their characteristics.

In the case of the *Lanforo* respondents, the R^2 value of 0.147 indicates that 14.7 percent of the variation in the level of knowledge about agricultural practices has been contributed by the eight independent variables. The F value 1.633 is not significant. The only characteristic significantly related with level of knowledge (at the 5 percent level) is membership to formal association (making a contribution of 4.3 percent). These results indicate that in *Lanforo*, there is not much variation in the level of knowledge about agricultural practices of the respondents along with the variation in their characteristics.

7.1.2.3 Knowledge about Nutrition and socioeconomic characteristics

In Table- 45, the coefficients of regression between the scores on the eight items of knowledge about nutrition (dependent variable) and the eight socio-economic characteristic (independent variables of respondents are given.

In the case of the *Dalocha* respondents, the R^2 of 0.129 indicates that 12.9 percent of the variation in the dependent variable is explained. The F value 2.531 is significant at the 1- percent level.

Table-45Results of Multiple Regression Analysis between knowledge about Nutrition and socioeconomic characteristics.

No	Characteristics	*Dalocha* No = 150	*Lanforo* No = 112
	1	2	3
1	Father's Education	-0.189 (3.6)	0.002 (0)
2	Education of self	0.205* (4.2)	0.063 (0.4)
3	Membership in association	0.052 (0.4)	0.318 (6.2)
4	Exposure to mass media	0.174* (3.0)	0.017 (2.6)
5	Spatial mobility	0.145 (2.1)	0.150 (2.2)
6	NGO development intervention	0.058 (0.3)	*0.072 (1.2)
7	Targeted by new extension Program	-0.051 (0.3)	-0.189 (3.6)
8	Household per capita income	-0.025 (0.3)	0.120 (1.4)
		R^2 =0.129 F = 2.531	R^2 = 0.107 F= 2.088

Note: - Figures in brackets indicate percentage of variance explained by an independent variable
** =P < 0.01; *= P< 0.05

Among the eight socioeconomic characteristics NGO development intervention (1.2 percent), targeting by the new extension program (0.3 percent), Household per capita income (0.3 percent), and membership in formal association (0.4 percent) are not significant at 5 percent level. Thus, there is not much variation in the level of knowledge about nutrition of the respondents along with independent variables mentioned. The remaining factors are significant at 5 percent level.

In case of *Lanforo* respondents the R^2 of 0.107 indicates that 10.7 percent of the variation in the independent variable is explained. The F value 2.088 is significant at 1-percent level. Among the

eight socioeconomic variables membership association, targeting by the new extension program, exposure to mass media, spatial mobility and per capita income are found to be significant explaining 6.2 percent, 3.6percent, 2.6 percent 2.2 percent and 1.4 percent respectively.

7.1.2.4 Knowledge about Human Fertility Control and socioeconomic characteristics

In Table- 46 the coefficients of regression between the scores obtained on the ten items examining the level of knowledge of respondents about fertility control practices and the eight independent variables are given. In the case of the *Dalocha* respondents, the R^2 of 0.167 indicates that 16.7 percent of the variation in knowledge about fertility control practices has been explained. The F value 3.432 is significant at the 1- percent level. Among the eight variables, except member ship in formal associations (0.1 percent) and Targeted by the new extension program (0.4 percent). There is a significant relation the rest six variables with the variation in knowledge about human fertility control (for the percent of variation see table-46).

In the case of the *Lanforo* respondents, the R^2 value is 0.040 indicates that 4.0 percent of the variation in the level of knowledge about human fertility control has been contributed by the eight independent variables. The F value of 0.396 is not significant, indicating that the difference in the relative contribution of the independent variables to the variation in knowledge is not significant.

The only characteristics significantly related with level of knowledge at the 5 percent level) is education of self (making a contribution of 4.8 percent). The following table shows the situation.

Table-46 Results of Multiple Regression Analysis between knowledge about Human Fertility and socioeconomic characteristics

No	Characteristics	*Dalocha* No = 150	*Lanforo* No = 112
	1	2	3
1	Father's Education	-0.189* (4.2)	0.085 (0.7)
2	Education of self	0.235** (5.5)	0.226 (4.8)
3	Membership in association	0.038 (0.1)	0.130 (0.7)
4	Exposure to mass media	0.194* (3.7)	0.096 (0.8)
5	Spatial mobility	0.142 (2.0)	-0.048 (0.2)
6	NGO development intervention	0.167 (2.8)	0.009 (0.1)
7	Targeted by new extension Program	-0.062 (0.4)	-0.101 (1)
8	Household per capita income	0.160 (2.6)	0.121 (0.9)
		R^2 =0.167 F = 3.423	R^2 = 0.040 F= 0.396

Note: Figures in brackets indicate percentage of variance explained by an independent variable
*= P < 0.01; **= P < 0.05

7.1.2.5 Knowledge about the cause of diseases and socioeconomic characteristics

In Table-47, the coefficient of regression between the scores obtained on the eight items inquiring about the level of knowledge of the respondents about the causation of diseases and their socioeconomic characteristics are given. In the case of the *Dalocha* respondents, the R^2 value of the regression is 0.281. This indicates that 28.1 percent of variation in the level of knowledge about the causation of diseases has been explained by the independent variables. The F value 4.041 is significant at the 1- percent level. Among these, Education of self, exposure to mass media and NGO development intervention are related to variation in the level of knowledge explaining 17.2 percent, 1.6 percent and 13.8 percent of the variation. In the case of *Lanforo* respondents the R^2 of 0.187 indicates that 18.7 percent of the variation has been explained. The F value 2.181 is significant at the 5 percent level. Among the eight characteristic membership to formal association (1.6 percent), NGO development intervention (percent), Household per capita

(0 percent) and Father's education (0.6 percent) have no much variation with the level of knowledge about the cause of disease of the respondents. Their F values also are not significant both at the 5 and 1- percent level. The rest socioeconomic characteristics have significant variation with the level of knowledge about the causes of diseases.

Table -47 Multiple Regression analysis between knowledge about the cause of Diseases and socioeconomic characteristics

No	Characteristics	*Dalocha* No = 150	*Lanforo* No = 112
	I	2	3
1	Father's Education	-0.013 (0.0)	-0.081 (0.6)
2	Education of self	0.565** (17.2)	0.454 (10.4)
3	Membership in association	0.089 (0.8)	0.126 (1.6)
4	Exposure to mass media	0.127** (1.6)	0.266** (7.1)
5	Spatial mobility	0.068 (0.5)	0.237* (5.6)
6	NGO development intervention	0.423* (13.8)	0.019 (0)
7	Targeted by new extension Program	-0.060* (0.6)	-0.157 (2.3)
8	Household per capita income	0.060 (0.4)	0.20 (0.)
		R^2 =0.281 F = 4.041	R^2 = 0.187 F= 2.181

Note: Figures in bracket indicate percentage of variance explained by an independent variable
*= P < 0.01; ** = P < 0.054

7.1.2.6 Knowledge about credit and saving and socioeconomic characteristics

In Table -48, the coefficients of regression between the scores obtained on the three items examining the level of knowledge of respondents' credit and saving and the eight independent variables are given. In the case of the *Dalocha* respondents, the R^2 of 0.054 indicates that 5.4 percent of the variation in the level of knowledge about credit and saving has been contributed by the eight independent variables. The F value of 0.986 is not significant, indicating that the difference in the relative contribution of the independent variable to the variation in knowledge is not significant.

The only characteristic significantly related with level of knowledge (at the 5 percent level) is education of self (making a contribution of 1.5 percent). These results indicate that in *Dalocha*, there is not much variation in the level of knowledge about credit and saving of he respondents along with the variation in their socioeconomic characteristics

In case of the *Lanforo* respondents, the R^2 value 0.126 indicates that 12.6 percent of the variation in the knowledge of respondents about credit and saving has been explained by the eight independent variables. The F value of 3.247 is significant at the 1- percent level, implying that the relative contribution of the independent variables to the variation in the dependent variable differed at the 1- percent level of significant.

Table -48 Results of multiple regression analysis between knowledge about credit and saving and socioeconomic characteristics.

No	Characteristics	*Dalocha* No = 150	*Lanforo* No = 112
		2	3
1	Father's Education	0.011 (0.2)	0.057 (0.3)
2	Education of self	0.121** (1.5)	0.119 (1.4)
3	Membership in association	0.88 (0.8)	0.109 (1.7)
4	Exposure to mass media	0.010 (0)	-0.071 (0.5)
5	Spatial mobility	0.082 (0.7)	0.96 (0.9)
6	NGO development intervention	0.049 (0.2)	0.003 (0)
7	Targeted by new extension Program	-0.082 (1.1)	-0.106 (1.1)
8	Household per capita income	-0.055 (0.3)	0.546* (27.2)
		R^2 =0.054 F = 0.986	R^2 = 0.126 F= 3.247

Note: - Figures in brackets indicate percentage of variance explained by an independent variable * = P < 0.01; ** =P < 0.05;

Among the eight independent variables, the only socioeconomic characteristic significantly related with level of knowledge (at the 1- percent level) is household per capita income (making a contribution of 27.2 percent). Thus these result implies that there is not much variation in the level of knowledge about credit and saving along with the variation in their characteristics.

7.1.2.7 Knowledge about Market situation and socioeconomic characteristics

In Table- 49 the results of regression coefficients between the scores obtained by the respondents on the five items of knowledge about marketing situations and their socioeconomic characteristics, R^2 value and F value are given. Accordingly, in the case of the *Dalocha* respondents, the R^2 value of 0.197 indicates that 19.7 percent of the variation in the level of knowledge about marketing situations has been contributed by the eight independent variables. The F value 4189 is significant at the 5 percent level implying that the reactive contribution of the independent variables to the variation in the dependent variable deferred at the 5 percent level of significance. Among the eight independent variables, the characteristics related with the variation in scores about marketing knowledge and their relative contribution are spatial mobility (11.7 percent) and education of self-(4.3percent).

In case of *Lanforo* respondents, the R^2 0.181 indicates that 18.1 of the variation is indicates that 18.1 of the variation is jointly explained by the eight independent variables. The F value of 2.104 is significant at the 5 percent level, indicating that the contribution of different independent variables to the variation of the dependent variable is significant at the 5 percent level.

Among the eight characteristics of the respondents, their household per capita income and targeting by the new extension program are related to variation in knowledge at the 5 percent level and contributed, respectively, 4.5 percent and 4 percent. Other factors are not significant to the to the variation of the knowledge about marketing situations.

Table -49 Results of Multiple regression analysis between knowledge about marketing situations socioeconomic characteristics.

No	Characteristics	*Dalocha* No = 150	*Lanforo* No = 112
		2	3
1	Father's Education	-0.0097 (0.9)	0.130 (1.7)
2	Education of self	0.208** (4.3)	0.027 (0.1)
3	Membership in association	0.063 (0.4)	0.132 (1.7)
4	Exposure to mass media	0.150 (2.3)	-0.048 (0.2)
5	Spatial mobility	0.342** (11.7)	0.042 (0.2)
6	NGO development intervention	-0.083 (0.07)	0.012 (0)
7	Targeted by new extension Program	0.081 (0.6)	-0.201** (4)
8	Household per capita income	0.192 (2.8)	0.212** (4.5)
		R^2 =0.197 F = 4.189	R^2 = 0.181 F= 2.104

Note:- Figures in brackets indicate percentage of variance explained by an independent variable * = P < 0.01; ** P < 0.05;

7.2. Focus group discussions

The focus groups were formed in all of the six-peasant associations and each group constituted six farmers. List of the members is annexed. All the discussion made with the focus groups in the two *woredas* are summarized as follows.

7.2.1 Knowledge About Agricultural practices.

The main theme for this point of discussion was to assess the knowledge that farmers have about modern agriculture practices. Accordingly the focus group of *Dalocha* woreda responded that more or less they practiced row sowing, crop rotation; recommended fertilizer and seed application. However with regard to new techniques for animal husbandry, most of the group members in *Golochoba* and *Jigena Lasho* heard about artificial insemination and bull castration

but do not practiced them. In the case of *Burka-Dilapa* most of the group farmers practiced and know them. All most all the group members know that animal diseases could be prevented through vaccination. On the contrary only three farmers knew that eggs could be hatched using machines, one in *Golecheba* and the other two in *Burka-Dilapa.* Moreover only two farmers among the group conducted soil classification on their farmland.

With regard to factors contributing to acquire their knowledge, most of the discussants respond that the main source of acquiring their knowledge was the development intervention made by the A.A.E in their locality. It is learnt that also the most knowledgeable farmers were trained by A.A.E. with in and out of the locality. Particularly, vegetable and fruit, *enset*, terracing and other soil and water management aspects are the results of farmers' visit to Sidama and other areas, which was sponsored by the A.A.E, as the focus group responded.

Regarding to the new extension program, the farmers do not have positive attitude for the program. As some of the group members responded that the main cause was the input loan burden that they face and obligation behind the program. Thus, no farmer has responded that the new extension program has contributed to acquire knowledge about agricultural practices. Spatial mobility is also found to be the source of knowledge. Two farmers from *Golocheba mentioned* that their knowledge about fruit and vegetable growing and management was brought from *Melka Sedi* (It is state farm found at Awash basin and produces banana and cotton).

In the case of *Lanforo* woreda, alley cropping, crop rotation, improved seed and fertilizer usage are practiced among the farmers in the area. Though most farmers do not like to practice terracing, but some farmers use it. With regard to modern techniques of animal husbandry, they don't know that animals could be pregnant through artificial insemination, and some didn't practice animal

vaccination. In mentioning the source of knowledge, natural method of animal breeding and biological control of weeds were learnt from their ancestors and forefathers. As compared to the *Dalocha* focus groups, they have relatively low level of knowledge about agricultural practices.

7.2.2 Knowledge about causation of diseases

In the case of *Dalocha* most of the members of the focus group identified and know the main top diseases that exist in their area. These include malaria, cholera, typhoid and other tracheal diseases.

In responding the causes for the diseases, most of the group members pointed out that the cause of malaria was lack of environmental sanitation and water log areas, however some pointed out that specifically female mosquito is the main cause. However, some discussants for example in *Jigena Lasho* PA, suggest that chewing sugar cane, cold weather, food deficiency and drinking water form open pond could cause malaria. Moreover some of them informed that before 5 years most of the peasants were believed that malaria was attack of devil. However by know they know it as disease and they treated it by going to health centers.

With regard to cholera, the focus group in *Burka Dilapa* PA particularly came to the conclusion that unprotected pond water and spoiled food are the main cause for cholera. However most of the group members in *Jigena* and *Golocheba* PA mentioned that the cause of cholera is hunger and draught. They justify that when there exists longer dry season cholera starts to be appear. Almost all of the group members among the three PAs, don't know the cause of typhoid. The main causes that they mentioned was attach of fever and from the patient's breath.

However, two farmers (Ato Mustafa Indris from *Jigena Lasho* and Ato Mohammed Bekele from *Burka Dilapa*) explained that the main causes for typhoid is feco-oral activities. Meanwhile,

minorities of the group members among the three-peasant association know that polio is caused through virus and good attitude to vaccination of polio.

There is also reasonably high awareness of AIDS, mostly its modes of transmission. Two women HH heads one in *Golecheba* and the other in *Jigena Lasho* during informal conversation responded that the disease could be transmitted through sex, and blood transfusion. They expressed their belief that it was men who brought the disease. On anther side, most of the male members in all PAs suggest that females who brought the disease. Some of the members also believed that white men and educated persons brought the disease.

Most of the three focus group members responded that they acquire the knowledge of causation of diseases from the services rendered through health posts constructed by AAE in their area, from the trained voluntary health workers and spatial mobility they made to (e.g. to Hosanna hospital) urban area. On other aspect, though the sample area in *Dalocha* have access to safe drinking water on average at the distance of 2.2 kilometers (A.A.E), some of the farmers use river and unprotected pond water. This is not because they didn't know the harm but they claim the cost (10 cents /40 lt.) that paid to fetch piped water from water kiosk. However majority of the farmers rejected this idea because on the average the majority spends 3-5 birr per day on the average for chewing *chat*. Hence spending up to 50 cents for safe water is insignificant as compared to spending for *chat*.

In the case of *Lanforo* the entire groups mentioned that malaria, typhoid and tuberculosis are the main diseases in their area. However, only Ato Awel Dulmecha in *Wonte Sostero* and Ato Kedir Abib in *Wonte Lola* focus groups clarify that malaria comes form mosquito, nurtured when it gets conducive place like grass and water logged area. Meanwhile, most of the farmers in the rest of

the groups did not know the cause of malaria and other main disease of the area, and guess out that it is attack of fever caused by drinking pond water. Regarding to cholera, the majority of the members of the focus groups respond that it is not a human disease but disease of poultry.

Because of inaccessibility of safe drinking water in most of their area they had a general concept that drinking water from river and pond could harm health, but they didn't knew the type of disease caused due to dirt water. Thus in this view most of the farmers in *Lanforo* areas lack knowledge about causation of diseases.

7.2. 3 Knowledge about human fertility control

The members of focus group in *Dalocha* were asked that whether they know about modern contraceptives. Most of the members mentioned that they know pills, condom and even inject-able contraceptives. Meanwhile, some mentioned that condom is needed in the younger, men and natural methods was found to be good for older people since they could control their sexual urges. However, though they know the modern contraceptives, their practical usage was constrained by different traditional and religious barriers. For example Ato Kemal Bamud from *Burka Dilapa* pointed out that, contraceptives hinder multiplying and maximizing their lesser number of clan members. They rationalize that if a higher the number of clan members existed in their locality they would benefited from different social, economic and political advantages like election. Notwithstanding this, most of the members in the three focus group areas argued that there is an attitudinal change in using modern contraceptives since 3-5 years back. This is due to the government health institutions and the AAE had a great deal to bring the existing attitudinal change. Moreover, they added that the trained voluntary PA members by the AAE, contributed for the use of contraceptives by women in their area. The contribution of mass media (Radio) also acknowledged by some of the members in all of the three groups.

In the case of *Lanforo*, focus groups in *Wonte sostero* did not want even to talk about the modern contra captives. This is because firstly, they reason that they had enough agricultural land, to accommodate the next generation; and secondly, they believe that every born child could be grown by Allah. Hence, most of them said that they do not allow their wives to use contraceptives. Moreover most the members of the two focus groups also share the idea of the members of *Wonte sostero* focus groups. Thus culture, religion and the land size they have by now negatively affects the knowledge about human fertility control methods in focus group members of *Lanforo*.

7.2.4 Knowledge about agricultural marketing situations

The majority of the focus group from the three PA, mentioned that they don't know the cause for the seasonal price fluctuation of agricultural crops in their area. Some of the reasons pointed out for the causes to the price change (decrease in 1993/94 as compared to 1992/93) were increment of costs of agricultural input, export restriction for cereals, the existing administration change in their zone. However some replied that lack of production diversification and bulk production of specific products like *teff* and wheat in their area was the cause for decrease in price. Regarding to know how about bargaining power, the minority responded that using co-operatives will increase benefit and the majority responds that private supply could increase bargaining power. Some members of the group also suggest that they decide the price of their produce in the market and on the way to the market.

In the case of focus groups in *Lanforo*, some of the groups' members seem to have ideas about the price fluctuation existed in their area. The question about what is the reason for decrease in price of cereals, was responded by the members that it is because of absence of exporting facilities (institutions) and the existence of bulk production of the items in the area were the main causes.

However, majority of the focus groups in the three PAs argued that government is the main cause. In justifying this idea, they argue that it wants to make them food self-sufficient by discouraging all the means of market channels those were purchasing the cereals from them. This is an assumption made by the farmers, however, it could not be the real cause for decrease in price of cereals. Thus in general the knowledge about marketing situation of the focus group farmers in *Lanforo* is somewhat less as compared to farmers in *Dalocha* woreda.

7.2.5 Knowledge about credit and saving institutions

The majority of the group members in *Dalocha* woreda didn't know the benefits of being a member of local credit and saving associations. The benefit of *Iqub* is understood in the way that they used it to prepare food turn by turn among its members and celebrate together by eating the prepared food. Moreover, their knowledge about *Iddir* was not in its indigenous insurance institution, but to share communal labour in carrying patients to the near by health institutions and. However, the minority knows that the local credit and saving institutions enable to have loan and teach them how effectively utilize it. Ato Shafi Yusuf from *Golecheba* indicated that *Iddir* helps to overcome the unforeseen accidents and *Iqub* helps to save money for different purposes. To start new business and to pay input loan were among the benefits of *Iqub* mentioned. With regard to the past experience of saving and credit association organized by AAE seven years ago, some suggest that farmers those who took loan seven years ago from AAE did not benefited out of it, this is because they consume the money in different types of present consumption's. Further, explained that inappropriate target group selection and lack of knowledge about how to manage and use the loan were also the factors hindered farmers to benefit from the institutions. Moreover Ato Nasir Nuredin from the *Golecheba* focus groups also stated that *chat* was the main enemy for loan taken from saving and credit association. This is because most of the farmers in their area chew *chat* by

expending on average3-5 birr per day. In general the majorities of the focus groups in *Dalocha* have less knowledge about local saving and credit institutions.

In the case of *Lanforo* woreda, some of the group members practiced micro financing by taking loan from Omo-micro finance (government institution operating in the area) and some of them responded that they are benefited out of it. Accordingly they mentioned that they have an idea about the benefits of being a member of local credit and saving associations as compare to being not a member. However, the attitude towards the government money resulted in poor repayment status. This is because, they believe that government is rich and if one doesn't repay the loan it could forgive him. In view of this Ato Sirbaro Sirmolo form *Archuma Golo* said "*Mother and government area the same in forgiving loan*". However, the majorities of the farmers knew the benefit of *Iqub, Iddir* and saving and credit institutions in their locality. Most of the members of the focus groups forwarded that it is from their forefathers that they inherited knowledge about *Iqub* and *Iddir* since a long time ago. They practice *Iqub* not only in saving cash but also in kind (cereals) from to over come unforeseen economic crisis. Thus farmers in *Lanforo* had better knowledge as compared to farmers in *Dalocha.*

7.2.6 Knowledge about nutrition and health

Most of the focus group members in the three PAs found in *Dalocha* heard and knew about what balanced diet mean. Almost all also, know that *injera* and bread should not be given to a child with an age of less then six months. However, on the discussion of nutrition issues some of the farmers pointed out that some nutritionally rich food items like milk are not consumed by women. Women are not allowed to consumed milk, which is processed to make cheese and butter for market. The focus group members pointed out that it is taboo for women to consume milk.

Moreover, the following food items are not also consumed during pregnancy- cheese, porridge, eggs, yogurt, stored honey and butter. A woman will be a subject of ridicule if a new born child has some marks on his body which is believed to be caused by eating food prohibited during pregnancy.

In the case of *Lanforo,* when we discussed about nutrition issues among the three focus groups, they believe that horticultural crops (fruits and vegetables) are the only source of nutrition. They also argued that because of they did not produce fruits and vegetables as the farmers in *Dalocha* do, they assume that they lack nutrients. Besides, these they lack the full knowledge about what balanced diet mean in general. Moreover, gender bias in consuming some valuable food items is also practiced in *Lanforo* as that of *Dalocha.*

7.2.7 Knowledge about elementary techniques

Most of the focus group in *Dalocha* knew the main advantages of modern grain stores over the traditional one. They also suggest some ideas about how to manage it. Knowledge about the type of spade used for heavy tilling and the size of donkey cartwheel that is easier to ply on village road, are known by most of the respondents of *Burka Dilapa* and *Jigana Lasho* focus groups. They responded that long handed spade and large size cartwheel are appropriate for heavy tilling and to ply on village road easily, respectively. However, the knowledge about Sheller and combines is greater in *Golocheba* focus group as compared to the other two groups. Most of the members saw them physically how they are operating. Some of the members of the focus groups know how pulley is used to draw water from the well.

In the case of *Lanforo* focus groups, the minority knew that the size of spade for heavy tilling and cartwheel to ply on village road easily. Only three farmers, one from *Wonte Lola* and the other two from *Archuma Gola* justified by giving example how long handed spade is appropriate for heavy tilling and large size cartwheel makes easy to ply on village road. Moreover the majority of the group members have knowledge about Sheller and combines. They knew how they are operating. Furthermore, one farmer from *Archuma Gola* responded that the time taken for combine to harvest and thresh one hectare of wheat.

In general though the knowledge about Sheller and combines is greater in *Lanforo*, in others knowledge about elementary techniques, the focus groups in *Dalocha* woreda have better know how as compared to *Lanforo*.

CHAPTER- VIII SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

Development is multidimensional, and apart from increase in wealth, it involves factors such as control of disease, improvement in health, reduction in fertility, and improvement in environmental and personal hygiene and empowerment (political capital formation). These require knowledge to pursue appropriate kinds of action.

A variety of factors (like natural resources, capital, technology, knowledge and social organization) contribute to the development of an area. Knowledge comprising its different components about daily life constitutes one of these factors, rather than its sole determinant. Economic development can be pushed through the use of other means also, but its pace can be quickened if the knowledge component is harnessed, and integrated with the overall development process. To cite a concrete example, while executing an irrigation project, attention is generally given only to its technological and to some extent its agronomic aspects, rather than creating appropriate knowledge among the people using the irrigation facility. If this aspect is also covered, the utilization of irrigation facilities, the productivity of the farms, and the earnings of the farmers and therefore, the overall effectiveness of an irrigation project, is likely to be greater. Knowledge being a component of the socioeconomic system, its pattern has to be in coherence with other aspects of developments.

This is the central hypothesis of this study and, based on this, it was postulated that the pattern of knowledge in areas with different levels of socioeconomic development would vary. It is likely to be characterized by greater knowledge in developed areas, and less knowledge in less developed

area. Hence, in the following section, an understanding of the characteristic of the respondents would give an idea of the level of development of the two *woredas*.

8.1 Summary of Findings

8.1.1 Socioeconomic Development

The analysis in the first section of this paper indicates that the socioeconomic characteristics of the two *woredas* differed relatively. *Dalocha woreda* is more or less found in a better well being condition as compare to *Lanforo* woreda. Accordingly, a low level of education (both formal and informal) and large household sizes characterizes *Lanforo* woreda. With regard to illiteracy rate respondents from *Dalocha* constitute 66.4 percent and 74.4 percent for *Lanforo*. 15.5 percent in *Dalocha* have accessed adult education and the percent for *Lanforo* is 1.1.Besides this, about 36.4 percent of respondents in *Dalocha* were trained in skill development and the figure in *Lanforo* was 2.9 percent. The average HH size is 5.14 and 6.5 respectively. Households derived the majority portion of their earning from agriculture (98%) in *Lanforo.* Though agriculture is the main source of income (91.1%) additional income generation from off-farm activities also practiced more in *Dalocha* as compared to *Lanforo*. 58% and 78.6 % of respondents in *Dalocha* and *Lanforo* were cooked food mainly in earthen vessels respectively. The percent of respondents who use aluminum vessels for cooking were 69.9 and 51.2 respectively. 100 percent of the respondents in *Lanforo* lack latrines. However, 95.6 percent defecate open as those of *Lanforo* and 4.4 percent have latrines in *Dalocha.* Moreover, the main waste disposal method in *Lanforo* was found to be throwing around house and street, in *Dalocha,* it is thrown in the garden and used as compost. In *Dalocha* about 76 % of the respondents has access to safe drinking water. On the other hand, only 40.3 % of the respondents of *Lanforo* were accessed to safe drinking water. In *Lanforo* 39.6% of the respondents' listen to the radio at different levels of frequency as compared to 53.6% in

Dalocha. With regard to newspaper reading 78.2 % of the respondents in *Lanforo* never reading and the percent is 71.9 in *Dalocha*. Intensity of mobility to towns in *Lanforo* is also found to be less as compared to *Dalocha*. With regard to social and economic service accessibility, in *Lanforo* no farmer can reach health institutions within a distance of less than one hour. However 63.4 percent of respondents in *Dalocha* reach health institution with in less than one hour. Safe drinking water was scarcely found in *Lanforo* as compared to *Dalocha*. Accordingly only 17.3 percent of the respondents in *Lanforo* fetch it within a distance of less than one hour. The percent is 89.4 in *Dalocha*.

Among the positive (economic, human and political capital formations) development changes seen in *Dalocha woreda*, a higher improvement was found to be in human capital formation. This in turn could be the basis for having a positive attitude to wards development. It is known that this kind of situation is fertile ground for different development interventions to overcome and /or minimize poverty in a shorter period of time as compared to *Lanforo* woreda, which lacks or found the issues at their lower level.

In line with this, on aspects of empowerment like perception of well being, participation in decision making that affect their life, and ability to accept and reject factors influencing their life was also found to be better in *Dalocha woreda* as compared to *Lanforo* woreda. Furthermore, the gender relationship between family and community along with perception of own well being was improved in a higher level in *Dalocha* than *Lanforo* in the past ten years. Thus one can perceive from the above summary that *Dalocha* woreda is found in better level of development as compared to *Lanforo* woreda. Particularly the development level was internally varies in terms of human capital formation and empowerment.

8.1.2 Characteristics of Knowledge

In Table 50, the average scores obtained by the respondents on the nine indices indicate that there is significant difference in the level of knowledge of the respondents form the two *woredas* in each component of knowledge examined. The level of knowledge on each component (except in little score (see table 46) knowledge about credit and saving) [119] is higher in *Dalocha woreda* than *Lanforo*. This indicates that there is coherence between the level of development of an area and the pattern of knowledge prevailing in that area.

Table-50 Mean scores obtained by respondents on various Indices of knowledge

No	Indices of knowledge	No of items	*Dalocha*	*Lanforo*
1	Knowledge about elementary Techniques	6	2.39	2.09
2	Knowledge about agricultural practices	9	5.03	4.88
3	Knowledge about Nutrition	5	2.94	2.83
4	Knowledge about fertility control	10	3.28	2.48
5	Knowledge about the causes of diseases	8	3.48	2.83
6	Knowledge about credit and saving institutions	3	1.36	1.55
7	Knowledge about marketing situations	4	2.62	2.29

Some of the main findings about the characteristics of knowledge may be highlighted. Knowledge about elementary techniques is lower in *Lanforo* as compared to respondents of *Dalocha.* Knowledge for managing modern grain stores and others is higher in *Dalocha*, while awareness and knowledge how combines and Sheller operate is greater in *Lanforo*. Probably the respondents of *Lanforo* might move for different purposes to large-scale private farms that practice mechanized farming in their locality and as a result they might acquire knowledge about the issues.

Similarly there is a sharp difference among the respondents from the two *woredas* about the knowledge of the causation of disease. The causes of many of the ordinary diseases are unknown

[11] The main factor that significantly affecting the knowledge of farmers about local credit and saving institution in *Lanforo* was annual per capita income. As it is indicated in the5.5.2 section of this study that the respondents in *Lanforo* have greater per capita income as compared to respondents of *Dalocha,* this probably could have its own effect on the knowledge of farmers in *Lanforo*. Moreover, the respondents have cumulative knowledge inherited from their forefathers about local saving institution (*Iqub*) as compared to respondents in *Dalocha.*

to the *Lanforo* respondents. Similarly knowledge about nutrition, fertility control practices and marketing is low in *Lanforo*. With regard to fertility control the religious attitude that Allah will grow children what so number is born and the belief that their existing agricultural land could accommodate the future demand of the new born children makes the use of contraceptives specially by women taboo in *Lanforo*. Knowledge about these matters is relatively widely dispersed in *Dalocha woreda.*

8.1.3 Factors significantly affecting the level of knowledge of farmers

Analyses were done through multiple regression analyses and focus group discussion to locate factors contributing to variation in knowledge. With regard to multiple regression analyses, the scores obtained by the respondents (the dependent variables) and the contribution of the eight independent variables to the variation of dependent variables was examined. In table- 51 the percentage of variance in knowledge explained by the eight independent variables (socioeconomic characteristics) is given.

Table -51 Percentage of variation in different components of knowledge explained by Independent variables

No	Indices of knowledge	*Dalocha* N=150	*Lanforo* N=112	Aggregate
1	Knowledge about elementary Techniques	13.1	11.3	-
2	Knowledge about agricultural practices	27.00	14.7	-
3	Knowledge about Nutrition	12.9	10.7	-
4	Knowledge about fertility control	16.7	4	-
5	Knowledge about the causes of diseases	28.1	18.7	-
6	Knowledge about local credit and saving institutions	5.4	12.6	-
7	Knowledge about marketing situations	19.7	18.1	-
8	Aggregate knowledge of index	36.2	23.7	42.8

At the aggregate level, for the whole sample (N= 262), and the aggregate index of knowledge, the regression analyses explained 42.8 percent of the variation in the level of knowledge by the eight independent variables. Education of self, NGO, development intervention, exposure to mass media and spatial mobility were found to be the most important variables contributing, respectively 20.7

percent, 11.3 percent, 7.4 percent and 5.7 percent to the variation in the level of knowledge in the two *woredas* jointly. The percentage of variation explained was 36.2 in *Dalocha* and 23.7 in *Lanforo*. The main variable associated with the change in knowledge was education of self in both *woredas*.

The proportion of variation in the individual components of knowledge explained by the eight independent variables varied. Since the variation in the seven components of knowledge was examined in relation to two groups (two *woreda* samples) and at aggregate level (for each *woreda* separately and jointly both *woredas*), there were 17 regression tests to identify the relative contribution of various factors to variation in knowledge. Among these 17 tests as many as 13 indicated education of self as being the most important variable contributing to variation in knowledge. Its influence was most pronounced in *Dalocha woreda* shown in 9 regression tests. This is because the rate of illiteracy among the respondents is found to be relatively less in *Dalocha* than *Lanforo*.

The importance of mass media (particularly listening radio) and spatial mobility as a source of change were found in both *woredas* shown in 5 regression tests each. NGO development intervention was found to be significant in 5 regression tests in *Dalocha woreda* only. This is because NGO development intervention is found only in this *woreda*. Action Aid - Ethiopia is the sole NGO working in integrated rural development issues in *Dalocha*. The interventions like informal education training and different skill development activities make difference in knowledge of farmers as compared to *Lanforo*. The AAE development interventions in *Dalocha woreda* also found to have direct relation with some aspects of spatial mobility. In most of the focus group discussion the farmers pointed out that for the purpose of practical training AAE takes

farmers to different areas of he country so as to share experiences among the farmers of other areas like Sidama zone of the SNNRPS. Though the rate of illiteracy among the fathers of the respondents was relatively high in *Dalocha*, it was found that father's education found to be contributing to the variation of knowledge in *Dalocha* in 3 regression tests. Membership in formal association and per capita income contributed to the variation of knowledge in 4 regression tests each in *Lanforo woreda*. Moreover targeting by the new extension program is contributing to the variation of knowledge in 3 tests in *Lanforo woreda*. On other hand the new extension program is found to be in significant for the contribution of variation in knowledge in both *woredas*. Among 17 regressions tested in 11 tests it is found that there is a negative association with the level of knowledge of farmers. With regard to focus group discussion in both *woredas*, mass media and spatial mobility contributed more in the variation of farmers' knowledge. However, the contribution of NGO development intervention is found to be existent only in *Dalocha woreda*.

8.1.4 Significant factors affecting farmers' knowledge and Intra- Regional Budget allocation formula

Financial resource mobilization is one of the main tasks practiced at intra -regional level. As it is mentioned in part one of this paper, in SNNPRS *woredas* are categorized using certain criteria for the budget allocation formula. Based on the indices calculated by BOPED, *Dalocha woreda* had greater indices in safe drinking water coverage, telecommunication and road density. But had smaller indices in education and health coverage as compared to *Lanforo* woreda. Generally, *Dalocha* was given higher average development indices as compared to *Lanforo*. The main factor that makes development difference between the two woredas according to the calculation of indices made by BOPED was the value given to the safe water coverage[12] to *Dalocha woreda*.

[12] the development intervention made by AAE in the water sector (see also 2.2.5. section of this paper) enabled the farmers of *Dalocha more* accessible to safe drinking water as compared to *Lanforo* woreda. Thus, *Dalocha* woreda got high index value for water coverage and this value inflated the indices of other indicators and brought *Dalocha* at higher average development index than *Lanforo*.

On the other hand, this study came up with education was pronounced in contributing for the variation of farmers' knowledge significantly in nine regression tests in *Dalocha* as compared to five tests in *Lanforo*. This condition depicts that there was an opportunity missed while incorporating education indicators in the budget formulas in the case of *Dalocha woreda*. These missed opportunities were, firstly the success story of primary education coverage through ACCESS programs is not taken into account. In this program about 6,978 children had access to basic education out of which 1,218 are girls; secondly 1,138 men and 348 women farmers gained access to basic education through FAL/REFLECT program (AAE, 1990). Notwithstanding this, positive educational achievements in *Dalocha* woreda through the non-formal basic education programs have not been incorporated in education indicator of the *Dalocha* woreda. This is because as AAE indicated that the linkage of ACCESS to the respective line ministry is not strong (1999). Thus this cost effective and efficient method of reaching citizens in basic education have not been given emphasis and not measured in the education coverage of the area. Therefore, due attention should have to be given not only in incorporating the out comes of these ACCESS and REFFLECT programs in education coverage of the woreda for development level categorization, but should also be institutionalized and practiced widely in every part of the country. This is because they are efficient and effective methods in enhancing primary education programs in poor countries like Ethiopia. Therefore, had these informal aspects of education would have been incorporated in the budget formula (education indicators), the real educational coverage of the *woredas* would have been shown properly (coverage of *Dalocha* woreda is greater than *Lanforo*). Consequently, the budget allocation also would have been distributed according to the indices that the woredas exactly have.

Besides education, the other factor that was significantly contributing to the variation in knowledge of farmers was NGO development intervention. Depending on the capacity, level of commitment for development and the performance that NGO has in a particular area would make difference in development level of an area particularly in regions like SNNPRS where many NGO operating. According to the information obtained from regional BOPED the NGO operating in the region planed to implement about 240 projects having project life of 1-5 years. The total budget allocated for implementing these projects is Birr 1,555,890,871.9. Out of this amount of money, for example in the budget year 2001 /2002 Birr 149,229,100 allocated. Hence, NGO play great role in the regional development process by allocating significant amount of money that could bring positive development change in a particular area if it is utilized to achieve the intended objectives.

Apart from constructing physical infrastructures, NGO also allocate money for training and other relevant skill development that are relevant for human resource development of the area. In addition to this they also mobilize community based organizations (CBO) so as to play their internal development role in the area, moreover, they also play a significant role in empowering the rural poor in order to create equal opportunities for development process. If these mentioned development aspects would be practiced effectively, then , could be an asset for enhancing development in a particular area. Thus, the existence of the NGO in a particular area should be given emphasis by setting certain criteria to measure their level of development contribution to that area. If this is considered and incorporated as one factor in the budget allocation formula by giving weight as compared to others, it will help to depict the relative development level image of an area (woredas).

Per capita income of the households was also found to be significant in four regression tests to the contribution of farmers' knowledge particularly in *Lanforo* woreda. Per capita income is a reflection of the level of productivity of an economy. It could enable to depict quantitative aspect of development of an area. Accordingly, it would be included ideally in the formula of budget allocation, however, they are rarely available in developing countries (Bahl and Linn 1992). Not withstanding this, countries like India incorporated per capita income in their formula. Thus per capita income is important not only for contributing to the variation of knowledge but also it shows the relative development level of an area, therefore, it should be taken into account in the formula.

Furthermore, spatial mobility was found to contribute to knowledge change in the two *woredas*. This variable could be expressed by the existence of rural road density in the woredas. The more rural road networks are widely distributed within an area, the more there will be a high spatial mobility and farmers could acquire knowledge and add value on the development process of an area. Hence the road density in a *woreda* should not be incorporated on aggregate basis in the formula but weight should be given to the different levels of roads found in the *woreda*.

The other factor that does not considered in this study, but incorporated in the budget formula was health indicator. Though it was not taken as an independent variable and tested its significance in the variation knowledge, it should have to be discussed here in line with its role in categorizing *woredas* in their health coverage for the budget allocation formula. It was given higher index to *Lanforo woreda* in the calculation made by BOPED. This indicates that the woreda have better health condition as compared to *Dalocha* woreda. However, it was discussed in the study on the knowledge level and situation of health matters in contrasting between the two *woredas*.

Accordingly it was found that the total health situations (environmental personal and knowledge about the causation of diseases, family planning and nutrition) are in better condition in *Dalocha* than *Lanforo*. The reason why *Lanforo* was given a high index for health indicator (see section 2.4.4) of in the budget formula is that it considers merely the absolute numbers. These include numbers of health professionals and constructed health institutions (according to the standard set by the government) along with the number of population of the *woreda*. However the health institutions those are constructed cost effectively using local materials, but with their effective services found in *Dalocha woreda* are not taken in to account. Moreover, the impact of training and skill development aspect of health interventions also not considered. In this view about 328 VHW, CHAs, TBAs CBDs were trained these could add value for health matters of the woreda. Additionally, about 263 households adopted pit latrine, 68% coverage of under one immunization and other health services (AAE 1999) also were not incorporated in the health indicator for the purpose of budget allocation. Hence, whether the health institutions are constructed with the standard or not[12], to see the level of development with respect to the sector one have to measure the out put (services) that could bring positive change in that particular area along with the service accessibility.

Had these aspects of health development been incorporated in the formula for categorizing *woredas* according to their health development levels, it would have been appropriate and rational in depicting relatively the real health status of the *woreda*. So that it enable to make the budget allocation on a rational based of equitable distribution.

[12] this is because in one side, the health policy of Ethiopia focuses on disease prevention aspect .on the other side financial capital to construct buildings and trained health professionals are also scarce in the country. Therefore, promoting using local materials for building and expanding health education with the help of trained local people could be given attention to achieve the intended objectives of the health policy

8.2 Conclusion and Recommendations

8.2.1 Conclusions

The foregoing findings indicate significant variation in the pattern of knowledge in the two *woredas* varying in their level of development. Such variation in knowledge was found to be significantly related with variation in the socio-personal characteristics of the population, particularly their level of education, mass media exposure and spatial mobility. This is in conformity with the finding of scholars like Daniel Lerner (1964) and Alex Inkels (1974), who identified education and mass media exposure as the main sources of modernization.

Moreover, intensive and integrated development intervention made by NGO could make difference in the variation of knowledge in a given rural population like the study area. On the other hand, the new extension program intervention was found to be inversely related with the knowledge of farmers made the study area. This implies that extension agents do not practice disseminating new techniques and technologies to the farmers, as the farmers themselves pointed out during group discussions they (extension agents) pass their time collecting input loans from the farmer. So, extension agents are not practicing their intended job.

The finding that the pattern of knowledge in an area is in congruence with the level of socioeconomic development of that area implies that knowledge is a component of the level of development in a given area. It is influenced by the pattern of life of the people in an area. This means that, if the socioeconomic development interventions made in particular area changes the pattern of life of people positively, then it would influence their level of knowledge about different daily life issues of that particular people. Thus, one can draw conclusion that the higher the level

of socioeconomic development in particular area exists, the higher will be the level of knowledge that the people have about different daily life in that area matters.

Even though factors other than knowledge themselves can push through socioeconomic development, their effectiveness will be greater and the process of development will be smoother and quicker if the knowledge aspect of development is also built into the development program. The case of irrigation was mentioned earlier. The role of knowledge is important for other development programs also. For example, as schemes for rural drinking water supply can be effective in information about diseases caused through contaminated water, and the causes of water contamination can be disseminated in the community along with the construction of the water supply project. Similarly, schemes for constructing latrines in rural areas can be more effective if information about the health hazards posed by defecating in the open is spread in the community. The knowledge dimension of development programs is not generally appreciated and little efforts are made to build this component as well into development programs. If this is done, the effectiveness of the developmental program will be greater, particularly where financial resources are scarce in countries like Ethiopia. Moreover, knowledge being the hidden factor of development, it is useful not only enhance the implementation of development programs and projects, but could also be used for categorizing area with their level of developments using the significant factors that affect it. This is because, this study proved that the level of knowledge is congruent with the level of development in area.

This being the case the level of knowledge is also found to be influenced by socioeconomic characteristic of population found in a particular area. Thus, identifying socioeconomic factors that affects the knowledge level of people in that area should be taken as a criterion for categorizing

areas with their level of development. When the purpose of categorizing areas (woredas) is for the purpose of budget allocation criteria, it will be useful to achieve equitable distribution by identifying the internal development variation of the area through factors affecting the knowledge of the people.

Moreover, identifying the knowledge level of a particular rural society about different aspects of development could enable to execute development interventions with knowledgeable participation of the people. Consequently, create fertile ground for efficient utilization of resources committed for that particular intervention and to achieve the intended objective of the intervention so as to benefit the people of the area that are means and ends of their local development.

8.2.2 Recommendations

Based on the findings of this research work, the following are recommended for their policy implication:

1. **Encourage farmers' confidence in the government's rural and other sectoral policies to create smooth relationship between farmers' and the executing sector offices so as to bring positive development change in the areas.** This is because it was learnt that in one hand, most farmers' in the project area don't have knowledge about activities that affect their life, which are forwarded to them from different sectoral offices. On the other hand, some of the farmers are suspicious to take part in the programs (e.g. extension) practiced by the government in their area. If the farmers would not develop confidence by participating in activities of before development intervention and tasting the fruits of that intervention practically, then farmers would not be motivated towards implementing the existing intervention and/or future participation in other interventions. In other word the main way to create farmers' confidence is and motivating them in present and future development process is empowerment in its real form.

2. **Agricultural marketing should be incorporated as a package in the new extension program and /or there should be an institution that focuses on marketing aspects of rural development so as to make farmers knowledgeable about marketing situation.**

   By doing so farmers would be accessed to every marketing information regarding to the marketable produces they produced. Increasing their bargaining power through market information would benefit them in maximizing their income and ultimately they will be initiated to increase production and productivity.

3. **NGO or government institutions should design a new strategy in rescuing farmers during the time of decrease in prices of agricultural produces particularly cereals.**

   This could be implemented in such a way that the institutions collect some quantity of marketable cereals from farmers during the peak harvesting period so as to maintain time utility of the product. Then certain amount of money (but not equivalent to the collected grain) will be given to the farmer who stored grain in order to overcome some financial obligations he met in the process of input purchase and for his other immediate cash need. After a certain period of time when the price of crop become relatively better, the institution could sell the grain on hand at reasonable price to refund its money that was given to the farmer and to give the balance that the farmer has.

4. **Micro finance institutions should have to implement their objectives with real participation of farmers:** Therefore, based on this stand they have to:

   4.1 Participate local people in the process of target group selection along with the survey they carry out in the area..

   4.2 Encourage farmers to utilize local saving and credit institutions by

mobilizing the institutions in such a way that they could benefit farmers in practicing in credit and saving schemes.

4.3 **Make an effort to minimize chat consumption of the area in collaboration with appropriate bodies of the area.** In the study area it was learnt that most of the farmers spend on average 3-5 birr per day for chat. Failure to do this, the loan given to the farmer will be consumed with out generating additional income.

5. **Local health institutions should give attention to teaching farmers about the causes and preventive measures of the main diseases of their area.**

Though contagious diseases like malaria cholera and typhoid are the main problems in both woredas. However, most of the farmers don't know these diseases and their causes. To overcome this, disseminating information about the disease (causes and prevention methods) will be important. If the farmers perceived this knowledge they could prevent the diseases easily.

6. **The extension agents and relevant agricultural institutions should make their primary jobs to channel new techniques, practices, information, and technologies to the farmers in its integrated approach so as to enable them to become knowledgeable on the rural development issues.**

In this study it is identified that in most of regression tests made extension was found to be inversely related with the knowledge of the farmers. Moreover, during focus group discussion the some farmers also suggest that the relationship they had with the extension agents and other workers of office of agriculture, was not friendly, but it was a relationship between lender and borrower that default to repay the loan. Therefore, this relationship should be changed n a way that it could enhance the rural development process.

7. **Socio- cultural barriers to fertility control and nutrition aspects should be broken using local religions and cultural leaders. In order to resolve or minimize the problems existed in the area concerning the issues.**

8. **Social indicators (education and health coverage) used for development planning and for other purposes should be given attention to the services rendered from cost effective and efficient institutions.** (Like health posts constructed using local materials and centers for informal education in the case of *Dalocha woreda*).

   Countries like Ethiopia are constrained by financial resources that are needed for different development investments. To achieve the targets that was set by the government in different sectors (to reach primary education and health to citizen) cost effective constructions using local materials could do more in giving the services at grass root level. What matters is the service given out of these but not the type of construction. Therefore, to enhance reaching citizen in primary education and primary health services in the case of education and health sectors respectively, such institutions could play great role. Thus, such institutions should also be encouraged and institutionalized in different parts of the country as well.

9. The regional budget allocation formula should give emphasis to the following points:

   9.1. **The formula should give attention to the outputs of the institutions along with the existence of physical facilities in particular area.** There has to be certain criteria which measures the efficiency of the services provided from the respective institutions. It does not mean that social service giving facilities in particular area renders effective service to the

people of the area. Hence ,to decide the expenditure need of that area with respect to the sector under question the assessing the service provided to the population of that particular area could give clue to the decision made for expenditure need to the service giving facility.

9.2 **It should incorporate informal education for children, adult education, in education coverage and the services from health posts that were constructed using local materials should also be incorporated in health coverage of an area.**

9.3. **The indicators should be weighted further in such a way that they reflected the significant role they play in the development process.** For example, health and education indicators should not be given equal weight to telephone indicator.

9.4 **It should also give due emphasis incorporating national development objectives to enhance their efficiency.** For example, primary education coverage, the efficiency of extension programs efficient utilization of financial resources in projects and programs. That is the more efficient the woreda is on the above issues, the more the amount certain amount of budget should be allocated based on certain criteria.

9.5 **It also should give a room for the money allocated from NGO to different development interventions in woredas.** It is learnt from the study that intensive human development aspects like training and different skill development activities done by AAE in *Dalocha* woreda, other thing being equal, brought positive development change on the daily life (knowing health matters, environmental sanitation, crop diversification, fertility control etc.) of the farmers. Thus, regardless of the money allocated by NGO for constructions of different physical

facilities (schools, health institutions, etc) that were taken into account in the formula in one way or another, the money they allocated for training and skill development should has to be considered in the formula.

10. **Intensive on-farm training and skill development of farmers on other off-farm activities should be encouraged and incorporated at different stages of implementation of development programs.** It is identified in this study that farmers that have access to training and skill development were found to be knowledgeable than the non-trained farmers.

11. **The government and other institutions should give due attention to factors significantly affecting the knowledge of farmers.** These are education, (formal and informal), rural road for spatial mobility, and there should be regional radio programs (or if resource is available at zonal level) that address the farmers on different development issues.

In conclusion, since the present study is only an assessment of the short term within a limited area, more in-depth and wide area quantitative and qualitative studies would be required on the effect of development interventions on the knowledge of farmers in different parts of the country. Moreover, researchers should further investigate the factors that affect the knowledge of farmers besides factors used by this study. In general, this research can be of great use in generating data for planning, designing strategies and implementing integrated rural development policies.

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Appendix-1
Questionnaire for examining the knowledge of farmers in *Dalocha* and *Lanforo* Woredas

Introduction

- **The purpose of this questionnaire is to collect data about the socioeconomic characteristics and level of knowledge about the farmers found in *Dalocha* and *Lanforo* woredas for Ma thesis from Addis Ababa University;**
- **This questionnaire should be answered only by the head of the household;**
- **Any information obtained from this questionnaire will be confidential;**

Part-I Questionnaire identification and result follow -up

1.1 Region _____

1.2 Zone _____

1.3 Woreda_____

1.4 peasant Association _____

1.5 Village Name _____

1.6 ID number of the respondent _____

1.7 Result of the questionnaire

No	Name of data collector	ID No of Data Collector____		
	Results of visiting	Date of Visiting		
1	Finalized			
2	Postponed to another time			
3	He is not willing			
4	Partially finalized			
5	Other specify			
6	Time of started _____ Time of finished _____			

PART II Socio – Personal Characteristics

2.1. Sex 1. Male 2. Female

2.2. Age of household head ----------Years

2.3. Marital Status 1. Married 2. Unmarried
3. Divorced 4. Widowed

2.4. Size of household _____

2.5 Is there any member of the household who lives in town areas?
1. Yes 2. No

2.6 Language 1.Amharic 2.Siltigna 3.Any other_____

2.7 Religion

1. Orthodox Christian
2. Muslim
3. Protestant Christian
4. Others _____

2.8 Education (formal and non-formal)

2.8.1. Education level of household head
Illiterate 4. grade 7-8
Read and write 5. grade 9-12
Grade 1-6 6. above grade

2.8.2. Education level of the father of household head
Illiterate 4. grade7-8
Read and write 5. grade 9-12
Grade 1-6 6. above grade12

2.8.3 have you ever learned informal education?
_____1. Yes 2. No

2.8.4 If yes for question 2.8.3 which one of the following you practiced?
1. Adult education 2. Community skill training
3. Others, specify_____

2.8.5 Which institutions do provide the informal education?
1. Government 2. NGO 3. Others, specify_____

2.9. Major occupations of head of household

1.Agriculture
2.petty trade
3. Handicrafts
4.Agriculture and petty trade
5. Others(specify)

2.10. Membership to formal and informal association

2.10.1 Are you member of any formal association?
1. No, not a member ⟶ go to 2.10.2 2. Yes, ordinary member
3. Yes, executive member

2.10.1.1 If the answer for question 2.10.1 is yes, then to which of the following association you are a member? (Please indicate all you are a member) 1.Yes 2.No

No	Types Association	Code
1	Service Co- operative	
2	Development association	
3	Credit & saving association	
4	Water usage association	
5	Political Organization	
7	Other (Specify)	

2.10.2 Are you a member of informal association?
1. No, not a member ⟶ go to 2.11
2.Yes, ordinary member
3. Yes, executive member

2.10.3If the answer for question 2.10.2.is yes, then to which of the following association is your member?

1.Yes 2.No

No	Types of associations	code
1.	*Iddir*	
2.	*Iqub*	
3.	*Mahber*	
4.	Other, specify_____	

2.11. Response to exposure to mass media;

2.11.1Frequency of listening radio

0. Never listening
1. Listening Sometimes
2. Listening occasionally
3. Listening frequently
4. Listening every day

2.11.2. Reading Newspapers

Never reading
Reading once a week
Reading twice in week
Reading 3-5 days in a week
Reading newspaper every day

2.11.3 Watching films / television

0.Never Watching 1.Once, twice a year
2. 3-11 times a year 3.Once or twice a month 4. Once or more a week

2.12. Spatial mobility-

2.12.1 visiting small towns (like *Dalocha, Tora, Butajira, Werabe, Inseno* etc.)

Never visiting during the previous one year
visiting towns 1-9 times
Visiting 19-24 times
Visiting 25-40 times
visiting every day

2.12.2visiting large towns (like Addis Ababa, Nazareth, *Awassa,* etc.)

0. Never visiting during the previous one year
1.visiting towns 1-9 times
2.Visiting 19-24 times
3.Visiting 25-40 times
4.visiting every day

2 .12.3 with in your district or out of it in rural areas in a month

0.Never moved
2.Once a week
3.Twice a week
4.three time a week
5.our time a week

Part III Agricultural practices

3.1. Livestock ownership and production

3.1.1 Do you own live stock? -1. yes 2. No

3.1.2 If yes, for question 3.1.1 please indicate the type and number of livestock you own

1	2	3	4	5
Type of livestock owned now; 1. Ox 7. Goat 2. Calves 8. chicken 3. Heifer 9. Horse 4. Bull 10. Mule 5. Cow 11.Donkey 6. Sheep 12. Others (specify _____)	Number owned now (heads)	Did you sell this type of animal in 1993 E.C.? 1. yes 2. no	If yes to Col.3, Number sold in 1993 E.C. (heads)	If yes to column 3, total revenue Obtained in 1993 E.C from sale of animals(in Birr)
3.1.2.A	3.1.2.B	3.1.2C	3.1.2D	3.1.2E

3.2 Crop production, land size and improved Agricultural practices

3.2.1. What is the total land size of the household including its premise _____ hectares.

3.2.2 How many types of crops do you normally plant?

1. 1 crop 2. 2 crops 3. 3 crops 4. more than 3 crops

3.2.3 How many years have you passed through farming? _____Years.

3.2.4If you practice **improved agricultural practices**, which ones do you apply?

1	2	3
Improved agricultural practices you apply: 1. crop rotation 2. recommended fertilizer applicant 3. recommended seed rate 4. recommended planting rate 5. composite making 6. terracing 7. tree planting 8. vegetable growing 9. forage production 10. live stock vaccination 11. improved poultry farming 12. zero grazing 13. chemicals application 14. other (specify _____)	How frequent do you apply such practice? 1. habitual 2. once in awhile	How beneficial was this practice in increasing your income? 1. little 2. modest 3. large
3.2.5A	3.2.5B	3.2.5C

3.2.5 What crops did you plant in 1992/93?

1	2	3	4	5	6
Type of crop planted in 1992/93E.C. 1. Maize 2. Wheat 3. Teff 4. Barely 5. Sorghum 6. Millet 7. Pulses 8. Oilseeds 9. Vegetables 10. fruit 11.Rootcrops 12Others(specify_____)	Area planted in Ha.	Production obtained in k.g .in Ha	What type of agricultural practice did you practice? 1.traditiona 2.improved 3. both	Did you sell part or all of your produce of this particular crop in 1992/93 1. yes 2. no	If yes to column 5, how much did you sell in 93/94E.C? In Birr
3.2.6A	3.26B	3.2.6C	3.2.6D	3.2.6E	3.2.6F

3.3 New extension program

3.3.1 Does the new extension program target you?
1. Yes 2. No

3.3.2 If your answer is yes to question 5.2.4.1, in how many packages do you targeted?
1. Less than 5 3. 10-15 5. 22-25
2. 5-10 4. 15-20 6. 25-30 new packages

3.3.3 If the program targets you, how many years do you practiced? _____Years.

3.3.4 If your answer is no to question 3.3.1, why? Because you:
1. Are too poor
2. Have not enough land
3. Have not enough livestock
4. Are not interested
5. Need it, but you did not get it 6. Other, specify _____

3.3.5 If you are targeted by the new extension system, in your opinion, is there any benefits you gain out of it?
1.Yes 2.No skip to question 3.3.6

3.3.6 If your answer for question 3.3.5 is yes, what are the benefits?
1. _____
2. _____
3. _____
4. _____

3.3.7 If your answer for question 3.3.5 is no, why?
1. _____
2. _____
3. _____
4. _____

3.3.8 Do you think that there was/ is discrimination among farmers in the process of targeting for the new extension program?
1. Yes 2. No, 3. I don't know

3.3.9 If yes for question 3.3.8 then what could be the reason behind?
1. _____
2. _____
3. _____

3.3.10 In your opinion generally, what is the contribution of extension service to your Knowledge?
(Please mention to the respondent such as knowledge about agricultural practices, nutrition and health, diseases ,family planning, Post harvest technologies and agricultural marketing)
0.no
1.very low
2.low
3.midium
4.high
5.very high

Part IV Earnings and Household Food Security

4.1 Earnings from off- farm

4.1.1 Do you have other source of income besides agriculture?
1. Yes 2. No

If yes to question 3.1, please, indicate the major sources of income and the amount of income generated in 1993 E.C

Major source of other income in 1993 E.C 1. petty trade 2. hand craft 3. spinning and weaving 4. sell fuel wood 5. daily wage labor 6. sell grass 7. seasonal migration 8. remittance 9. other (specify)	Number of house hold members who participated in this particular activity	Average number of months/days they were engaged in this particular activity	Total amount of income obtained from this particulars activity in 1993 E.C (in Birr)
4.2A	4.2B	4.2C	4.2D

4.2. Household Food Security

4.2.1. Does your own, production fully meet your families annual food requirement? 1. Yes 2. No

4.2.2 If no to 3.4.1 what portion of your family annual food requirement was met from your own production in 1993? 1. Less than half 2. About half 3. About three fourths

4.3.3If the product you produce covers half and less than of your household consumption from where do you cover the rest?
1.decreasing daily food consumption
2.purchase from the market by your own money
3.from aid
4.purchase from the market from remittance

Part V Personal and environmental health

5.1Do you use safe drinking water supply systems?
1. Yes 2. No

5.2. Please indicate the major sources of water supply systems your family uses.

1	2	3	4
Major sources of water your family uses: 1. pipe water 2. well water unprotected 3. well water protected 4. spring water unprotected 5. spring water protected 6. river 7. pond 8. lake 9. other (specific ____)	Is this particular source of water adequate in the wet season? 1. yes 2. no	Is this particular source of water adequate in the dry season? 1. yes 2. no	How far do you travel round trip to fetch water from this particular source of water? 1. less than 1hr 2. 1:01-2:00hr 3. 2:01-3-00hr 4. Greater than 3hrs.
5.2A	5.2B	5.2C	5.2D

5.3. What type of toilet facilities does your household use?

1. Do not have any facilities (skip to 5.4)
2. Pit latrine
3. Ventilated improved pit latrine
4. Other (specify _____)

5.4. Main waste disposal methods

1. Burning
2. Thrown in the river
3. Thrown around the house or the street
4. Thrown in the ditch
5. Thrown in a communal dump site
6. Other (specify _____).

Part VI Housing Characteristics and household resources

6.1 Are there any windows in the house?

1.Yes 2. No

6.2. What is the major material used for the constriction of the walls?

1. Wood and thatch
2. Wood and mud
3. Stone and mud
4. Bamboo and thatch
5. Other (specify) _____

6.3. What is the major material used for the construction of the roof?

1. Thatch 2. Corrugated iron
3. Other (specify) _____

6.4. Does your house have a room that is used solely for cooking?1. Yes 2. No

6.5. Where do domestic animals spend the night?

1. Same house, same section 2. Same house, separate section 3. Separate place
4. No animals are available

6.6. Does your household own/have the following items?

Type of Items		No	Code
1. Working radio	1	2	
2. Cassette recorder	1	2	
3. Kerosene stove	1	2	
4. Gas stove	1	2	
5. Bicycle	1	2	
6. Insecticide sprayer	1	2	
7. Cart	1	2	
8. Plow	1	2	
9. aluminum cooking dishes	1	2	
10. clay made dishes Others	1	2	
11.other,specify	1	2	

Part VII Access to Socioeconomic institutions and positive development changes achieved in the past ten years

7.1. Socioeconomic institutions

7.1.1 Which health Service does the household use (circle all that are applied)

1. Traditional birth attendant
2. Traditional healer
3. Public health centers
4. Hospitals 5.both health centers and traditional healer 6.Others(specify

7.1.2. Where do you teach your children?

1.Formal school 2.Informal school 3.I do not teach.

7.1.3 In yours walking speed how much time do you travel to arrive at:

No	Institution/infrastructure	Code
1	Health institution	
2	Market places	
3	Extension offices	
4	Telecommunication Service	
5	Electric power	
6	potable / piped water	
7	Nearby town	
8	School	
9	others / specify	

7.1.3 Have you ever-dialed telephone in your area? 1. Yes 2. No

7.2 (A) The **positive changes** you encounter before and after the NGO intervention in your area? (***Dalocha***)

(B) The **positive changes** you encountered from government development intervention in the last ten years? (***Lanforo-***woreda)

7.2.4.1.Economic changes (circle one)

NO.	Indicators	Positive changes			
		No	Little	Medium	Higher
1	Additional job creation	0	1	2	3
2	Asset formation	0	1	2	3
3	Housing status	0	1	2	3
4	Household expenditure &consumption	0	1	2	3
5	Food security	0	1	2	3
6	Ability to cope with crisis	0	1	2	3
7	Credit and Saving	0	1	2	3
8	Additional income generating	0	1	2	3
9	other specify	0	1	2	3

7.2.4.2.Changes in social aspect (circle one)

NO.	Indicators	Positive changes			
		No	Little	Medium	Higher
1	Literacy and educational level	0	1	2	3
2	Household health situation	0	1	2	3
3	Environmental health	0	1	2	3
4	Family planning	0	1	2	3
5	School attendance rate of children	0	1	2	3
6	Child mortality	0	1	2	3
7	Reliability of safe water supply	0	1	2	3
8	Motivation towards development	0	1	2	3

7.2.4.3 Empowerment in Social, economic and political situations in the area (circle one)

NO.	Indicators	Positive changes			
		No	Little	Medium	Higher
1	Perception of wellbeing and quality of life	0	1	2	3
2	Participation in decision making	0	1	2	3
3	Access to public services/resources	0	1	2	3
4	Ability to accept/reject factors that influence their life	0	1	2	3
5	Perception and understanding of constitutional rights	0	1	2	3
6	Perception of accountability and responsibility of local public officials to them	0	1	2	3
7	Other specify	0	1	2	3

7.2.4.4 Women empowerment

NO.	Indicators	Positive changes			
		No	Little	Medium	Higher
1	Involvement in income generating activities	0	1	2	3
2	Ownership and control over assets	0	1	2	3
3	Perception of own wellbeing	0	1	2	3
4	Economic dependence on husbands	0	1	2	3
5	Mobility	0	1	2	3
6	Participation in local institutions	0	1	2	3
7	Educating girls	0	1	2	3
8	Other specify	0	1	2	3

Part VIII Questionnaire about Farmers' Knowledge

8.1 Knowledge about elementary techniques

8.1.1 Which type of spade is desirable for heavy tilling?
1.Short handle spade
2.Long handle spade
3.I don't know

8.1.2 Which type of donkey cart is easier to ply on village roads?
1.With small wheel
2.With a large wheel
3.I don't know

8.1.3 Have you seen a pulley used for drawing water from a well?
1.No, I never seen
2.Yes, but I don't know the operation
3.Yes, and I know the operation

8.1.4 What type of special skill do you have?
1.I don't have any
2.Carpenter
3. Masonry
4.Handcraft
5.Other specify _____,

8.1.5 Have you seen a Sheller and how it works before?
1.No, I never seen and know
2. Yes, I have seen but I don't know how it works
3.Yes, I have seen and I know how it works

8.1.6 Do you know how to manage modern grain store?
1.Yes, I know
2.No, I don't

8.1.7 If you have knowledge about elementary techniques, in your opinion what is the contribution of NGO found in your locality to your knowledge?
0.no
1.very low
2.low
3.midium
4.high
5.very high

8.2 Knowledge About Agricultural Practices

8.2.1 Which of the following practice increase yield of maize?
1.Row sowing
2.Broad casting
3. I don't know

8.2.2 At what stage do we apply fertilizer to maize crop?
1.at early stage 2.at latter stage 3. I don't know

8.2.3 Would the application of chemical fertilizer adversely affect the quality of the soil?
1.Yes 2.No

8.2.4 Have you ever tried to understand the composition of the soil of your field?
1 .Yes 2.No

8.2.5. Do you know of any modern method of castrating a bull?
1 .No I don't know and not practiced
2 .Yes, I know, but not practiced
3. Yes, I know and practiced

8.2.6 Do you know that there is a maximum time with in which milking of animals should be done?
1. No, I don't know 2. Yes, I know

8.2.7 If your answer for question 8.2.6 is yes and you know the time? What is exact time?
_____day

8.2.8. Do you know that cattle can, be made pregnant through artificial insemination?
1. No, I am not aware and not practiced
2.Yes, I am aware but not practiced

3. Yes, I am aware and practiced

8.2.9 Is it possible to prevent animal, diseases through vaccination?

1. No, it is not
2. Yes, it is possible but I have not used
3. Yes, it is possible and I have used

8.2.10 Have you ever heard of hatching eggs with a machine?

1. Yes 2 . No

8.2.11 If you have knowledge about agricultural practices, in your opinion what is the contribution of NGO found in your locality to your knowledge?

0.no 1.very low
2.low 3.midium 4.high 5.very high

8.3 Knowledge about Nutrition

8.3.1 Did you heard about the need to take balanced diet?

1 .Yes 2 .No

8.3.2 If one eats very large quantities of food, would it improve his health?

1. Yes 2 . No

8.3.3 Can a child of less than four months be given "*injera*", "*kita*" or bread?

1 .Yes
2 .No

8.3.4 The price of butter is more than double that of oil. Does butter contain double the nutritive value of oil?

1.Yes 2.No

8.3.5Which of the following food items help more for disease prevention?

1. Meat and egg
2. Fruits and Vegetables
3.I don't know

8.3.6 If you have knowledge about nutrition, in your opinion what is the contribution of NGO found in your locality to your knowledge?

0.no
1.very low
2.low
3.midium4.high 5.very high

8.4 Knowledge about Fertility Control

8.4.1 Do you know why a woman menstruates?

1. Yes 2 .No

8.4.2 Please, you indicate roughly the period in the menses cycle when pregnancy is likely to occur? _____days

8.4.3Have you ever heard about modern contraceptive.

1 .Yes2 .No

8.4.4. Among the following modern contraceptives, which method do you know?

No.	Modern contraceptives	I know	Don't now
1.	Injectables	1	2
2.	Safe period	1	2
3.	IUD	1	2
4.	Pills	1	2
5	Male sterilization	1	2
6	Female sterilization	1	2
7.	Induced abortion	1	2
8	Condom	1	2
9.	Withdrawal	1	2

8.4.5 If you have knowledge about fertility control, in your opinion what is the contribution of NGO found in your locality to your knowledge?

0.no 1.very low 2.low 3.midium4.high 5.very high

8.5 Knowledge about causation of Diseases

8.5.1 Do you know how cholera is caused?

1.Yes
2 .No _____ skip to 8.5.3

8.5.2 If the answer for question 8.5.1 is yes, what are the causes for cholera?

1. _____
2. _____

3. _____

8.5.3 Do you know how malaria is caused? 1. Yes 2. No_____ Skip to question 8.5.

8.5.4 If the answer for question 8.5.3 is yes, then, what are the causes for malaria?

1. _____
2. _____
3. _____
4. _____

8.5.5 Do you know how typhoid is caused?

1. Yes 2 . No _____ skip to question 8.5.7

8.5.6 5f the answer to question 8.5.5 is yes, then, what is the main cause typhoid?

1. _____
2. _____
3. _____

8.5.7 Do you know how polio is caused?

1. Yes 2 . No _____ skip to question 8.5.9

8.5.8 If the answer to question 8.5.7is yes, then, what is the main cause for polio?

1. _____
2. _____
3. _____

8.5.9 Do you know the ways of AIDS transmissions?

1.Yes
2. No _____ skip to question 8.5.11

8.5.10 If the answer to question 8.5.9 is yes, then, what are the ways of AIDS transmission?

1. _____
2. _____
3. _____

8.5.11 Is there any harm in drinking water from a village pond?

1. Yes 2. No _____ skip to question 8.5.13

8.5.12 If the answer to question 8.5.11 were yes, then, what would be the harm?

1_____
2. _____
3._____

8.5.13 Is there any harm in villages defecating in the open?

1 .Yes
2. No _____ skip to question 8.5.15

8.5. 14 If the answer to question 8.5.13 is yes, then, what would be the harm?

1. _____
2. _____
3. _____

8.5.15 Is healthier to live in a house with many windows or one with out any windows?

1. With many windows
2. With out any windows
3. I don't know

8.5.16 If you have knowledge about causation of diseases, in your opinion what is the contribution of NGO found in your locality to your knowledge?

0.no
1.very low
2.low 3.midium 4.high 5.very high

8.6 Knowledge about credit saving and insurance.

8.6.1 Are you a member of a saving and credit association in your area?

1. Yes 2. No

8.6.2. Did you obtain credit /loan in the past three years?

1. Yes 2. No

8.6.3. If yes to 8.61and /or 8.6.2 please indicate the purpose, type and source of credit.

1	2	3	4	5	6
Purpose of credit you obtained in the past three years 1. grain for consumption 2. fertilizer purchase 3. seed purchase	Source of credit /loan 1.PA. service-co-operative 2. saving and credit association 3.money lenders	Amount borrowed (in Birr)	Credit period (month)	Interest rate (% per month)	Amount repaid up to now (in Birr)

4. live stock purchase 5. purchase of farm implements 6. to start new business 7. to expand existing buss 8. for personal expense 9. Other (specify _____)	4.from *Iqub* 5.friends /relatives 6.commercial bank 7.others (specify ___)				
8.6.3A	8.6.3B	8.6.3C	8.6.3D	8.6..3E	8.6.3F

8.6.4 If you are member of local credit and saving association, what are the benefits gained from the associations?

1. _____
2. _____
3. _____

8.6.5 What is the purpose of being a member of I*iddir?*

1. _____
2. _____
3. _____

8.6.6. What is the purpose of being a member of '*Iqub* "?

1 _____
2_____
3_____

8.6.7 In your opinion, in your locality what are the main impediments to credit use?
Indicate the possible three impediments).

1. I don't know
2. Fear of refusal
3. Lack of information
4. Credit supply problem
5. High interest rate.
6. Fear of failure to repay

8.6.8 If you have knowledge about benefits of micro financial institutions in your opinion what is the contribution of NGO found in your locality to your knowledge?

0..no
1.very low
2.low
3.midium
4.high
5.very high

8.7 Knowledge about marketing situations.

8.7.1 As compared to the past production year, did the price of agricultural products in your area increased or decreased?

1. Increased 2 . Decreased

8.7.2 The answer to question 8.7.1 is increased/decreased, what are the main causes for the price change?

1. _____
2. _____
3._____

8.7.3 Which of the following factors will benefit you in terms of price?

1.Selling your produces privately
2. Selling your produces using consumer co-operatives
3. I don't know

8.7.4 Where do you decide the price of your product?

1. After the merchant tells you the price he offer 2. on the road to the market
3. You gather information from previous market 4 . 2 and 3 5. Other specify _____)

8.7.5 If you have knowledge about marketing situations, in your opinion what is the contribution of NGO found in your locality to your knowledge?

0.no
1.very low
2.low
3.midium
4.high
5.very high

Appendix -2 Check Lists for Asking Focus Group Discussion and Key Informants

Part I. Question posed to farmers' focus group discussion

1.knowledge about elementary techniques:

Do you know about the following?

1.1The difference between managing traditional and modern grain stores?

1.2.Pully system,

1.3.smaller or larger size of donkey cartwheel is ease to ply on the village road?

1.4 Have you ever seen Sheller and combine physically and how they operate?

2.Knowledge about nutrition

2.1What are the main nutritional food items that are given value in terms of nourishment in your area?

2.2 Do you give solid food (bread, *injera* etc) for a child less than 6 months?

2.3 Have you ever heard about balanced diet?

3. Knowledge about human fertility control

3.1 Do you know about why woman menstruates?

3.2 Do farmers in this area know using of modern contraceptives?

- If yes what are they? And if no, why?

4.Knowledge about causation of disease

4.1 What are the main diseases manifested in your area?

4.2What are the main causes of the following diseases? And wheat measures taken by farmers to prevent them?

- cholera, typhoid, malaria, AIDS and ,polio

4.3 what would be the harm in defecating in open?

4.4.Is there any harm drinking water from open village pond?

5.Knowledge about Credit and saving institutions

5.1 What are the benefits of being a member in *Iddir.Iqub*, and credit and saving associations.

5.2 Do farmers who took loan in the previous years succeeded or not? And why?

6.Knowledge about agricultural practices

6.1.Row sowing or broad casting increases production of maize?

6.2.At early or lately stage do you apply fertilizer to cereals?

6.3.Do you know artificial insemination, modern bull castrating and hatching of egg through machines?

6.4. Have you ever tried to know the type of soil in your field?

6.5.Does frequent application of chemical fertilizer adversely affect the soil?

7.Knowledge about marketing situations

7.1 What are the main marketing problems in the area?

7.2 How far the farmers understand marketing problems and try to overcome them?

7.3 What are the main causes of price change (increase or decrease) in your locality?

7.4 How do farmers decide the selling price of their product?

8.How do you evaluate the new extension program practiced in your area?

9. How do you evaluate the development interventions of NGO s in your area? if any

- In relation to increasing your knowledge about the above mentioned items
- In terms of development gains as compare to prior of their intervention.

Part two- Appropriate government officials at National (Ministry of Finance and Economic Development), Regional (BOPED), Zonal (DOPED) levels.

1. Do you think that some of the existing development indicators in for budget formula reflect development position of the woredas?
2. Have you ever tried to search additional variables for incorporating in the formula (development indicators)?
3. In your opinion and practice, what are the shortcomings of the existing development indicators?
4. Do you recommend additional indicators to incorporate them in the formula?

Appendix - 3 List of Farmers participated in Focus group Discussions

3.1 **Focus Group of *Dalocha-Woreda***

No	Name	Age	Level of Education
	Golecheba PA		
1	Ato Sabir Awel	55	illiterate
2	Ato Sirur Wolengo	36	read & write
3	Ato Mohamed Siraj	68	illiterate
4	Ato Nadir Nuredin	45	illiterate
5	Ato Shafi Yusuf	56	illiterate
6	Ato Yusuf Mohamed	31	2nd grade
	Burka Dilapa		
1	Ato Kemal Bamud Hebeto	50	4th grade
2	Ato Jemal Nesro Bamud	47	read & write
3	Ato Ousman Dilo Detamo	43	read & write
4	Ato Bedru Hasen Yaqub	60	illiterate
5	Ato Mohamed Bekele Amid	61	read & write
6	Ato Musema Amdeto	56	read & write
	Jigena Lasho		
1	Ato Jemal Mohamed Ahmed	40	illiterate
2	Ato Nurato Ousman Welchafo	45	read & write
3	Ato Mustefa Indris Sedeka	60	illiterate
4	Ato Lelenso Hasen Sirbemo	55	illiterate
5	Ato Nursebo Seid Mustefa	43	read & write
6	Ato Kedamo Shukre Mohamed	32	read & write
7	Ato Mustefa Dermolo Mohamed	39	read & write

3.2 Focus Group of *Lanforo-Woreda*

No	Name	Age	Level of Education
	Wonte Lola		
1	Ato Kedir Habib Gugato	29	illiberal
2	Ato Yusuf Abrar Mosa	69	illiterate
3	Ato Mohamed Jemal Ibro	36	read and write
4	Ato Aliye Husen Zaida	43	illiterate
5	Ato Sasmula Kedir	34	read and write
6	Ato Shemsu Awel Awmed	56	illiterate
	Wonte Sostero		
1	Ato Awel Dulmecha Mogoro	45	illiterate
2	Ato Yasin Surur Kidero	50	illiterate
3	Ato Awmed Gebato Shukur	60	illiterate
4	Ato Ousman Hasen Bamud	51	illiterate
5	Ato Nurato Kedamo	38	read and write
6	Ato Mustafa Shemsu	29	read and write
	Archuma Gola		
1	Ato Redi Gibsa Mudema	57	illiterate
2	Ato Sirbaro Shermolo Hegeno	55	illiterate
3	Ato Kesero Jemal Mene	52	read and write
4	Ato Mosa Abdo Badula	55	illiterate
5	Ato Hegeno Shukre Adem	34	read and write
6	Ato Fereja Jemal Hegeno	47	illiterate

DECLARATION

I, THE UNDER SIGNED, DECLARE THAT THIS THESIS IS MY ORIGINAL WORK AND HAS NOT BEEN PRESENTED FOR A DEGREE IN ANY UNIVERSITY, AND THAT ALL SOURCE MATERIALS USED FOR THE THESIS HAVE BEEN ACKNOWLEDGED.

MERGIA BEKELE

JUNE, 2002