

Contribution of Donor Funded Agricultural Projects to Livelihood Capitals of Beneficiaries

Allan Echabod Kaliwo

Chief Agricultural Extension Officer, Ministry of Agriculture and Ph.D Candidate,
Mzuzu University, Malawi.

Corresponding author's e-mail: akaliwo@gmail.com

ABSTRACT

The study aimed at determining the contribution of the Agricultural Sector Wide Approach Support Project (ASWAp-SP) a World Bank funded project in Malawi to the five livelihood assets of human, social, natural, physical and economic capitals of the beneficiaries: case of Zomba district. There was literature gap on the aggregated contributions made by donor funded agricultural projects to the five livelihood assets. Previous studies mainly focused on sustainability of such projects with little focus on their contribution to the five capitals of the beneficiaries in Malawi. Data were collected by interviewing 65 randomly selected targeted beneficiaries and 65 randomly selected non targeted beneficiaries using a structured household survey questionnaire and semi structured focus group and key informant interviews from May to June 2023. Data were analyzed by running descriptive statistics: i.e., frequencies, percentages, Chi-Square tests. Findings showed that ASWAp-SP made significant improvements to all the five livelihood capitals $p < .05$ by providing trainings, messages, radio programmes, inputs like maize, legume, agroforestry seed and fertilisers. ASWAp-SP increased women's ability to decide to participate in farmer groups. Women who were in the targeted households took agriculture as their main source of income more than women from non-targeted beneficiary households ($p < .05$). The project also made improvements to roads. The study concluded that ASWAp-SP changed the status of production for the targeted households more than the non-targeted ones since results showed that there were statistically significant differences $p < 0.05$ ($p = 0.015$) in the status of production between the targeted beneficiaries and the non-targeted ones.

Key words: ASWAp-SP, livelihoods, contribution, capitals, beneficiaries

INTRODUCTION

Despite the implementation of various donor funded agricultural projects and programmes targeting smallholder farmers in Malawi, agriculture in Malawi is still characterized by low and stagnant yields (MGDS, 2016, Malawi Vision 2063). In addition, the sector is characterized by overdependence on rain fed farming, which increases vulnerability to weather related shocks. There are also low levels of irrigation development and low uptake of improved farm inputs. Consequently, Malawi continues to suffer from chronic food shortages, low income, unsustainable livelihood, lack of food purchasing power and general poverty (NSO -IHS5, 2020). Harvested farm

produce does not last for the whole season neither is there surplus for sale. The Integrated Household Survey number 5 conducted by the National Statistical Office (NSO) over a period April 2019 to March 2020 showed that percentage of households having inadequate food per year increased from 38.3 per cent to 63.5 per cent from 2011 to 2020 likewise inadequate housing from 40.5 per cent to 52.1 per cent, high food secure households decreased from 57.6 per cent to 23.8 per cent while very low food secure households increased from 32.5 per cent to 62.9 per cent over the same period despite registering a huge increase of households practicing intercropping from 30.8 per cent to 83.4 per cent as depicted in the table below:

Table 1
Households reporting inadequate consumption of food and housing

Food, housing and intercropping	IHS3	IHS4	IHS5
Inadequate Food	38.3	63.8	63.5
Inadequate Housing	40.5	55.6	52.1
Intercropping	30.8	53.4	83.4
Food Security Status			
High food Secure	57.6	24.0	23.8
Marginal Food Secure	2.1	2.6	3.4
Low Food Secure	7.9	12.0	9.9
Very low Food Secure	32.5	61.4	62.9

Source: Malawi National Statistical Office, IHS5 2019-2020

This situation is contrary to the expectation that every donor has on any specific program or project's intervention. The expectation is that any intervention should produce sustainable benefits and impacts on the population. Given that there are many poverty alleviation projects in Malawi, but that poverty persists, it seems that these projects are not having a long-term effect. Thus, it is important to examine whether or not the development initiatives begun with these projects are benefiting the intended/targeted beneficiaries.

Literature reveals that efforts of donor organizations to empower rural communities through poverty alleviation projects are largely proving to be unfruitful. Some projects are often left uncompleted and thus cannot continue once they are left in the hands of the community, and thus people's livelihoods are showing little or no improvement despite the efforts put in place (Tanga et al., 2014). There also seems to be a missing link between the concept of “community empowerment” and the formulation and implementation of these projects, since the projects would sometimes show signs of lacking a sustainable nature, which thereby incapacitate the communities in their fight against poverty. This has led to poverty, starvation, and the continuation of high unemployment levels, which go unabated and send people crossing over to South Africa for better fortunes (Hofisi and Chizimba (2013). This study by Hofisi and Chizimba just looked at the sustainability of donor-funded projects in Malawi in general but did not analyse benefits accrued in donor funded

projects. Another study by Prashanth Kotturi in 2014 presented the findings of the project performance evaluation of the Rural Livelihoods Support Programme in the Republic of Malawi, which was implemented between 2004 and 2014 and was an integrated rural development initiative with a broad design. The programme operated in an environment of evolving decentralization and worked through local government bodies, especially village-level bodies. It adopted a participatory approach to community planning and provided financing to implement community priorities. In the process of implementation, it built the capacity of village development committees. However, its contribution to building the capacity of district governments was hindered by a number of factors, including the stalled decentralization process in Malawi and high turnover of staff. The evaluation emphasized the need for IFAD to base its future project designs on thorough diagnostics of the capacities of the local governments. One of the main achievements of the programme was the goat pass-on system, which had increased the resilience of the target groups and provided them with alternative sources of income. The programme sought to increase the productivity of maize through the provision of extension services. However, by focusing on maize in a mono-cropping system, it did not take into account other options for enhancing adaptation to climate change and improve nutrition security among the target groups. The presence of various elements in a farming system – such as livestock, crops, forages, fruit trees – and integration between them could have increased the resilience of small holders and

improved their access to nutritious food. There was scope to further engage with and strengthen grass-roots institutions such as farmers' organizations and cooperatives to complement the efforts of public extension services. In addition, more attention could have been given to enhancing access to markets, in order to complement the emphasis on increasing production and productivity of crops and livestock. Again, this study did not make any analysis the contribution of donor funded projects. Similarly, a performance Assessment Report of January 2021 by the World Bank Group on its two projects namely: The Irrigation, Rural Livelihoods and Agricultural Development Project (IRLADP) and The Agricultural Development Program Support Project (ADPSP) just compared two of its own projects but did not analyse their contribution to rural livelihoods against theories of development. The IRLADP supported irrigation farming through the integrated provision of hardware, mainly irrigation infrastructure, and software, mainly local and institutional capacity building. The project introduced water user associations (WUAs) for the local management of water and financial resources in the irrigation schemes. The IRLADP also supported the Input for Asset (IFA) public works program to compensate poor rural households for their labor with inputs. The Agricultural Development Program Support Project (ADPSP) addressed the efficiency of decision making at the institutional agricultural policy and farm input-productivity level. At the farm level, the project supported the reform of the Farm Input Subsidy Program (FISP) and provided training and agricultural extension to members of farmer organizations. Both projects thus supported farm productivity and the government's ability to create an enabling environment for agribusiness.

The objective of the Project Performance Assessment Report was to assess how the farm level support of both projects contributed to sustainable increases in agricultural productivity among smallholder farmers (SHFs). Both projects fostered an integrated approach to increases in agricultural productivity by promoting the uptake of traditional measures to support supply (irrigation, modern

inputs, and agronomic knowledge) together with complementary practices of improved land and water management. There was therefore need to carry out an analysis study of the contribution of agricultural donor funded projects to rural livelihoods.

METHODOLOGY

Study Area and period

The study was conducted from in farming communities of Malosa Extension Planning Area (EPA) in Zomba district where the project interventions of ASWAp-SP had been taking place since 2012. Sampled farmers from sampled villages of the following sections were interviewed in Malosa EPA: 1. Chopi, 2. Kanache, 3. Lifani. 4. Malemia, 5. Matandani, 6. Matuta, 7. Mbelo, 8. Mpungulira, 9. Mtwiche, 10. Naisi, 11. Ndaje, 12. Songani..

The study was conducted from May to June 2023.

Research design

Exploratory and Confirmatory Factor Analysis were used to group variables into factors based on correlation between variables to come up with new variables (latent variables). Path Analysis was done to get a clear picture of the direct and indirect effects of the independent variables (project interventions) on the dependent variable (rural livelihoods). A Structural Equation Model was used because in relational studies, the aim is to reveal the relationship between two or more variables (Creswell, 2008 and Kelloway, 2011).

Sampling framework and methods

The research design used was the Multi stage sampling technique: The study district of Zomba was purposively sampled because it is where the ASWAp-SP has been taking place in Machinga Agricultural Development Division (ADD), the ADD having been randomly selected out of 8. Malosa EPA was randomly selected out of 9 because all the 9 EPAs in Zomba district participated in the project so there was no specific criterion to choose the EPA. Sampled villages and respondents were determined by using proportional allocation method according to size of the Primary Sampling

Units (PSUs) which were the sections). The target population for this study was 20,921 (the farming families in Malosa EPA). According to Israel, (1992) and Bryman, (2004), 30% of the available sampling units in a target population are adequate for one to carry out research hence using the Yamane 1967 formula below, the sample sizes were calculated and a figure of 392.5 was found, 30% of which was 118.

$$n = \frac{N}{1+(N)e^2}$$

Where: n = sample size, N = population size; e = error margin which is 0.05.

Substituting the values in the equation, the sample size (n) obtained is:

$$n = \frac{20921}{1 + (20921)0.05^2}$$

$$n = 392.5$$

30% = 118

Adding 10% non-response rate = 130 (65 beneficiaries and 65 non beneficiaries)

Data Collection

Household Survey questionnaire

Kobo tool collect was used to administer a semi structured household survey questionnaire which was the main data collection tool. GPS handsets were used to collect the location of the households and measure the size of households' fields.

Focus Group Discussions

One (1) focus group discussion involving lead farmers, members of the Village Agricultural Committees (VACs), beneficiaries and non-beneficiaries in groups of 10 per each section totaling 12 sessions were done to seek answers on the findings of the household survey.

Key Informant Interviews

After the focus group discussions, key informant interviews with one different member from the same categories totaling 12 individuals were also be done to help explain the findings of the

household survey and the focus group discussions. Malosa EPA extension workers and Zomba district agriculture office staff also provided information through oral interviews and office reports some of which have been cited in this document.

Pretesting, validity and reliability of the questionnaire

According to Kumar, 2011 a pilot study or pretesting of the questionnaire should be done to a similar group to the targeted population and 5 to 10% of the study population is adequate to get the short falls or accurateness of the questions and responses in the questionnaire. Pretesting of the questionnaire was therefore done to 13 randomly selected farmers from Nsondole EPA of the same Zomba district. The questions were clear and valid responses were being given by the respondents repeatedly. Reliability of the questionnaire was ensured by running a reliability analysis of all questions and responses in SPSS. An average cronbachalpha value of 0.763 was obtained indicating the research instrument was reliable. A cronbach alpha value of not less than 0.7 is considered adequate for reliability of the research instrument (Bonett & Wright, 2015).

Data Analysis

Descriptive analysis

Descriptive statistics i.e., frequencies and cross tabulations were done to see patterns of the data. Chi-square test was done to determine the association between the dependent and the independent variables.

Multiple regression analysis

Rural livelihood was described as a set of rural community activities essential for everyday life that are conducted over people's life spans or a means of living for rural communities. In most rural communities in Malawi, farming is the main activity conducted as a means of living i.e., a source of livelihood (MoAIWD, 2016). Rural livelihood in this study was measured by examining the current status of natural, physical, financial, social and human capitals of the project beneficiaries against

those of non-beneficiaries. Following Greene (2003), the Multipleregression model for this study was specified as:

$$\text{Rural livelihoods } L = \ln P_j / P_m = \beta_1 X_1 \quad j=1, 2, \dots, m-1$$

Where:

\ln = a probabilistic log

P_j = the probability that interventions influence rural livelihoods

P_m = the probability that rural livelihood is not influenced by the interventions

X_1 = Vector of the determinants/explanatory/predictor/independent variables that influence rural livelihoods

β_1 = the corresponding set of multiple regression coefficients that describe how changes in the independent variables influence rural livelihoods.

The dependent variables in these equations were the log odds ratios of having improved rural livelihood (P_j) versus having unimproved livelihoods (P_m). The probability of improved livelihoods was estimated as:

$$P_j = \frac{e^{\beta_j X}}{1 + \sum_{j=1}^m e^{\beta_j X}}$$

And the probability of unimproved rural livelihoods was estimated as:

$$P_m = \frac{1}{1 + \sum_{j=1}^m e^{\beta_j X}}$$

Rural livelihood is dependent on several factors, namely: Social or demographic characteristics, financial/ economic, human, and natural factors. The model uses a Cumulative Distribution Function (CDF). Cumulative Distribution Function is used to model regressions where the response variable is dichotomous, taking 0-1 values. The dependent variable (Y) is dichotomized with a value of (0) if respondents have negative response to the question (i.e., the factor did not influence the outcome) and (1) if respondents had positive response (i.e., the factor did influence the outcome).

The general estimating equation for the study was;

$$\text{Rural livelihoods } L = f \text{ Soc, Fic, Huc, Nac, Phc}$$

Whereas:

Soc = Social capital

Fic = Financial capital

Huc = Human capital

Nac = Natural capital

Phc = Physical capital

The following multiple regression model was used to estimate rural livelihoods:

Rural livelihoods $L = \alpha + \beta_1 Soc + \beta_2 Fic + \beta_3 Huc + \beta_4 Nac + \beta_5 Pnc + \mu_i$ where the five livelihood assets were in the form of binary probit regression model of 0 if the variable was expected to have a negative influence or no influence on rural livelihood and 1 if it was expected to have a positive influence. The values of rural livelihood (L) were as depicted as follows: Human capital (age in years, marital status i.e. 0=unmarried, 1=married), Natural capital (land tenure 0=No ownership, 1=Owned, farm size 0=less than or equal to 0.6 ha, 1=More than 0.6ha), Social capital (Membership to farmer organisations 0=Nonmember, 1 member) etc.

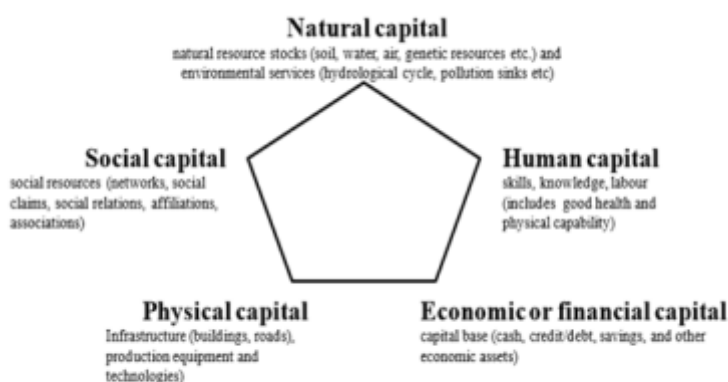


Figure : The five capitals of sustainable livelihood (Source: Scoones, 1998)

RESULTS AND DISCUSSION

The contribution of the ASWAp-SP to the five livelihood assets of human, social, physical, natural and economic capitals of the beneficiaries.

Human capital

The study hypothesized that the ASWAp-SP made a contribution to the human capital of the beneficiaries. The findings showed that indeed the human capital of the beneficiaries improved through the provision of trainings and agricultural messages to the beneficiaries of both categories (targeted and non-targeted) (Tables 2 to 11).

Table 2
Participation in agricultural trainings

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	No	42	5.1	32.3	32.3
	Yes	88	10.8	67.7	100.0
	Total	130	15.9	100.0	
Missing	System	687	84.1		
Total		817	100.0		

Table 2 shows that 67.7 per cent of the respondents participated in agricultural trainings during the time of ASWAp-SP implementation.

Table 3
Types of trainings received

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Informal (From non experts)	1	.1	1.1	1.1
	Formal (From experts)	66	8.1	75.0	76.1
	Both formal and informal	21	2.6	23.9	100.0
	Total	88	10.8	100.0	
Missing	System	729	89.2		
Total		817	100.0		

Table 3 above shows that 75 per cent of those who received trainings, their trainings were formal trainings or from experts.

Table 4
Provider of the trainings

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Other farmers (Informal)	13	1.6	8.2	8.2
	Lead farmers (Informal)	34	4.2	21.5	29.7
	Government extension workers (Formal)	85	10.4	53.8	83.5
	NGOs (Formal)	25	3.1	15.8	99.4
	Other institutions or personnel	1	.1	.6	100.0
	Total	158	19.3	100.0	
Missing	System	659	80.7		
Total		817	100.0		

Table 4 indicates that 53.8 per cent of the trainings were provided by government extension workers, 21.5 per cent by lead farmers and 15.8 per cent by NGOs while 8.2 per cent of the trainings were provided by other farmers. It should be noted that ASWAp-SP worked through government extension workers, lead farmers and other farmers as well.

Types of trainings attended

16.4 per cent of the respondents attended trainings in general agriculture, 7.5 per cent in nutrition, 8.1 per cent in conservation agriculture, 11.3 per cent in soil fertility improvement, 9.8 per cent in soil and water conservation, 10 per cent in post-harvest handling, 8.5 per cent in Gender, HIV and AIDS, 5.1 per cent in climate smart agriculture, 5.3 per cent in livestock management, 3.0 per cent in farm business management, 3.2 per cent in fodder conservation, 6.4 per cent in leadership and group dynamics, 3.4 per cent market

oriented farm planning and 1.9 per cent in other trainings like manure making. Ridge alinement and one-one planting.

*Table 5
Helpfulness of the trainings*

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Yes	88	10.8	100.0	100.0
Missing	System	729	89.2		
Total		817	100.0		

All the respondents reported that the trainings they received were helpful (Table 5)

*Table 6
Agricultural messages and advisory services received*

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	No	29	3.5	22.5	22.5
	Yes	100	12.2	77.5	100.0
	Total	129	15.8	100.0	
Missing	System	688	84.2		
Total		817	100.0		

77.5 per cent of the respondents acknowledged receipt of agricultural messages during ASWAp-SP implementation (Table 6).

*Table 7
Helpfulness of the received messages or services*

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Somehow helpful	1	.1	1.0	1.0
	Helpful	30	3.7	30.0	31.0
	Very helpful	69	8.4	69.0	100.0
	Total	100	12.2	100.0	
Missing	System	717	87.8		
Total		817	100.0		

69 per cent of the respondents indicated that agricultural messages they received were very helpful, 30 per cent indicated that the messages were helpful (Table 7).

*Table 8
ASWAp-SP secretariat messages frequency*

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not even once	1	.1	16.7	16.7
	Quarterly	2	.2	33.3	50.0
	Monthly	1	.1	16.7	66.7
	Fortnightly	1	.1	16.7	83.3
	Weekly	1	.1	16.7	100.0
	Total	6	.7	100.0	
Missing	System	811	99.3		
Total		817	100.0		

Though ASWAp-SP worked through government extension workers, lead farmers and other farmers, some agricultural messages also came directly from the ASWAp-SP secretariat through radio, mobile unit campaigns, field days, demonstrations, electronic and print media as well as through phone text messages. 33.3 per cent of the respondents indicated that ASWAp-SP secretariat messages came on a quarterly basis while 16.7 per cent indicated that they received the direct messages monthly, fortnightly, weekly but some not even once. (Table 8).

*Table 9
Listenership to ASWAp-SP's "TitukukendiASWAp" program on Zodiak Radio*

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	No	78	9.5	60.0	60.0
	Yes	52	6.4	40.0	100.0
	Total	130	15.9	100.0	
Missing	System	687	84.1		
Total		817	100.0		

Though ASWAp-SP had a radio program on Zodiak radio, only 40% of the respondents once listened to it (Figure 5).

*Table 10
ASWAp-SP radio programmes or radio activities assistance*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	44	5.4	33.8	33.8
	Yes	86	10.5	66.2	100.0
	Total	130	15.9	100.0	
Missing	System	687	84.1		
Total		817	100.0		

However, table 10 shows that 66.2 per cent of the respondents were assisted in their farming activities by ASWAp-SP's radio programmes and activities since ASWAp-SP's radio activities were not only happening on Zodiak but on other media stations and radio programmes as well like "Ulimiwalero" on MBC radio 1 and "Titukukendiulimi" on MBC radio 2.

*Table 11
Mode of assistance*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Have changed my farming practice	73	8.9	61.3	61.3
	Have increased my yields/production	46	5.6	38.7	100.0
	Total	119	14.6	100.0	
Missing	System	698	85.4		
Total		817	100.0		

61.3per cent of the respondents who reported that they got assistance through ASWAp-SP's radio programmes or activities indicated that the ASWAp-SP's radio programmes or activities changed their farming practice while 38.7% reported that the radio programmes or activities led to increases in their yields or production by following what they heard on the radios.

Social capital

The results also showed that ASWAp-SP increased women's ability to decide to participate in farmer groups while increasing their status of production (Figure 1). According to Hox *et al.*, 2017, correlation technique was used to analyse the degree of association between two variables. Pearson correlation coefficient was used to determine the strength and direction of the relationship between the dependent and the independent variable. The data analysis using Pearson product moment correlation was based on the assumption that data was normally distributed and the variables were continuous. There was a strong positive correlation of 11.116 between women's increased status of production and ability to participate in farmer groups ($p < .05$) (Table 15) and women were more elected leaders in farmer groups than any other groups while their status of production increased (Figure 2).

Table 12
*Status of production * Women's ability to decide to participate in farmer groups - Chi-Square Tests*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.116 ^a	3	.011
Likelihood Ratio	9.223	3	.026
Linear-by-Linear Association	7.865	1	.005
N of Valid Cases	127		

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is 1.23.

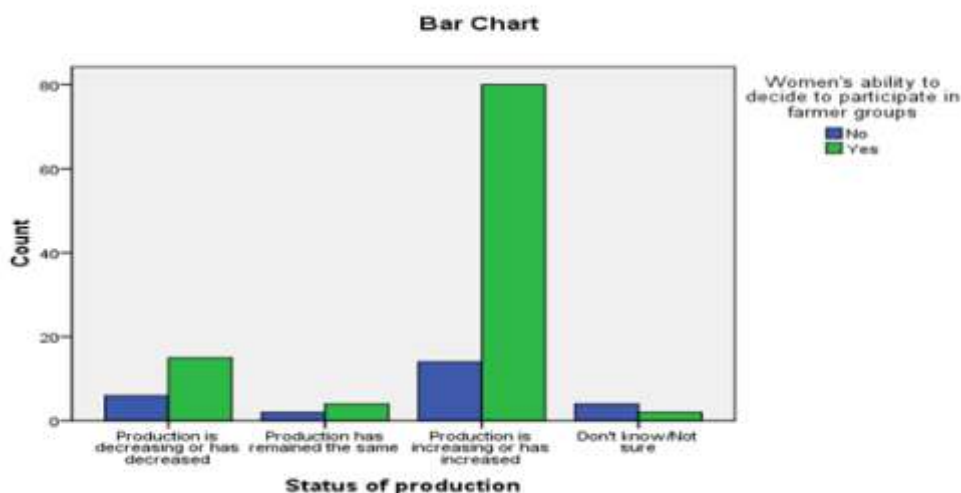


Figure 2: Status of production and women's ability to decide to participate in farmer groups

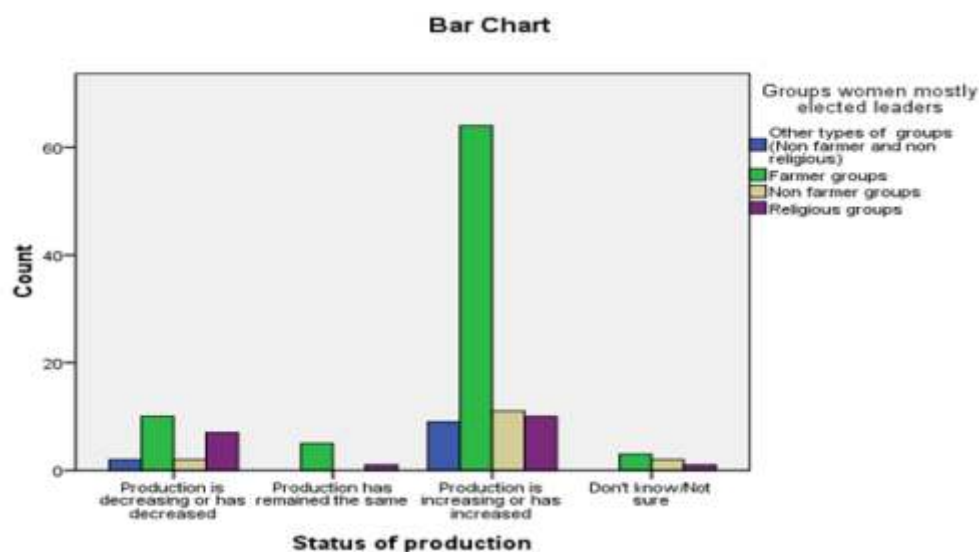


Figure 3: Status of production and groups women mostly elected leaders

Natural capital

The study also hypothesized that the ASWAp-SP made a contribution to the natural capital of the beneficiaries. The findings showed that indeed ASWAp-SP made some contribution to the natural capital of the beneficiaries. Most of the interventions promoted by ASWAp-SP were to do with the restoration of the environment like soil nutrients, health and conservation as tabulated below:

*Table 13
Involvement in ASWAp-SP interventions*

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Conservation agriculture	52	6.4	12.0	12.0
	Agro-forestry	36	4.4	8.3	20.3
	Manure making and application	113	13.8	26.1	46.4
	Soil and water conservation	58	7.1	13.4	59.8
	Goat production	14	1.7	3.2	63.0
	Chicken production	18	2.2	4.2	67.2
	Farmer Business School	7	.9	1.6	68.8
	Farmer Field School	3	.4	.7	69.5
	Mounting demonstration plots	25	3.1	5.8	75.3
	Seed multiplication	21	2.6	4.8	80.1
	Farmer research trials	5	.6	1.2	81.3
	Village Loan savings	37	4.5	8.5	89.8
	Food and Nutrition	33	4.0	7.6	97.5
	Household Approach	5	.6	1.2	98.6
	Other ASWAp-SP interventions	1	6	.7	1.4
	Total	433	53.0	100.0	
Missing	System	384	47.0		
Total		817	100.0		

12% of the respondents were involved in conservation agriculture, 8.3% in agroforestry, 26.1% in manure making and application, 13.4% in soil and water conservation which are activities aimed at improving natural capital (Table 13).

Table 14
Source of agroforestry seeds/seedlings

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Did not have them	61	7.5	46.9	46.9
	ASWAp-SP	43	5.3	33.1	80.0
	Other or own sources	26	3.2	20.0	100.0
	Total	130	15.9	100.0	
Missing	System	687	84.1		
Total		817	100.0		

33.1% of the respondents reported to have obtained agroforestry seedlings from the ASWAp-SP (Table 14). Agroforestry is aimed at restoring the natural capital by improving soil nutrients while at the same time improving forestry cover.

Table 15
Zomba district's natural capital improvement targets

Indicator	District Target	Actual - October 2022
Increased hectares under CSA	455	1,112.5
Organic manure	156	546.5
Agroforestry	55	89.5
Soil and water conservation practices (Swales, gully reclamation, check dams, contour and box ridging and vetiver hedgerows)	244	476.5

Source: Zomba District Agriculture office, ASWAp-SP completion report, June 2023.

By October 2022, the district had surpassed its target on area under Climate Smart Agriculture (CSA) by 245 per cent, organic manure by 350 per cent, and agroforestry by 163 per cent and soil and water conservation activities by 195 per cent (Table 15).

According to the ASWAp-SP's Multi-Donor Trust Fund Implementation Completion and Results Report (ICR) of July, 2017, the original global environmental objective of ASWAp-SP as approved was: to strengthen the natural resource base in agricultural lands through doubling the area under sustainable land management as a basis for securing ecosystem services and sustainable agricultural productivity. To assess sustainability of productivity increase, the expected outcome was improved soil fertility to be measured through levels of soil organic matter in conservation farming application areas. It was agreed to monitor conservation agriculture efforts with the expected intermediate outcome being improved adoption of conservation farming as measured through total smallholder area (ha) under conservation farming. The targeted area was 200,000 hectares national wide but by July 2017, the total smallholder area under conservation farming had already reached 217,373 hectares at the time of the report (MoAIWD, 2017).

Physical capital

The study also hypothesized that the ASWAp-SP made a contribution to the physical capital of the beneficiaries. The results showed that indeed the physical capital of the beneficiaries improved by making improvements to rural roads (Tables 16 and 17).

Table 16
Improvements to roads

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	No	76	9.3	58.5	58.5
	Yes	46	5.6	35.4	93.8
	Don't know/Not sure	8	1.0	6.2	100.0
	Total	130	15.9	100.0	
Missing	System	687	84.1		
Total		817	100.0		

35.4% of the respondents acknowledged improvements to their roads through the ASWAp-SP (Table 16).

Table 17
Zomba district's targets to road improvements

Indicator	District Target	Actual – December 2021
-Roads rehabilitated, LVSRs	35 km	6.7 km
-Roads rehabilitated, labor intensive	150 km	90.3 km

Source: Zomba District Agriculture office, ASWAp-SP completion report, June 2023.

According to Zomba district's ASWAp-SP completion report of June 2023, the district had managed to improve 6.7km of the Low Volume Sealed Roads (LVSRs) out of the targeted 35km and 90.3km of labour-intensive roads out of the targeted 150km by December 2021 (Table 17).

Economic capital

The study also hypothesized that the ASWAp-SP made a contribution to the economic capital of the beneficiaries. The results showed that indeed the economic capital of the beneficiaries increased. The study found that 18.8% of the respondents got their farm inputs directly from the ASWAp-SP there by making a contribution to the economical capital of the beneficiaries. 56.5 per cent reported to have acquired inputs through Village Savings and Loans (VSLs) some of which were also facilitated by the ASWAp-SP (Table 18).

Table 18
Source or means of input acquisition

		Frequency	Per cent	Valid Per cent	Cumulative per cent
Valid	ASWAp-SP	13	1.6	18.8	18.8
	Commercial banks	1	.1	1.4	20.3
	Village Savings and Loans	39	4.8	56.5	76.8
	Other organizations	16	2.0	23.2	100.0
	Total	69	8.4	100.0	
Missing	System	748	91.6		
Total		817	100.0		

43.8 per cent of the respondents reported to have acquired fertilisers from ASWAp-SP (Table 22 and Figure 3).

Table 19
Source of fertilisers

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Did not have them	16	2.0	12.3	12.3
	ASWAp-SP	57	7.0	43.8	56.2
	Other or own sources	57	7.0	43.8	100.0
	Total	130	15.9	100.0	
Missing	System	687	84.1		
Total		817	100.0		

Bar Chart

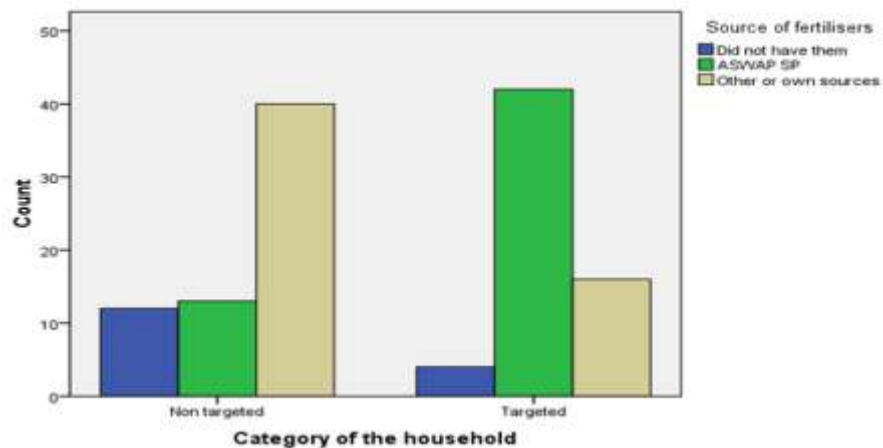


Figure 4: Sources of fertilisers

Table 20
Source of maize and legume seeds

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Did not have them	18	2.2	13.8	13.8
	ASWAp-SP	57	7.0	43.8	57.7
	Other or own sources	55	6.7	42.3	100.0
	Total	130	15.9	100.0	
Missing	System	687	84.1		
Total		817	100.0		
Legume seeds					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Did not have them	44	5.4	33.8	33.8
	ASWAp-SP	27	3.3	20.8	54.6
	Other or own sources	59	7.2	45.4	100.0
	Total	130	15.9	100.0	
Missing	System	687	84.1		
Total		817	100.0		

43.8 per cent of the beneficiaries acquired their maize seeds from ASWAp-SP and 20.8 per cent acquired legume seeds from ASWAp-SP (Table 23).

The study hypothesized that the status of production would increase due to the contribution of the ASWAp-SP project. The results showed that indeed the status of production increased in both categories (targeted and non-targeted beneficiaries) although there was no statistically significant correlation between the category of the beneficiaries and the status of production hence there was no significant difference in the status of production between the targeted and the non-targeted beneficiaries (Table 21 and Figure 4). Both categories registered increases in production. However, the increase was slightly more in the targeted households than in the non-targeted ones.

*Table 21
Correlation between category of beneficiary and status of production*

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.620 ^a	3	.132
Likelihood Ratio	7.555	3	.056
Linear-by-Linear Association	4.682	1	.030
N of Valid Cases	125		

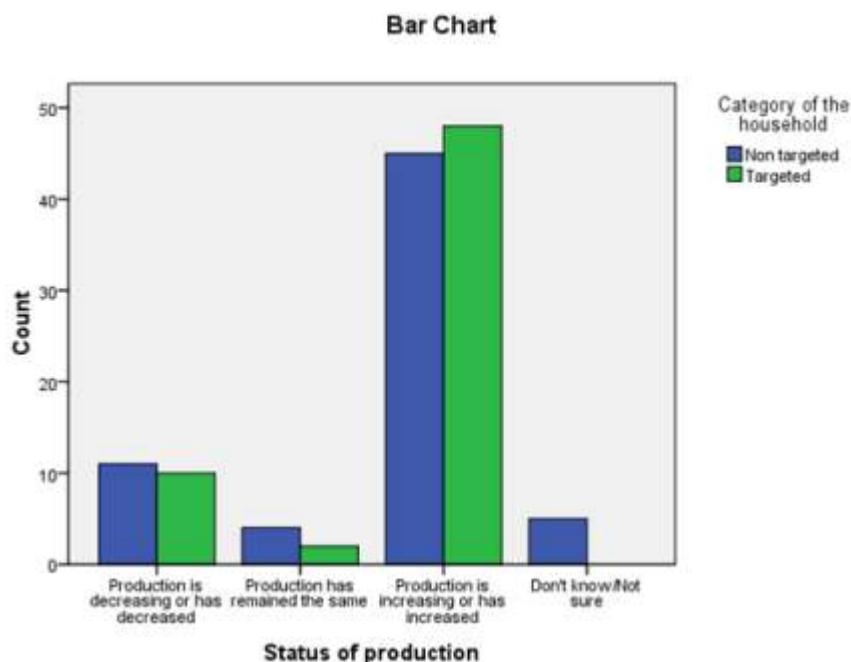


Figure 5: Category of household beneficiary and status of production

Zomba district agriculture office had targeted 20 per cent increases in yields of maize, ground nuts and soya beans but by the end of December 2021 it had managed to increase the yields by 12.76 per cent, 3 per cent and 4.79 per cent respectively for the three crops (Table 22).

Table 22
Zomba district targets to increases in yields

Indicator	District Target	Actual December 2021
Yield increase for selected commodities in direct project beneficiaries (maize and g/nuts) - %-Average of maize and groundnuts yields increase	20	
Maize	20	12.76
Groundnuts	20	3
Soya	20	4.79

Source: Zomba District Agriculture office, ASWAp-SP completion report, June 2023.

Among the main benefits or assets derived from ASWAp-SP (Table 23), 14.9 per cent of the beneficiaries bought livestock (goats and chickens), 10.3 per cent constructed new houses, 8 per cent bought bicycles, 1.1 per cent bought motor cycles, 21.7 per cent paid school fees, 4.6 per cent bought iron sheets, 16 per cent bought farm inputs, 3.4 per cent bought TV or radio, 1.7 per cent bought solar panels, 18.3 per cent bought other goods like kitchen utensils, clothes, water pump, pigs, ducks, pigeons, hoes, land, school uniform, exercise books, bricks, sweet potato vines, food, groceries and hired labour for various activities including farming and house roofing.

Table 23
Main benefits or assets from ASWAp-SP derived to date

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Bought livestock	26	3.2	14.9	14.9
	Constructed a new house	18	2.2	10.3	25.1
	Bought a bicycle	14	1.7	8.0	33.1
	Bought motor cycle	2	.2	1.1	34.3
	Paid school fees	38	4.7	21.7	56.0
	Bought iron sheets	8	1.0	4.6	60.6
	Bought farm inputs	28	3.4	16.0	76.6
	Bought TV set or radio	6	.7	3.4	80.0
	Bought solar panel	3	.4	1.7	81.7
	Other goods	32	3.9	18.3	100.0
	Total	175	21.4	100.0	
Missing	System	642	78.6		
Total		817	100.0		

CONCLUSION

The contribution of the ASWAp-SP to the five livelihood assets of human, social, physical, natural and economic capitals of the beneficiaries.

The study concludes that the ASWAp-SP made some significant contributions to the five livelihood assets of human, social, physical, natural and economic capitals of the beneficiaries.

Human capital

Through ASWAp-SP human capital of the beneficiaries improved through the provision of trainings and agricultural messages to the beneficiaries of both categories (targeted and non-targeted). Government extension workers provided more than half of the trainings that the beneficiaries received. Implementation of ASWAp-SP was through the same government extension workers making it ideal to conclude that more than 50% of the information from ASWAp-SP reached the intended beneficiaries. ASWAp-SP Information was also transmitted to the beneficiaries through radio programmes on Zodiak and other radio stations like MBC and Mzati. ASWAp-SP's radio programmes or activities changed the farmers' farming practice and also led to increases in their yields or production by following what they heard on the radios.

Social capital

ASWAp-SP increased women's ability to decide to participate in farmer groups while increasing their status of production and women were more elected leaders in farmer groups than any other groups while their status of production increased.

Natural capital

Most of the interventions promoted by ASWAp-SP were to do with the restoration of the environment like soil nutrients, health and conservation. ASWAp-SP promoted conservation agriculture, agroforestry, manure making and application, soil and water conservation which are all activities aimed at improving natural capital.

ASWAp-SP helped farmers access agroforestry seeds and seedlings thereby restoring their natural capital.

By October 2022, the district had surpassed its target on area under Climate Smart Agriculture (CSA) by 245 per cent, organic manure by 350 per cent, and agroforestry by 163 per cent and soil and water conservation activities by 195 per cent.

Physical capital

ASWAp-SP improved the physical capital of the beneficiaries by making improvements to rural roads. Zomba district had managed to improve 6.7km of the Low Volume Sealed Roads (LVSRs) out of the targeted 35km and 90.3km of labour-intensive roads out of the targeted 150km by December 2021.

Economic capital

ASWAp-SP increased the economic capital of the beneficiaries. A good number of the beneficiaries got their farm inputs (fertilisers, maize seeds and legume seeds directly from the ASWAp-SP there by making a contribution to the economical capital of the beneficiaries. Others acquired inputs through Village Savings and Loans (VSLs) some of which were also facilitated by the ASWAp-SP. The status of production increased in both categories (targeted and non-targeted beneficiaries). The increase was slightly more in the targeted households than in the non-targeted ones.

Among the main benefits or assets derived from ASWAp-SP, some beneficiaries paid school fees for their children, others constructed new houses, bought livestock (goats and chickens), bicycles, motor cycles, iron sheets, farm inputs, TV or radio, solar panels and other goods like kitchen utensils, clothes, water pump, pigs, ducks, pigeons, hoes, land, school uniform, exercise books, bricks, sweet potato vines, food, groceries and hired labour for various activities including farming and house roofing.

REFERENCES

- Bonett & Wright, 2015, Cronbach's alpha reliability: hypothesis testing and sample size planning. *Journal of Organisation Behavior*, 36(1), 3-15.
- Bryman, A 2004, *Social Research Methods*. Oxford, Oxford University Press. UK.
- Chambers, R., & Conway, G R 1992, Sustainable Rural Livelihoods: Practical concepts for the 21st century. IDS discussion paper 296. University of Sussex.
- Creswell, J.W. 2008, *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. London, SAGE Publications.
- Cronbach, L. J 1951, Coefficient alpha and the internal structure of tests.
- GoM 2016, National Agricultural Policy, Ministry of Agriculture, Irrigation and Food Security, Lilongwe.
- GoM, 2017, Malawi Growth and Development Strategy III Building a Productive, Competitive and Resilient Nation, Lilongwe, Malawi.
- GoM, 2020, Malawi Vision 2063: An Inclusively Wealthy and Self-reliant Nation. National Planning Commission, Lilongwe, Malawi.
- Greene W.H, 2008, *Econometric Analysis*. New York University, USA
- Hofisi and Chizimba 2013, 'The Sustainability of Donor Funded Projects in Malawi'. *Mediterranean Journal of Social Sciences*, July 2013.
- Hox *et al.*, 2017, *Multilevel Analysis: Techniques and Applications*. Routledge.
- Israel, G.D, 1992, Determining Sample Size. Department of Agricultural Education and Communication, Institute of Food and Agricultural Sciences, University of Florida, Gainesville.
- Kelloway, 2011 'Assessing Power of Structural Equation Modelling Studies: A Meta Analysis'. *Mathematics Education Research Journal*, September 2011.
- Kotturi, P, 2014 & 2016, Republic of Malawi Rural Livelihoods Support Programme Project Performance Evaluation Approach Paper, IFAD, Rome, Italy.
- Krantz, L 2001, *The Sustainable Livelihood Approach to Poverty Reduction*. Division for Policy and Socio-Economic Analysis Report.
- MoAIWD, 2016, National Agriculture Policy, Lilongwe, Malawi.
- MoAIWD, 2017, Final ICR ASWAP-SP 31-8-2017
- MoAIWD, 2019, SAPP 2017/18 Survey on Annual Outcomes and Drivers of Conservation Agriculture. Lilongwe, Malawi.
- NSO 2021, The fifth Integrated Household Survey (IHS5 2020 Report), National Statistical Office, Zomba Malawi.
- Tanga et al., 2014, The impact of improved road infrastructure on the livelihoods of rural residents in Lesotho. The case of Phamong. Fort Hare University, South Africa.
- World Bank 2021, Malawi - Irrigation, Rural Livelihoods and Agricultural Development Project and Agricultural Development Programme Support Project, Independent Evaluation Group Project Performance Assessment Report 155283. Washington DC, World Bank. USA.
- Yamane, Y. 1967. *Mathematical Formulae for Sample Size Determination*.

.....