Improving technical support to enhance productivity of rural community in Boloso Sore and Boloso Bombe Woredas, Wolaita Zone, SNNPR, Ethiopia

Abstract

The study aimed at how to improve the technical support to enhance productivity of rural community in Boloso Sore and Boloso Bombe Woredas/Districts of Ethiopia. It employed both quantitative and qualitative study design. The study used questionnaire, KII and FGD guides to gather primary data and the secondary data were collected via desk review. The results of this study affirmed that serious efforts have been made and large amount of resources have been invested by Wonta Rural Development Association to improve the livelihood situation of the rural household. The viability and scope of supports made by the Wonta Rural Development Association to improve household productivity and intend to create rural employment worked out good in the areas of dairy goat and community based organizations like self help groups for savings. The productivity of horticulture, poultry and other activities were found inferior during the study period. Engagement of key stakeholders, continuous monitoring and evaluation schemes, feedback from end users among others to enhance technical support were slim. The study has suggested a conceptual model to improve rural household production and productivity to enhance household food security, to promote rural job opportunity and to introduce and apply value chain in rural context.

Key Words: Technical support, Productivity, Conceptual model

INTRODUCTION

Given that improving the efficiency of agricultural production is a key to pro-poor economic growth, improvements in agricultural technology are the principal means of doing this. Agricultural technology can affect smallholder income, labour opportunities for the poor, food prices, environmental sustainability, and linkages with the rest of the rural economy (FAO, 2000):

- Agricultural technology has been a primary factor contributing to increases in farm productivity in developing countries over the past half-century. Although there is still

widespread food insecurity, the situation without current technology development would have been unimaginable.

- New technology can provide additional rural employment, but there are always countervailing pressures to reduce labor input and lower its costs.
- Food prices are demonstrably lower because of technology, but the distribution of benefits between consumers and producers depends on the nature of the local economy and trade patterns.

Agriculture is the dominant economic activity in many sub-Saharan countries. It is accounting for more than 60% of the total labor force. The livelihoods for 75% of the poor living in sub-Saharan countries depend on agriculture. As such, it is widely believed that improving productivity, profitability and sustainability of smallholder agriculture in sub-Saharan Africa is key to promoting inclusive economic growth and the main pathway to reducing poverty and inequality (Mulubrhan and Bekele, 2017).

To improve the effectiveness of agriculture for development, upgrading the skill levels of rural people is of paramount importance. Low educational attainment coupled with scant opportunities to acquire job-specific skills and on-the job training and experience, constrain job opportunities for many rural youth and adults seeking productive work in agriculture. Skill-focused programmes, including Training for Rural Economic Empowerment (TREE), target agricultural communities. They also target bundle rural extension systems into broader knowledge and skills development packages, which interact with technical services, the private sector, and specific supply chains to support high-potential but small-scale agricultural production. Community-based entrepreneurship training initiatives open up means of linking training to local social networks. These initiatives have demonstrated how the limited opportunities for skill development in poor rural areas can be expanded and then linked to employment. This is achieved by identifying local potential economic opportunities and skills constraints, designing and delivering community-based training for the community (ILO, 2009).

Community-Based Training for Rural Economic Empowerment (TREE) promotes income generation and local development, emphasizing the role of skills and knowledge for creating new economic and employment opportunities for the poor, underemployed, unemployed, and the otherwise disadvantaged, towards sustained economic activities. Many of these target

agricultural production and services, working to build capacities and create value-chain networks (ILO, 2009).

Countries that have developed successfully have shifted resources from agriculture to manufacturing. The Green Revolution benefited most regions of the world, particularly East Asia and the Pacific, where cereal yields quadrupled between 1960 and 1990. But Africa missed out on this and the continued lack of progress in agricultural productivity has been blamed for holding back the region's overall economic growth (World Bank, 2015).

A better understanding of the benefits of technical support on the lives and livelihoods of the poor engaged in agriculture and allied activities could help scholars to find out ways to enhance the productivity. Increasing agricultural productivity must be central to the growth and poverty reduction agendas in areas like Boloso Sore and Boloso Bombe Woredas. It is also critical to food security and environmental sustainability objectives. This requires provisions of technical support to enhance agricultural productivity, value and supply chain management, skills required for production and marketing. The main objective of the study was focused on how to improve the technical support to enhance productivity of rural community. The specific objectives aimed:

- To assess the available needed skills and resources that could enable the resource poor farmers to respond better to household needs
- To investigate the viability and scope of various supports rendered by Wonta Rural Development Association to enhance house hold food security
- To assess the productivity of agricultural enterprises and petty trades to absorb rural labor force and
- To suggest technical support approach to enhance productivity

Materials and methods

Description of the study area

This study was conducted in Boloso Bombe and Boloso Sore Woredas from September 2019 till December 2019. Boloso sore worda is located at 37047, E longitude with 7069, N latitude in Wolayita Zone, SNNPRS. The soil types of this particular site are sandy clay loam having a pH of 4.3. The altitude is about 1800 meters above sea level with an average rain fall of about

1538.44 mm. The mean minimum and maximum temperature of the area is about 14.48°C, and 28.5°C, respectively. The total area of the Woreda 33600 hectares of which 26193.751 hectares are cultivable, 1975.57 covered by grazing lands, 1644.41 hectares forest and bush land, 159.75 hectares uncultivable land, 252.26 hectares, currently irrigated land, swamp and degraded 1869.13 hectares and 1505.129 hectares other. The total livestock population of the area is cattle 59011 sheep 15605, goat 8032, equine 318, and poultry 67809 (Boloso Sore Woreda Agriculture office, 2001 unpublished). The human population of the district is 168314 Based on the 2007 Census conducted by the CSA, this Woreda has a total population of 87,956, of whom 42,848 are men and 45,108 women; 1,057 or 1.2% of its population are urban dwellers. Agriculture is the main stay for the rural community. On the other hand, Boloso Bombe Woreda consists of a total population of about 117,330(57,131 male and 60,199 female). The 2007 census also shows the population constitutes about 14,039 and 3,620 male and female household head respectively. The agro ecology of the Woreda is mainly dominated by 'kola'(75%) followed by 'woyna-dega'(20%) and dega (5%) with the altitude ranging from 1375m to 2277m above sea level. The total area of the Woreda is about 21,859 ha out of which 13,592 ha (62%) is cultivable land. About1560 ha is grazing land, and the area of 3207 ha is covered by tree. The remaining 3500 ha land is found to be uncultivable. Agriculture especially crop production is the dominant form of economic activity where ginger production takes a lion share followed by cereals like maize, teff, etc. and root crops such as enset, sweet-potato, potato, taro, yam etc.. (CSA, 2007).

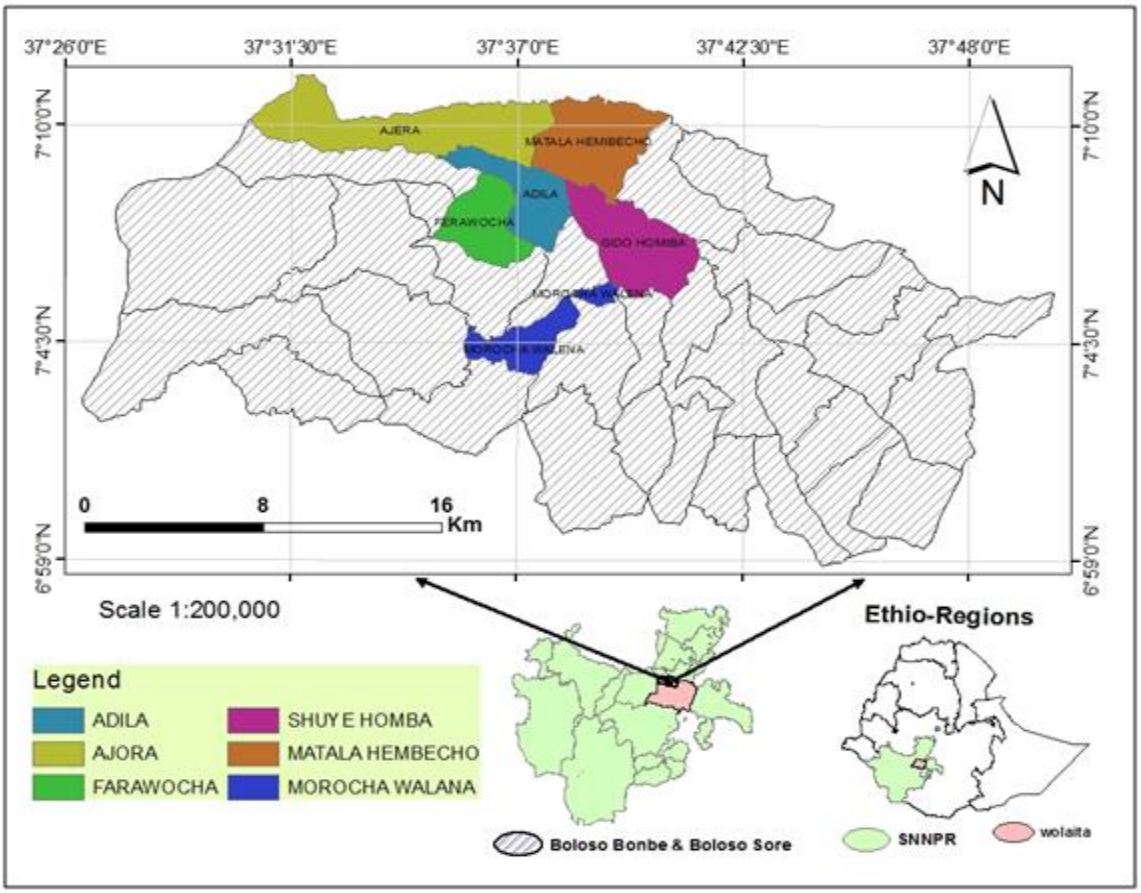

Fig 1: Arial Map of the study Woredas

Study design

This research was employed both quantitative and qualitative research design. The Data from quantitative research—such as profitability, demographics, and socioeconomics—provided important information for productivity decisions. The qualitative design suited best with the focus is to develop an understanding of a phenomenon or situation in order to be able to develop the conceptual model.

Data collection

The information for this study was collected using a review of existing literature, government policy documents, and FAO guidelines. Key informant interviews and focused group discussions were carried on with experts, farmers, and researchers to explore their own experiences and as informants providing a broader perspective and observations related to technical support to improve the productivity of rural youths, women and male farmers.

Key Informant Interview (KII) and Survey

Key Informant Interview involved interviewing people who have particularly informed perspectives on an aspect of the subject being studied. A total of 15 people were selected purposively for their first-hand knowledge about a topic of interest. Accordingly, development agents, experts, researchers and farmers were deeply interviewed to gather qualitative information. A total of 40 households were also selected randomly and surveyed to explore relevant information in the areas of profitability/productivity, demographics, and socioeconomics of the households being studied.

Focus Group Discussion (FGD)

A total of four FGDs were employed for this study.

Data analysis

Qualitative data analysis involved the identification, examination, and interpretation of patterns and themes in textual data and determined how these patterns and themes help answer the research questions at hand. According to Joy Frechtlin and Laure Sharp, (1997), qualitative analysis is not guided by universal rules; is a very fluid process that is highly dependent on the evaluator and the context of the study; and likely to change and adapt as the study evolves and the data emerges. Therefore, the qualitative information was be edited, coded and categorized in to groups based on their similarities and differences and then connections were made among the information. The data then was compiled and organized. Finally, the grouped information was analyzed thematically. The quantitative data were computed descriptively.

RESULT AND DISCUSSION

Socioeconomic Characteristic of the Households

Table 1 Socioeconomic Characteristic of the Households

Factors	Minimum	Maximum	Sum	Mean	Std. Deviation
Age(Years)	19	45	1170	29.25	2.23
Education(years of formal education)	0	10	87	2.2	0.5
Family size(number)	2	10	264	7	1.8
Land size(hectare)	0.125	0.5	9.0	0.2	0.14
Livestock(TLU)	0.013	1.143	23.43	0.6	0.21

Annual income(birr)	781	5678	78,303	1958	57.1
N=40					

As can be seen in (Table 1), the average age of the respondents was 29.5 years with minimum and maximum to be 19 years and 45 years respectively. As far as the education status of the respondents were concerned, the average years of formal education were found to be 2.2 with minimum and maximum of 0 and 10 years of schooling respectively. This indicated that the respondents, in average, did not complete primary education. More specifically, there were people who did not attend any formal education in the study area. The commitment for technology up take and application of full agricultural packages usually aligns with the level of education. Thus, the low education level of the study participants might have contributed a lot to poor productivity of households in the study area. Furthermore, the average family size of the sampled respondents was counted to be 7 with minimum and maximum of 2 and 10 respectively. This has shown that the large family size might have effect on intergenerational sharing of cultivable land in small pieces. This caused to harvest small amount of yield from their plot of land.

The survey (Table 1) has also revealed that average land size of sample respondents found to be 0.2 hectare with minimum and maximum of 0.125 and 0.5 respectively. This indicated that the areas were also characterized by very small land holding with very large family size. Moreover, the average number of livestock in Tropical Livestock Unit (TLU) was found to be 0.6 with minimum and maximum of 0.013 and 1.143 respectively. This has asserted that the households in the study area were extremely recourse poor as some households responded that they owned only a single chicken. In addition, the average annual income of sample respondents was computed as summation of all earnings (e.g. sale of crop, livestock, livestock products, earning via petty trades, borrowings, remittances, etc). The average income computed during the study period was 1,958 Ethiopian birr per annum where the minimum and maximum earnings were 781 and 5,678 respectively. In other words, they could not earn not more than birr 5 per day if computed at regular basis. Further, there were households who could earn the annual income of 781 which indicated they earn not more than birr 2 per day if computed at regular basis. According to the National Plan Commission of Ethiopia (2017), the absolute poverty line was determined at per-capita income of birr 7,184 per year per adult person. Thus, the evidence has

shown that households in the study area were extremely poor which clearly indicated that their farm out puts were insufficient to meet their household needs.

Available needed skills and resources

Ethiopia is the land of promise with great potential and a comparative advantage in agriculture. The country is endowed with large and diverse plant and animal genetic resources. It has untapped irrigation potential. The country has diverse agro-ecologies that are suitable for the production of wide varieties of crops and for keeping different species of animals. And more importantly, Ethiopia has a large pool of human resource with indigenous knowledge, which is vital to achieving sustainable agricultural development (Awulachew , 2010).

Respondents in the current study have indicated that many of them are poor and food insecure and were not producing crops sufficient for them. They cultivated their small sized land and produce food that could not fed them throughout the year. In addition to farming, they have committed multiple economic activities, often in the informal economy, to contribute towards their small incomes. These small farms depended predominantly on family labor. They have been engaged in scavenging type poultry production and very small sized ruminants' husbandry. In a similar fascine, studies indicated that in China, nearly 98 percent of farmers cultivated farms smaller than 2 hectares –the country alone accounts for almost half the world's small farms. The skills and the resources available for Chinese were land, small capital and family labor with the indigenous knowledge. The government of China then supported the farmers with technical skills to improve farm productivity. In India, about 80 percent of farmers are smallholders. In Ethiopia and Egypt, farms smaller than 2 hectares constitute nearly 90 percent of the total number of farms. In Mexico, 50 percent of the farmers are small; in Brazil smallholders make up for 20 percent of the total number of farmers (Nagayets, O., 2005). The Asian countries and the Latins adopted green revolution to transform the agriculture sector.

If agricultural intensification has been practiced similar to green revolution in the study area, there is a possibility to enhance the productivity of agriculture with the skill and the land resources that the farmers have at hand. This may contribute to absorb the labor force in the rural

part and reduce uncontrolled urban to rural and abroad migration of non skilled people who have been pushed because of food insecurity in the study area.

Viability and scope of supports rendered

The study has shown that dairy goat farming and women self help groups were viable and still potential interventions to fulfill the food security need of rural household as well as dietary diversity of children. Attempts in irrigation to enhance household crop production and productivity was operating and at its onset stage. The main problem of pest and disease attacks in ginger, enset, poultry, and tomato made these interventions impotent. In kebeles like Ajora, the yield per plant and plot of land was very minimal and it was of subsistence type that did not empower farmers to build household asset, absorb more labor force and even to satisfy the nutritional demand.

The study has identified that the interventions were suffering from poor technical support such as irregular extension support, no supply of full packages, almost improper stakeholder identification and mapping prior to intervention. The horticulture sector associated with tomato was promising to satisfy household food security, nutritional as well as financial need of the farmers. However, the tomato farming was suffering from poor extension service to minimize pest and disease attack, post harvest loss and market problem. The study clearly indicated that proper stockholders mapping prior to any intervention is critical issue for the success.

Productivity of agricultural enterprises and petty trades

Table 2 productivity and profitability of agricultural enterprises and petty trade

Factors	Minimum	Maximum	Sum	Mean	Std. Deviation
Productivity of Agricultural enterprises (quintal/hectare)					
vegetables	0.12	3	44.6	1.12	0.62
cereals	0.5	4.3	56.48	1.41	0.86
Root crops	0.6	5.8	62.4	1.68	0.69
Profitability of petty trade					
Profit per market(birr)	5	62	783	19.50	4.50
N=40					

As shown in (Table 2), the average productivities of agricultural enterprises like vegetables, cereals, and root crops were computed as the ratio of total product of each commodity measured

in quintal to the total area of land owned by the households. Thus, it was found to be 1.12 quintal per hectare, 1.41 quintal per hectare and 1.68 quintal per hectare respectively. The minimum yields for vegetables, cereals, and root crops were found to be 0.12, 0.5, and 0.6 quintal per hectare respectively. The maximum yields for the same crops were 3, 4.3, and 5.8 quintal per hectare. This has shown that agricultural enterprises were extremely unproductive which might be due to poor technical support among others.

As far as the petty trade (e.g. fruit business, grain retailing, etc) was concerned, it was computed as summation of the net earnings obtained from markets per day. Thus, the average profitability per market was found to be birr 19.5 with minimum and maximum of birr 5 and 62 respectively. This implied that there exist a hopeful opportunity for these activities given that effective technical support were provided.

Suggested technical support approach to enhance productivity

Improving agricultural productivity, while conserving and enhancing natural resources, is an essential requirement for farmers to increase global food supplies on a sustainable basis. The role of smallholder farmers and their families in increasing agricultural productivity growth sustainably is crucial. Half a billion small family farms produce most of the food consumed in developing countries. This accounts over 80% of the land in Asia and Africa but their productivity is generally lagging. The success of developing countries in increasing agricultural productivity will have global implications in strengthening the resilience of food markets, enhancing food security, improving wellbeing and promoting sustainability (Larson et al., 2013; Meyer, 2015).

A study made in India using a time series data (1969/70 to 2005/06) has shown that labor, capital, and land are the sources of agricultural productivity growth with output elasticity of 1.96,1.06 and 0.15, respectively (Tripathi & Prasad, 2008). Family size, the income of the household, level of education of the head, access to credit facilities are the factors influencing agricultural productivity in rural communities of Pakistan (Rahman, Hussain, &Taqi, 2014).

An impact evaluation study made in Malawi (2005/06 to 2008/09) confirmed that participation of households in the fertilizer and seed subsidy program supports households to raise maize production and productivity (Dorward & Chirwa, 2011). Similar findings have been found from

a panel data analysis from Kenya. From the year 1997–2007, the productivity growth in maize is determined by an increase in fertilizer use, changes in the adoption of high-yielding seed varieties, and an increase in the fertilizer distribution outlets (Kibaara et al., 2009). Supporting this finding is also found in a study made in Southern Ethiopia. Labor, fertilizer use, capital, technical support and oxen power are the significant variables affecting the productivity of maize by farm households (Geta et al., 2013). Findings from Benin focusing on the productivity of maize revealed that access to inputs, capital, and the poor institutional arrangements in which farmers operate were limiting the productivity of maize (Amegnaglo, 2018).

Microfinance services are an anti-poverty program, a source of gender empowerment and an overall driving force for economic development. Microfinance enables rural households to solve their financial problems during the preparation of their farm activities. To this end, microfinance impacts positively agricultural production and productivity in the rural community. Research work from Ghana supports such notable and positive relationship between microfinance and crop production; an increase in microcredit provision to the farmers improves the crop production of the farmers by more than 33.3 Kgs (Nuhu et al., 2014). While total livestock unit and farm size of the rural households have an adverse effect in explaining the variation in cassava productivity, access to credit enhances the productivity among the credit beneficiary households in Nigeria (Awotide et al., 2015).

Governments, international development agencies, and stakeholders also introduced farmer field schools in rural communities to train the farmers on the adoption of technologies and other development related techniques. A study made in eastern Africa, mainly in Kenya, Tanzania, and Uganda, has witnessed the positive impact of such schools on agricultural productivity and other outcomes. Participating in the farmer field school improves the crop production of the study countries as a pool by 61 percent, and increases the crop production in Kenya by 80 percent (Davis et al., 2010).

The productivity of farms can be improved through economies of scale and the adoption of more technically-efficient production systems. However, long-run productivity growth for the sector as a whole requires continuous technological progress, as well as social innovations and new business models. For agriculture to respond to future challenges, innovation will not only need to

improve the efficiency with which inputs are turned into outputs, but also conserve scarce natural resources and reduce waste (OECD, 2011).

To enhance agricultural productivity and improve the livelihood of the small landholder rural people, the government has trained extension workers and allocated them to villages, introducing different agricultural packages, expanding credits services, and providing selected agricultural inputs (CSA, 2013). Even though the government has designed and implemented alternative policy options, still the incidence of poverty and food insecurity is very high, and the country depends on food aid. Agricultural productivity is very low and cannot support to cover the food demand even by the farming communities themselves. Accordingly, more than 10 million people were facing a food shortage, hunger and malnutrition every year and the numbers are rising greatly if there is weather change like shortage of rainfall, "El-Nino" and others (Ethiopian Communication Minister [ECM], 2015).

Due to its importance, the government of Ethiopia gives high priority to the agriculture sector by setting a strategy of agricultural development led industrialization (ADLI). The main goal of the agricultural policy is not only achieving the sustainable increase in agricultural production and productivity of small holder farmers but also accelerate agricultural commercialization and agro industrial development in the country (PIF, 2010-2020). Agricultural productivity can be increased by using two ways. The first method is through improvement in technology given some level of input and the other option of improving productivity is to enhance the output per household labor ratio of rural household farmers, given fixed level of inputs and technology.

Economies characterized by large rural population and slow industrialization will need to focus on creating rural employment, although economic diversification and management of urban growth remain critical objective. The agricultural and Non Farm Income in rural set up provide good support to the Ethiopian economy and remaining as the priority for the government and international donor agencies. The local development actors also focus on technical support for the agriculture and nonfarm sectors as a tool for achieving food security. Thus, it is legitimate to suggest the conceptual model how these sectors improve household productivity to escape abject rural poverty. The current study has indicated that the stakeholders' engagement in various intervention programs was weak. Full packages with efficient technical support from the development agents were missing. The monitoring and evaluation scheme and

feedback about the intervention were not sufficiently implemented. The only monitoring approach was the evaluation report obtained from the zonal department for finance and economic cooperation. We, the team of researchers therefore suggested to use the following conceptual model for the improvement of the productivity in all its spheres of rural households

Suggested conceptual model

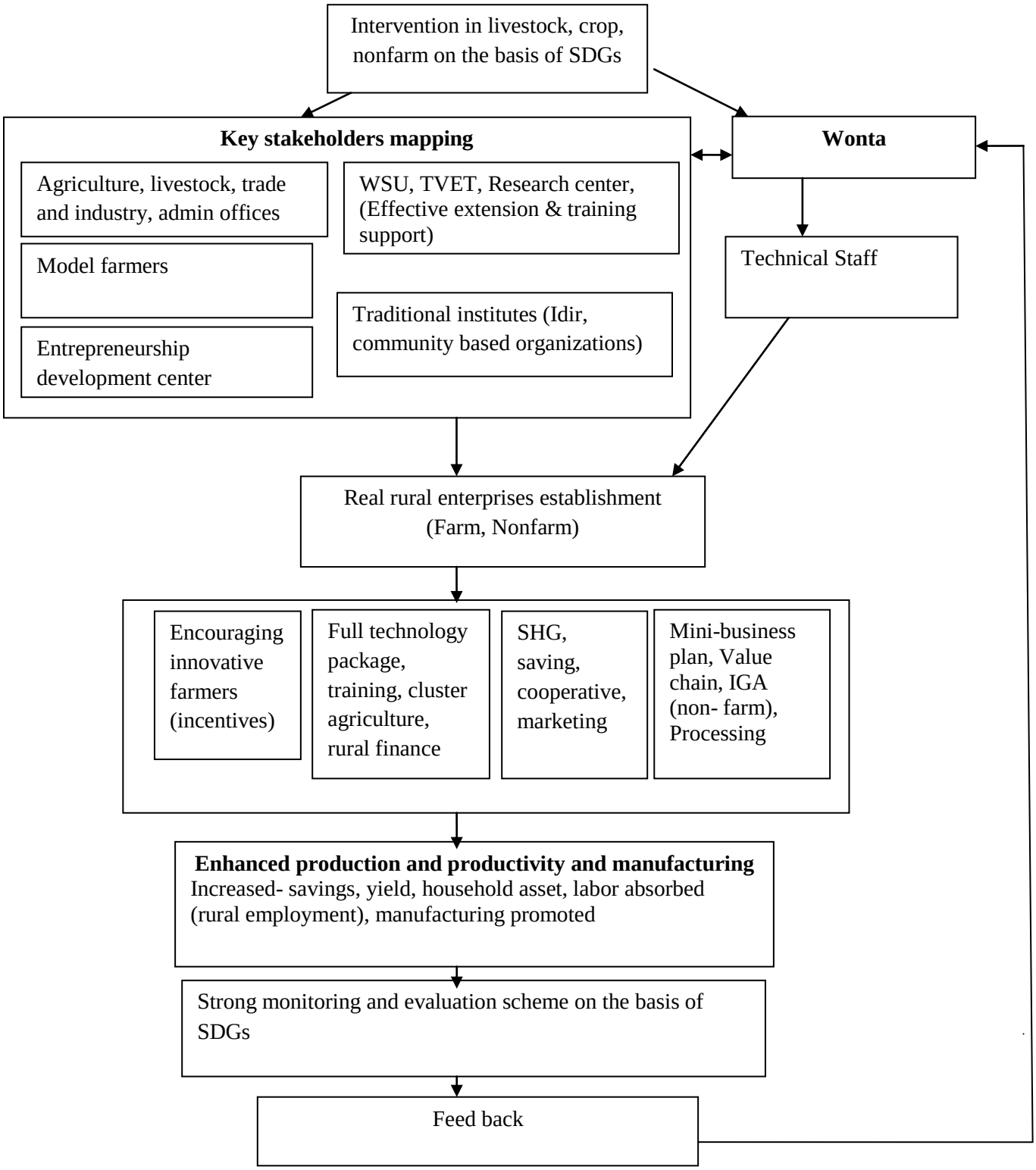

Fig 2: Schematic representation of the model

Conclusion and recommendation

The empirical data obtained from the field using the survey, KII and FGD guides, data from the secondary sources through desk review affirmed that serious efforts have been made and large amount of resources have been invested by Wonta Rural Development Association to improve the livelihood situation of the rural household in the intervention areas. The viability and scope of interventions made by the Wonta Rural Development Association to improve household productivity and intend to create rural employment worked out good in the areas of dairy goat and community based organizations like self help groups for savings seemed good but horticulture, poultry and other activities were found inferior during the study period. The Green revolution has indeed witnessed that proper application of agricultural packages including the technical support had paramount importance to boost productivity. Stakeholders' identification and engagement is one of the key issues for success of intervention projects. Wonta Rural Development Association has not committed to identify and map key collaborators prior to implementing projects in the intervention areas.

- Enhancing agricultural knowledge-base and capacity to improve productivity is crucial to achieve remunerative and sustainable smallholder agriculture. For such knowledge and capacity development to be relevant to actors such as Wonta, it is important to involve and aware key stakeholders such as universities, research centers and TVETs about the development strategies and priorities of Wonta. Thus, the initiative to create functional multi-stakeholder platform, at zonal levels, needs to be considered.
- The implication of this study was that the productivity of the farmers can be increased through better allocation of the available resources especially land, drought power, credit for inputs, technical support, labor and fertilizer. Thus, concerned bodies in the development intervention activities working with the view to boost productivity of the farmers should allocate the potential resources for rural communities.
- We recommend the implementation of the proposed conceptual model during development intervention programs

Acknowledgements

The authors would like to express their heartfelt appreciation for the Wonta Rural Development Association for the financial support provided to carry out this research. It is fare to acknowledge

the genuine contribution of the study participants and the field staffs of the above organization during the entire course of the research work.

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