**Socio-economic impact of integrated watershed development program:**

**: The case of Habru woreda, Eastern Amhara,Ethiopia**

**“A Thesis”**

**“Submitted to Indira Gandhi National Open University in partial fulfillment of the requirement for Master of Arts Degree in Rural Development Programme”**

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**Addis Ababa, Ethiopia**

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**Ethiopia, Bahirdar**

**DECLARATION**

I hereby declare that the dissertation entitled SOCIO-ECONOMIC IMPACT OF INTEGRATED WATERSHED DEVELOPMENT PROGRAM, THE CASE OF HABRU WOREDA, EASTERN AMHARA, ETHIOPIA submitted by me for the partial fulfillment of the M.A. in Rural Development to Indra Gandhi National Open University, (IGNOU) New Delhi is my own original work and has not been submitted earlier either to IGNOU or to any other institution for the fulfillment of the requirement for any course of study. I also declare that no chapter of this manuscript in whole or in part is lifted and incorporated in this report from any earlier work done by me or others.

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Which he is submitting, is his genuine and original work.

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**Acronyms**

* GDP – Gross Domestic Product
* IWSDP- Integrated watershed development program
* MEDAc -
* MOFED - Ministry of finance and economic development
* FHE- Food for the hungry Ethiopia
* SWC- Soil and water conservation
* MoARD- Ministry of agriculture and rural development.
* GoE- Government of Ethiopia
* PSNP- Productive safety net program

# Abstract

This paper focuses on the impact of integrated watershed development program (IWSDP) in promoting socio economic condition of rural Communities in Habru Woreda, Eastern Amhara Region of Ethiopia. The overall objective of the study is to analyze the economic and social status of people residing in a watershed as a result of integrated watershed development program and make some comparison in reference with theoretical and practical terms.

In order to collect primary data, scheduled interviews, questionnaires, informal discussions and physical observations were employed as methods and tools. In addition, secondary data was collected from available documents along with the stated objectives of the paper.

In the district there were 90 watersheds identified for integrated development. Only two watersheds at two Kebles (06 & 13) were selected. The study was conducted by using 100 respondents (30% female) at both of the selected watersheds.

At both watersheds, 84% of the sample households perceived that: soil and water conservation, forest development, promotion of people’s participation as well as increasing agricultural production have been the major factors for assessments in the integrated watershed development program. There were several other programs sanctioned at different watersheds of the woreda. Among the programs, 72% was the PSNP (productive safety net program), 17% other food security programs and some 11% of the works were supported by community mobilization.

Muslim households constitute 96% of the total community, and are dominant at both watersheds. The remaining minorities are orthodox Christians, constituting about 4%. Among the surveyed households 56% were illiterate. Those who attended formal education were only 10%, while that of the households who can read and write were 34%.

A total of 97% of the sample households had pit latrines around their residence. Among the pit latrines, 58% were made accessible three years before and only and 35% has been constructed subsequently, all through the assistance of IWSDP. Thus, household latrines have been promoted during the integrated watershed development program. More people (61%) had become knowledgeable on family planning after IWSDP as compared to 2% before 2006.Furthermore; the use of family planning methods has become diversified through after 2006.

Almost all (99%) of the users at both watersheds were fully involved in planning, implementation and evaluation of the watershed development program. Despite the participatory approaches, 7% of the households witnessed that there was no adequate room for users to effect decision upon the program. The situation implies passive and consultative way of participation here and there, in the development process.

Crop production has increased after the intervention of watershed development program. Among the surveyed households, 60.6% indicated that, crop production had been greater after 2006. The major factors for increased production after 2006 were the improvement in soil moisture, better fertility and additional agricultural inputs.

According to the survey result, 84.4% of the households stated that the status of livestock production at both watersheds had increased after 2006 (after the IWSDP) as compared to production before ISWDP. The factors contributing to increased livestock production were improvement in livestock feed, water availability and reduction of livestock diseases in and around the watershed.

According to survey result, there is an improvement in the economic level of sample households over the last five years after the realization of IWSDP. Beneficiaries of the watershed have also diversified their means of income after IWSDP intervention. Accordingly, 19% of the sample household’s income was generated from crop, livestock and the sale of forest products after 2006. In addition household investment packages (shoats restocking & fattening) had increased from 12% before 2006 to 26% after the watershed development program.

# 

# Introduction

## Background

Ethiopia is a country, which is richly endowed with huge manpower, arable land and natural resources. However, much of its potential is not yet exploited. Out of 66% of its landmass which is believed to have the potential for agricultural development, only a quarter of this is exploited until now (MEDaC, 1999:145).

As boldly stated under the Structure of Agriculture in Ethiopia (MEDaC, 1999:145), the Ethiopian economy remains heavily dependent on agriculture, which accounts for about 45% of the Gross Domestic Products (GDP). An estimated 85% of the population gains its livelihood directly or indirectly from agricultural production.

The above information from MEDaC was also supported by the report from (MOFED, 2006) in such a way that agriculture is responsible for approximately 50% of the Gross Domestic Product, 90% of foreign exchange earnings, and 85% of the livelihoods of the population.

Though the huge agricultural potential and a large number of people in this sector, Ethiopia has become one of the major food aid recipients in the continent. Food shortages stem from low food production and lack of income generating opportunities. Resource degradation is identified to be one of the major reasons for this distressing trend in the food production and economic growth (Hurni, 1993; and Girma, 2001).

Low food production is also caused by many factors such as fragmented farming plots, poor soil fertility and poor agricultural techniques (Dejene and Mulate, 1995). The majority of rain fed agricultural areas in Ethiopia is characterized by high risk, low productivity and exposure to series natural resource degradation.

The degradation of resources is caused by heavy pressure from the human and livestock populations coupled with many other physical, socio-economic and political factors (sonneveld, 2002). The Ethiopian highlands constitute one of the most degraded lands in Africa (EI-Swaify and Hurni, 1996). The most pressing forms of resource degradation are destruction of natural vegetative covers and soil erosion by water (Woldeamlak, 2003).

Similarly, Amhara Region has the highest number of chronically food insecure people in Ethiopia. Only 23.3% of Ethiopia’s population lives in Amhara, but 31.1% of the country’s chronically food insecure. The causes of chronic food insecurity in these woredas are multifaceted and complex. These include the low social and economic status, recurrent drought, serious land degradation, low agricultural productivity, low land holding size and underdeveloped community capacity (FHE, 2011).

Significant proportions of the population use unprotected water sources or unimproved sanitation which result in intestinal parasites and diarrhea. Also contributing to poor health is limited practice of proper hygiene and nutrition behaviors. This limited access and availability of food and poor utilization result in a vicious cycle of asset depletion and vulnerability to shocks (FHE, 2011).

The eastern part of the Amhara regional state is chronically less productive due to serious land degradation and recurrent drought. Average productivity of most major crops in eastern Amhara is below the national average. For example, during the 2009 *Meher[[1]](#footnote-1)* the productivity of barley for Amhara (13.07 qt/ha) was 15.6% lower than the national average (15.5 qt/ha) (F HE, 2011).

The farming system in the particular study area (Habru Woreda) is generally practiced under the conditions of limited/spoiled land resources, shortage of moisture, low input, poor technology adoption and poor soil and crop management. These critical factors have resulted in low production and productivity in the area (Habru woreda office of agriculture, 2010).

The high demand for firewood, coupled with overgrazing and cultivation on slopes, has led to deforestation and severe soil erosion. Runoff has caused deep gullies which further reduce the already limited farmland.

## Area description

Habru is among the eastern administrative districts of the Amhara National Regional state. The woreda is sub-divided in to 30 predominantly rural and 2 urban Kebeles. It covers about 143,396 ha with a wide variation of elevation ranging from 1500 - 2600masl. Out of which 55% is cultivated land (used to grow annual and perennial crops), 5% is grazing land, 38% is covered with forest and bushes, and 2% is waste land and land used for other purposes. (Habru woreda office of agriculture, 2010)

Agro climatically, the Woreda is divided in to three food economy zones namely Highland, Midland, and low land with an area of 3.5%, 40% and 56.5% respectively. The mean annual rainfall of the Woreda is between 750mm to 1000mm characterized by high variability and uncertainty. The major crops grown in the area are teff, sorghum, and maize (Habru woreda office of agriculture, 2010)

The present population of the Woreda, based on the 2004 population census, is projected to be 203,477 (102,249 male & 101,228 female) out of which 88% live in rural areas. About 92% of the economy of the people is directly or indirectly depends on mixed farming agriculture.

Habru is one of the typically food insecure Woredas of the region. The major reasons for food insecurity include: deforestation, soil erosion, fragment and unproductive land holding and erratic distribution of rainfall (Habru woreda office of agriculture, 2010).

In addition to the traditional land use system, very limited use of irrigation water, backward production technology, lack of skilled man power, absence of diversified income source as well as poor physical infrastructure, especially in the rural community exacerbate the situation in the Woreda. The cropping system, crop options and focusing of annual crops would make monotype farming and less productive that contributes for poverty (Habru woreda office of agriculture, 2010)

## Statement of the problem

It is a fact that the degradation of natural resources is the greatest constraint to sustainable agricultural development in most of the developing countries. It is also accepted that sustainable utilization of land resources could only be achieved by adopting improved and integrated management system of land, water and vegetation and direct involvement different actors.

The degradation of watersheds in Ethiopia threatens the livelihood of millions of people and constrains the ability of the country to develop a strong agriculture. Particularly in the high land areas, population and livestock growth along with poor natural resource management system hastily deplete the existing natural resource base.

The pressures on forest resources and marginal lands along with inappropriate cultivation practices resulted in naked mountains. The situation leads to, damaging floods, unwanted sediment and socio-economically deprived ruralcommunities (FAO, 1999/2000).

Therefore, community based participatory watershed planning and development is a vital necessity in complex landscapes. Watershed planning has moved away from conventional land use-planning exercise to a logical interpretation of the potentials of the land as a function of the demands of the people living in the watersheds.

Participatory watershed planning is the key to understand what is needed to be done at various levels to sustain, improve and diversify production while developing and managing the natural resource base, promote income generation opportunities, increase access to basic services (roads, markets, schools, water, and the like.) and make livelihood systems resilient to shocks.

In Amhara region, degraded watersheds resulted in limited opportunities to water and soil harvesting along with its use; difficulties in the access to clean water for domestic use lead to and higher incidence of water-borne diseases. Unstable watersheds induce unstable production, productivity and income systems; increased vulnerability to drought and food insecurity is directly linked to the conditions of the watershed and its limited capacity to support local livelihoods.

Integrated watershed development is considered as instrument to “bring rural households back to business” from food-insecurity and degraded conditions. Besides, watershed development enables new opportunities to water development. Thus, the watershed, or catchment area, is the natural framework for resource development in relation to crop production systems, as well as, to resource conservation and utilization.

Equally important, integrated watershed development program is a practical and effective tool for utilizing at best the different disciplines related to agriculture and food security, in a way that they mutually reinforce and integrate each other. Natural resources, inputs and extension, livestock, water and marketing are all connected and will greatly benefit from using a participatory watershed planning framework.

The watershed condition of soil, vegetation and its management system has direct implications on the water resources in particular and on the behavior of the natural resources in general. It has been observed that the destruction of forests and rangelands have resulted in damaging runoffs, destruction of downstream agricultural lands and reduced groundwater recharge. These incidents need to be managed to reverse the situation of natural resources degradation and improve agricultural productivity.

Soil erosion decreases land fertility and ultimately agriculture production. Also, deterioration of land results in decrease in the availability of fodder for animals. Agriculture, animal husbandry and collection of forest products are the main occupations of the rural people. Degradation in their productivity severely affects the rural economy. It has a direct impact on availability of enough quantity of food in particular and the quality of life of the people as a whole. Hence, it is advisable to treat the whole watershed collectively.

With the same concern, integrated watershed development programs have been launched in Habru woreda by the joint effort of the local government and non-governmental organizations since 2001. The programs have focused on creating socio-economic assets within the selected watersheds in an integrated manner.

As a rural development approach, it has been considered as the best means to use the limited resource and ensure maximum benefits of the beneficiaries. Several mountains in each kebele of the district are now identified, delineated and prepared to sanction under the system of integrated watershed development program.

Therefore, this study is trying to find out the socio-economic impacts of integrated watershed development program implemented in Guba and Menentela watersheds of Habru woreda since 2006. The study will try to answer questions related to importance of the program in terms of social and economic contribution in the lives of the community.

## 1.4. Objectives of the Research

The overall objective of the study is to assess socio-economic impacts/contribution of integrated watershed management program implemented in Habru woreda of the eastern Amhara region.

The specific objectives are:

* To assess the contribution of integrated water shed management towards community health and literacy status;
* To study the changes in income & asset level of the beneficiaries within the watershed;
* To discover the extent of community participation in the program;
* To analyze the degree to which the desired effects of an intervention lasts beyond its end;
* To draw lessons of the program and develop recommendations for future research.

## 1.5. Hypothesis of the Research

Improved socio-economic condition of the local people as result of integrated watershed development would lead to sustainable natural resource base as well as prosperous livelihood.

## 1.6. Universe of the Study

The study area covered sample watershed in Habru district of the eastern Amhara national regional state. A sample of two watersheds in two different Kebeles was covered for the study. The sample watersheds have been implemented since the last five years (starting from 2006) by the joint effort of local government and non-governmental organizations.

## 1.7. Definition of Terms Used

**Impact*:*** is an effect attributed to an intervention. It is the change exerted in the overall socio-economic status of the people in an area as a result of program/project intervention.

The term impact, sometimes referred to as outcome, denotes the relationship between the project’s purpose and goal, that is the extent to which the benefits received by the target beneficiaries had a wider overall effect on larger numbers of people in the sector or region (EC, project management guide line, vol-1,2004). At Impact level the analysis generally examines such aspects as:

* How far enhanced economic and social development resulted from improved institutional capabilities and communications;
* How far did programs/projects enhance economic and social development beyond the level of their immediate users?

**Economic Impact**: implies that the provisions of training and employment as well as engaging inincome generating activities withboth forward and backward linkages with the ultimate objective of making community economically independent and self-reliant, (Rowlands,Jo,1998).

**Social impacts:** as Rowlands (1995) stated that, social impact is the removal of all existing social induced inequalities, disparities and other persisting problems besides providing easy accesses to basic minimum services. Social empowerment is thus not only about opening up accesses but also as able and entitled to occupy the decision making space.

**Community**: the concept of community comes from having something in common, common place, interest, distinction. Thus, the Bureau of the Census of the United States defines a rural community on the bases of the size and the density of population at a particular place (Redfield, Robert, 1956).

**Participation:** may take on various forms, and occur in varying intensities depending on the nature of the activity and the roles and responsibilities of the people and groups involved. Community members or groups may simply be required to contribute labor or some cash inputs, or be represented on a management capacity is committee, or take on full management and decision making responsibilities and authority.

The nature of the program will influence the level of participation that is practical and possible, as well as a realistic assessment of skills and capacity among participating communities and groups. The four levels of participation can be distinguished as information sharing, consultation, decision making and initiating action.

**2. Literature Review**

## 2.1. Concept and Historical Development of watershed development

## 2.1.1. Concept of integrated watershed development

Watershed is defined as a hydro-geological unit of an area from which the rainwater drains through a single outlet. Watershed development refers to the conservation, regeneration and judicious use of all the natural resources (like land, water, plants, animals) by human beings.

The watershed context provides the natural frame work for investigation into the complex linkage among land use, soil and water resources and the interdependence of people in their resource use practices. Because of physical significance, watershed are also considered to be the logical spatial constructs for the sustainable and integrated management of natural resources with the direct involvement of local population and the practice is what is popularly known as integrate watershed management (Brooks et al., 1997; Sharma, 1999; Rhoades, 2000).

The aim of integrated watershed management (IWSM) is to achieve sustainable resources and sustainable rural livelihoods concurrently with the full involvement of the people affected (Rhoades, 2000).

Watershed management brings about the best possible balance between natural resources on the one side and human beings on the other. Human beings and the ecology are interdependent. The changes in the environment directly affect the lives of the people depending on it. A degraded environment means a degraded quality of life of the people. This degradation can be tackled effectively through the holistic development of the watershed. A watershed provides a natural geo-hydrological unit for planning any developmental initiative. The approach would be treatment from “ridge to valley”.

A watershed can also be stated as the drainage basin or catchment area of a stream or river. It refers to the entire upstream topography around a defined drainage channel, which feeds water to the lower stream. Watershed may be nearly flat or may include hills or mountains. The size of the watershed varies from a few hectares to thousands of hectares. Micro-watersheds are generally defined as falling in the range 500-1000 hectares. A mini watershed comprises a number of micro-watersheds and covers around 5000 hectares. A macro-watershed is equivalent to a river basin and may encompass many thousands of hectares (Farrington et al., 1999)

The watershed is a land based program focusing on water resource with the purpose of enhancing agricultural productivity through increased soil & moisture conservation. The program is essential to promote other extension services essential to improve socio-economic status of the people. Individual farm and grazing lands are also critical sections of watersheds and need to be treated along with the rest of the watershed management.

The most important point in watershed development is the participation of people in development planning, management and equitable distribution of the benefits. Natural resources can be managed sustainably if ownership and user rights are clearly defined and the user is permitted to manage and benefit from the resource.

Managing watershed for rural development is a relatively new concept. It focuses on soil, water and vegetation with enhancing the productivity with ecological and institutional sustainability. Thus watershed development refers to the conservation, regeneration and careful utilization of all the resources: land, water, vegetative, animal and human. Watershed development is thus a multi-disciplinary approach that involves continuous interaction exchange amongst various sectors.

Wherever ecological degradation occurs, erosion in the quality and substance of life of the human community within that ecosystem also occurs. Because of degradation of forests and pasturelands, soil erosion increases. Along with the top soil nutrients also flow away.

Integrated watershed management can be considered as technical and socio-economic intervention. From technical point of view, it involves reducing soil erosion, promoting vegetative cover, and harnessing water resources. In terms of socioeconomic aspect, watershed management involves linking the actions of numerous users in a watershed who may have diversified interests (Natural resource management and environment, IGNOU, MRD -102, 2008 (re-print).

## 2.1.2. Historical development of watershed development

These days, several stake holders pay more attention to the socioeconomic aspects of watershed management. The local people need to have full involvement in the management of watersheds so that they can use their land, animals and other natural resources in a productive way without causing harm to natural resources.

The past experiences of rehabilitating degraded resources has been focusing on physical soil and water conservation (SWC) and a forestation measures on common lands (mountains) without considering the human element. The system could not bring desirable outcomes (results) at all level. The top-down approach followed in the planning and management process was among the several reasons contributed for failure (Stahl, 1990; Azene, 1997; Yeraswork, 2000).

Experiences of the past had shown that, the top-down deliveries and disintegrated developmental approach could not be effective and sustainable in all aspects. Thus, the need to have new, comprehensive and demand driven natural resource management system is essential taken in to account the actual socio-economic context at local level.

Planning the development of watersheds for Ethiopia started in the 1980’s. A planning unit for developing large watersheds comprised 30-40 thousand hectares. The purpose was mostly for implementing natural resource conservation and development programs. Large-scale efforts remained mostly unsatisfactory due to lack of effective community participation, limited sense of responsibility over assets created, and unmanageable planning units.

The lessons learned from this experience encouraged MoA and support agencies like FAO to initiate pilot watershed planning approaches on a bottom-up basis, using smaller units and following community-based approaches. As a result the minimum planning and sub watershed approaches were introduced. Minimum planning at the initial stage involved shifting from larger watersheds to smaller sub-watersheds (MoARD, 2005).

The conservation and sustainable management of natural resources are of paramount importance to the people of the region in general and the district in particular. The majority of the government and NGO’s Public Works (PW) were watershed-based activities and are implemented in combination with community user groups who will privately manage the lands in order to sustainably protect and utilize these resources. This component will utilize soil and water conservation, tree and fodder plantations, and other sustainable environmental management activities.

In the region, the watershed development program was initiated with the central intention to overcome the problem of natural resource degradation and food insecurity in an integrated manner. It was viewed as the key program, which could meet the rising and complex challenges of rain fed agricultural areas: especially where there is chronic food insecurity.

Following the regional direction, Habru woreda continues to realize the participatory watershed management planning in which community members identify problems and prioritize interventions to mitigate the problems. The GoE’s “Community-based Participatory Watershed Development: A Guideline (MoARD 2005)” will guide the implementation of this component.

**3. Methodology of the Research**

This research was conducted to assess the economic and social impacts brought by integrated watershed development program. Data were collected & analyzed by considering variables relevant to discover changes like crop & livestock production, income, health & literacy, institutional set up and community participation of the program. The study has been carried out based on primary data from sample households. Also, all the relevant available secondary data have been utilized.

## 3.1. Sampling Techniques of the Research

Among the total number of watersheds sanctioned under the system of community based integrated watershed management program, two watersheds were purposely chosen for the study based on accessibility / availability of information, intervention experiences or year of program sanctioning (2006-2010) and cost. The following table presents the list of sample watersheds selected for the study.

**Table - 3.1: List of sample watersheds selected for the study**

|  |  |  |  |
| --- | --- | --- | --- |
| S/N | Name of the watershed (WS) | Kebele of the WS | Area of the WS |
| 1 | Menentela | O6 | 350 |
| 2 | Guba | 13 | 806.5 |

Source: Habru woreda office of agriculture

## 3.2. Data Collection: Tools and Procedures

Different data collection methods were deployed to answer research questions and meet study objectives. Collection of primary and secondary data was helping to reach the realities on the ground.

Primary data collection was done through sample house hold survey. Sample households from the two watersheds were also selected using random sampling technique. Accordingly, 50 households (30% women) in each watershed and a total of 100 respondents were targeted randomly for household questionnaire.

For the purpose of triangulation, informal discussions were held with woreda office of agriculture, non-governmental organizations and watershed user groups.

Moreover, qualitative visual assessment of the study watersheds has been conducted to cross check the realities on the ground.

Available secondary data has been collected from different sources. Watershed profile, reports, and other records were collected from the offices of agriculture and NGO at woreda and kebele level.

## 3.3. Data Processing

The completed interview schedules were computerized, processed, verified and arranged serially. Coalition and analyses of data from household survey and secondary sources was done. Summarization of information has been made using various descriptive analytical statistical parameters.

**4. Results and Discussion**

## 4.1. Overall Insight of the Integrated Watershed Development program (IWSDP)

## 4.1.1. Awareness of users on the importance of IWSDP

As part of the research study, the perception of users and other development actors of the impact of integrated watershed development program are very crucial. The information was collected through group discussions and household survey.

After realizing the importance of watershed development approach in poverty stricken rural areas, the woreda office of agriculture and rural development (WoARD) initiated watershed development programs (WSDPs) since 2005/2006 onwards . The program approach is geared in terms of multiple disciplines based on natural resources inside the watershed. It has the goal of conserving and utilization of natural resources in the watershed. The watershed development frame work in Habru woreda mainly focused on conservation and rehabilitation of soil, water and forest resources.

In both watersheds, 84% of the sample households perceived soil and water conservation, forest development, promotion of people’s participation as well as increasing agricultural production have been the major factors for integrated watershed development program. Some (13 %) respondents perceived IWSDP comprises only Soil & Water Conservation (SWC) and forest development processes. Users have also understood the program to be important in increasing the value of land in terms of productivity (Table 4.1).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 4.1: Respondents view on the Importance of IWSDP** | | | |  |  |
|  | Importance | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Conservation of soil and water | 1 | 1 | 1 | 1 |
|  | promote participation | 1 | 1 | 1 | 2 |
|  | Increase agricultural production | 1 | 1 | 1 | 3 |
|  | SWC & forest development | 13 | 13 | 13 | 16 |
|  | All four items | 84 | 84 | 84 |  |
|  | Total | 100 | 100 | 100 |  |

Source: Household survey

## 4.1.2. Programs sanctioned inside the watershed

Watershed development planning had already been practiced before the implementation of activities in selected watersheds. Currently, there were a total of 90 watershed programs in the target districts on the basis of 3-5 year sequential public work plans. The Woreda office of agriculture supported the preparation of watershed plans in the kebeles. These plans were also used for productive safety net program (PSNP) while mainly focuses on emergency programs for development (Woreda Office of Agriculture, 2010).

There were several programs sanctioned for different watersheds of the woreda. Among the programs, 72% was the PSNP (productive safety net program), 17% other food security programs and some 11% of the works were supported by the community (Table 4.2).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Table 4.2: Responses from households on other programs sanctioned in the watershed area | | | | | |
|  | Programs | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | PSNP | 72 | 72 | 72 | 72 |
|  | Other food security programs | 17 | 17 | 17 | 17 |
|  | community contribution | 11 | 11 | 11 | 11 |
|  | Total | 100 | 100 | 100 |  |

Source: Household survey

## 4.1.3. Initiatives activated under the IWSDP

In Habru woreda, as an agrarian district, the livelihoods of its people rely on local natural resources. The soil and water conservation component are far-reaching and outweighs other several sectors in the watershed area Several soil and water conservation measures, such as, 145 km of soil bund, 18.5km stone bund, 65km of hill side terrace, 103,000 micro-basins, 6127m3 of stone & gabion check dam and 10,800 trenches were constructed at both watersheds over the year after 2006.

**Table 4.3: Soil and Water Conservation measures undertaken by IWSDP**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Menentela** | | **Guba** | |
| **S.N** | **Type** | **Unit** | **Quantity** | **Unit** | **Quantity** |
|  | Soil bund | km | 20 | km | 125 |
|  | Stone bund | km | 12 | km | 6.5 |
|  | Hillside Terrace | km | 65 | - | - |
|  | Micro-basin | Quantity | 38000 | no | 65000 |
|  | Stone check dam | M3 | 107 | M3 | 6000 |
|  | Gabion check dam | M3 | 20 |  |  |
|  | Trench | Quantity | 2800 | no | 8000 |
|  | Wood check dam | Km | 0.5 |  |  |

Source: Woreda office of agriculture

Through the integrated framework other initiatives supposed to improve the economic and social status of watershed users were also implemented. In general, 69.7% of the initiatives were identified as income generating and asset creation projects, although 29.3% of the initiatives were potable water supply, hygiene and sanitation components (Table 4.4).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 4.4: Other Initiatives activated after 2006 (IWSDP)** | | | | | |
|  |  | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | IGA & asset creation | 69 | 69 | 69.7 | 69.7 |
|  | Potable water supply, hygiene & Sanitation | 29 | 29 | 29.3 | 29.7 |
|  | Irrigation development | 1 | 1 | 1.0 | 1.7 |
|  | Total | 99 | 99 | 100 |  |
| Missing | System | 1 | 1 |  |  |
| Total |  | 100 | 100 |  |  |

Source: Household survey

## 4.2. Social impact of the IWSDP

Extent of the impact of integrated watershed development program greatly depends on the nature of interaction between the human and non-human elements in the watershed.

### 4.2.1. Demographic characteristics of sample households

Muslim households constitute 96% of the total community, and were dominant in both watersheds. The remaining minorities were orthodox Christians, constituting about 4% (Table 4.5).

# Table 4.5: Social composition of surveyed sample households

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Religion | Sex | | | | | |
| Male | | Female | | Total | |
| HH | % | HH | % | HH | % |
| Muslim | 67 | 67 | 29 | 29 | 96 | 96 |
| Orthodox Christians | 3 | 3 | 1 | 1 | 4 | 4 |
| Protestant Christians | 0 | 0 | 0 | 0 | 0 | 0 |

Source: household survey

With regard to the distribution of sample population by age group, the share of people in the age group of less than 15 years make up 37.29 %, the work force in the age group of 15 – 65 years constitute 61.65% ,which is larger than the other groups, and 1.06% of the people were above 65 years. The average household size of the watershed was five (4.75) (Table 4.6).

# 

# Table 4.6: Population by age group

|  |  |  |
| --- | --- | --- |
|  | frequency | Valid percent |
| less than 15 years | 34 | 37.29 |
| 15 - 65 years | 61 | 61.65 |
| Greater than 65 years | 5 | 1.06 |
| Total | 100 | 100 |

Source: household survey

## 4.2.2. Literacy (Education) level

Literacy is an important driving force behind economic and social development (Rural Development Indian context, 2008).

Among the surveyed households, 56% were illiterate at both watersheds. Those who attended formal education were only 10%, while that of the households who can read and write were 34%. The most important factor contributing to this level of literacy is the promotion of adult education at Guba watershed (Table 4.7).

# Table 4.7: Distribution of sample household by educational level

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Illiterate | 56 | 56 | 56 | 56 |
|  | Read & write | 34 | 34 | 34 | 90 |
|  | Grade 1 to 4 | 7 | 7 | 7 | 97 |
|  | Grade 5 to 8 | 3 | 3 | 3 | 100 |
|  | Total | 100 | 100 | 100 |  |

Source: household survey

Participation of all children in schooling is an important instrument to ensure the goal of universal primary education. School enrollment was higher at both watersheds irrespective of gender.

Among the households 96.6% had sent their children to school. Among those who could not send their children to school, the reason given were the demand for child labor (47.7%), lack of awareness about education (31.8%), lack of access to school (11.4%), sickness(6.8%) and other factors (Table 4.8).

**Table 4.8: Status of children enrollment in school**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Status of enrollment | | | Factors inhibiting enrollment | | | |
|  | All school age Children enrolled | not all children enrolled at school | Do not have a child reached for schooling | Parents demand for child labor | Parents lack of awareness | Disease | Lack of access to school |
| Frequency | 89 | 2 | 4 | 21.0 | 14 | 3 | 5 |
| Valid percent | 96.6 | 1.7 | 2.1 | 47.7 | 31.8 | 6.8 | 11.4 |

Source: household survey

## 4.2.3. Health

## 4.2.3.1. Hygiene and sanitation

Hygiene and sanitation is one of the main health packages essential to improve health of a community. Thus, access to household pit latrine has been an important component to promote hygiene and sanitation in those watersheds.

Among the total households, 97% of them had pit latrines around their residence. From the total pit latrines, 58% were made accessible three years before and 35% has been constructed in the subsequent years, all through the assistance of IWSDP. Thus, household latrines have been significantly promoted during the integrated watershed development program.

The majority (96%) of the households use pit latrines rather than defecating outside in the open field. It is true that, availability of household pit latrine along with proper practice unreservedly promoted personal and environmental hygiene which in turn improves the health status of the community (Table 4.9).

# Table 4.9: Household latrine promotion in the sample watersheds

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time of practice | Watershed |  | Household with pit latrine | Latrine utilization by family |
| In 2008 | Menentela | Count | 20 | 38 |
|  | % | 100 | 100 |
|  | Guba | Count | 38 | 20 |
|  |  | % | 100 | 100 |
|  | Total | Count | 58 | 58 |
|  |  | % | 100 | 100 |
| (In 2010 | Menentela | Count | 28 | 28 |
|  |  | % | 100 | 100 |
|  | Guba | Count | 7 | 7 |
|  |  | % | 100 | 100 |
|  | Total | Count | 35 | 35 |
|  |  | % | 100 | 100 |
| In 2011 | Menentela | Count | 1 | 1 |
|  |  | % | 100 | 100 |
|  | Guba | Count | 2 | 2 |
|  |  | % | 100 | 100 |
|  | Total | Count | 3 | 3 |
|  |  | % | 100 | 100 |

Source: household survey

Similarly, the practice of hygiene and sanitation has improved over the years after the IWSDP. Prior to 2006, only 18% of the people in the watershed have practiced hand washing after meal and before and after defecation as compared to 80% after 2006. Also, the practice of washing clothes, home and compound cleaning has improved 80% and 79% after 2006, respectively (Table 4.10).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 4.10: Other types of hygiene and sanitation practices in sample watersheds | | | | | | | | | | |
| Starting time | Watershed name | Hand washing practice before & after meal and after defecation (%) | Cloth washing practice | | | | | Home & compound cleaning | | |
| weekly | in two weeks | monthly | in three months | Total | Yes | no | Total |
| before 2006 | Menentela | 10 | 8 | 2 |  |  | 10 | 9 | 1 | 10 |
| Guba | 8 | 8 | 0 |  |  | 8 | 8 | 0 | 8 |
| Total | 18 | 16 | 2 |  |  | 18 | 17 | 1 | 18 |
| after 2006 | Menentela | 40 | 34 |  | 5 | 1 | 40 | 39 |  | 39 |
| Guba | 40 | 25 |  | 14 | 1 | 40 | 40 |  | 40 |
|  | Total | 80 | 59 |  | 19 | 2 | 80 | 79 |  | 79 |

Source: household survey

The prevalence of malaria and diarrhea before the IWSDP (before 2006) had been 35% & 49% as compared to 10% and 8% after the program intervention (after 2006). Reduction in the prevalence of hygienic diseases is because of improvement in the access to health service, potable water supply and nutrition, having a total share of 76% in both sample watersheds. On site observation and related cases have also shown the improved hygienic and sanitation practices by a number of households in the sample watersheds (Table 4.11).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 4.11: Disease prevalence before and after 2006 (IWSDP) | | | | |
| Count | Type | watershed name | | Total |
|  | Menentela | Guba |  |
| Disease prevalence before 2006 | malaria | 18 | 17 | 35 |
| diarrhea | 26 | 23 | 49 |
| Disease prevalence after 2006 | malaria | 3 | 7 | 10 |
| diarrhea | 1 | 7 | 8 |
|  |  |  |  |  |
| status of prevalence after 2006 | Increased prevalence | 0 | 1 | 1 |
| no prevalence | 27 | 25 | 52 |
| decreased prevalence | 18 | 8 | 26 |
| Reason for reduction in disease prevalence | improved access to health service | 0 | 3 | 3 |
| improved access to potable water supply | 9 | 2 | 11 |
| Improved household nutrition | 1 | 3 | 4 |
| all | 42 | 34 | 76 |

Source: household survey

## 4.2.3.2. Family Planning

The interaction between human and non- human element is vital inside the watershed. Balance in the number of population with the carrying capacity of natural resources will create sustainable and suitable environment for all.

More people (61%) had become knowledgeable on family planning after IWSDP as compared to 2% before 2006. Also, the use of family planning methods has become diversified through time after 2006 (Table 4.12).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 4.12: Knowledge on family planning before and after 2006** | | | | | | | |
| Family planning before 2006 | Knowledge | method of family planning | | | | | Total |
|  | Birth control pills | Birth control injection | nor -plant | condom | pills and injection |
| yes | 0 | 2 | 0 |  | 1 | 2 |
| no | 6 | 48 | 2 |  | 4 | 61 |
| Family planning after 2006 | yes | 6 | 48 | 2 | 1 | 4 | 61 |
| no | 0 | 1 | 0 | 0 | 0 | 1 |

Source: household survey

## 4.2.3.3. Health institutions

Improvements in primary health services require the establishment of health care institutions at community level. Integrated approach of the watershed development recognizes health as one of the important issues for safe and friendly environment in the area. At Menentela watershed, 94% of the surveyed households witnessed the availability of health post in their watershed providing both community based health education and minor treatments. The institution was essential to improve the health behavior and practice of the people (Table 4.14).

**Table 4.14: Health institutions in the watershed**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Watershed | health institution in the watershed | | | | service provided | | | |
| health post | health center | no health institution | Total | health education | treatment | both | Total |
| Menentela | 47 | 0 | 2 | 49 | 31 | 5 | 11 | 47 |
| Guba | 0 | 0 | 5 | 5 | 0 | 0 |  |  |
| Total | 47 | 0 | 7 | 54 | 31 | 5 |  | 47 |

Source: household survey

## 4.2.4. Community participation through the IWSDP

## 4.2.4.1. Users participation in program planning and management

Due recognition to people's participation is a key factor to sustainable development. Active involvement and participation of local communities in development programs is a more recent approach to rural development. The participatory approach implies that target communities are not merely beneficiaries enjoying the fruits of development; rather they are active partners in the process of rural development (voluntary action in rural development, 2008).

Participation of the target community from the very outset up to benefit sharing is key factors in integrated watershed development program. The conception, designing/planning, implementation, contribution of resources, evaluation, maintenance and equitable distribution of development benefits are the basic stages in which users are going to be involved.

Community based organizations rooted in local communities are also essential to perform these responsibilities so as to institutionalize participation in the development program efficiently. Almost all (99%) of the users in both watersheds were adequately involved through planning, implementation and evaluation of the watershed development program (Table 4.14).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Table 4.14: User's participation through IWSDP | | | | | | | |
| Name of watershed | Planning (%) | | Implementation (%) | | Evaluation (%) | | |
| yes | no | yes | no | yes | | no |
|  |  |  |  |  | some time | More often |
| Menentela | 49 | 0 | 49 | 0 | 13 | 36 | 1 |
| Guba | 50 | 0 | 50 | 1 | 15 | 35 | 0 |
| Total | 99 | 0 | 99 | 1 | 28 | 71 | 1 |

Source: Household survey

Forest development, soil & water conservation (SWC) were among the major activities they had participated. Users had also contributed in terms of labor and material in the process of integrated watershed programs (Table 4.15).

**Table 4.15: Essence of community participation**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Watershed | Major activities | | | | Type of contribution | | |
| SWC only | forest development only | Both | Total | labor | material | Total |
| Menentela | 0 | 0 | 49 | 49 | 31 | 18 | 49 |
| Guba | 1 | 1 | 48 | 50 | 50 | 0 | 50 |
| Total | 1 | 1 | 97 | 99 | 81 | 18 | 99 |

Source: household survey

Development approaches include contributory, functional and interactive participation of the community at all level. It strives to elevate rural communities to the highest level of participation viz., self mobilization of the rural communities. When a rural community mobilizes itself in its community based institutions they become empowered (Voluntary action in rural development, IGNOU 2008). Among the surveyed households, 95% of them were freely expressing their ideas and interests in integrated watershed development program. Also, 92% of the people were making decisions for the realization of the program. Despite the participatory approaches, 7% of the households witnessed that there was no adequate room for users to effect decision upon the program. The situation implies passive and consultative way of participation has occurred, here and there, in the development process (Table 4.16).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 4.16: Level of user's participation in IWSDP** | | | | | | | | | |
| watershed name | Free participation in a meetings | | | decision making | | | reason for not making decisions | | |
| yes | No | Total | yes | no | Total | The meeting was only informing people | Meeting was only consultation of users | Total |
| Menentela | 47 | 2 | 49 | 46 | 3 | 49 | 2 | 1 | 3 |
| Guba | 48 | 2 | 50 | 46 | 4 | 50 | 0 | 4 | 4 |
| Total | 95 | 4 | 99 | 92 | 7 | 99 | 2 | 5 | 7 |

Source: household survey

## 4.2.4.2. Watershed institutional setup and Leadership

According to the report of 2010, there were 16 members (eight in each watershed) organized as watershed committee with 10% of the members were female. Planning & management of integrated watershed development programs, mobilization of users, development and distribution of development benefits were the major functions of the watershed committees (Table 4.17).

**Table 4.17: Institutional arrangement through IWSDP**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Watershed | presence of watershed committee | Roles of watershed committee | | | |
| yes | Planning & management of watershed development programs | mobilize users | distribute development benefits | All Activities |
| Menentela | 50 | 0 | 0 | 0 | 50 |
| Guba | 50 | 0 | 0 | 0 | 50 |
| Total | 100 | 0 | 0 | 0 | 100 |

Source: household survey

All, (100%) of the surveyed households witness the availability of governing by-laws in both watersheds. The by-law has been produced jointly by users and the watershed committees through the facilitation of government and concerned non- governmental organizations (Table 4.18).

**Table 4.18: Availability of by-laws**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Watershed | Availability of watershed by-laws | Responsibility for drafting watershed by-laws | | | |
| Yes | watershed committee | watershed users | Local government & NGOs | Watershed committee with users |
| Menentela | 50 | 1 | 8 | 1 | 40 |
| Guba | 50 | 0 | 3 | 0 | 47 |
| Total | 100 | 1 | 11 | 1 | 87 |

Source: household survey

Among the surveyed households, 84% of them had witnessed the presence of watersheds social fencing system in which watershed users become key actors to safe guard development programs and benefits inside the watershed. Similarly, all people in both watersheds were benefited from development programs based on the agreed by-laws and without any social bias (Table 4.19).

**Table 4.19: Program ownership**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Responsibility to safe guard the watershed | | | | |
| Watershed | GO/NGO | Guards paid by users | watershed users | Go/NGO & watershed users | Total |
| Menentela | 1 | 1 | 36 | 12 | 50 |
| Guba | 0 | 0 | 48 | 2 | 50 |
| Total | 1 | 1 | 84 | 14 | 100 |

Source: household survey

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 4.20: Benefit distribution** | | | | | | | |
|  | Beneficiaries from watershed development products | | | | | Mechanism for distribution of benefits | |
| Watershed | Women | Men | The rich people | The poor people | The community inside the watershed | Based up on by-laws | irregularly |
| Menentela | 0 | 0 | 0 | 0 | 50 | 50 | 0 |
| Guba | 0 | 0 | 0 | 0 | 50 | 48 | 2 |
| Total | 0 | 0 | 0 | 0 | 100 | 98 | 2 |

Source: household survey

## 4.3. Economic Impact of the IWSDP

The desirability of empowering communities to take care of their economic problems themselves has been raised since long. Integrated watershed development is a rapid and sustainable economic development strategy focusing on “human” and “non-human” elements. All the natural resources are considered fundamental to bring about economic prosperity while properly managed by the people in the watershed. There is a mutual binding effect between human and other natural resources for them to be sustained as created in a given place. Therefore, IWSD is the entry point for comprehensive economic development.

## 4.3.1. Economic activities prevailed under the watershed

The district is predominantly an agricultural belt. Along with growing field crops, bee keeping, poultry, small ruminants restocking, fattening, horticulture and dairy activities are being practiced by the community. There were also, a number of people who pursue other off-farm income generating activities in the woreda. Weaving, carpentry, masonry and petty trade are among the off- farm economic activities providing employment opportunities to many people.

Agro - climatically, the woreda is well known for fruit and vegetable production, mostly by using irrigation. Because of its potential, the area was identified as the best corridor for horticultural development by the regional bureau of agriculture (Amhara region bureau of agriculture, 2010).

## 4.3.2. Land holding

About 94% of the households own cultivable land in the watersheds. The distribution of sample households, by different land holding categories, reveals that 92.6% of the households had possessed land ranging from 0.25 to 0.75ha prior to 2006 while it decreased to 83% after the IWSDP. Similarly, 7.4% of the households had possessed land about 1ha before the IWSDP while it increased to 11.7% after 2006.The factors contributing to the increased in land size after 2006 were the treatment of degraded lands through soil and water conservation measures and extra lands taken from other people through lease (Table 4.21)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 4.21: Land possession before and after 2006 (before and after the IWSDP)** | | | | | | | |
|  | Land size | Possession before 2006 | | | Possession after 2006 | | |
| Frequency | Percent | Valid Percent | Frequency | Percent | Valid Percent |
| Valid | 0.25 - 0.75 ha | 87 | 87 | 92.6 | 83 | 83 | 88.3 |
|  | 0.76 -1 ha | 7 | 7 | 7.4 | 10 | 10 | 10.6 |
|  | 1.1 - 2 ha | 0 | 0 | 0.0 | 1 | 1 | 1.1 |
| Missing | System | 6 | 6 |  | 6 | 6 |  |

Source: household survey

## 4.3.3. Crop production

Mid- altitude areas of Habru woreda has benefited from bi-modal rain fall condition. In general, 90.8% of the watershed beneficiaries had benefited by producing crops twice/year by taking advantage of the binary rainfall in the area.

Crop production has increased after the intervention of watershed development program. Among the surveyed households, 60.6% had indicated that crop production had been greater after 2006 (Table 4.22). The major factors for increased production after 2006were the improvement in soil moisture, better fertility and additional agricultural inputs.

Factors contributing to improvement in soil fertility were soil and water conservation measures (83%) and the promotion of fertilizer (17%) like compost in their own farm lands (Table 4.23).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 4.22: Crop production** | | | | |
|  | crop production pattern within a year | | level of crop production | | | |
|  | Once per year | Twice per year | now is more than before 2006 | now is less than before 2006 | | production before and after 2006 is similar |
| Frequency | 8 | 89 | 60 | 34 | | 5 |
| Valid Percent | 8.2 | 90.8 | 60.6 | 34.3 | | 5.1 |

Source: household survey

**Table 4.23: Factors for increased crop production**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Factors for increased production after 2006 | | Factors for improved fertility | | Factors for improved moisture availability | |
| Improved soil moisture | Improved moisture, use of improved inputs and improved fertility | Soil & water conservation measures by the program | fertilizer | SWC made by the program | SWC made by the program & adequate rain fall |
| Frequency | 3 | 56 | 39 | 8 | 36 | 13 |
| Valid Percent | 5.1 | 94.9 | 83.0 | 17.0 | 73.5 | 26.5 |

Source: household survey

## 4.3.4. Livestock production

Users in the watershed were depending on livestock development activities, such as, small ruminants restocking, poultry, beekeeping and others. These activities were linked with the carrying capacity of watersheds in the area.

According to the survey result, 84.4% of the households had stated that the status of livestock production in both watersheds had increased after 2006 (after the IWSDP) as compared to production before ISWDP. The factors contributing to increased livestock production were improvement in livestock feed, water availability and reduction of livestock diseases prevalence in and around the watershed (Table 4.24).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 4.24: Status of livestock production in the watershed** | | | | | |
|  | Status of livestock production | | | Factors for increased livestock production | |
| now is greater than before 2006 | now is less than before 2006 | similar before & after 2006 | Improved livestock feed availability | Improved water & feed availability and reduced livestock disease |
| Frequency | 84 | 13 | 2 | 3 | 56 |
| Valid Percent | 84.8 | 13.1 | 2 | 5.1 | 94.9 |

Source: household survey

Among the surveyed households, 74% had indicated that they had collected forage for their livestock from forests, home stead and margins of the farm land. Usually residents in the watershed practice cut- and- carry system for their livestock rather than free grazing as they were bound by the watershed by-laws (Table 4.25).

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 4.25: Sources of livestock forage** | | | |
|  | cut & carry system from forest | homestead & farm side forage development | forest, home stead & farm side forage development |
| Frequency | 24 | 1 | 64 |
| Valid Percent | 24.4 | 1.2 | 74.4 |

Source: household survey

Sources of water for livestock and human beings in the study watersheds are both springs and rivers in and around the watershed. In general 63.9% of the surveyed households had obtained water from rivers and springs out of the watershed area. Also, 97% of the surveyed households witnessed the recharging status of ground water potential inside the watershed as a result of different water conservation measures which conveys water for human and livestock throughout the year (Table 4.26).

**Table 4.26: Status of water source in the watershed**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Sources of water | | | availability of water | | status of water potential | |
|  | from spring inside the watershed | from river in the watershed | from rivers & springs out of the watershed | all over the year | during Rain fall season | Decreasing/missing | recharging/increasing |
| Frequency | 30 | 5 | 62 | 91 | 5 | 3 | 97 |
| Valid Percent | 30.9 | 5.2 | 63.9 | 94.8 | 5.2 | 3 | 97 |

Source: household survey

## 4.3.5. Level of household income

Income generation is the most important factor for improving the quality of life of the household. According to survey result, there is an improvement in the economic level of sample households over the last five years after the realization of IWSDP.

The number of sample households having an annual income of birr less than1000 has declined from 25% to 1% between 2006 & 2011. The number of households having annual income of birr 1001-2000 had also decreased from 50% before 2006 to 10% after 2006(up to now). The number of households with annual earning of birr 8,001-10,000 & 10,001-12,000 had also increased from (2%) & (0%) before 2006 to (12%) & (2%), respectively, after 2006 (Table 4.27).

**Table4.27: Household income level**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **birr/annum** | **Before 2006** | | **After 2006** | |
|  |  | Frequency | Percent | Frequency | Percent |
| Valid | < 1000 | 25 | 25 | 1 | 1 |
|  | 1001 – 2000 | 50 | 50 | 10 | 10 |
|  | 2001 – 3000 | 13 | 13 | 26 | 26 |
|  | 3001- 4000 | 7 | 7 | 19 | 19 |
|  | 4001 – 6000 | 1 | 1 | 24 | 24 |
|  | 6001- 8000 | 2 | 2 | 6 | 6 |
|  | 8001 – 10000 | 2 | 2 | 12 | 12 |
|  | 10001 - 12000 | 0 | 0 | 2 | 2 |
|  | Total | 100 | 100 | 100 | 100 |

Source: household survey

## 4.3.6. Household income diversification

It was observed that crop production was the major source of income in both watersheds before and after the IWSDP. Beneficiaries of IWSDP have also diversified their means of income after IWSDP intervention. Accordingly, 19% of the sample household’s income was generated from crop, livestock and the sale of forest products after 2006. . This is mainly due to the impact of integrated watershed development program (Table 4.28).

# Table 4.28: Primary Income sources

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Income source before 2006 | | Income source after 2006 | |
|  |  | Frequency | Percent | Frequency | Percent |
| Valid | Crop | 53 | 53.5 | 52 | 52 |
|  | Livestock | 4 | 4.0 | 1 | 1 |
|  | crop & livestock | 42 | 42.4 | 28 | 28 |
|  | crop, livestock and forest products | 0 | 0.0 | 19 | 19 |
|  | Total | 99 | 100 | 100 | 100 |
|  |  |  |  |  |  |

Source: household survey

Beneficiaries having extra time other than farming had greater (59%) daily wage opportunities after 2006 than before (34%). Thus, income sources have diversified and expanded as a result of integrated watershed development program in both watersheds (Table 4.29).

**Table: 4.29. Other income sources**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Type | Other income source before 2006 | | Other income source after 2006 | |
|  |  | Frequency | Percent | Frequency | Percent |
| Valid | daily labor | 34 | 34 | 59 | 59 |
|  | petty trade | 5 | 5 | 7 | 7 |
|  | Weaving | 2 | 2 | 6 | 6 |
|  | Masonry | 0 | 0 | 1 | 1 |
|  | Carpentry | 0 | 0 | 1 | 1 |
|  | no other income source | 59 | 59 | 26 | 26 |
|  | Total | 100 | 100 | 100 | 100 |

Source: household survey

**4.3.7. Household investment**

It was observed that the proportion of households whose income was used only for consumer goods has declined from 88% before 2006 to 56% after the IWSDP. In addition household investment packages (shoats restocking & fattening) had increased from 12% before 2006 to 26% after the watershed development program. The culture of saving is improved over the years after 2006 (5%) from 0% before the program. Improvement in saving and investment opportunities could be attributed to increase in income level and creation of household assets (Table 4.30).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 4.30: Household investment** | | | | | |
|  |  | Investment before 2006 | | Investment after 2006 | |
|  |  | Frequency | Percent | Frequency | Percent |
|  | cover only house hold consumption | 88 | 88 | 56 | 56 |
|  | shoats restocking | 0 | 0 | 13 | 13 |
|  | shoats restocking & fattening | 12 | 12 | 26 | 25 |
|  | Saving | 0 | 0 | 5 | 5 |
|  | Total | 100 | 100 | 100 | 100 |

Source: household survey

**5. Conclusion and recommendation**

Integrated watershed development could be recognized as valid manifestation of development for a country, such as, Ethiopia. Integrated watershed development program aims to bring about effective natural resources management, increased agricultural production and consequently improved social, economic and environmental well being of the population.

It also plays a great role to increase the participation and empowerment of the local community towards sustainable food security. The efficient management and utilization of natural resources and other benefits such as creation rural employment opportunities and increased income are an indication that IWSDP can bring sustainable socio-economic development without ruthlessly affecting the environment.

Socio-economic impact study in two watersheds in Habru woreda has revealed some features that are important for successful implementation of IWSDP. It has shown clearly that IWSDP can be relatively well designed in an integrated manner through the direct involvement of all stake holders including watershed beneficiaries. Integrated watershed management can be considered as beneficial in the process of lucid resource mapping, need identification and adequate planning through genuine engagement of the local people, community based institutions and other development actors.

The other most important factor was implementation and management of the IWSDP can be realistic through agreed and active by-laws of the local community. Economic benefits that can happen through IWSDP are also reflections of the change in attitude of human elements inside the watershed. The positive synergy between human and non- human elements towards sustainable welfare was seen as vital secret of the IWSDP.

Based on the discussions, observations and analyses on the impact of integrated watershed development program in the sample watersheds, the following recommendations could improve the sustainable development and benefit the area:

* Build up awareness/perception of users on integrated watershed management principles;
* The participation of women in the management & leadership of watershed development programs as well as sharing of benefits need to be considered ;
* The watershed development associations and their own by-laws need to be empowered with government formal structures (Kebele administrations, social courts etc) ;
* The level of community participation needs to go beyond informative and consultation in the watershed development program ;
* Proper integration of different socio-economic sectors needs to be ensured in the watershed ;
* Linkages need to be established among different programs implemented by NGOs and the government in order to maximize the pace of positive changes in the lives of the watershed communities ;
* Continuous follow-up by the rural development office to the watershed areas under program implementation is essential for the institutionalization of the system ;
* The response for the issue of land certification and user rights inside the watershed should be based on exhaustive studies by involving the local people.

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**7. Annex: Tools for data collection**

## 7.1 Interview schedule for watershed development users

**SECTION -1: PERSONAL INFORMATION**

* 1. Keble\_\_\_\_\_\_\_\_\_\_

Name of Watershed: \_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. Name of Interviewee: \_\_\_\_\_\_\_\_\_\_\_\_\_
  2. Sex: A/ Male B/ Female
  3. Education level: A/Literate B/ Illiterate

**SECTION-2: GENERAL INFORMATION**

**2.1. Role of Integrated Watershed Development program.**

Q1. Obviously, you are in the watershed and beneficiary of the integrated watershed development program, what are the roles of integrated watershed development?

A/Conservation of soil and water B/ Forest and fodder development

C/ promote health & education D/promote participation E/ increase production F/all

Q2. What are the programs sanctioned under the integrated watershed management approach?

A/PSNP B/World bank poverty reduction program C/other government programs D/community contribution D/all

Q3. What are the issues addressed within the watershed after 2006 under the integrated watershed program?

A/construction of health & education institutions B/IGA & asset creation C/potable water supply, hygiene & sanitation D/ irrigation development E/all

**SECTION-3: ECONOMIC IMPACT**

**3.1. Crop Production**

Q1.Do you have cultivable land in the watershed? A/Yes B/ No

Q2. If the answer for Q1 is yes, how much hectare of cultivable land did you possess before 2006?

A/0.25 - 0.75 ha B/0.75 -1 ha C/1-2 ha D/more than 2 ha.

Q3. If the answer for Q1 is yes, how much hectare of cultivable land do you have now?

A/0.25 - 0.75 ha B/ 0.75 -1 ha C/ 1-2 ha D/ more than 2 ha.

Q4. What was the reason for increased in cultivable land size?

A/soil conservation measures taken after 2006 B/ gully rehabilitation C/taking extra land from others D/A & B E/other reason

Q5. If your cultivable land size decreased now, what was the reason?

A/increased soil erosion after 2006 B/ broken lands because of runoff C/provide some portion of land to the family D/A & B

Q6. How often does your land give yield in a year?

A/ Once per year B/ Twice per year C/ Three times a year

Q7. If the answer for Q6 is B, when this started?

A/before 2006 B/ After 2006

Q8.If the answer for Q7 is B, what was the reason for double cropping?

A/availability of bimodal RF B/ access to irrigation after 2006 C/ any other reason

Q9. If the answer for Q8 is B, how irrigation water is accessible?

A/ ground water development within watershed B/ construction of RF water harvesting structures by the program C/all

Q10. What is the tendency in the amount of crop production?

A/crop production now is more than before 2006 B/crop production before 2006 is more than now

C/ production before and after 2006 is similar

Q11. If the answer for Q10 is A, what was the reason?

A/ better use of improved inputs B/Improved soil fertility C/ Improved water availability D/all

Q12. If the answer for Q10 is B, what was the reason?

A/shortage of inputs than before 2006 B/ increased soil erosion C/soil fertility depletion after 2006

D/fragmented land holding due to runoff E/all

Q13. If the answer for Q11 is A/D, where do you get improved inputs?

A/from PSNP implemented in the watershed B/from other programs implemented in the watershed C/outside the watershed D/ A & B E/all

Q14. If the answer for Q11 is B, what was the reason?

A/ soil & water conservation measures by the program B/ use of organic fertilizer (compost) C/all

Q15. If the answer for Q11 is C, what was the reason?

A/soil & water conservation made by the program B/adequate RF C/all

**3.2. Livestock Production**

Q1. What was the status of livestock production?

A/now is greater than before 2006 B/now is less than before 2006 C/similar before and after 2006

Q2. If the answer for Q1 is A, what are the reasons?

A/ availability of better livestock feed now than before 2006 B/availability of much water now than before 2006 C/decreased livestock disease D/all

Q3. If the answer for Q1 is B, what were the reasons?

A/shortage of feed B/shortage of water C/disease D/all

Q4. If the answer for Q2 is A, where do you find livestock feed?

A/ cut & carry system from forest B/free grazing C/homestead & farm forage development D/A & C D/all

Q5. Where do you get adequate water for livestock’s?

A/ from springs in the watershed B/from river in the watershed C/ from rivers & springs out of the watershed

D/A & B F/all

Q6. If the answer for Q5 is A, how often does these sources serve?

A/ all over the year B/ Only in dry season C/ during RF season D/A & B

Q7. If the answer for Q6 is A, when this situation happened?

A/before 2006 B/after 2006 C/all time the same

Q8. What is the trend of spring water capacity in the watershed after 2006?

A/Decreasing (missing) B/recharging/increasing

**3.3. Income and asset creation**

Q1. What are your sources of income before 2006?

A/ crop products B/ livestock products B/selling forest products C/A & B D/all

Q2. What are your sources of income after 2006?

A/ crop products B/ livestock products B/selling forest products C/A & B D/all

Q3. What are the other sources of your income before 2006?

A/ off farm IGA’s B/daily wage from labor based works in the watershed C/all

Q4. What are the other sources of your income after 2006?

A/ off farm IGA’s B/daily wage from labor based works in the watershed C/all

Q5. In which type of off-farm income generating activities did you engage before 2006?

A/Petty trade B/Masonry C/Carpentry D/Weaving E/ any others

Q6. In which type of off-farm income generating activities did you engage after 2006?

A/Petty trade B/Masonry C/Carpentry D/weaving E/ any others

Q7. To what extent income generating activities diversified after the watershed development intervention?

A/To a great extent B/to some extent C/Hardily

Q8. If the answer for Q7 has a growing trend, what was the reason?

A/improved livestock production because of IWSD B/improved crop production because of IWSD C/ access to diversified IGA's because of IWSD D/A &B E/all

Q9. What was the trend of your annual income from all sources of income before and after the integrated watershed development program?

|  |  |
| --- | --- |
| Average annual Income before IWSDP (Birr) | Average annual income after IWSDP (Birr) |
|  |  |

Q10. For what purpose do you invest incomes before 2006?

A/buy shoats for restocking B/buy large ruminants for fattening & dairy C/cover household fees D/ saving E/all except D

Q11. For what purpose do you invest incomes after 2006?

A/buy shoats for restocking B/buy large ruminants for fattening & dairy C/cover household fees D/ saving E/all except D

Q12. If the answer for Q10 is C, what were the household items spend for?

A/ clothing B/food C/medical D/school fee for children E/ all

Q12. If the answer for Q11 C, what were the household items spend for?

A/ clothing B/food C/medical D/school fee for children E/all

Q12. Do you invest income for the purchase of agricultural inputs A/ yes B/no

**SECTION- 4: SOCIAL IMPACT**

**4.1. Health**

Q1. Was there health problem in the watershed before IWSD? A/yes B/ no

Q2. What was the condition of disease incidence in the watershed?

A/decreased after 2006 B/increased after 2006 C/the same before and after 2006

Q3. If the answer for Q2 is A, what was the reason?

A/improved access to health service B/improved access to potable water C/improved nutrition D/A & B E/all

Q4. If the answer for Q2 is B, what was the reason?

A/limited access to health service B/food deficit C/ no potable water supply D/ all

Q5. What were the diseases prevailed in the watershed before 2006?

A/malaria B/diarrhea C/eye disease D/any other

Q6. What were the diseases prevailed in the watershed after 2006?

A/malaria B/diarrhea C/ eye disease D/ any other

Q7. If supply of potable water has improved after 2006 in the watershed, what is the reason?

A/recharged ground water sources B/ developed springs C/developed HDWs D/all

Q8.Do you have pit latrine in the house compound? A/ yes B/no

Q9.If the answer for Q9 is yes, when did you start the practice?

A/before 2006 B/before three years C/last year D/This year

Q10. If yes, do the entire family members use it? A/yes B/no

Q11. Do you have practiced hand washing after defecation? A/ yes B/no

Q12. Do you have practiced hand washing before and after the meal A/ yes B/no

Q13. When did you start to practice hand washing before and after the meal? A/before 2006 B/ after 2006

Q14. When did you practice washing clothes?

A/weekly B/Monthly C/in three months D/Yearly

Q15. Do you have accustomed to clean house compounds & household utensils? A/yes B/no

Q16. Do you know about family planning before 2006? A/yes B/no

Q17. If the answer for Q16 is yes, what kind of family planning method you use?

A/ pills B/implant C/injection D/condom E/any other

Q18. Do you know about family planning after 2006? A/yes B/no

Q19. If the answer for Q18 is yes, what kind of family planning method you use?

A/ pills B/implant C/injection D/Condom E/any other

Q20. What type of health institution established in the watershed?

A/health post B/health center C/ all

Q21. When do health institutions established?

A/ before 2006 B/ after 2006 C/in all times

Q22. What were the services provided by health institutions?

A/health education B/medical treatment C/ all

**4.2. Education**

Q1. When did you get adult education?

A/before 2006 B/after 2006 C/not educated

Q2. If the answer is for Q1 is B, what was the reason?

A/promotion of adult education program in the watershed B/created access to school C/improved income

Q3. What type of school established in the watershed?

A/satellites B/primary (1-4) C/ junior (5-8) D/A & B E/none

Q4. When the school was established?

A/before 2006 B/after 2006

Q5. Do all of your school aged children enrolled in primary education?

A/ yes B/no C/no child reached for education

Q6. If the answer for Q5 is no, what was the reason?

A/parents need to child labor B/shortage of food C/lack of access to school D/all E/ any other

Q7. Was there school drop out of children? A/yes B/no

Q8. If yes, what was the reason?

A/inaccessibility of school B/need to have child labor C/unable to cover school fee D/lack of awareness

**4.3. Community participation**

Q1.Did you attend in the planning process for watershed development?

A/Yes B/No

Q2. Did you participate in the watershed development program implementation? A/yes B/no

Q3. If the answer for Q2 is yes, in what development activities did you participate?

A/soil & water conservation B/forest seedling plantation C/forest (watershed) protection D/road construction

E/school & health post construction F/A , B & C G/all

Q4. In what sense would you participate or your participation is expressed?

A/ labor contribution B/material provision C/cash contribution D/A & B E/all

Q5. Did you take part in the evaluation of watershed development program?

A/yes B/no

Q6. If yes, how often do you attend the meetings?

A/Regularly B/Sometimes C/only one time

Q7. Do participants of the meeting are able to express their interest on the development process?

A/yes B/no

Q8. If the answer for Q6 is A, could they say yes or no for what has to be done? A/yes B/no

Q9. If the answer for Q6 is B, what was the reason?

A/no opening to decide B/informatory C/consultation D/all

Q10. Is there watershed user association? A/ yes B/no

Q11. If yes, what are the roles of watershed user association?

A/planning watershed development B/managing watershed development C/bring watershed users participate in the implementation process D/distribute development benefits E/all

Q12. Are there bylaws of the watershed user association? A/yes B/no

Q13. If yes, who established bylaws of the watershed user association?

A/watershed committee B/watershed beneficiaries C/GOV & NGOs D/A & B

Q14. Who protect the watershed development activities?

A/ guards paid by the GOV/NGO B/guards paid by beneficiaries C/ social fencing (shifting every users) D/B & C

Q15. To whom forest resources are distributed?

A/ women B/Men C/poor D/rich E/all people in the watershed

Q16. How forest products distributed to watershed beneficiaries?

A/ based on bylaws B/collecting without considering laws D/explain, if any other ways

**Checklist for Group discussion**

1. What is an integrated watershed development?
2. What are the uses of integrated watershed development?
3. What are the activities carried out within the watershed?
4. What is the planning process with regard to integrated watershed development? Who get involved in the planning process? Who facilitates?
5. How watershed development activities implemented?
6. What about user’s contribution in the watershed development?
7. Who monitors and evaluate the development process?
8. What are the trees planted in the watershed & what survived?
9. What are the means of livelihoods in the watershed?
10. What is the severity soil & water degradation from time to time (1998/2003)/?

**THANK YOU VERY MUCH FOR YOUR COOPERATION AND HELP!**

**Socio-economic impact of integrated watershed development program:**

**: The case of Habru woreda, Eastern Amhara,Ethiopia**

**“A Thesis proposal”**

**“Submitted to Indira Gandhi National Open University in partial fulfillment of the requirement for Master of Arts Degree in Rural Development Programme”**

**by Sisay Mengesha**

**Addis Ababa, Ethiopia**

**July 2011**

**Ethiopia, Bahirdar**

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**Date**

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# Introduction and Background

Agriculture is the backbone of the Ethiopian economy. It is responsible for approximately 50% of the Gross Domestic Product, 90% of foreign exchange earnings, and 85% of the livelihoods of the population (MOFED report, 2006). Ethiopia's agricultural sector is determined by subsistence strategies of smallholder farmers. Degradation of natural resources, rapid population growth and erratic rainfall has resulted in chronic food insecurity in the country.

About 89 % of the population in Amhara is relying on agriculture which is characterized by conventional technology, fragmented landholding and rain fed. The regional GDP in the years 2004/2005 is composed of 60.89% from agriculture and its allies, 22.89% from industry and 16.22% from service sectors (BoFED report, 2008). This shows that the agriculture sector still remains to be the dominant sector of the regional economy. The MDG demands that Developing Countries should achieve at least a 7% average economic growth each year to achieve the Goals in 2015 (UN publication on the MDG, 2010).

Land degradation seriously affects the livelihoods and food security of millions of people. It arises from high soil erosion rates (as a result of steep slopes, continuous encroachment and cultivation of marginal lands), deforestation, overgrazing, poor coping mechanisms, extensive use of charcoal, and others (Lal 2000, Hinchcliffe et al. 1999). Concern about the widespread soil degradation and scarcity, poorly managed water resources has led to the spread of watershed management investments throughout Asia, Africa and Latin America (Lal 2000, Hinchcliffe et al. 1999).

Recognizing the degradation and importance of natural resources conservation, integrated watershed management became central issue in the eyes of the Ethiopian government since the last one decade. The Integrated Watershed Program was introduced with the objective to treat and develop micro-watersheds keeping in view the land capability, site condition and needs of local people. With similar intention, the Amhara National Regional State in its rural development strategy has endorsed the need for a conservation based, watershed focused development approach.

Although the growing importance of integrated watershed development program as an approach to rural development and natural resource management in our country, there has been relatively limited research on their impact in particular attention to the Amhara region.

Thus, this study will be realized in Habru Woreda, North Wollo administrative zone of the Amhara National Regional state. Habru is located at 490 km from Addis Ababa and 387 km far from Bahir Dar, the capital city of Amhara National Regional State. It is divided in to 30 predominantly rural and 2 urban administrative Kebeles. The Woreda covers about 143,396 ha with an elevation ranging from 1500 – 2600m above sea level.

Regarding land use, 55% cultivated, 5% grazing, 38% forest and bushes, and 2% of the land is used for other purposes. The general topographic feature of the Woreda is characterized by rugged mountains to plain low lands. Agro climatically, it has three zones considered as Highland (3.5%), Midland (40%), and kola (56.5%). Population of the Woreda, based on the 2004 population census, is projected to be 203,477 (102,249 male & 101,228 female) out of which 88% are reside in rural areas (Habru woreda office of Agriculture, 2010).

The mean annual rainfall of the Woreda is between 750 mm to 1000 mm and it is characterized by high variability and uncertainty. The major crops grown in the area are teff, sorghum, maize, Barley, wheat, bean, pea (Habru woreda office of Agriculture, 2010).

Habru is one of the chronically food insecure Woredas of the region. The major reasons for food insecurity include: high population pressure, deforestation, soil erosion, fragment and unproductive land holdings, erratic distribution of rainfall, poor land use and back ward farming system (Habru woreda office of Agriculture, 2010).

Taking account the natural resources degradation and its consequence on socio-economic deprivation of the people, the local government sanctioned watershed development program in collaboration with non-governmental organizations for the last half a decade.

The two watershed areas, namely, Guba and Menentela, are part of the integrated watershed development programs and are intensively intervened since 2006. Both of them are categorized under mid-land agro ecology zones situated at an average elevation of 1500 and 1900 masl. The average total up stream watershed area of Guba and Menentela is 806 and 270 ha, with estimated population of 896 and 490, respectively.

# Statement of the Problem

It is a fact that the degradation of natural resources is the greatest constraint to sustainable agricultural development in most of the developing countries. It is also accepted that sustainable use and management of the land resources could only be achieved by adopting a system of improved land, water and vegetation use based on an integrated approach for land resources development with direct involvement and participation of the different actors.

The degradation of watersheds in Ethiopia threatens the livelihood of millions of people and constrains the ability of the country to develop a strong agriculture. Particularly in the high land areas, population and livestock growth along with poor natural resource management system hastily deplete the existing natural resource base. The pressures on forest resources and marginal lands along with inappropriate cultivation practices resulted in naked mountains. The situation leads to, damaging floods, unwanted sediment and socio-economically deprived ruralcommunities (FAO, 1999/2000).

Therefore, community based participatory watershed planning and development is a vital necessity in complex landscapes. Watershed planning has moved away from conventional land use-planning exercise to a logical interpretation of the potentials of the land as a function of the demands of the people living in the watersheds.

Participatory watershed planning is the key to understand what is needed to be done at various levels to sustain, improve and diversify production while developing and managing the natural resource base, promote income generation opportunities, increase access to basic services (roads, markets, schools, water, and the like.) and make livelihood systems resilient to shocks.

In Amhara region, degraded watersheds resulted in limited opportunities to water harvesting and use; difficulties in the access to clean water for domestic use lead to and higher incidence of water-borne diseases. Unstable watersheds induce unstable production, productivity and income systems; increased vulnerability to drought and food insecurity is directly linked to the conditions of the watershed and its limited capacity to support local livelihoods.

Integrated watershed development is considered as instrument to “bring rural households back to business” from food-insecurity and degraded conditions. Besides, watershed development enables new opportunities to water development. Thus, the watershed, or catchment area, is the natural framework for resource development in relation to crop production systems, as well as, to resource conservation and utilization.

Equally important, integrated watershed development program is a practical and effective tool for utilizing at best the different disciplines related to agriculture and food security, in a way that they mutually reinforce and integrate each other. Natural resources, inputs and extension, livestock, water and marketing are all connected and will greatly benefit from using a participatory watershed planning framework.

The watershed condition of soil, vegetation and its management system has direct implications on the water resources in particular and on the behavior of the natural resources in general. It has been observed that the destruction of forests and rangelands have resulted in damaging runoffs, destruction of downstream agricultural lands and reduced groundwater recharge.

With the same concern, integrated water shed development programs have been launched in Habru woreda by the joint effort of the local government and different non-governmental organizations since 2001. The programs have focused to create socio-economic assets within the selected watersheds in an integrated manner. As a rural development approach, it has been considered as the best means to use the limited resource and ensure maximum benefits of the beneficiaries. Several mountains in each kebele of the district are now identified, delineated and prepared to sanction under the system of integrated watershed development program.

Therefore, this study is trying to find out the socio-economic impacts of integrated watershed development program implemented in Guba and Menentela watersheds starting from the year 2006. The study will try to answer the following questions in the sense of integrated development approach in those watersheds:

1. Are watershed residents aware of the importance of integrated watershed development?
2. Is income and asset level of the watershed residents increased because of the integrated watershed development program?
3. Has crop production improved as a result of integrated watershed development program?
4. Has water resource potential of the area/watersheds improved?
5. Has Health and literacy status of the watershed residents improved?

6. Are watershed residents willing to contribute to the protection/management of the watersheds?

7. If they are, what type of contribution made for the improved management of these watersheds?

8. Is there any type of community based institutional set up to realize program objectives?

9. If they are not, what are the reasons/why they are not willing to contribute to the improved management of these watersheds?

10. How and to whom the benefits of the watershed distributed?

# Objectives of the Research

The overall objective of the study is to assess socio-economic impacts/contribution of integrated watershed management program implemented in Habru woreda of the eastern Amhara region.

**This study has the following specific objectives**:

* To assess the contribution of integrated water shed management towards community health and literacy status.
* To study the changes in income & asset level of the beneficiaries within the watershed.
* To discover the extent of community participation in the program.
* To analyze the degree to which the desired effects of an intervention lasts beyond its end.
* To draw lessons of the program and develop recommendations for future research.

# Hypothesis of the Research

Improved socio-economic condition of the local people as result of integrated watershed development would lead to sustainable natural resource base as well as prosperous livelihood. Integrated watershed development could not be realized without comprehensive multi-sector intervention. Genuine involvement of the beneficiaries through efficient community based organizations should not be over looked while sanctioning integrated watershed development.

# Universe of the Study

The study will assess some of the socio-economic impacts of community based integrated water shed development being implemented in Habru woreda, eastern parts of the Amhara region. A sample of two watersheds in two different kebeles will be covered by the study where by integrated watershed development program has been practiced since the last five years by the joint effort of local government and non-governmental organizations.

The study will focus on analysis of economic and social changes exerted in the lives of the rural people in and around the water sheds as a result of integrated watershed development intervention. Under the economic contribution, crop & livestock production, income and asset, rehabilitation of natural resources shall be measured. On the same approaches, changes made in the health and literacy status of the people, institutional set up and participation level of the community shall be analyzed under social impacts. Findings of the study will be properly compiled, recommendations will also be in place and used for further research work.

# Definition of Terms Used

**Impact*:*** is an effect attributed to an intervention. It is the change exerted in the overall socio-economic status of the people in an area as a result of program/project intervention.

The term impact, sometimes referred to as outcome, denotes the relationship between the project’s purpose and goal, that is the extent to which the benefits received by the target beneficiaries had a wider overall effect on larger numbers of people in the sector or region (EC, project management guide line, vol-1,2004). At Impact level the analysis generally examines such aspects as:

* How far enhanced economic and social development resulted from improved institutional capabilities and communications;
* How far did programs/projects enhance economic and social development beyond the level of their immediate users?

**Economic Impact**: implies that the provisions of training and employment as well as engaging inincome generating activities withboth forward and backward linkages with the ultimate objective of making community economically independent and self-reliant, (Rowlands,Jo,1998).

**Social impacts:** as Rowlands (1995) stated that, social impact is the removal of all existing social induced inequalities, disparities and other persisting problems besides providing easy accesses to basic minimum services. Social empowerment is thus not only about opening up accesses but also as able and entitled to occupy the decision making space.

**Community**: the concept of community comes from having something in common, common place, interest, distinction. Thus, the Bureau of the Census of the United States defines a rural community on the bases of the size and the density of population at a particular place (Redfield, Robert, 1956).

**Participation:** may take on various forms, and occur in varying intensities depending on the nature of the activity and the roles and responsibilities of the people and groups involved. Community members or groups may simply be required to contribute labor or some cash inputs, or be represented on a management capacity is committee, or take on full management and decision making responsibilities and authority.

The nature of the program will influence the level of participation that is practical and possible, as well as a realistic assessment of skills and capacity among participating communities and groups. The four levels of participation can be distinguished as information sharing, consultation, decision making and initiating action (EC, 2004).

# Literature Review

## 7.1. Concept of Integrated Water shed development

Watershed is defined as a hydro-geological unit of area from which the rainwater drains through a single outlet. Watershed development refers to the conservation, regeneration and judicious use of all the natural resources (like land, water, plants, animals) by human beings. Watershed Management brings about the best possible balance between natural resources on the one side and human beings on the other. Human beings and the ecology are interdependent. The changes in the environment directly affect the lives of the people depending on it. A degraded environment means a degraded quality of life of the people. This degradation can be tackled effectively through the holistic development of the watershed. A watershed provides a natural geo-hydrological unit for planning any developmental initiative. The approach would be treatment from “ridge to valley”.

A watershed can be defined as the drainage basin or catchment area of a stream or river. It refers to the entire upstream topography around a defined drainage channel, which feeds water to the lower stream. Watershed may be nearly flat or may include hills or mountains. The size of the watershed varies from a few hectares to thousands of hectares. Micro-watersheds are generally defined as falling in the range 500-1000 hectares. A mini watershed comprises a number of micro-watersheds and covers around 5000 hectares. A macro-watershed is equivalent to a river basin and may encompass many thousands of hectares (Farrington et al., 1999)

Managing watershed for rural development is a relatively new concept. It focuses on soil, water and vegetation with enhancing the productivity with ecological and institutional sustainability. Thus watershed development refers to the conservation, regeneration and careful utilization of all the resources: land, water, vegetative, animal and human. Watershed development is thus a multi-disciplinary approach that involves continuous interaction exchange amongst various sectors.

Wherever ecological degradation occurs, erosion in the quality and substance of life of the human community within that ecosystem also occurs. Because of degradation of forests and pasturelands, soil erosion increases. Along with the top soil nutrients also flow away.

Soil erosion decreases land fertility and ultimately agriculture production. Also, deterioration of land results in decrease in the availability of fodder for animals. Agriculture, animal husbandry and collection of forest products are the main occupations of the rural people. Degradation in their productivity severely affects the rural economy. It has a direct impact on availability of enough quantity of food in particular and the quality of life of the people as a whole. Hence, it is advisable to treat the whole watershed collectively.

Integrated watershed management can be considered as technical and socio-economic intervention. From technical point of view, it involves reducing soil erosion, promoting vegetative cover, and harnessing water resources. In terms of socioeconomic aspect, watershed management involves linking the actions of numerous users in a watershed who may have diversified interests. These days, several stake holders pay more attention to the socioeconomic aspects of watershed management. The local people need to have full involvement in the management of watersheds so that they can manage & use their land, animals and other natural resources in a productive way without causing harm to natural resources.

## Historical Review of Watershed Concept in Ethiopia

Planning the development of watersheds for Ethiopia started in the 1980’s. A planning unit for developing large watersheds comprised 30-40 thousand hectares. The purpose was mostly for implementing natural resource conservation and development programs. Large-scale efforts remained mostly unsatisfactory due to lack of effective community participation, limited sense of responsibility over assets created, and unmanageable planning units. The lessons learned from this experience encouraged MoA and support agencies like FAO to initiate pilot watershed planning approaches on a bottom-up basis, using smaller units and following community-based approaches. As a result the minimum planning and sub watershed approaches were introduced. Minimum planning at the initial stage involved shifting from larger watersheds to smaller sub-watersheds (MoARD, 2005).

# Methodology of the Research

This research is going to be conducted to assess the economic and social impacts brought by integrated watershed development program. Data will be collected & analyzed by considering variables relevant to discover changes like crop & livestock production, income, health & literacy, institutional set up and community participation of the program.

## Sampling Techniques of the Research

This study aims to examine socio economic impact of community based integrated watershed management.

Among the total number of watersheds sanctioned under the system of community based integrated watershed management program, two watersheds will be chosen for the study based on accessibility, intervention experience and cost. These are **Guba** and **Menetela** watersheds in Gimsha (13) and Menentela (06) kebeles respectively. Sample households from the two watersheds will be selected using random sampling technique

Data Collection: Tools and Procedures

Different data collection methods will be deployed to answer research questions and meet study objectives. Collection of primary and secondary data is helping to reach the realities on the ground.

In order to discover information through primary data collection, 50 households (30% women) in each watershed and a total of 100 respondents will be targeted as key informant using **questionnaire**. For the purpose of triangulation, opinions from woreda office of agriculture, non-governmental organizations and watershed user groups will be generated through focus **group discussions.**

Secondary data (watershed plan, survey, reports) from the offices of agriculture and NGO at woreda level will be gathered and **reviewed**. Budgetary allocations for watershed management, socio-economic status before and after the program, institutional set up and involvement of the local people are some of the data gathered at secondary level. Moreover, qualitative **visual assessment** of the study watersheds will be conducted to cross check the realities on the ground.

## Data Processing and presentation

The completed interview schedules shall be scrutinized, processed, verified, edited, and arranged serially. The data collected using the above mentioned techniques will be organized, classified, summarized and presented using various descriptive analytical statistical parameters. SPSS techniques will be applied to process data collected by primary technique. The qualitative data will be analyzed using narrative descriptions and categorizations.

# Chapters

The first chapter shall be issued to the background and justification of this study. In this chapter, an attempt shall be made to describe the national and regional socio-economic status, statement of the problem and objective of the study.

The second chapter deals with literature reviews on the concept, historical overview and principles of integrated watershed development.

The third chapter states about research design on data collection methods. Under this chapter, sampling techniques, types of data and data processing tools will also be discussed.

The fourth chapter deals with major findings on economic and social status of the community in and around the watershed.

The fifth chapter will deal with Summary and conclusion. Finally, references and appendixes will be sited at the ends of the pages.

# Time Schedules and Logistics

## Work Plan

|  |  |  |
| --- | --- | --- |
| **S/N** | **Descriptions** | **Time Frame** |
| 1 | Correcting Commented Proposal | April 20,2011 to 25, 2011 |
| 2 | Corrected Proposal submission & final approval | April 26, 2011 to May 4, 2011 |
| 3 | Data collection | May 5, 2011 to May 15, 2011 |
| 4 | Data summarization and Analysis | May 16, 2011 to May 20, 2011 |
| M | Thesis write up | May 21, 2011 to June 1, 2011 |
| 6 | Thesis Final submission | July11, 2011 |

## Logistics

| **S/N** | **Descriptions** | **Unit** | **Quantity** | **Unit price** | **Total price** |
| --- | --- | --- | --- | --- | --- |
| 1 | Perdiem |  |  |  |  |
| 1.1 | Researcher | No | 1 | 150 | 2100 |
| 1.2 | Driver | No | 1 | 150 | 2100 |
| 1.3 | Enumerator | No | 4 | 50 | 600 |
| 2 | Stationeries | LS | 1 | 4,000 | 4,000 |
| 3 | Transportation(fuel and Lubricants) | Ls | 1 | 6,780 | 6,780 |
| 5 | Contingency | - | - | - | 1,580 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

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# Interview schedule

| **S/N** | **Descriptions** | **Schedule** | | | | |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Day one | Day two | Day three | Day four | Day five |
| 1 | Identification of data enumerators | xxx |  |  |  |  |
| 2 | Training of data enumerators and pretesting |  | xxx |  |  |  |
| 3 | Conduct interview and supervision | No |  | xxx | xxx | xxx |
| 4 | Closing and handover filled up questionnaires | No |  | xxx | xxx | xxx |

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1. Meher is the local name of the main rainy season in Ethiopia that runs from June – September. [↑](#footnote-ref-1)