SUSTAINABILITY OF PRODUCTIVE ASSETS CREATED FOR VULNERABLE COMMUNITIES: AN IMPACT ASSESSMENT OF TANZANIA SOCIAL ACTION FUND INTERVENTION

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Abstract

Lack of projects sustainability raises more doubts about the long-term contribution of intervention to income expansion and poverty reduction. Little evidences are known on the sustainability of the productive assets created for vulnerable groups. Thus, this study was conducted to assess the livelihood impact assessment of Tanzania Social Action Fund (TASAF) intervention on rural vulnerable groups in Makete and Rungwe Districts, Tanzania. However, this article examined the sustainability of productive assets created. A stratified sample of 239 recipients and 115 non-recipients in public works, carpentry, dairy cattle and poultry projects were interviewed. A quasi-experimental and cross sectional design was used to collect data. Descriptive statistics and instrumental variables / 2SLS approaches were used to analyze data. Results showed that only carpentry project was significantly sustainable. Based on these findings, it was concluded that project sustainability depends on its nature and vulnerability of beneficiaries. This therefore it is recommended that the government should create assets through thorough participatory identification of the nature of projects relevant to the target group(s). In addition**,** local government authorities should implement assets created through training, supervision and regular field exchange visits.

Key words: TASAF, Makete, Rungwe, poverty, vulnerability, intervention, productive assets, relevance, effectiveness, efficiency and projects sustainability

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1.0 Introduction

Poverty has negative consequences on the vulnerable groups' livelihood at different times in their lives. It consumes a share of transfers from a range of non-state and public resources on social well-being payments and costs arising from social effects of poverty. It is argued that globalization has induced income variability and social exclusion among vast groups and has amplified greater opportunity, risk and less ability for governments to pursue independent policies (Lau Jorgensen and Van Domelen, 1999). Livelihood intervention comprises the capabilities, assets and activities required as a means of living. It is sustainable when it can cope with and recover from stresses and shocks (Haidar, 2009; Kratz, 2001). Similarly, intervention is sustainable if it attains long-term goals without dependency (Royal Tropical Institute, 2011; Parveen, 2009). However, lack of intervention sustainability raises doubts about the long-term contribution of assets created to income expansion and poverty reduction (Swan, 2004) through Tanzania social action fund intervention of vulnerable communities. The Government of Tanzania (GoT) has taken various initiatives to alleviate poverty in rural areas since its independence in 1961. The GoT has placed its emphasize on rural development strategy so as to raise rural agricultural production and living standards (United Republic of Tanzania, 2000a; 2000b and 2001a) through improvement and transformation approaches (Amani and Mkumbo, 2012). Hitherto, both approaches adopted earlier were biased towards cash crops for export and de-emphasized the production of food crops. Tanzanians produced what they were not consuming and consumed what they were not producing. Consequently, production pattern declined overtime even if all resources were planned and controlled by the government agencies and rural poor people were merely peasant's labour (Amani and Mkumbo, 2012). Ultimately, both policies failed because people's desire, experience and interests were ignored hence

fruitless in rural productivity [*http://archive.unu.edu/unupress/unupbooks/ruraldvpt policies; cite visited on 12/04/2012*].

2.0 Statement of the problem

In 1973/74 the Government of Tanzania launched a villagization progamme for the with the purpose of enhancing agricultural production and facilitating social services. To enhance its implementation, the multi-sectoral strategy termed as "regional integration development programs (RIDEPS)"was formulated (Ngasongwa, 1988). This aimed at increasing agricultural production and social services through increased income to improve the quality of life of the rural people (Amani and Mkumbo, 2012). By the mid 1980s, programmes failed because of poor coordination, different focus and approaches, donor dependence and exclusion of communities in decision-making process (Amani and Mkumbo, 2012; Ngasongwa, 1988).

In addition, Tanzania Social Action Fund (TASAF) was introduced in the year 2000 aiming at socio-economic empowerment of the vulnerable communities through participatory approach contrary to the previous interventions by provision of productive assets in order to address poverty disparity (World Bank, 2006). Its implementation complements the National Strategies for Growth and Reduction of Poverty (NSGRP I & II) (2005, 2010). Consequently, NSGRP II like its predecessor framework is a vehicle for realizing Tanzania's development vision 2025 and the millennium development goals (MDGs). With all efforts undertaken by the government, yet, poverty is still a challenge in Tanzania, particularly in rural areas where 38% of the population lives below the basic needs poverty line compared with 24% in urban areas (United Republic of Tanzania, 2010; FAO, 2008). However, little evidences based on methodological approach are known on the sustainability of assets created on improving the welfare of poor people to

eradicate extreme poverty and hunger (United Republic of Tanzania, 2001b). Therefore, this paper examined the sustainability of assets created by TASAF intervention in Makete and Rungwe Districts to inform policymakers and recipients at large.

3.0 Research methodology

In estimating intervention impact, experimental and quasi-experimental designs were considered. The first approach could be applied within a subset of equally eligible beneficiaries while reaching the most eligible and denying the least eligible (Baker, 2000). However, this could be unethical owing to the denial of benefits to other eligible members and difficult to ensure that assignment could be truly random (Baker, 2000; 1999). Moreover, quasi-experiment approach was employed in which a control group that resemble the treatment at least in observed characteristics through econometric methods was constructed. Hitherto, this technique has a problem of selection bias that can be controlled by using Instrumental variables technique (IVs) (Baker, 2000). Therefore, more than one variable that matter to participation but not to outcomes given participation were included to remove the endogeinity problem.

To date, intervention impact isolation using participants and non-participants explicitly focuses on livelihoods (Haidar, 2009). Therefore, modified DFID (1999) sustainable livelihood (SL) conceptual framework (Figure 1) was adopted for intervention livelihood analysis.

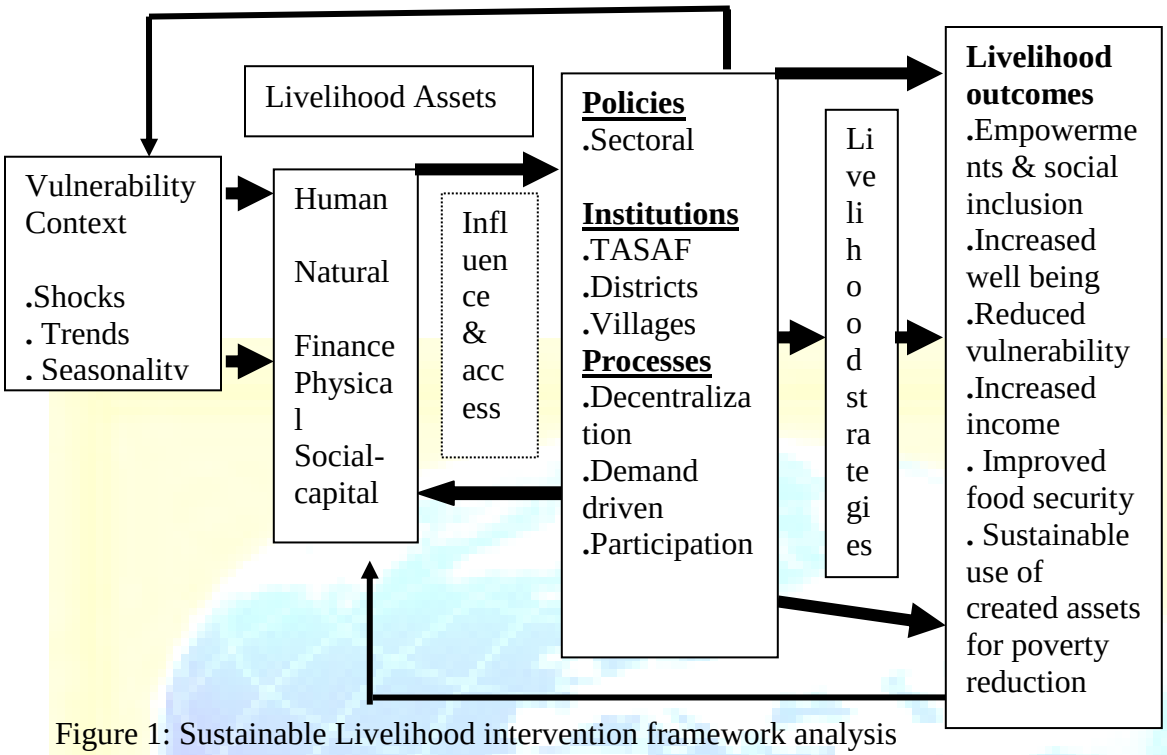

Figure 1: Sustainable Livelihood intervention framework analysis

Source: Modified DFID sustainable livelihood framework (1999)

The study employed a quasi-experimental approach (Grossman, 2005; Spath, 2004; Hulme, 2000; Baker, 2000; 1999; Power and Riddell, 1998) in which cross-sectional data were collected once at a given point of time (Baker, 2003; Stock and Watson, 2003; Wooldridge, 2001). Sample size determination was based on precision rate of 5% and confidence level of 95%. Therefore, the traditional formula (Power and Riddell, 1998):

$$n = \frac{1.96^2 \, p(1-p)}{SE^2} \quad \ldots\ldots (1)$$

was applied, whereas "*n*" is a sample size calculated, *SE* is the tolerable standard error (0.05), and p = (0.64) and (1-p) = (0.36) were the proportion of projects participants and non-participants, respectively. The figure 1.96 reflects the choice of a 95% confidence interval and the margin error of $\pm 5\%$ was tolerable. Thus, the sample size was 354. Multistage and stratified

sampling technique were employed to obtain a representative sample since all districts in Tanzania adopted the intervention in which fourteen villages with and seven villages with no projects were non-randomly selected subject to restrictions on a farther location from the treated village to avoid spill-over effects in both Makete and Rungwe districts.

Stratified list of participants: food insecure (FI), community development investment (CDI), vulnerable groups (VGs) and service poor (SP) projects were used as the sampling frame. However, 239 recipients and 115 non recipients were surveyed. A cross-sectional quasi-experimental study design was adopted while interview schedule questionnaires, key informant's, focus group discussions checklists on TASAF projects' implementation were weighed against objectives in relation to the NSGRP and MDGs to meet the research objectives. The statistical package for social sciences (SPSS) and STATA version 16 and 10 respectively were used for data analysis in which qualitative probability of participation in the projects was ascertained while the following variables (Table 1) were included in the descriptive and estimation model.

Table 1: Variables specified in the analytical model

Variable	Definition	Expected sign
Partic (Participation =1 or otherwise)	Taking part in the intervention activities	+/-
Location (Makete/Rungwe =1 or otherwise)	The site or position where an intervention is established to serve needy communities	+/-
Benage(Beneficiary age) (Years)	The amount of money received by a recipients over a period of time as payment for participation, goods or services or a profit from investment	+/-
Mstatus (Marital status =1 or otherwise)	The fact of somebody's being unmarried, married, or formerly married	+/-
Edulevel (Education level) (Number of years)	Degree of knowledge or abilities gained through teaching learning especially at a school or similar institution	+
Femhhd (Female household head =1 or otherwise)	A woman family head	+/-

Participants

Ablebod (Able bodied =1 or otherwise)	A person who is healthy and physically strong who can perform economic activities in a community	+
Chronic diseased (1=Yes, No)	Persistent pain of unknown/known cause with medical condition characterized by long-term painnot attributable to known pathological process or organic disease	+/-
Elder (1=Yes, 0=No)	Senior member of community who is advanced in years and has an influence, authority and needy person	+/-
HIV infected (1=Yes, 0=No)	A person who is adversely affected by HIV disease.	+/-
Orphans (1=Yes, 0 =No)	A child whose parents are both dead or who has been abandoned by his or her parents, especially a child not adopted by another family	+/-
Widowers =1 or otherwise	A group of men whose wives has died especially when he has not re-married.	+
Projects		
Carpproj(Carpentry works project) 1= Yes, 0= No	An organized work of building houses and making furniture for the objective of employment creation among vulnerable groups	+
Dcatproj(Dairy cattle project) 1= Yes, 0= No	An organized unit of cattle bred and raised for milk production	+
Envconspr(Environmental conservation project) 1= Yes, 0= No	A planned activity related to the conservation and maintenance of the natural world	+/-
Pproj(Poultry project) (1=Yes, 0=No)	An organized unit of chickens raised for meat and eggs production	+/-
Prpwps(Public works projects = 1 or otherwise)	Extensive public works undertakings	+/-
Watproj(Water project =1or otherwise)	An organized work for water supply service to a community	+
Project sustainability (1=Yes, 0=No)	Attains long-term goals without dependency	+/-
Primneed (Project ability to meet immediate needs =1 or otherwise)	Short term delivery of goods and services	+/-
Pbenplimpl (Participation of beneficiaries in project planning and implementation =1 or otherwise)	Contribution in preparation and execution	+/-
Prdepart (Project degree of participation =1 or otherwise)	Extent of involvement in projects	+/-
Prgendis(Project gender issues = 1or otherwise)	Consideration of male and female participants	+/-
Prgsneed (Project goal related to social needs =1 or otherwise)	Target of intervention in addressing community wants	+/-
Prinputime (Project inputs timing =1 or otherwise)	Appropriate delivery of project inputs	+/-
Prouputs(Project outputs achievement =1 or otherwise)	Products or services which result from an intervention	+/-
Pprelpovred(Project relevance to poverty reduction =1 or otherwise)	Significance of intervention in relation to income and non income poverty	+/-
Properatime(Project operation time, years)	Period of involvement in a given activity from inception to the eventual survey time	+/-

The endogeneity test showed that the endogenous explanatory variable was significant ($p<0.01$) when ordinary least square (OLS) was compared by two stage least square (2SLS), therefore, the use of IV/ 2SLS procedures was necessary to solve the problem as OLS could yield inconsistent estimates (Stock and Watson, 2003). Thus, the study employed IV/ 2SLS with the key assumption that IVs correlates with the endogenous variable independent of potential outcomes to produce consistent results (Wooldridge, 2004; Greenstone and Gayer, 2007; Blondal, 2007) expressed as:

$$y = \beta_0 + \beta_1 y_1 + \beta_i x_i + u_i \quad \text{..... (2)}$$

Where; y = project sustainability, β_0 = constant term, β_1 = coefficient of endogenous explanatory variable y_1 (participation), β_i =coefficients of exogenous variables x_i (such as location, gender and age) and u_i = error term for all $i = 2,3,\ldots\ldots,n$ terms. Based on the endogeinity test, the endogenous explanatory variable was transformed into IV to obtain consistent estimators (Stock and Watson, 2003) an observable IV z_i (target groups) was introduced and correlated with y_1 (participation) and not u specified as:

$$y_1 = \alpha_0 + \alpha_1 z_1 + \alpha_2 z_2 + \alpha_3 z_3 + \alpha_4 z_4 + \alpha_5 z_5 + \nu \quad \text{..... (3)}$$

given that $Cov(z_i, y_1) \neq 0$, $E(\nu) = 0$, $Cov(z_i, \nu) = 0$ and α_i in (3) are unknown statistics for all $i = 1,\ldots\ldots,5$ and $\alpha_i z_i$ is uncorrelated with the error term and fitted values were obtained by regressing y_1 versus z_i:

$$\hat{y}_1 = \hat{\alpha}_0 + \hat{\alpha}_1 z_1 + \hat{\alpha}_2 z_2 + \hat{\alpha}_3 z_3 + \hat{\alpha}_4 z_4 + \hat{\alpha}_5 z_5 \quad \text{..... (4)}$$

$\hat{y}_1$ was used as the IV for y_1 and z_i (target groups) was causally associated with y_1 (participation) and endogeneity test of explanatory variables as a necessity of applying 2SLS was done (Cameron and Trivedi, 2005; Wooldridge, 2004). Hitherto, R^2 and Wald-statistic were useful guides (Bound *et al*., 1995) to the quality of IV estimate. Therefore, the analytical model for estimation of project sustainability was specified as defined in Table 1:

$$Y_{PS} = \beta_0 + \beta_1 Partic + \beta_2 Locat + \beta_3 properatime + \beta_4 Femhhd + \beta_5 Benage + \beta_6 Mstatus +$$

$$\beta_7 Educ + \beta_8 prrepovred + \beta_9 prgsneed + \beta_{10} primnned + \beta_{11} pprpimp + \beta_{12} prgendis +$$

$$\beta_{13} prouputs + \beta_{14} Dprpart + \sum_{i=1}^{5} \beta_i projects + e_{ps} \quad \text{.....(5)}$$

Study expectations were: ($\beta_1 > 0$) participation had influence on project sustainability, ($\beta_{8-14} > 0$) factors under consideration influenced project sustainability and that ($\beta_i > 0$) project(s) created were sustainable.

4.0. Results and discussion

4.1 Descriptive statistics

4.1.1 Description of TASAF projects intervention

Respondents were asked to indicate how projects were established and distributed in a given community and the target groups who benefited from TASAF intervention. The results showed that projects were established based on location, marital and gender status of beneficiaries (Tables 2a, 2b and 3a, 3b) presented in the following sections.

4.1.2 Types of projects supported by TASAF

Seven projects were evaluated from both districts and five from each district respectively (Table 2a). Results showed that of all the projects supported by TASAF, dairy cattle projects formed 36.5% followed by environmental conservation and public works. This could be attributed to the nature of participants and their projects' priorities.

Table 2a: TASAF projects distribution in Makte and Rungwe Districts (n=192)

Projects distribution	**Makete**		**Rungwe**		**Total**	
	n	%	n	%	n	%
Public works-Local roads	12	16.4	12	10.1	24	12.5
Dispensary (SP)	0	0	9	7.6	9.0	4.7
Dairy cattle(VG)	27	37	43	36.1	70	36.5
Environmental conservation (FI &VG)	16	21.9	44	37	60	31.2
Poultry (VG)	14	19.2	0.0	0.0	14	7.3
Water (CDI)	0	0.0	11	9.2	11	5.7
Carpentry(VG)	4	5.5	0.0	0.0	4.0	2.1
Total	**73**	**100**	**119**	**100**	**192**	**100**

4.1.3 TASAF projects target groups distribution

According to the basic question asked earlier (Table 2b) survey results showed that among 192 participants, 50% were able-bodied while 0.5% were orphans. The reason for the able-bodied group was that physical infrastructure assets created in rural areas required active labour force participation to sustain their livelihoods through cash-for-work programs. Hitherto, carpentry projects aimed at creating long-term economic activities for the orphaned group.

Table 2b: TASAF projects and beneficiaries distribution in Makete and Rungwe Districts

Vulnerable groups in both districts (n=192)							
Projects	Orphan	Widow	Elder	C/dis.	Able-bod.	HIV/inf.	Total
Roads (FI)	-	-	-	-	24	-	24
Disp. (SP)	-	-	-	-	9	-	9
Dairy cat.	-	11	23	7	18	11	70
Env.cons	-	0	29	-	31	-	60
Poultry	-	2	6	-	1	5	14

Water (CDI)	-	-	1	-	10	-	11
Carpentry	1	-	-	-	3	-	4
Total (%)	**1(0.5)**	**13(6.8)**	**59(30.7)**	**7(3.6)**	**96(50)**	**16(8.3)**	**192(100)**

C/dis= Chronic diseased, Able-bod = Able-bodied, HIV/inf = HIV infected.

4.1.4 TASAF projects and marital status of participants

Results (Table 3a) showed that 64.6% of participants were married followed by separated while 2.1% were widowers. This suggested that the majority of married recipients were Able-bodied and they had an opportunity to participate. These contradict to the present study expectation that Widows and Widowers could form a large proportion of participants. Probably, this difference could have been attributed to the selection criteria based on the vulnerability of the target group(s).

Table 3a: Projects distribution based on marital status and gender of beneficiaries

	Beneficiaries marital status (n=192)					
Project	Single	Married	Separated	Widow	Widower	Total
PWPs-Local roads(FI)	0	21	2	0	1	24
Dispsnesary (SP)	2	7	0	0	0	9
Dairy cattle(VG)	2	40	21	6	1	70
Env cons(FI &VG)	3	41	13	2	1	60
Poultry (VG)	0	5	7	1	1	14
Water (CDI)	3	8	0	0	0	11
Carpentry(VG)	2	2	0	0	0	4
Total, n (%)	12(6.2)	124(64.6)	43(22.4)	9(4.7)	4(2.1)	192(100)

Figures in brackets are percentages.

4.1.5 TASAF projects and gender status of participants

Study findings (Table 3b) showed that 44.4% and 27.8% of male, 29.4% and 34.3% of female participants were beneficiaries of dairy cattle and environmental conservation projects, respectively. However, about 2% of both women and men recipients were involved in carpentry

projects. This suggests that both male and female had a likelihood in project participation during the intervention period.

Table 3b: Makete and Rungwe districts: Projects distribution based on gender of participants (n=192)

	Female		Male		Total	
Projects	n	%	n	%	n	%
PWPs-Local roads(FI)	9	8.8	15	16.7	24	12.5
Dispsnesary (SP)	9	8.8	0	0.0	9	6.5
Dairy cattle(VG)	30	29.4	40	44.4	70	36.5
Env cons(FI &VG)	35	34.3	25	27.8	60	31.3
Poultry (VG)	10	9.8	4	4.4	14	7.3
Water (CDI)	7	6.9	4	4.4	11	5.7
Carpentry(VG)	2	2.0	2	2.2	4	2.1
Total	102	100	90	100	192	100

4.2 Sustainability of assets created in vulnerable communities

Respondents were asked whether beneficiaries were supported by TASAF through community projects, if yes they were required to list the project(s) established or otherwise. Results (Table 4) showed that 36.5% of beneficiaries followed by 31.2% were supported through dairy cattle and environmental conservation respectively while 2.1% benefit through carpentry project.

Table 4: Vulnerable groups projects support under TASAF intervention

	Beneficiaries(192)		Non beneficiaries(108)	
Response	**n**	**%**	**n**	**%**
Yes	192	100	0	0.0
No	0	0.0	108	100
Projects specified				
Local roads(FI)	24	12.5		
Dispensary (SP)	9	4.7		
Dairy cattle(VG)	70	36.5		
Env cons(FI &VG)	60	31.2		
Poultry (VG)	14	7.3		
Water (CDI)	11	5.7		
Carpentry(VG)	4	2.1		
Total	**192**	**100**		

4.2.1 TASAF projects relevance, effectiveness and efficiency

The projects relevance, effectiveness and efficiency were analysed in relation to National policy on poverty reduction aspects.

4.2.1.1 TASAF projects relevance

Participants were asked to indicate project relevancy to poverty reduction, with respect to poverty reduction, participation in planning and implementation, adequacy of gender issues, whether the project purpose met immediate social needs and whether results were attractive to recipients or otherwise. Result (Table 5) showed that on average project relevance to poverty reduction and addressing social related needs between Makete and Rungwe districts were statistically significant at ($p<0.05$) and ($p<0.01$) levels respectively. Suggesting that there was a difference between the two districts, probably the variation could have been attributed to the fact that Rungwe has five years more experience in implementing TASAF projects than Makete District.

Table 5: Attributes on project relevance in Makete and Rungwe Districts:

	Beneficiaries (n=192)				
	Makete		Rungwe		
Project attributes	**Mean proportion**	**std dev.**	**Mean proportion**	**std dev.**	**F-value**
Was the project relevant to poverty reduction?	0.850	0.360	0.940	0.236	4.554*
Was the project goal addressing poverty related needs?	0.580	0.498	0.970	0.181	60.575**
Involvement in planning and implementation?	0.850	0.360	0.890	0.313	0.706
Did the project addressed the gender issue adequately?	0.930	0.254	0.890	0.291	0.337
Did the project purpose met the immediate needs?	0.450	0.501	0.880	0.324	52.298**
were the project results attractive to the beneficiaries?	0.580	0.498	0.940	0.236	47.106**

**Significant at $p<0.05$, **significant at $p<0.01$, $df = 1$*

Findings (Table 5) showed that the average in meeting the immediate social needs and attractiveness of project results between Makete and Rungwe Districts were both statistically significant at ($p<0.01$) level. These suggest that there were differences in meeting the immediate social needs and projects' results being attractive to recipients between the two districts. The differences between Makete and Rugwe districts could have been attributed to the districts' success or failure to identify felt and expressed recipients' needs at the inception of the project intervention. Kutsch and Hall (2010) noted that irrelevant projects might become counterproductive to recipients. According to observations made by Sovannarith (2009) report that poverty reduction occurs in part by lifting those in poverty by ensuring that benefits are evenly distributed.

4.2.1.2 TASAF project effectiveness

In view of project effectiveness, recipients were asked to indicate whether project activities were implemented as planned, whether project outputs were achieved as expected and existence of any constraints that hindered implementation or otherwise.

Survey findings (Table 6) showed that in average both project activities and project outputs between Makete and Rungwe districts were statistically significant at ($p<0.05$) and ($p<0.01$) levels, respectively. These suggest that there were differences in implementing project activities and consequently different project outputs were achieved between the two districts. Probably, the variations in project activities and project outcomes between districts could have been attributed to weakness in monitoring and evaluation during the implementation process that had an adverse effect in the expected outputs and results agree with observations made by (Lecy, 2010; ILO, 1997).

Table 6: Attributes on project effectiveness in Makete and Rungwe Districts

	Beneficiaries (n=192)				
	Makete		Rungwe		
Project attributes	**Mean proportion**	**Std dev.**	**Mean proportion**	**std dev.**	**F-value**
were the project activities implemented as planned?	0.850	0.360	0.940	0.236	4.554*
Were the project outputs achieved as expected?	0.620	0.490	0.890	0.313	22.43**
Any constraints hindered implementation?	0.470	0.502	0.410	0.494	0.533

**Significant at $p<0.05$, **significant at $p<0.01$, $df = 1$*

4.2.1.3 TASAF projects efficiency and sustainability

In the same way, recipients were asked to indicate the appropriateness timing of inputs, whether the project utilized the existing human resources and the degree of participation of beneficiaries, or otherwise. Findings (Table 7) showed that the average timing of inputs at the project location and the degree of recipients participation between districts were both statistically significant at ($p<0.01$) and ($p<0.05$) levels. Suggesting that there were differences in timing of inputs delivery and the extent of recipients' involvements in projects implementation in the two districts. The differences in timing of inputs delivery and beneficiaries' involvement between the two districts could have been attributed to TASAF procurement procedures, poor infrastructure net work to the project location and low awareness of recipients on project ownership. Kusek and Rist (2004) noted that without ownership, recipients are not willing to invest their time and other resources in the project. In this case, both districts maximized the use of local human resources available indicating that targeted groups earned their livelihood through participation and in-kind contribution to minimize projects costs, respectively.

Table 7: Attributes on project efficiency in Makete and Rungwe Districts

	Beneficiaries (n=192)				
	Makete		Rungwe		
Project attributes	Mean proportion	std dev.	Mean proportion	std dev.	F-value

Is the timing of inputs appropriate?	0.410	0.495	0.700	0.461	16.496**
D0 the project utilize the existing human resources?	0.930	0.254	0.970	0.157	2.124
Do the degree of participation of beneficiaries sufficient?	0.860	0.346	0.950	0.220	4.496*

**Significant at p<0.05, **significant at p<0.01, df* = 1

In summary, projects results discussed and presented so far ascertained the sustainability of TASAF project after the withdrawal of TASAF resources as shown in the estimation model used. Influential factors identified for sustainability were based on the priority reflected in project goals in addressing poverty and related social needs, achieving immediate needs, attractiveness of projects results and the degree of participation by the beneficiaries. Since, the purpose of the TASAF intervention was to provide immediate support rather than longer-term benefits, TASAF projects were more focused on outputs rather than outcomes. The following quantitative estimation of impact of intervention confirmed the observed facts on impact of the project to the livelihood of the vulnerable people.

4.3 Quantitative estimation of projects sustainability

Table 8 present the extent to which created assets were sustainable after the withdrawal of support from TASAF. Estimates were tested for model fit, fitted values and heteroskedasticity. Results showed a significant Wald-statistic test ($p<0.01$) and pseudo R-squared (84.92%) indicating that the model was appropriate and instruments were relevant and sufficiently correlated with endogenous explanatory variables, respectively. Furthermore, hat-square variable for fitted values ($P>|t| =0.346$) and constant variance were both not statistically significant suggesting that the model was appropriate with no specification error and heteroskedasticity problems.

Survey findings showed that of all the projects surveyed only carpentry works was statistically significant ($p<0.05$) and sustainable (Table 8). This proposed that the project continued to deliver long-term benefits to recipients after the departure of external funding. Thus, the effectiveness of the intervention depends on the nature of the project. However, results contradicts with the argument that social funds were set up to provide temporary employment and a bridge over the crisis through lower-based income transfers and a subsidization of social services (Batkin, 2001; Lau-Jorgensen and Van-Domelen, 1999). Most likely, organizational of assets created and financial management enhanced participants in learning and managing the assets (Lund – Thomsen, 2007). Equally, Del Ninno *et al*. (2009) reported that a well designed and implemented project helps in mitigating income shocks as an anti-poverty instrument.

Moreover, the relevance of the project to poverty reduction ($p<0.05$), project goal related to social needs, degree of participation, project outputs, project ability to meet immediate needs of target group were significantly ($p<0.01$) positively correlated with project sustainability (Table 8). These suggest that project sustainability depends on its relevance, ability to address social needs, extent of recipients' involvement, products and services and short-term effects to communities. Probably, this was improved by transparency in project ownership, management, maintenance and credibility (Kusek and Rist, 2004). Contrary, Shaheen *et al*. (2009) reported that sustainability of projects was sought to be achieved through participatory approach in development by involvement of beneficiaries at all stages.

To this end, project operational period ever since inauguration had positive significant ($p<0.01$) influence on project sustainability. This advocates that as time passes through participation, participants appreciated benefits from the projects established as their livelihoods improved thus project ownership was imprinted. In the same way, Mubangizi (2009) observed that poverty alleviation projects are successful if they promote sustainable livelihoods.

Table 8: Instrumental variables (2SLS) regression of projects sustainability in Makete and Rungwe Districts

Variable	Coefficient	Std. Err.	z	P>|z|
Instrumented				
Participation	-0.189	0.122	-1.550	0.121
Instruments				
Makete	0.049	0.035	1.410	0.158
Project operation period	0.063	0.014	4.570	0.000***
Female household head	-0.005	0.029	-0.180	0.855
Beneficiary age	0.001	0.001	1.090	0.274
Marital status	0.057	0.030	1.890	0.059*
Education level	0.021	0.015	1.390	0.164
Relevance on poverty reduction	0.134	0.057	2.340	0.019**
Project goal on social needs	0.251	0.062	4.070	0.000***
Ability to meet Immediate needs	0.223	0.059	3.760	0.000***
Planning and implementation	-0.081	0.049	-1.660	0.096*
Gender issues	0.087	0.068	1.280	0.201
Project outputs	0.180	0.046	3.930	0.000***
Time of inputs delivery	0.025	0.042	0.580	0.560
Degree of participation	0.192	0.066	2.910	0.004***
Public works	0.067	0.045	1.480	0.138
Carpentry project	0.266	0.124	2.130	0.033**
Dairy cattle project	0.001	0.057	0.010	0.990
Poultry project	0.107	0.071	1.500	0.132
Environmental conservation.	0.021	0.057	0.380	0.706
Constant	-0.159	0.073	-2.190	0.029

Significance levels: *, ** and *** are $p<0.1$, $p<0.05$ and $p<0.01$, respectively.

5.0 Conclusions and recommendations

Based on these findings, therefore it was concluded that sustainability of assets created for poverty reduction was influenced by relevance, effectiveness, efficiency and project operational period since its inception. Based on this conclusion, it is recommended that: First, the government should create assets through a thorough participatory identification of assets to be created relevant to the target group(s). Second, local government authorities should implement assets created through training, supervision and regular field exchange visits for long-term benefits with possibilities of scaling up to achieve its sustenance period and be credible for other assets. Third, recipients should have a binding contract of assets to enhance livelihood sustainability subject to payback of assets handled over rather than being an income re-distribution.

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