Constituency Development Fund and Poverty Reduction: A Case Study

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ABSTRACT
This study investigates Constituency Development Fund’s (CDF) contribution and its effectiveness on the household poverty reduction in Siaya District Kenya for the period 2003 and 2007. We use multiple regression analysis to assess the level of contribution of CDF towards improvement of people’s livelihood. The empirical results shows a significant decrease in household expenditure on education with the β value 3.733 and 0.740 for 2003 and 2007 respectively and health with 3.962 and positive 0.864 for 2003 and 2007. We conclude that CDF has effectively contributed to poverty reduction and improved livelihood among the households.

Key words: Constituency Development Fund (CDF, Poverty Reduction, Household

Journal of Economic Literature (JEL) Classification Number: P46

Mathematics Subject Classification number: 91B32

I. Introduction

1.1: Background Information
Abject poverty in Siaya District remains a serious problem despite the government’s efforts to alleviate the vice through initiation of poverty development programmes. Some of the programmes initiated by the Government of Kenya are: Constituency Development Fund (CDF) in the year 2003; the Local Authority Transfer Fund (LATF) of 1998/99; Poverty Alleviation fund of 2000/01; the Roads Maintenance Fuel Levy Fund (RMLF) of 2000/01; Constituency HIV/AIDS Fund of 2001/02; Free Primary Education Fund of 2003 and; School Bursary Funds of 2003 among others (Mapesa et al. 2006). Besides, the World Economic Forum report on the Alliance’s Pilot work in Siaya District, Kenya (2009), asserts that Siaya District is ranked as the poorest district in Kenya experiencing high levels of chronic and seasonal hunger. The district economic indicators shows: Poverty: 64% of the population live below the poverty line; Hunger: 36% of the children are stunted by malnutrition, and 22% are underweight; Health: There is one doctor for every 96,000 people. Life expectancy is 37 years for
men and 43 years for women. An estimated 24% are infected with HIV/AIDS; Environment: 30% have access to safe drinking water; Infrastructure: 1% of households have electricity. The Siaya District is located in the western region of Kenya about 400 km from Nairobi and about 65 km away from Kisumu City and it is one of the twenty one districts in Nyanza Province. It has three parliamentary constituencies namely Ugenya, Alego-Usonga, and Gem. The district is 1,520 square Km. Geographically, the district lies between latitude 0 26’ to 0 18’ North and longitude 33 58’ East and 34 33’West. It borders Busia district to the North, Emuhaya and Butere- Mumias District to the north east, Bondo to the South and Kisumu West to the south East (CEPAD, 2007).

1.2: Focus of the Study

The Constituency Development Fund (CDF) is a devolved fund established in 2003 through the CDF Act in The Kenya Gazette Supplement No. 107 (Act No. 11) of 9th January 2004.. The CDF Act is dubbed as the most credible and critical legislation that requires the government of Kenya to set aside an amount of not less than 2.5% of all its ordinary revenue from the exchequer for the CDF fund. This money is targeted to all 210 constituencies in Kenya with the budget ceiling for each constituency prescribed to be: firstly, three quarters of the net total of CDF divided equally among all constituencies (netting out 5% emergency and 3% administrative take down) and secondly; a quarter of the net total of CDF divided by the national poverty index multiplied by the constituency poverty index.

According to the CDF Act 2003, the main objectives of CDF are to; fund projects that have immediate social and economic impact on the lives of the people, alleviate poverty and in particular, to fight against poverty at the constituency level (Institute of Economic Affairs, 2006). The fund is administered by the National Management Committee (NMC), Constituency Fund Committee (CFC), Districts Projects Committee (DPC) and Constituency Development Committee (CDC). These agencies are mandated to ensure that the fund operates efficiently. The funds are subject to audit in accordance with the Exchequer and Audit Act. The key instruments for the operationalisation of CDF are the CDF Act, 2003, the CDF Regulations, 2004, the Exchequer and Audit (Public Procurement) Regulations, 2001, government financial regulations and procedures and various Treasury circulars from time to time.

Whereas the government of Kenya has put in place water tight measures for efficient use of CDF funds to achieve specific targeted objectives enshrined in the CDF Act 2003; a number of studies conducted previously have pointed out some challenges facing CDF funds. For instance, GOK (2007) evaluated the effectiveness of devolved funds in meeting their set objectives as part of the routine annual monitoring and evaluation of programmes. Results of the task force indicated that there was overwhelming evidence that some development funds went unutilised and were either returned to Treasury, wasted or misappropriated within the line ministries (Mapesa et al, 2006). A country wide survey conducted by Institute of Economic Affairs (2006) entitled ‘Kenyans’ Verdict: A Citizens Report Card on the Constituencies Development Fund came out with interesting results. It also revealed that 51% of the beneficiaries were unsatisfied with the overall impact of CDF on poverty while 43% were
satisfied with equity issues in CDF. Further, this survey revealed that sometimes the Member of Parliament dictated who should be awarded a contract in any CDF funded projects and knowledge of costs of projects and disbursed amounts among project beneficiaries was generally low. The Centre for Peace and Democracy (2007) provided a social audit of devolved funds in Alego constituency in Siaya district. The social audit revealed that utilization of CDF was improperly done and that most beneficiaries were yet to realise the CDF impact on poverty as some sectors such as agriculture and water were inadequately considered for funding even though the CDF committee bought tractors to be hired at a fee by the poor. A study conducted by Omondi (2007) in Siaya District entitled ‘Constraints to CDF bursary to secondary students’ reveals that the criteria used for allocating bursary has been flawed to the level that the categories of non deserving students have become beneficiaries of the fund. A Baseline Survey conducted by Kenya Institute for Public Policy Research and Analysis (KIPPRA) in 2007, indicates that on average, in all the districts in Kenya, CDF fund was rated at 48.8% by respondents to have no impact and 38.9% of the respondents rated it to have positive impact on the lives of the people.

Keeping in view the overwhelming evidence of sceptical challenges facing CDF fund at the moment that have been pointed out by the previous empirical studies conducted, little is known about the effectiveness of CDF on poverty reduction in Siaya District. This survey study therefore has been designed to address two specific research questions: “To what extent has CDF Fund contributed towards improvement of the people’s livelihood in Siaya District?” and; “What is the significant relationship between CDF and poverty reduction in Siaya District?” The study is guided by the two specific objectives: to: Assess the level of contribution of CDF towards improvement of people’s livelihood in Siaya District and; to determine the significant relationship between CDF and poverty reduction in Siaya District. This study endeavours to make a contribution of new knowledge on effectiveness of CDF on poverty reduction in Siaya district in order to fill up the current information gap.

2. Research Methodology

The study adopts survey research design to evaluate the effectiveness of CDF on poverty reduction in Siaya District. This type of research design is suitable as it aids the researcher in collecting original data for the purposes of describing a population which is too large to observe directly. Siaya district has a total of 127,000 households estimated from 1999 population and housing census (GOK, 2006). For this reasons the study adopts the Kenya National Bureau of Statistics Sampling Frame known as National Sample Survey and Evaluation Programme Four (NASSEP IV) which identifies a total of 32 clusters each with 100 households spread in the entire district. Thus the total number of households forming the clusters is 3,200. The calculation of the sample was done considering the target population of 3,200 households and the required confidence level of 0.05 that yielded 310 households as sample size for the study. The households were taken as the unit of analysis.
Both primary and secondary data were considered in the study. The primary data was gathered through interviews, discussions and observations. Secondary data used were obtained from government publications, CDF Offices, District Development Office, Kenya National Bureau of Statistics office, and other organizations serial reports. Before carrying out data collection for the study, a pre-test of the instruments was carried out in one none selected cluster of the Kenya National Bureau of Statistics to test reliability of research instruments for one week and the results were analysed. The pre-test results concluded that the instruments were valid and reliable. According to Orotho (2005), validity is concerned with whether the questionnaire content is measuring what it is supposed to measure. Gay (1987) contends that validity is established by expert judgement. Key-Informant Interviewing was conducted and information was obtained from the CDF committee members, chiefs and the District Development Officers who had more knowledge on the CDF operations and well versed with the CDF Act.

In order to understand more about CDF sponsored projects, participant observation and photography were used in the study. Direct observation helped the researcher in cross-checking the respondents’ answers while photographs were taken to capture CDF projects on the ground.

Both descriptive and quantitative techniques were used in the processing, analysis and presentation of the data. According to Odebero (2001) a combination of techniques are important because descriptive methods tend to be strong in validity but weak in reliability while quantitative methods tend to be strong in reliability but weak in validity hence their combination balanced the strengths and weaknesses of each of them. In this study, data were cleaned and then coded according to the variables. A code is an abbreviation or symbol applied to a segment of words most often in a sentence or paragraph of transcript, field notes in order to classify the word (Miles et al., 1984). The data entry and formatting of tables as well as production of some charts was done in Excel package. After completion of data entry, the data was then exported to SPSS package for analysis. The report writing was done in Microsoft Word. The dependent variable household income and the independent variables namely household expenditures on health care, education, food, non-food items and water were subjected to both simple and multiple regression analysis.

The assumption was that:
\[ Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + U_t \]
Mathematically expressed as \[ \Sigma Y = a_0 + \Sigma a_iX_i \] for \( i = 1, 2, \ldots, 5 \)
Where (\( Y \)) = Household Income
\( X_1 \) = households expenditure on health care.
\( X_2 \) = households expenditure on education.
\( X_3 \) = households expenditure on food.
\( X_4 \) = households expenditure on non-food items.
\( X_5 \) = household expenditure on water.
\( U_t \) = Error term.
\( a_0 = \text{Constant} \)

\( a_i's = \text{regression coefficients or change induced in} \ Y \ \text{by} \ X_i's, \ \text{for all} \ i's = 1, 2, ..., 5 \)

The SPSS computer statistical analysis package was used to establish the value of the coefficients of the regression equations. Multiple regression analysis was used because it showed the interactive effect of each independent variable on the dependent variable. The coefficients of the multiple determiners were obtained and used to determine the level of variation of household income accounted for by the independent variables. There were two regression models generated for comparison to help in finding out whether CDF had been effective on poverty reduction in Siaya district. The analyzed information was presented using frequency tables, cross tabulations and charts.

3. Results of the Study

The study used regression analysis to assess the level of contribution of CDF towards improvement of people’s livelihood in Siaya district. This was done by regression of the dependent variable household disposable income against the independent variables namely; household expenditure on health care, education, food, non food and water. Regression analysis was important as it produced the correlation between the variable and contribution of each to the dependent variable.

The regression model assumes that; first, the error term has a normal distribution with a mean of zero, secondly, the variance of the error term is constant across cases and independent of the variables in the model and an error term with non constant variance is said to be heteroscedastic, thirdly, the value of the error term for a given case is independent of the values of the variables in the model and of the values of the error term for other cases. In this study, the multiple regression analysis, assumed that the variation in dependent variable (Household Disposable Income) was jointly caused by independent variables namely households expenditure on health care, education, food, non food items, water and an error term. Prior to running the regression analysis, a scatter plot was examined to determine whether a linear model was reasonable for the variables. The resulting scatter plots appeared reasonable for the regression with some few possible causes of concern for the points which exerted undue influence on the lay out of the regression line. The scatter plots showed that the household income appeared to increase with increasing expenditure on health care, education, food, non food items and a near horizontal line with expenditure on water. Test for multicollinearity showed insignificance inter-correlations among the independent variables as indicated by the \( R^2 \) values. According to Mukras (1993), when \( R^2 \) of a variable falls below 0.5, it shows insignificant interrelations among the variables. To test for heteroscedasticity, Spearman’s rank correlation showed that all values were below 0.5 indicating absence of heteroscedasticity amongst independent variables. Koutsoyiannis (1977) asserts that rank correlations exceeding 0.5 suggests presence of heteroscedasticity. Autocorrelation test was conducted using Durbin -Watson regression estimate and the results produced by with an aid of SPSS version 10.0 indicated that the successive values of the errors (\( \mu \)) for some variables changed sign frequently suggesting negative autocorrelation while others did not change sign frequently suggesting positive autocorrelation. As
stated by Koutsoyiannis (ibid), if the successive values of the error term changes sign frequently, then autocorrelation is negative otherwise it is positive. Mukras (ibid) asserted that where multicollinearity, heteroscedasticity and autocorrelation tests fails to identify a set or subset of estimates, policy formulation is commonly based on the common characteristics of significant estimates. Thus in this study the significant variables determined the effectiveness of CDF on poverty reduction in Siaya District.

3.1: Determination of the Effect of each Independent Variable on Dependent

The regression analysis produced the contribution of each independent variable on household income for the two years. Each variable was regressed against the dependent variable income with other independent variables constant and the results are summarized in the Tables 19 and 20 below. The two tables provided the strength of association (R) between the household income and the independent variables as well as the contribution of each variable (R²). R is the linear correlation between observed and model predicted values of the dependent variable. From Table 1, the study indicates that in 2003, there was weak association between annual household income and annual expenditure on health care, food and water as shown in the R column. In 2003, annual expenditure on education contributed 41.1% of the total variations in household income while annual expenditures on food and non food items contributed 24.4% and 27% of the total variation in household income respectively. Expenditure on health care and water contributed 15% and 11.3% of the variations. All the variables jointly contributed 75.8% of the total variations on household disposable income. The remaining 24.2% not catered for in 2003 by the five independent variables were attributed to many other parameters which also affected the household income and errors in data collection. However, the study reveals that 75.8% contribution by the five variables was a high value showing that these variables might have contributed more to the expenditure of household income. Thus this study suggested that more household income was spent on the five sectors under consideration in 2003.

<table>
<thead>
<tr>
<th>Variable</th>
<th>R</th>
<th>R²</th>
<th>R² adjusted</th>
<th>Std deviation of estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>X₁</td>
<td>0.387</td>
<td>0.150</td>
<td>0.146</td>
<td>146083.846</td>
</tr>
<tr>
<td>X₂</td>
<td>0.641</td>
<td>0.411</td>
<td>0.408</td>
<td>112715.974</td>
</tr>
<tr>
<td>X₃</td>
<td>0.494</td>
<td>0.244</td>
<td>0.241</td>
<td>126417.874</td>
</tr>
<tr>
<td>X₄</td>
<td>0.520</td>
<td>0.270</td>
<td>0.267</td>
<td>123581.695</td>
</tr>
<tr>
<td>X₅</td>
<td>0.336</td>
<td>0.113</td>
<td>0.104</td>
<td>175495.296</td>
</tr>
<tr>
<td>Jointly</td>
<td>0.871</td>
<td>0.758</td>
<td>0.738</td>
<td>98917.16</td>
</tr>
</tbody>
</table>

Source: Field Survey data, 2008

From Table 2, study reveals that there was weak relationship between household income and expenditure on health care, education and water while there was strong association between income and expenditure on food and non food items. The study also shows that in 2007, annual household
expenditure on food and non food items contributed 42% and 43.8% respectively of the variations on
the household disposable income while annual expenditure on health care and education contributed
lowly at 3.2% and 1.75% respectively of the total variations in the household income. Household
expenditure on water contributed insignificant amount of variations on income of about 0.3%. Jointly
the variables contributed 66.3% of the variations on household income. The remaining 33.7% not
catered for by the five independent variables were attributed to many other parameters which also
affected the household income and errors in data collection. However, the study indicates that the
66.3% contributed by the five variables was not very high value to show that these variables
contributed proportionately to the expenditure of household disposable income. Thus the household
income was not proportionately spent on the five sectors under consideration in 2007. This implies
that there was high expenditure on certain sectors than the others. The study therefore suggested
that the households’ expenditure was high on food and non food items compared to household
expenditure on health care, education and water. This high household expenditure on food and non
food items in 2007 could be attributed high oil prices and inflation.

<table>
<thead>
<tr>
<th>Variable</th>
<th>R</th>
<th>R²</th>
<th>R² adjusted</th>
<th>Std deviation of estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>X₁</td>
<td>0.179</td>
<td>0.032</td>
<td>0.028</td>
<td>148807.98</td>
</tr>
<tr>
<td>X₂</td>
<td>0.418</td>
<td>0.175</td>
<td>0.171</td>
<td>137416.13</td>
</tr>
<tr>
<td>X₃</td>
<td>0.648</td>
<td>0.420</td>
<td>0.418</td>
<td>112834.18</td>
</tr>
<tr>
<td>X₄</td>
<td>0.662</td>
<td>0.438</td>
<td>0.436</td>
<td>111283.61</td>
</tr>
<tr>
<td>X₅</td>
<td>0.058</td>
<td>0.003</td>
<td>0.005</td>
<td>156834.14</td>
</tr>
<tr>
<td>Jointly</td>
<td>0.814</td>
<td>0.663</td>
<td>0.645</td>
<td>96662.702</td>
</tr>
</tbody>
</table>

Source: Field Survey data, 2008

Where; Y₂₀₀₃ – Annual household income in 2003
Y₂₀₀₇ - Annual household income in 2007
X₁ - Annual household expenditure on health care
X₂ – Annual household expenditure on education
X₃ – Annual household expenditure on food
X₄ – Annual household expenditure on non food items
X₅ – Annual household expenditure on water

The Multiple Regression Analysis

Multiple regressions were used by the study to determine the sectors household disposable income
was utilized the most. From table 3, the study indicates that the relationship between household
disposable income in 2003 and the independent variables namely household expenditure on health
care, education, food, non food items and water can be shown using regression equation:-

\[ Y₂₀₀₃ = 44858.356 - 3.962 \times X₁ + 3.733 \times X₂ - 0.068 \times X₃ + 1.097 \times X₄ - 3.041 \times X₅ + \mu \]

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From the regression equation $Y_{2003}$, the study shows that household expenditure on health care, food and water had negative coefficient. This showed that household disposable income was inversely related to household expenditure on health care, food and water thus suggesting that less expenditure of household disposable income was used in those sectors. Similarly, the study finds that household expenditure on education and non food items had positive coefficient indicating that households had spent more of their disposable income on education and non food items. Therefore, in 2003, a 1% increase in the expenditure on health care led to a drop in household disposable income by 3.962 times with other factors held constant while a 1% increase in household expenditure on education led to an increase in household disposable income by 3.733 times. Further, there was a drop on the household disposable income for a 1% increase in the household expenditure on food and water. A 1% increase in the household expenditure on non food items led to an increase of 1.097 times on household disposable income. The study therefore suggests that in 2003, households spent less of their disposable income on food and water but spent more on education and non food items.

**Table 3**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t-statistic</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>44858.356</td>
<td>16674.553</td>
<td>2.690</td>
<td>.009</td>
</tr>
<tr>
<td>$X_1$</td>
<td>-3.962</td>
<td>0.848</td>
<td>-.762</td>
<td>-4.670</td>
</tr>
<tr>
<td>$X_2$</td>
<td>3.733</td>
<td>0.634</td>
<td>.463</td>
<td>5.890</td>
</tr>
<tr>
<td>$X_3$</td>
<td>-.068</td>
<td>0.257</td>
<td>-.063</td>
<td>-.264</td>
</tr>
<tr>
<td>$X_4$</td>
<td>1.097</td>
<td>0.252</td>
<td>1.234</td>
<td>4.347</td>
</tr>
<tr>
<td>$X_5$</td>
<td>-3.041</td>
<td>4.162</td>
<td>-.057</td>
<td>-.731</td>
</tr>
</tbody>
</table>

*Source:* Field Survey data, 2008 (t-statistic significant at 0.05)

**Table 4**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t-statistic</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>29357.996</td>
<td>14899.85</td>
<td>1.970</td>
<td>0.052</td>
</tr>
<tr>
<td>$X_1$</td>
<td>0.864</td>
<td>0.298</td>
<td>0.364</td>
<td>2.895</td>
</tr>
<tr>
<td>$X_2$</td>
<td>0.740</td>
<td>0.233</td>
<td>0.399</td>
<td>3.183</td>
</tr>
<tr>
<td>$X_3$</td>
<td>1.376</td>
<td>0.314</td>
<td>0.270</td>
<td>4.387</td>
</tr>
<tr>
<td>$X_4$</td>
<td>-.264</td>
<td>0.428</td>
<td>-.037</td>
<td>-.616</td>
</tr>
<tr>
<td>$X_5$</td>
<td>-3.419</td>
<td>3.752</td>
<td>-.055</td>
<td>-.911</td>
</tr>
</tbody>
</table>

*Source:* Field Survey data, 2008 (t-statistic significant at 0.05)
From table 4, the study shows that the relationship between household income in 2007 and the independent variables namely household expenditure on health care, education, food, non food items and water are shown using the regression equation:

$$Y_{2007} = 29357.996 + 0.864 \times X_1 + 0.740 \times X_2 + 1.376 \times X_3 - 0.264 \times X_4 - 3.419 \times X_5 + \mu$$

From the regression equation $Y_{2007}$, the study indicates positive coefficients for the household expenditures on health care, education, food and negative coefficients for household expenditure on non food items and water. This study reveals that a 1% increase in household expenditure on health care, education and food led to an increase of 0.864, 0.740 and 1.376 times on household disposable income respectively in the year 2007 while an increase of 1% of household expenditure on non food items and water led to a drop in the household disposable income by 0.264 and 3.419 times respectively. This implied that households may have not spent much of their disposable income on non-food as they did in 2003. The study shows that household expenditure on water changed insignificantly as indicated by the two equations. This implies that water sector was not adequately covered by CDF.

3.2: Comparison of the Regression Equations

The two regression equations were compared to enable inferences be made on the effectiveness of CDF on poverty reduction. This was done by comparing the household expenditure on the key sectors funded by CDF and whether there was a drop in the $\beta$ coefficient between the year 2003 and 2007. From the two regression equations, the study reveals that there was a decrease in household expenditure on education. This drop is supported by the $\beta$ value 3.733 and 0.740 in the years 2003 and 2007 respectively. It was further revealed by the study that household expenditure on health insignificantly increased as shown by the $\beta$ coefficients of negative 3.962 and positive 0.864 in the year 2003 and 2007 respectively. The study shows increase in household expenditure on food and a decrease in the expenditure on non food items as shown in the two equations. This study reveals insignificant expenditure or change in expenditure on water in the district. The $\beta$ coefficients for expenditure on water for 2003 and 2007 are negatives 3.041 and 3.419 respectively. The study therefore suggests that there was reduction of household expenditure on education and health care and hence less impact on the household disposable income. The study suggests that the less impact on household disposable income as a result of expenditure on health care could be attributed partly to introduction of CDF which led to expansion of health care services in the district and other development agencies such as Centre for Disease Control and KEMRI, Global Fund, AMREF, World Vision and Millennium Development Fund among others. Moreover, the household survey results indicated that 54.7% of the households knew of health projects funded by CDF while 25.8% stated that access to the health services had improved. Republic of Kenya (2000), asserted that 30.9% of the poor who were sick in Siaya District never sought for treatment because the cost of treatment was too expensive while 26.7% of the non poor had similar reasons for not seeking treatment.

The study suggest that the drop in household expenditure on education or less impact on the household disposable income could attributed to CDF because from the household survey results, 75.5% of the households knew of the CDF projects on education while 68% stated that education facilities are adequate in the district. Access to education was also indicated by 70.3% of the
households to have improved. Other funds such as Free Primary Education Fund, Constituency bursary, Millennium Development Fund project and other donor funds could have also contributed to the drop in household expenditure on education which this study did not investigate. This study therefore suggested that CDF had improved education sector and at the same time relieved households the burden of using more of their disposable income on education expenditure.

This study suggests that increase in household expenditure on food and decrease in the expenditure on non food items could be attributed to high food and non food prices as a result of upward trend in the oil prices both locally and internationally. The study result suggests that CDF did not adequately contribute to food production in the district. This study also found out that 45.7% of the households in Siaya district had inadequate food. But Republic of Kenya (2007) found out that 26.1% of the households in Siaya district were food poor. As stated before, this study confirms that Siaya District remains a food importer since food production has never improved despite many initiatives and CDF ought to target food production or agricultural projects in order to reduce food poverty.

As regards expenditure on non food, choice had to be made by the household between expenditure on food and non food items. This led to less expenditure on non food expenditure as it was the savings made after expenditure on food that the households could spend on non food items. The study suggests that expenditure on non food decreased between the years probably due to hard economic times experienced by the households that never reflected the true annual economic growth which has been on the upward trend since 2003.

The insignificant change in the household expenditure on water suggests that not much improvement was done on the water sector by CDF or other funds. This fact is supported by 45.4% of the households who sated to draw their water from the river, stream, pond/dam and spring while 39.4% of the households get their water from the borehole/well where they hardly paid for the water. Republic of Kenya (ibid) indicates that 37% of the households in Siaya draw their water from borehole/well. The disparity in the two studies could be attributed to sampling procedures used since this study considered rural households while the former was conducted in both urban and rural households in the sampling frame of Kenya National Bureau of Statistics in the district. The equations therefore suggested more impact on household disposable income in 2003 when CDF was just introduced than in 2007 when CDF had been in place.

3.3: Research Hypotheses Testing

The study tested hypotheses using t-statistics to find out the CDF funded sectors which exerted less impact on the household disposable income when household expenditures are made. To test hypothesis when variance is not known, a t-distribution was used. Like the normal distribution, t-distribution is symmetric and it approximates the normal distribution for large samples. But the t has fatter tails than normal, an occurrence which is especially for sample sizes of 30 or less (Pindyck, R.S et al., 1981). According to Koutsoyiannis (1977), the procedure for testing hypothesis concerning the value of population parameters includes formulating the null and alternative hypotheses and choosing the level of significance of the test, location of the critical region, the appropriate test
statistic for example normal (Z), t-statistics, chi-square ($\chi^2$), and Fisher distribution (F). After computing the statistic, a comparison is made between the sample values of the chosen statistic with the theoretical values that define the critical region. If the observed value of statistic falls in this critical region we reject the null hypothesis otherwise we accept the null hypothesis. In this study, the only hypotheses are:

**H₀**: CDF has not improved the livelihood of people in Siaya District.

**H₁**: CDF has improved the livelihood of people in Siaya District

The null hypothesis typically takes the form $H_0: \mu = 0$ or in the case of parameters of econometric relationships, $H_0: b_i = 0$ and the alternative hypothesis ($H_1$) is an alternative assumption about the population parameter which is a counter proposition to the null hypothesis and takes the form $H_1: \mu \neq 0$ or $H_1: b_i \neq 0$ implying that a two tailed critical region was chosen for $H_1: b_i \neq b_i^*$. The significance level was set at 95% or 0.05 which implied that the critical region includes the values of the variables with low probability of being observed or values which correspond to the level of significance. The acceptance zone (A) in this case was defined by $A: t<1.96$ while the rejection zone (R) defined by $R: t>1.96$. This indicates that a null hypothesis was accepted if $t-$ statistic was less than or equal to 1.96 and the alternative hypothesis rejected. Similarly for $t-$statistic greater than 1.96, the null hypothesis is rejected and the alternative accepted.

As mentioned the household income and expenditure were used to determine the acceptance and rejection of the hypotheses. To do this, the effects of household expenditure on health care, education, food, non food items and water on household income was used in determining the acceptance or rejection of both null and alternative hypotheses. As stated before, if household expenditure on any sector used in the model has more impact on household income then it implies that CDF never performed well in that sector and therefore less contribution towards poverty reduction.

The indirect null hypotheses tested were:

**H₀₁**: There is no statistically significant relationship between expenditure on health care and household income.

**H₀₂**: There is no statistically significant relationship between expenditure on education and household income.

**H₀₃**: There is no statistically significant relationship between expenditure on food and household income.

**H₀₄**: There is no statistically significant relationship between expenditure on non food items and household income.

**H₀₅**: There is no statistically significant relationship between expenditure on water and household income.

Tables 5 and 6 indicate the significance of each independent variable on household income using $t-$statistic. The value of $t$-statistics shows which variable should be rejected or accepted.
The study reveals the following conclusions from tables 5 and 6; that, there was statistically significant relationship between household expenditure on health care and household disposable income in the year 2003 and 2007. The study indicates that the null hypothesis has been rejected. This implies that CDF has contributed to development of the health sector in the district.

The study also reveals that there was statistically significant relationship between household expenditure on education and household disposable income for the year 2003 and 2007. The study therefore indicates that the null hypothesis was rejected. But the study shows from the regression equations that more funds were used on education by the households in 2003 than 2007. This study suggests that less household expenditure on education in 2007 could be attributed to CDF and other
development funds such as Free Primary Education (FPE) and Constituency bursary fund even though FPE never catered for construction of buildings and the bursary.

There was no statistically significant relationship between household expenditure on food in 2003 while the statistical relationship was significant in 2007. The null hypothesis was therefore accepted in 2003 and rejected in 2007. The study suggests that this difference in statistical significance could be attributed to lower prices of food items, bumper harvest due to better weather conditions in 2003. Secondly, the study suggests that there could have been many poor households in that year who could not afford expenditure on food. The study also suggest that the significant increase in 2007 on household disposable income due to a unit increase on the expenditure on food could be attributed to high food prices as a result of the increase in the cost of production and fuel prices despite the economic growth realised since 2003. Secondly, the study suggests the other cause to be the failure by the development agencies in the district to effectively address the food security situation which could reverse the district from being food importer to food producer. According to Republic of Kenya (ibid), over 90% of the farmers in the district are subsistence in nature and their harvest hardly last for over four months. Moreover, the study indicates that CDF had not significantly contributed to food poverty reduction in Siaya district as the study shows that there were no tangible agricultural projects undertaken by the CDF committee except in Gem constituency where the CDF committee worked hand in hand with the Bar Sauri Millennium Development Project in order to boost agricultural production.

There was statistically significant relationship between household expenditure on non food items and household disposable income in 2003 while there was no statistically significant relationship between the two variables in 2007. The null hypothesis was rejected in 2003 and accepted in 2007. The study suggests that the fluctuations on the prices of goods and service though in the upward trend could have contributed to less household expenditure on non food items. This is because preference and choice made by the households between expenditures on non food items and expenditures on basic household requirements or necessities such as food, education and health care. Lastly there was no statistically significant relationship between household expenditure on water and household disposable income in both years. The null hypothesis was rejected in both years. The study suggests that expenditure on water had less impact on household disposable income for the two years and this could be attributed to the fact that most households draw their water from unpaid sources such as rivers, dams, ponds, streams, springs, boreholes and wells. Our conclusion on this is that CDF did not make any impact on the provision and access to safe water in the district.

### 3.4: Outliers and Extremes in Household Income and Expenditure

In order to establish the existence of households with abnormally low or high income and expenditure, the study used Box plots. The low or high income and expenditures indicated by the box plot may have exerted undue amount of influence on the lay out of the regression line. However as shown in figure 20 in the appendix II, the study shows that each constituency had its own share of the outliers and extremes in the household income in the years 2003 and 2007. The study reveals that Ugenya
and Gem constituencies had more extremes and outliers compared to Alego Usonga. In the box plot, the extremes are indicated by a star (*) while outliers are indicated by a near cycle. Figure 21 and 22 in the Appendix II also indicates the outliers and extremes in annual household income. Table 42 provides information on the first five highest incomes and last five lowest incomes that the study found. The study indicates the highest income in 2003 as ksh.1,086,000 while in 2007 the highest amount was ksh.1,190,000. The lowest were Ksh. 300 and 1,400 in 2003 and 2007 respectively. The study reveals that the outliers and the extremes exhibited by the box plots are for those households whose member or members are in formal employment, business or retired and have constant monthly income. The box plot clearly indicates that majority of household earned annual income of less than ksh.200,000 but the income was generally higher in 2007 than in 2003 for all the constituencies.

4: Conclusion and Recommendations

4.1: Conclusion
CDF has effectively contributed to poverty reduction in Siaya district since the study indicates a decrease in the number of poor households from 49.2% in 2003 to 37.4% in 2007. The effectiveness in the projects implementation level implies prompt utilization of these facilities by the community because of regular monitoring by the CDC. Further, the study concludes that more CDF expenditure was concentrated on service sectors of education and health. Other production sectors such as agriculture, energy and transport were inadequately funded. Water and sanitation which is one of the basic human need was inefficiently funded and the frequent outbreak of water bone diseases such as cholera, dysentery and rampant typhoid cases further explains the district lack of clean and safe drinking water. Food insecurity continues to be a major problem despite many funding agencies operating in the district.

Besides, CDF has significantly contributed to uplifting the standard of living of the residents of Siaya district through households direct benefits such as labour supply, tender supply, market local goods and bursary all which raised the income levels of these households. Similarly, the study concludes that there was relief on expenditure of household disposable income in both health care and education resulting into more household savings which could be invested elsewhere. Average monthly income increased by a small margin over the five years indicating that poverty still remains a problem despite the achievements of CDF.

From regression analysis and hypotheses testing the study identified the strengths and weaknesses of CDF. The main weaknesses as revealed by the study was under funding of the agriculture production and water sectors which could further contribute to the uplifting of the districts population standard of living by lowering household expenditure on food and less morbidity rates occasioned by water borne diseases.
4.2: Recommendations

The study recommends that CDF Act requires further amendments to increase the fund from 2.5% to 10% to empower the community participation in development projects which targets poverty reduction in the district. At the same time curb the powers of MPs who are reported to flaw and mismanage the CDF. Moreover, the CDF committee should comprise of technically qualified members who can keep proper records of the projects and bursary beneficiaries. It is recommended that the recently posted CDF managers recruit professionally qualified support staff. To enhance public awareness, there is need to develop and implement elaborate Information Education Communication (IEC) materials. The project catalogue should clearly contain the name of the project, the amount allocated, co-financiers if any and the amount contributed and the project status which should be up dated regularly because the community viewed on going projects as stalled and abandoned. For the public awareness, let the list of bursary beneficiaries and projects be pinned in the notice boards of the offices of the provincial administration. CDF management, CDF Board should ensure timely disbursement of the funds so that projects do not stall for along period before completion. This was reflected in the research findings by the number of households who stated that the projects were abandoned. The provision in the CDF Act 2007 amendment that empowers the CDF committee as the sole authority in the allocation of funds and exercised at their own discretion though within the Act will be or has been subjected to abuse and therefore should be amended to state that they should do it according to the location development committees priorities because the CDF committee may not be well versed with the development needs of each section of the constituency. The study also recommends that there is need for monitoring system of projects and CDF bursary recipients. Finally this study reveals that the government procurement procedures are supposed to be followed to the letter while conducting purchases of various items and services. However, the study noted with serious concern that, the CDF Act has a loophole on the procurement system where CDF committee can directly fund institutions and organised groups to manage and undertake implementation of some projects. With this arrangement, the funds are open to misappropriation and embezzlement since many organizations might be given credit for the same project and none of them may be aware of the other funding agency. To avoid this, the study recommends that CDF committee need to either undertake the project fully or collaborate with a known organization and after completion of the project, it should be clearly indicated on the wall or by way of a notice board/ sign post the contribution of each organization.

5. References


Community Watch, April 2008; Fate of 150 Ugenya Bursary Beneficiaries hang in Balance. Legislators on Focus over CDF formation. Issue No. 2


