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Socio-Economic Contributions of Community Based Participatory Watershed Development on Rural Farm Households at Gammo Gofa Zone of Demba Gofa Woreda, Ethiopia

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1.1 Abstract
The purpose of this study is to assess the socio-economic contribution of community based participatory watershed development among 164 sampled rural farm households of Demba Gofa Woreda. To achieve this objective, the study was applied multi-stage representative sampling technique. Mixed research design was adopted. The Quantitative data collected were entered to STATA software version 11 and analyzed using tools of descriptive statistics: Chi-square test was used to check the relation between key socio-economic variables. Both primary and secondary data sources were used. Additionally, 13 key informants were interviewed and about 21 purposively selected participants were included in three focus group discussions. The cumulative findings revealed that the intervention on majority of farm households brought significant progress and improvements on production, nutritional status and rehabilitating degraded lands in the last five consecutive years on one hand and due to institutional failures and communal limitations the intervention brought slight changes and progress on the income in terms of increment and diversification and education in terms of school enrolment and effectiveness in few farm households of the sampled kebeles. Finally it is recommended that improving the training, visitation and extension service, Ensure participation through willingly rather than employing forceful coercion, developing and expanding small-scale irrigation broadly and improving the marketing channel are most important tools to increase and improve the socio-economic contribution of the intervention to farm households.
1.2. KEYWORDS: CBPWD, Socio-Economic Contribution, Farm households

1.3. BACKGROUND OF THE STUDY

Appropriate management and use of degraded watersheds have obviously resulted in large scale ecological, economic and social benefits to farmers. Asian countries like Nepal, The Philippines and Indonesia have remarkable and often large-scale watershed development programs (Buzuayehu and Tariku, 2002). Participatory conservation and watershed-based approaches have been also successfully introduced and expanded in various countries in Africa, particularly in Kenya, Niger, Burkina Faso and Mali, to name a few. Such programs have been realized within the context of combating desertification and poverty reduction efforts (MoARD, 2005).

Recent studies shows intensity of recurrent droughts affects the livelihoods of agricultural communities and the whole economy. Even in a year of good rain, the occurrence of floods affects the livelihoods of riparian residents with little capacity to neither protect them from the seasonal flood nor mitigate the impact. Excess water is also responsible for the soil erosion in the highlands (MoWR, 1993).

Gulilat (2002), Suggested that Poor watershed management and farming practices have contributed to these rates. Sustainability of the management of water supply schemes is also a challenge for the sector. Poor co-ordination among stakeholders is aggravating the situation and constraining the economic returns on investment.

As per the observation of the researcher in Demba Gofa Woreda, the vulnerability to unfavorable climatic condition and the degradation of soil and water resources makes the farm household food insecure; ultimately maintain their poverty situation. The food production of the district is low due to the subsistence production system. To maintain and stabilize sustainable development in the district various rural interventions were undertaken by the government in the district one of which is Community Based Participatory Watershed Development.

Therefore, this study tried to analyze the socio-economic contribution of Community Based Participatory Watershed Development on rural farm households in Demba Gofa Woreda.

1.4. STATEMENT OF THE PROBLEM

Underdevelopment, rapid population increase, land degradation, climate uncertainty and water scarcity are the major bottlenecks to achieving higher agricultural production and improved rural livelihoods in developing countries like Ethiopia (Addisu, 2012). Due to these, the agricultural sector is predominantly characterized by subsistence, low yielding and rain fed agriculture.

Despite the various efforts made to transform the agricultural sector to produce sufficient food in the country and other public response like food aid programs to protect farm households from impact of income risk and other social problems, still food insecurity is a chronic problem and about 10 percent of the

population of the country requires food aid assistance each year (Ibrahim, 2012).

According to DGAO Report (2012), to solve the problem, several intervention measures including Community Based Participatory Watershed Development were transferred and undertaken by the government to rural households to improve the livelihood condition particularly production, income, education and nutrition of farm households through the bottom-up approaches for the last five consecutive years to meet its objectives in rural development sector. But benefit of the intervention i.e., Community Based Participatory Watershed Development on socio-economic situation of poor farm households in the study area were not analyzed.

Preliminary assessment of the new intervention i.e., Community Based Participatory Watershed Development signaled not only increased agricultural production and income but also has contributed to the rehabilitation of degraded lands there by contributing to the livelihood of smallholder farmers in the study area. Detailed data, however, are not available to substantiate the claims and to scale out the intervention from the study area to other areas. Without a formal study and hard facts and figures, the social and economic benefits generated by the interventions may remain unknown. Moreover, there was a dearth of studies conducted on this issue in the Woreda. Hence this study was aimed at filling this research gap.

1.5. RESEARCH OBJECTIVES:

The overall objective of the study is to assess the socio-economic contribution of Community Based Participatory Watershed Development on rural farm households of Demba Gofa Woreda of Gammo Gofa zone. The specific objectives of this research are:

- ✓ Assess the contribution of Community Based Participatory Watershed Development on farm household economic issues (production and total income)
- ✓ Examine the contribution of Community Based Participatory Watershed Development on social welfare issues (education and nutritional status).

Evaluate the contribution of Community Based Participatory Watershed Development on rehabilitating degraded lands.

1.6. REVIEW OF RELATED LITERATURE:

1.6.1. Concepts of Watershed Management

Kerr (2007) defined watershed management as programs with technical interventions (planting trees, building check dams, etc.) to raise the productivity of certain resources and bring water resources under control and he defines Watershed management as managing hydrological relationships in a watershed, which may involve protecting certain resources from degradation rather than making physical investments in their productivity.

1.6.2. Participatory Watershed Development

Participatory watershed management approach which was the main focus of this study is considered as one of the newly emerging approach to address rural problems in terms of natural resource conservation, production and poverty alleviation. Recent years have seen a move in watershed management programs from top-down approaches to participatory approaches designed to create ownership. Participatory management has been defined as a process whereby those with legitimate interests in a project both influence decisions that affect them and receive a proportion of any benefits that may accrue (Darghouth et al. 2008).

To succeed, watershed management has to be participatory. This is one of the lessons coming out of decades of failures of center ally-planned watershed development projects through which local people have been either coerced or paid to undertake terracing, bunding, destocking, destocking and other technical measures that external experts believed would cure watershed degradation Aher & Pawar, 2013).

1.6.3. Problems and Failures Encountered With Watershed Development in Ethiopia

Watershed development has been problematic when applied in a rigid and conventional manner. This is true when applied without community participation and using only hydrological planning units, where a range of interventions remained limited and post rehabilitation management aspects were neglected. This resulted in various failures or serious shortcomings difficult to correct. Some examples can be cited in Ethiopia and elsewhere. For instance, the case of the large Borkena dam in South Wello in the 1980's where the dam was constructed before sufficient conservation measures were in place (MoARD of Ethiopia, 2005).

Besides, runoff and sedimentation rates were seriously underestimated. It resulted in the filling with silt and coarse materials of the multi-million Birr dam within one rainy season. Other examples in Ethiopia include large-scale watershed planning using top down approaches and rigid technical packages during the 1980's that resulted in unsatisfactory performance of several conservation efforts (Jember, 2005).

This shows that a poorly planned watershed approach could result in complete failure. In other parts there have been cases of over-exploitation of water-tables resulting from an intensive watershed treatment where some of the major benefits have been reduced, particularly for the poor, because of the competitive use of water resources by richer farmers for irrigation. Other cases of failure included upper ridges planted with monocultures of eucalyptus trees, which depleted water-tables and had negative ecological effect on soils (MoARD of

Ethiopia, 2005).

1.6.4. Empirical Studies

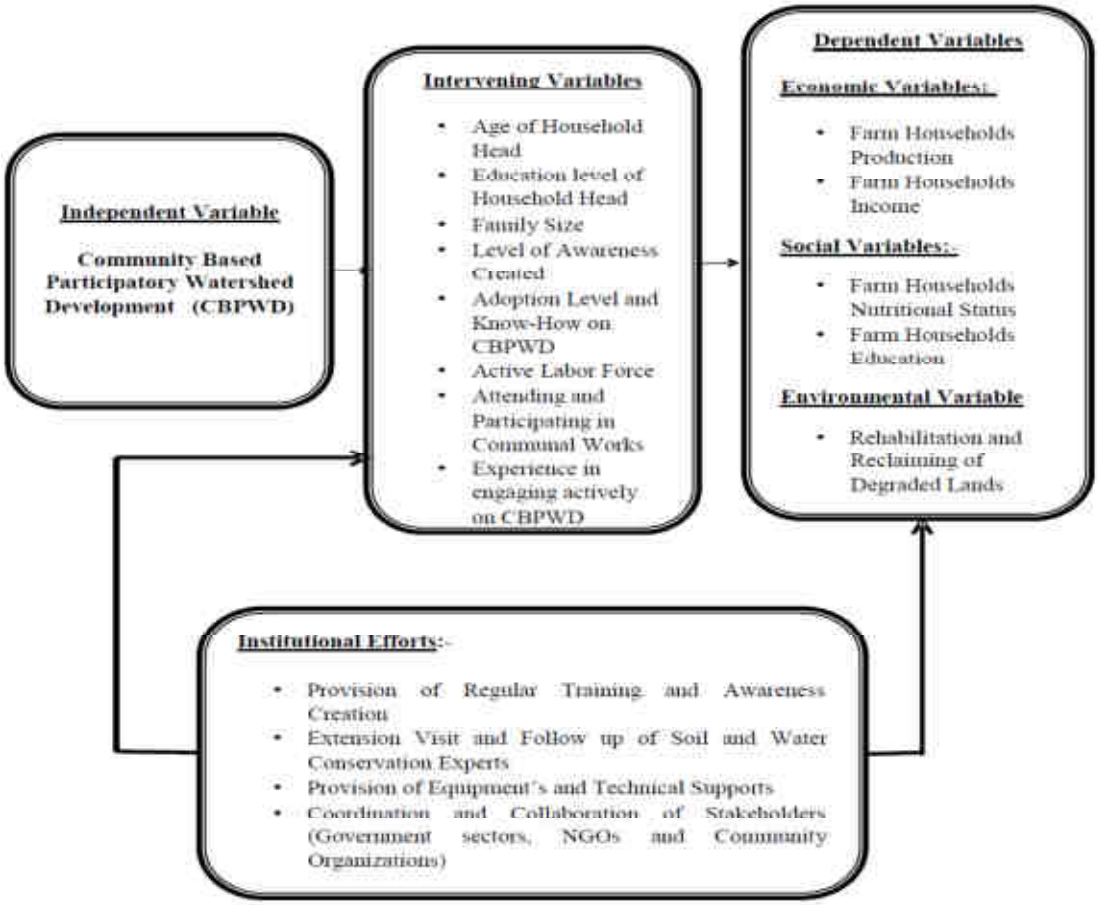
The work of Darghouth et al. (2008) pointed out the assessment of World Bank in Tunisia that, soil and water conservation measures increased infiltration rates. This resulted in higher crop and tree survival rates and higher adoption rate for perennial crops. Increased agricultural production raised on-farm employment opportunities. However, to what extent the contribution (impact) was inclusive to all beneficiary households was not confirmed.

According to Gebrehaweria (2012) the study conducted on six study sites in Ethiopia, two each in Tigray, Amhara and Oromia shows that whilst there was sometimes considerable variation across watersheds, the overall economic and social status of the communities in the study areas improved following watershed interventions. Land and crop productivity and additional area for cultivation increased over the years as a result of land rehabilitation activities, increased availability of water for supplementary or full scale irrigation and the introduction of new agronomic practices. Farmers have gained tangible economic benefits.

The study of Chifamba (2013) in Zimbabwe save catchment project by using descriptive statistics indicated that the benefits which accrue from watershed development are less than the costs they incur. The study noted that although integrated watershed management projects reviewed included poverty reduction among their objectives, there is little evidence of any ex ante analysis of poverty that would have helped to improve poor people's livelihood.

According to Yenealem et al. (2013) by using Propensity Score Matching (PSM) technique, the study made on the impact of integrated soil and water conservation program on crop production and income in West Harerghe zone empirically demonstrated that integrated soil and water land management program has a significant contribution in increasing crop productivity and hence, increase income to reduce food insecurity of smallholder farmers. These estimated performances of the program also show considerable variability by agro-ecological type of the sampled kebeles. Therefore, it can be concluded that in agriculture dependent country like Ethiopia, soil and water conservation is crucial in improving the livelihoods of the rural farm households. But how such programmes are participatory and the benefits are inclusive is under question. Participatory approaches and community watershed management plans have been widely used with varying success in reconciling the overlay of human activity on naturally defined watersheds.

1.7. CONCEPTUAL FRAMEWORK OF THE STUDY



Source: Researcher Own Construction (2015) based on Review of Literatures

1.8. RESEARCH METHEODOLOGY

The research is carried by self-administered questionnaires to collect the response. Two Kebeles one from midland and the other from lowland was selected by using purposive sampling where there is a community based participatory watershed program. Conduct systematic selection of the sample households by giving equal possibility for each Kebeles. The total households in the two sample Kebeles are 2060 and from the total households, 164 sample households were selected.

1.9. DATA ANALYSIS AND DISCUSSION

In conducting the study, 164 questionnaires were distributed out of which 160 were returned and answered.

Table 1: Training, Level of awareness and Participation of respondents

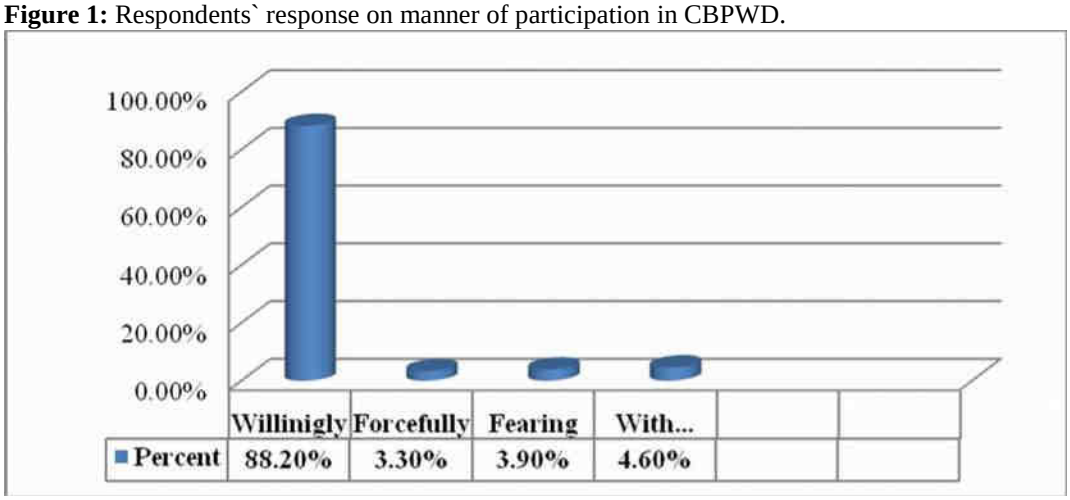
Characteristics	n	%
Training in CBPWD		
Yes	147	91.88
No	13	8.12
Total	**160**	**100**
Awareness created		
Yes	141	88.13
No	19	11.87
Total	**160**	**100**
Participation in CBPWD		
Yes	140	87.50
No	20	12.50
Total	**160**	**100**

Source: Researcher Own Computation Survey, 2015

The above table depicts that majority 147 (91.88%) of respondents have taken training regularly the remaining 13 (8.22%) of the respondents have not taken training services. In view of these findings, it's possible to conclude that almost above 90% of respondents were taken training in community based participatory watershed development regularly in the last five consecutive years. Therefore, making other things remain constant the training as institutional factor positively attributes to the contribution of the intervention.

The above table also shows that about 141(88.13%) out of the total respondents responded that they have clear understanding and knowledge on the strategy of community based participatory watershed development. The remaining 19 (11.87%) of the respondents responded that they face awareness and understanding gap and limitations on the strategy. Interviews with Institution of ARDoW confirms that though they have no clear understanding they are participating in communal conservation practices of community based participatory watershed development in their Kebeles. The above table also shows regular participants of respondents and those respondents who are not participating regularly in the communal watershed management activity. In these regard 140 (87.5 %) of respondents responded that they are actively and regularly participating in the Kebeles community based participatory watershed development activity. The remaining 20 (12.50%) of respondents responded that they are not regularly participating.

Figure 1: Respondents` response on manner of participation in CBPWD.



Source: Researcher Own Computation Survey, 2015

As per the Figure 4.1, the vast majority of the respondents that (88.2%) out of 140 respondents responded that they participated willingly in the community based participatory watershed development conservation activities. The remaining 5(3.3%), 6(3.9%) and 6(4.6%) of respondents stated that they were mobilized forcefully with coercion, fearing punishment, and with the expectation to gain something from the government respectively. This implies that there is still coercion, punishment and expectation of wages for the communal work in the area.

Table 2: Strategies used by district leaders for mobilizing the public to implement CBPWD

Characteristics	n	%
Strategies used by district leaders for mobilizing the public to implement CBPWD		
Education and Training	29	18.12
Setting Clear Vision and Communication	8	5
Exerting positive influence	3	1.87
Combination of the above three	118	73.75
Punishment	2	1.25
Total	**160**	**100**

Source: Researcher Own Computation Survey, 2015

Leaders of the District at different levels employ different strategies for mobilizing the public for implementing Community Based Participatory Watershed Development. As it was clearly specified, 29 (18.12%) of the respondents stated that the district leaders use education and training. 8(5%) responded

setting clear vision and communicating as a strategy. 3(1.87%) stated exerting positive influence as a strategy. 118(73.75%) responded combination of the above three as strategies and 2(1.25%) of the total respondents mentioned punishment as a strategy.

Table 3: Soil erosion before and after the intervention of CBPWD, improvement in production and effectiveness of the intervention in the last five consecutive years.

Characteristics	n	%
Soil erosion before the intervention of CBPWD		
Severe risk of soil erosion	128	80.67
Moderate risk of soil erosion	30	18.75
Minor risk of soil erosion	1	0.63
No risk of soil erosion	1	0.63
Total	**160**	**100**
Soil erosion after the intervention of CBPWD		
Increased	3	1.88
Remain the same	36	22.50
Decreased	121	75.63
Total	**160**	**100**
Do you observed improvement in production in the last five consecutive years due to CBPWD?		
Yes	115	71.88
No	45	28.12
Total	**160**	**100**
Effectiveness of CBPWD in retaining soil erosion as Compared with the traditional SWC methods		
Better effective	111	69.38
Remain the same	42	26.25
Less effective	7	4.38
Total	**160**	**100**

Source: Researcher Own Computation Survey, 2015

To sum up, the program brought significant change in soil erosion, production.

Moreover, Pearson Chi-square (χ^2) (2, N=160) = 50.3382 Pr = 0.000 statistically shows significant relationship between improvement in production and Effectiveness of CBPWD in retaining soil erosion as compared with the traditional SWC methods in the sampled kebeles.

Table 4: Respondents rational on production and productivity improvement

Characteristics	n	%
If Yes, How CBPWD improved your Production and Productivity?		
Soil erosion significantly decreased	51	44.35
Fertility of the soil increased	20	17.39
Forest coverage of the area increased	1	0.87
All of the above mentioned	43	37.39
Total	**115**	**100**

Source: Researcher Own Computation Survey, 2015

The above table clearly shows due to three factors improvement was achieved.

Table 5: Increment in land productivity, improvement in production, productivity level and fertility status in the last five consecutive years due to the intervention of CBPWD.

Characteristics	n	%
Have you observed increment in land productivity in the last five consecutive years due to the intervention of CBPWD?		
Yes	119	74.38
No	41	25.62
Total	**160**	**100**
Have you observed improvement in production in the last five consecutive years due to the intervention of CBPWD?		
Yes	115	71.88
No	45	28.12
Total	**160**	**100**
What do you say about general productivity in relation to the application of CBPWD in the last five consecutive years		
Increased	110	68.75
Remain the same	40	25
Decreased	10	6.25
Total	**160**	**100**
What do you say about soil fertility status of your land in terms of yield you got in the last five consecutive years due to the intervention of CBPWD?		
Very Fertile	46	28.75
Fertile	70	43.75
No Change	21	13.13
Infertile	23	14.38
Total	**160**	**100**

Source: Researcher Own Computation Survey, 2015 The above table clearly displays improvement in the level of land productivity of farm households due to the intervention of community based participatory watershed development. Additionally, Pearson Chi-square (χ^2) (1, N=160) = 49.5042 Pr = 0.000, shows statistically significant relationship between production and land productivity in the sampled households.

Table 5: Change in Average production of maize per hectare in Quintal and the level of the problem farm HHs are confront in the last five consecutive years due to the intervention of CBPWD.

Characteristics	n	%
Average production of maize per hectare (in Quintal)		
10-15	18	11.25
16-20	13	8.13
21-30	9	5.63
31-40	26	16.25
41-50	55	34.35
51 and above	39	24.37
Total	**160**	**100**
Due to CBPWD the level of the problem HH face		
High	13	8.13
Remain the same	41	25.63
Low	106	66.25
Total	**160**	**100**

Source: Researcher Own Computation Survey, 2015

Table 6: The availability of animal feed (fodder) and livestock production in relation to theintervention of CBPWD in the sampled kebeles

Characteristics	n	%
How do you see the availability of animal fed after the intervention of CBPWD?		
Increased	116	72.50
Remain the same	35	21.88
Decreased	9	5.63
Total	**160**	**100**
How do you see the livestock production in terms of both quality and quantity after the intervention of CBPWD?		
Increased	112	70
Remain the same	36	25.50
Decreased	12	7.2
Total	**160**	**100**

Source: Researcher Own Computation Survey, 2015

Moreover, Pearson Chi-square (χ^2) (4, N=160) = 183.6205 pr=0.00 shows statistically significant relationship between availability of animal feed and livestock production in the sampled kebeles.

Therefore, from all the above both qualitative and quantitative findings, it's possible to corroborate that the intervention of community based participatory watershed development have brought a significant contributions in production to the majority of farm households in the sampled kebeles of the district.

Table 7: The percentage change in income variables due to the intervention of CBPWD

Characteristics	n	%
Due to CBPWD what do you say income of your HHs in the last five consecutive years?		
Increasing	70	43.75
Remain the same	75	46.87
Decreasing	15	9.38
Total	**160**	**100**
Due to income change how do you see your HH Liv.St in the last five consecutive years?		
Increasing	67	41.87
Remain the same	77	48.13
Decreasing	16	10
Total	**160**	**100**
Due to CBPWD does your income source diversified in the last five consecutive years?		
Yes	70	43.75
No	90	56.25
Total	**160**	**100**

Source: Researcher Own Computation Survey, 2015

To conclude, the intervention of CBPWD brought slight improvement in income of farm households in the study area.

Table 8: HHs food consumption per day and availability of food after the intervention of CBPWD

Characteristics	n	%
How many times does your HHs feed per day after the intervention of CBPWD?		
One times a day	6	3.75
Two times a day	37	23.13
Three times a day	88	55
Four times a day	29	18.13
Total	**160**	**100**
How do you see the availability of food in your household after the intervention of CBPWD?		
Increased	112	70
Remain the same	33	20.63
Decreased	15	9.37
Total	**160**	**100**
If it was increased in the last five consecutive years How?		
Agricultural production improved	36	32.14
Soil erosion decreased	31	27.68
HHs purchasing power increased	2	1.79
All the above mentioned factors	43	38.39

Source: Researcher Own Computation Survey, 2015

From the above table, it's possible to conclude that the intervention of CBPWD brought significant improvement on nutritional status of farm households.

Table 9: HHs vulnerability to periodic shocks and the general nutritional status after theintervention of CBPWD

Characteristics	n	%
How do you see your household vulnerability to periodic shocks and food insecurity after the intervention of CBPWD?		
Increased	10	6.25
Remain the same	33	20.63
Decreased	117	73
Total	**160**	**100**
If it was decreased in the last five consecutive years how?		
HHs financial and physical ability increased	7	5.98
HHs food stock was increased	1	0.85
HHs production increased	70	59.83
All the above mentioned factors	39	33.33
Total	**160**	**100**
What do you say about general nutritional status of your HHs in terms of both quantity and quality after the intervention of CBPWD?		
Increased	105	65.62
Remain the same	44	27.5
Decreased	11	6.88
Total	**160**	**100**

Source: Researcher Own Computation Survey, 2015

Therefore, depending on the raw data collected through qualitatively and quantitatively, it's possible to verify that the intervention of community based participatory watershed development in the selected sample kebeles brought significant changes and improvements in the majority of farm households nutritional status in terms of the frequency of meal taken per day, availability of food in farm households, minimizing vulnerability and exposure of farm households to periodic shocks and household food utilization and consumption.

Table 10: Educational enrolment and effectiveness of farm HHs children's after the intervention of CBPWD

Characteristics	n	%
How do you evaluate educational enrolment of your children's after the intervention of CBPWD in the last five consecutive years?		
Increased	56	35
Remain the same	73	44.38
Decreased	31	20.63
Total	**160**	**100**
If it was increased what do you think the reason?		
Risks were reduced to administer our families	2	3.37
Income of the HHs increased that increased expenditure	7	12.50
HHs production of market oriented crops increased	7	12.50
All of the above mentioned factors	40	71.43
Total	**56**	**100**
How do you see the effectiveness of your children's after the intervention of CBPWD?		
Increased	50	31
Remain the same	75	47
Decreased	35	22
Total	**160**	**100**

Source: Researcher Own Computation Survey, 2015

From the above table, we can understand that the intervention of CBPWD brought minor change on education level of farm households.

Further , the qualitative data collected from various parties confirms Community based watershed development programs enhances strong environmental management practices including appropriate management of land, water and the entire ecosystem by improved environmental protection and soil and water conservation strategies and rehabilitating degraded lands.

1.10. CONCLUSION

This research was conducted in Demba Gofa Woreda of Gammo Gofa Zone with the prime intent of assessing the socio-economic contribution of CBPWD on rural farm households.

The findings of the study clearly shows through retaining soil erosion, floods and other natural disasters, CBPWD increases the fertility of the soil and improve production and productivity and nutritional status of farm households. However, when triangulating both response of the questionnaire, the focus group discussions and key informant interviews response about the change achieved on income of farm households and education of farm households children's, it was not satisfactory and significant on majority of farm households in the selected Kebeles that calls for rechecking and resetting on the implementation of the intervention and the need for broader application of small-scale irrigation for the reason that in most circumstances watershed development programs were followed by the development of small-scale irrigation to sustainably solve the socio-economic problems like income, education, health, employment and others of farm households.

1.11. RECOMMENDATIONS

In order to increase the contribution, effectiveness and sustainability of community based participatory watershed development on improving the socio-economic status of farm households in Demba Gofa District, the following recommendations is forwarded out of the empirical qualitative and quantitative findings:

- ✓ **Provision of regular training, visitation and extension service:** training to build the capacity of farm households and demonstration of the extension support plays great role in the attitudinal change and adoption and adaptation of communal conservation measures that improve the livelihoods and socio-economic situations of farm households.

  The finding of the research indicated that due to institutional failures almost 10% farm households in the selected kebeles were not taken training services on community based participatory watershed development in the last five consecutive years that created awareness gap on them and reduced the benefit gained from the intervention. Regarding regular visitation by experts of soil and water conservation the finding indicates that 36% respondents responded there is no regularities for visit of experts for extension and demonstration of communal conservation system and they were visited less than three times

per month. In view of the above facts in the selected sample kebeles regular training, visitation and extension service are critical factors in determining the implementation, success and contribution of community based participatory watershed development Thus, strengthening regular training, visitation and extension supporting is essential on improving contribution, effectiveness and sustainability of community based participatory watershed development on improving the socio-economic status of farm households.

- ✓ **Ensuring participation through willingly rather than employing forceful coercion and punishment:** As literatures indicate that one approach in creating community based participatory watershed development is through giving the main actors (implementers living in the community) an opportunity to think and plan their future. However, as the finding of the study shows leaders in the study area still employ forceful coercion, punishment and fining as a means for mobilizing and participating the farm households for implementing community based participatory watershed development activity plans despite the fact that the majority of the respondent groups indicated it through the local farmers` free willingness. So, local leaders are recommended to stick to creation of awareness about the importance and contribution of community based participatory watershed development strategies and comprehensive capacity building rather than following forceful coercion and punishment as a means for public mobilization and participation. Equal attention should be given for the implementation of community based participatory watershed development strategies among actors in different areas of government bodies and experts of soil and water conservation so as to bring holistic rural transformation in order to minimize the influence of negligence in practicing the intervention in one area over another. Because, the finding clearly shows areal variations on the benefits and contributions obtained from the intervention particularly those areas which were found in the peripheral parts of the selected sample kebeles were neglected to gain training, supervision and visitation supports due to these in majority of farm households the benefits obtained from the intervention was not significant and satisfactory. Therefore, equal treatment and handling system should be in place among neighboring kebeles so as to ensure mutual economic, social and environmental benefits after the intervention in their localities.
- ✓ **Developing and expanding small-scale irrigation:** Irrigation is the practice of applying water to the soil to supplement the natural rain water shortage and provide moisture for plant growth (Melaku, 2012). Based on the study conducted by Melaku Zullo (Melaku 2012) and Turkato Turto (Turkato 2013), on the impact of small-scale irrigation on food security and green environment development strategy respectively, both of them suggested that the development of small-scale irrigation on farm households following the application of watershed development will help farm households to grow commercial products which have high demand and price in the nearby towns like onion, tomato, cabbage, vegetables and fruits which increases the income and improves the livelihood of farm households. However, the finding in this study as shown in the analysis part clearly indicated that following the application of community based participatory watershed development; institutional failures to develop and expand small-scale irrigation broadly limited majority of farm households to cultivate and grow crops like maize and sorghum which have little commercial value and sold in the local market that further affected the income of farm households in the study area. In addition to these, various studies confirms that watershed development interventions and small-scale irrigation intervention should have to go side by side in order to boost agricultural production, to increase the income of farm households and to increases the cropping season. Therefore, development and expansion of small-scale irrigation broadly required in the study area for the future application.
- ✓ **Improving the marketing channel:** The intervention of community based participatory watershed development increases production, income and consumption expenditure of households. The contribution of community based participatory watershed development on these aspects is dependent also on the marketing of the products.

  However, the finding shows low market value in time of harvesting season doesn't encourage increasing the income of farm households that resulted from high agricultural production. Due to these about 53.13% of respondents indicated that their income show no change or even declining in the last five consecutive years. The problem will be serious when similar farmers harvest the same crop at the same time. The production of some crops in the area is easily perishable in nature and thus needs immediate market. Production of maize which was grown by the majority of farm households in the area is also highly susceptible to damage in

the storage due to weevil. Distance between village and town are proxy to market service thus, improving the infrastructure service is essential on improving the socio-economic condition of farm household. Obtaining reasonable market price is a reward for boosting production. Therefore, the agricultural production in the area need to be guided by reliable market in order to improve the income level of farm households and concerned bodies should give more emphasize and work on solving marketing problems of agricultural product by establishing, and strengthening cooperatives, cooperative unions, improving post-harvest technologies like providing storage facilities, pesticides for participants in community based participatory watershed development are essential for better contribution of the intervention on improving the livelihoods of farm households in the District as well as in the nation too

1.12. Future Areas of Study and Long-Term Policy Concerns

The study has revealed that due to the intervention of community based participatory watershed development, the results obtained in changing the income and education of farm households in the majority of the farm households was of little importance or influence and insignificant. This leaves a room for further study to observe and find out (1) what factors are determining the contribution of community based participatory watershed development on income and education of farm households. (2) what are the major challenges and constraints in the implementation of community based participatory watershed development and (3) the impact of community based participatory watershed development in creating employment opportunity for youths of rural farm households in the study District by extending the sample size to a larger community group and employing additional research tools.

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Determinants of Saving Behavior of Households in Ethiopia: The Case Benishangul Gumuz Regional State

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Abstract
This study examined the factors that affect saving behavior of rural households in Benishangul Gumuz Regional Sate. It employed descriptive statistics and double hurdle model to analyze the data collected from a sample of 325 rural households in the study area. The descriptive result showed that about 83.4 percent of sampled households involved in saving of which 68 percent use formal financial institutions and the remaining opt for alternative saving options. The result of double hurdle model provided empirical evidence on a positive significant effect of age, income and level of education of the head on a decision of households to save; whereas household size, distance to formal financial institutions and employment status have negative influences on household's decision to save. With regards to the extent of saving; income of household head, level of education, landholding size and involvement in petty trade has a positive significant impact on amount of saving; whereas household size, employment status and distance to formal financial institutions significantly reduced the amount of saving by households. The findings implied the need for designing strategies that could improve the saving behavior, mobilization and diversification of saving by rural households. Moreover, the need for government involvement in building the capacity of rural households in terms of education and information systems with regards to savings as well as encouraging financial institutions to implement door-to-door service provisions so as to enhance saving behavior of households are desirable.
Keywords: Household, Savings, Double hurdle, Assosa

1. Introduction

Saving refers to the fraction of income not instantly consumed but kept for future investment, consumption or for unforeseen contingencies in the future. It is important in improving the well-being of individuals and serve as a security at the times of shocks for the households. Saving is being seen as a method of diminishing the risk resulting from the inability to predict the future and thus acting as precaution. According to Popovici (2012) unexpected events in the life-cycle of individuals make saving an important element in fulfilling the financial gap. Household savings could be intended to address household expenditure but rural households are constrained due to seasonality of cash flows, work culture and income; as a result of which saving is seasonal and irregular, too. Saving mobilization is also critical for individual welfare in that, at individual level it helps households' smoothen their consumption and finance productive investments in human and business capital Karlan *et al.* (2013).

At macro level, saving in the form of capital formation is considered as a crucial weapon for economic growth as it increases capital stock thereby improving the ability of an economy to produce future higher incomes (Donkor and Duah, 2013). Saving is strongly correlated with economic growth as suggested by neoclassical growth models, which stressed the importance of saving as an essential factor to economic growth of a country. Saving in the form of capital formation is important for economic growth, as countries that were able to accumulate high level of saving and thus high investments were seen to achieve faster rate of economic growths (Todaro and Smith, 2012). Investment is important for rapid and sustainable economic growth which in turn is determined by the amount of domestic (national) saving of a country (Halefom, 2015).

We know that, as in the case of already advanced countries, achieving and sustaining the high growth rates set out in the growth and transformation plan of Ethiopia requires substantial capital formation. With binding external financial constraints critical investments are needed to be financed from domestic sources. Although Ethiopia's record in mobilizing resources as compared unfavorably to its Asian comparators are relatively low (IMF, 2014), the figures by Minster of Finance and Economic Development of Ethiopia (2014) revealed an increasing domestic saving rate from 5.2 percent in 2009/10 to 17.7 percent in 2012/13 and the share of gross domestic investment increased from 24.7 percent to 33 percent in the same year.

Analysis of behavior of household saving and its parameters at micro level is crucial in that without such microeconomic data, it is very difficult to interpret aggregate savings trends at national level (Orazio and Miguel, 2000). The national saving rate statistics that forms important part of capital accumulation for economic growth are the aggregated result of household saving. Thus, it is important to study the saving mobilization and behavior of households to interpret aggregate results. The household saving situation in general and saving mobilization and behavior of households in particular in the study area of Benishangul Gumuz Regional state is