An Impact Assessment of the Community Market for Conservation (COMACO) Project on the Welfare of Small-Scale Farmers in Zambia's Chama District.

A Research Report Presented to the Department of Agricultural Economics and Extension of the University of Zambia.

BY

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# ACRONYMS

- COMACO COMMUNITY MARKET FOR CONSERVATION
- CTC CONSERVATION FARMER AND WILDLIFE TRADING CENTRE
- WCS WILDLIFE CONSERVATION SOCIETY
- MACO MINISTRY OF AGRICULTURE AND COOPERATIVES
- CSO CENTRAL STATISTICS OFFICE
- GDP GROSS DOMESTIC PRODUCT
- GMA GAME MANAGEMENT AREA
- VAG VILLAGE ACTION GROUP
- CBNRM COMMUNITY BASED NATURAL RESOURCE MANAGEMENT
- WFP WORLD FOOD PROGRAMME

#### ZAWAZAMBIA WILDLIFE AUTHORITIES

- CRB COMMUNITY RESOURCE BOARD
- FAO FOOD AND AGRICULTURE ORGANISATION
- FISP FARMER INPUT SUPPORT PROGRAMME
- FRA FOOD RESERVE AGENCY
- MACO MINISTRY OF AGRICULTURE AND COOPERATIVES
- FG FARMER GROUP

#### ABSTRACT

#### An Impact Assessment of the Community Market for Conservation (COMACO) Project on the Welfare of Small-Scale Farmers in Zambia's Chama District.

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Valley areas in Zambia experience much higher levels of poverty as compared other rural areas. This can be partly attributed to the poor climatic conditions which make farming difficult in such areas. The Community Market for Conservation (COMACO) is a design under the Wild Life Conservation Society (WCS) which is aimed at improving the income and food security levels of people in the Luangwa valley.

Thisdesign aimsat trying to reduce human pressure on natural resources by reducing the poverty levels of the people in the Luangwa valley.COMACO gives alternative sources of income and food to the poor people of the Luangwa valley who are the perpetrators of most environmental degrading activities.

This research was aimed at establishing the economic impact that COMACO is having on the project participants. A sample of 110 people in Chikwa area of Chama district was randomly selected and interviewed. This sample was made up of 43 members and 67 non-members. Income of the people in the area of the research was used as a proxy for economic welfare.

The impact was measured through the use of the Quasi Experimental Design. The average income of the members of COMACO was used as the intervention variable and was compared to income of non-member which was used as the control variable. The impact (difference) was found to positive K798, 937 which showed that the members of COMACO had much higher annual income levels than non-members. But the membership in Chikwa area stands at 39%, meaning that less than half the population actually belong to COMACO.

Considering the positive impact that the project is having on the people of the Luangwa valley, it is recommended that the COMACO design be replicated in other GMA's of the country. Furthermore, COMACO management should find means of increasing the membership from the current 39% in Chikwa to at least 50%.

# CHAPTER ONE INTRODUCTION

#### 1.1 Background

Statistics show that Zambia's poverty levels in urban areas to be 64% as compared to over 78% in rural areas (CSO, 2009). In order to earn a living, people will get into different activities which may include illegal activities. People living around Game Management Areas (GMA) engage in activities like unauthorized hunting, over fishing or deforestation as a means of survival. These activities are harmful to both the Environment and Agricultural sectors of Zambia. Agriculture is the main stay of households in rural Zambia including those in GMA's, hence the need to encourage sustainable agriculture. In order to reduce the high poverty levels in the rural areas and promote rural development, the focus will be on stimulating agriculture productivity and promotion of agro-businesses, (Sixth National Development Plan, 2011). Agriculture is certainly one of the industries that the Zambian Government has identified to use in its quest towards Economic Development.

Community Market for Conservation (COMACO) is a rural designwhich started working as a pilot program under the wildlife conservation society (WCS) in the Luangwa valley in 2001. Wildlife Conservation Society (WCS) developed the COMACO design in partnership with Zambia Wildlife Authority (ZAWA), District Councils, and Community Resource Boards (CRB) through the assistance of World Food Programme (WFP), Programme Against Malnutrition (PAM), and the Food and Agricultural Organization (FAO).

The COMACO design centres on a regional trading centre, called the Conservation Farmer and Wildlife Producer Trading Centre (CTC), and a network of producer trading depots. Under this design, COMACO is able to link literally thousands of poor, food-vulnerable households with interventions that promote improved farming skills, better-paying markets and more environmentally acceptable land use and practices. The CTC is run as a business, `which is based on a large-volume supply of marketable commodities produced by household-level producers, whose production technologies are consistent with land use practices acceptable to conservation of natural resources, (COMACO: Design And Analysis 2004).

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Household producers are organized into producer groups, which are registered with the CTC on the basis of their commitment to conservation. The business is a large-scale trading enterprise designed to build market volume around selected commodities and production technologies that help improve food security, income opportunities and natural resource conservation. Unlike more centrist approaches to biodiversity conservation that rely on national authorities to enforce resource management regulations, COMACO are highly decentralized, household-focused, incentive-driven, and potentially self-financing (COMACO: Design And Analysis 2004).

The CTC operates through a network of trading depots located in rural areas, often in close proximity to a national forest or national park. Households who agree to take up improved farming and land use practices compatible with biodiversity conservation are asked to undertake training in these practices and to form producer groups, consisting usually of 10 to 20 members. Groups are then asked to elect leaders and approve by-laws that require members to adopt zero-tillage and other soil-enhancing practices and prohibit members from such acts as snaring of wildlife, poisoning fish, or burning crop residues. Upon meeting these requirements, producer group members are eligible for the higher commodity prices COMACO offers among other benefits. The approach initially targets families who are poor and food impoverished, and thus most apt to rely on consumptive or illegal use of natural resources as a coping strategy. The majority share-holding is held in trust by WCS on behalf of community shareholders. The arrangement requires that all profits of the CTC belong to community shareholders and WCS facilitates the businessmanagement of the CTC to maintain cost-effectiveness, accountability, strategic investments and compliance to the objectives of COMACO.WCS also holds the majority of share on behalf of the community, other shareholders are the local councils (COMACO: Design And Analysis 2004, COMACO Business Report 2009).

COMACO's goal is threefold and that is to reduce poverty, create jobs and to ensure project sustainability. The COMACO design aims at ensuring that at least 85% of selected poor families achieve a sustainable production of diverse commodities that support food security and increased income and reduce risks of Natural Resource degradation. The other goal of the design is to supplement Government and private sector efforts of Job Creation through increased opportunities of self-employment from direct trade in farm-based and natural resource-based commodities. The third goal of the design is to ensure its Sustainabilitythrough reduced trading centre's dependency on donor support for its

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operational costs and become fully self-financing within 5 years of a trading centre's establishment.

COMACO's vision has been to Protect wildlife and forest resources of the Luangwa Valley ecosystem. This is done by giving poor, food-insecure families access to environmentally "smart" trade benefits, inputs and skills that replace the need to poach wildlife or degrade other natural resources. Under its strategic plan, the mission of the design is to provide marketing services, trade benefits, and extension support for farmbased and natural resource-based commodities as a basis for adopting improved land use practices that promote natural resource conservation. (COMACO: Design and Analysis 2004).

From the statement of its Mission, Vision and Goals, it's clear that COMACO as model is spearheading the development of many sectors in the Luangwa valley which include poverty reduction, job creation commodity marketing and sustainable agriculture. But this study concentrated on finding out the effect the COMACO's agricultural intervention is having on the households living in the Luangwa valley. In this regard the study was to determine household income levels of the beneficiaries.

Other studies to establish the effect of the design have been done in the past though these studies have been concentrated in areas where COMACO has been operating on full scale for more than five years which include Lundazi and Mambwe districts. Some of the finding showed an increase in the amount of payment to farmers from K209, 000,000 in 2005 to K1, 220,000,000 in 2008.

The studies also showed the price trend of some of the commodities that are purchased by COMACO, e.g. rice showed 36% increase in price, chickens showed 80% increase and honey price increased by 108.8% between 2002 and 2005. In 2007 the total number of registered farmers was 30,740 of which 56% were female. Other observations made in these studies were the improved stocks of wildlife, reduced incidences of poaching and increased use of conservative methods of agriculture by farmers in the areas. (COMACO: *Scaling up Conservation Impact through Markets that Change Livelihood, 2009*).

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#### 1.2 Problem Statement

As has already been discussed, the COMACO design through its integrated activities that include natural resource conservation, sustainable agriculture, poverty reduction and job creation for the local people has had positive impact in operational areas. However, most such recorded impacts firstly, have tended to be based on studies conducted by internal researchers as opposed to external evaluators. The finding would be even more convincing if they were to be backed up by results of studies done by individual who have no link to the COMACO design. Secondly, most such information on the performance of the project has been based on the data collected from Lundazi, Mambwe and Nyimba in most cases, these being full scale operational areas that have been in existence for more than 5 years. This has happened to the disadvantage of other recent operational areas such as Chama district, a latest area where the model has just been upgraded from pilot to full scale status. The actual performance of the project in such areas is not exactly known as it has been overshadowed by positive performance of the other areas.

Despite the positive effects that the model is said to have, there is need to have more and wider coverage impact assessment studies done in COMACO areas of operation than is the case now. Such impact studies should involve both internal and externalresearchers. More of the involvement of external people and organization to COMACO would contribute towards the provision of a better insight on the actual influence that the project is having on the people in the operational areas. More specific studies are also required to establish how other newer areas of operation are performing. This will either prove or dispute earlier positive findings.

Because of the project model's high level of integration, this study was only intended to establish the extent to which the agricultural intervention of the project is having in the district. Particular attention was to establish agricultural impact on the target groups in terms of income levels. To achieve this, the following were the objectives of the study:

#### 1.3 Main Objective

To assess the impact that COMACO's Agricultural intervention is having on the economic welfare of small scale farmers in the Luangwa valley.

## **1.4** SpecificObjectives were to:

- Determine the change in income levels of COMACO beneficiaries and nonbeneficiaries over the period of the project.
- Identify COMACO's Agricultural intervention in the Luangwa valley.
- Determine the participation status of small scale farmers in COMACO's agricultural activities.

## 1.5 Hypothesis

- *H0:* there is no difference in income level between the beneficiaries and non-beneficiaries.
- *H1*: there is a difference income level between beneficiaries and non-beneficiaries.

# CHAPTER TWO LITERATURE REVIEW

Household income is the totalincome from all people living in a particular household. Income refers not only to the salaries and benefits received but also to receipts from any personalbusiness, investments, dividends and other income. Household income is often used as an economic indicator (Business Dictionary, 2010)

The mean monthly income for a Zambian household in 2004 was K 511, 377. The modal income group for the country ranged from K150, 001-K300, 000, representing 26% of the population. Only about one in every three households (35%) has mean monthly incomes that exceeded K 300, 000; implying that the majority of Zambian households, or approximately 65%, had incomes below the basic needs basket of about K500,000 (CSO, 2004)

Households generally depend on income to meet their day-to-day expenditures on food, housing, clothing, shelter, education, health, etc. Therefore, household income plays a vital role in the measurement of living conditions of households (Living Condition survey 2004).

The populations living in and around the GMA's are among the highly impoverished people in the country today. This is why they pose a threat to the natural resources in these areas, Government and other stakeholders have realised this hence the coming up of many different methods of trying to reduce the negative impact of the people on natural resources.

But despite all the commitment by the Government, the Zambia Wildlife Authority (ZAWA), the communities and the donors the GMAs are in a spiral of degradation ecologically, economically, and sociologically. Communities in the GMAs are characterised by high poverty levels, when compared to other rural communities, the welfare in GMAs is 30% lower than the national average. Monthly per capita expenditure of GMA residents is estimated at ZMK71, 000 compared to the national average of ZMK112, 000 and ZMK244, 000 in rural and urban areas, respectively. This is so partly because the GMA communities have continued to experience the depressing effects of wildlife management policies, which are restrictive to agricultural development and alternative uses of natural resources (Simasiku et al, 2008).

The most serious problems across all GMAs are poaching, human encroachment, fire, deforestation, subsistence agriculture and illegal fishing. To reverse this there is need for improved funding into the protection of natural resources or the authorities to try and use different methods of protection (Simasiku et al, 2008).

The co-management of wildlife resources presents opportunities and threats for communities living in GMAs. Through the CBNRM program, communities receive a share of the revenues generated from hunting licenses and concession fees paid by hunting outfitters. These funds are distributed to Village Action Groups (VAGs), which use the revenue to employ village scouts (who aid in wildlife protection) and for implementation of community development projects (such as the construction of health clinics, schools, water wells, and boreholes).

The effectiveness of the program is also threatened by unintended negative effects, such as greater crop destruction with increasing wildlife populations and the pressure that immigration puts on land and other natural resources. Crop losses from wildlife conflicts are cited by village leaders and residents as the greatest impediment to socioeconomic development in GMAs. Despite the apparent increase in crop losses and injuries related to wildlife conflicts, there is currently no means to compensate households for such losses (Fernandez et al 2009).

Public-Private Partnerships (PPPs) that include various community organizations are now part of the government's policy in natural resources management. However, their success requires improvements to existing and sometimes outdated policies and legal frameworks. Legislation should establish an unequivocal incentive framework to stimulate communities to contribute to, and appreciate, the objectives of the partnerships. Furthermore, it should provide for a clearer definition of communities' rights to natural resources, and this improved security of tenure should be legally enshrined in the agreements and policies.

A business-oriented approach should be adopted in order to guarantee continued investments in community development activities. Accordingly, local people must be encouraged to engage in businesses. The government has expressed concerns about the low level of community participation in past efforts, but a recently enacted law, the Zambia Citizen's Empowerment Act, is expected to enhance local participation in business (Fernandez et al 2009).

The studies above brought out the both the positives and negatives of wildlife and GMA's on communities. Besides the benefits that can come from a successful conservation plan, there is a problem of increased human – wildlife conflict with the increase in animal populations. But this study is going to only concentrate on evaluating on the impact that COMACO is having on the welfare of the people living in the GMA's. As has been established, poverty of the rural population is one of the drivers of natural resource exploitation, therefore theimprovement in the welfare of the people in the GMA's will eventually lead to reduced exploitation of wildlife.

# CHAPTER THREE METHODOLGY

#### 3.1 Introduction

Under this section are the methods and procedures which were utilized through the whole process of this research study.

#### 3.2 Study Location

The study was carried out in Chama district of the Eastern Province. The actual study area was specifically located in the GMA were COMACO has enough participating households. Chama district is partly locatedin the Luangwa valley and part of it is in the GMA. The major economic activity of the district is Agriculture with rice growing being the most important agricultural activity due to the favourable conditions for growing of the grain. Maize production has in the last few years become another crop of choice for the small scale farmers in the area. This is as a result of the introduction of the Food Reserve Agency (FRA) buying deports and the provision of inputs under the Fertilizer Support Programme (FISP) in the district. The district experiences a lot of fluctuations in weather patterns which lead to droughts and flooding which as a result make the district prone to occasional food shortages. Livestock farming is not very common in the district due to the high prevalence of parasites which thrive in the GMA's. More animals are found in plateau areas of the district which are further away from the habitats of wildlife. Chikwa area was the specific location where this study was done. It is about 120km south of the district centre. COMACO has been operating in this area since it was introduced as a pilot project because Chikwa is very close to the game reserve.

#### 3.3 Study Design

This study adopted household income as the determinate of rural household welfare. The household income information only consisted of earnings from the sales of agricultural products produced in the previous production season (2010/2011) and sold during the 2011 marketing season. The sample consisted of the intervention group and the control group so

that the impact of the COMACO design of the beneficiaries (intervention group) can be determined.

The Quasi-experimental design was used to determine the impact that COMACO is having on its beneficiaries. The average income level of the COMACO members in the sample was compared to that of the non-members (control group) in the sample and to the income levels of people in rural areas and in the. The impact that COMACO is having on the beneficiaries was determined by the following design:-



- IX = intervention group after COMACO's intervention
- C1 = control group before intervention.
- C2 = control group after intervention.

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• The size of the impact was found by this equation: X = (IX - I) - (C2 - C1)

#### 3.4 Sample Size and Sampling Technique

A sample size of 140 were randomly selected with the use of excel spread sheets with the use of farmer records from MACO as the sampling frame.One half of the sample size was to be made up of COMACO members but only 43 members participated, while the other half was to non-members(control group) but only 67 households were in the sample. Primary data was collected with the use of questionnaires as the data collection instrument. The questionnaire was self-administered for the literate while it was used as an interviewing instrument for those who are not literate enough. Secondary data was equally collected from WCS, MACO and COMACO offices both in Lusaka and district of study.

#### 3.5 Data Organisation and Analysis

Data was organized and analyzed for descriptive statistics in excel and the Statistical Package for Social Sciences (SPSS). SPSS was also used for the testing of the hypothesis by the use of the t-test.

#### 3.6 Challenges Faced

One of the short comings that were encountered was the lack of baseline information to show the income levels of the beneficiaries before the commencement of the project. This was the reason why income of members was only compared to that of the control group, that of the rural areas and that of GMA's. The pre-project income used was the national average of the GMA's for 2007, at the time when the project was just being introduced in the Chikwa area were the survey was carried out.

The other shortcoming was non-response from some of the households drawn in the sample. 140 households were drawn to be evaluated in this survey but only 110 were successfully received data entry.

# CHAPTER FOUR FINDINGS AND DISCUSSIONS

#### 4.1 Introduction

This chapter presents and discusses the study findings. It begins with a presentation and discussion of the Demographics characteristics of the respondents then the socio-Economic activities of the respondents. It goes on to discuss the hypothesis testing and finishes off with determining the impact of COMACO on it members and end with discussing the main findings of the study.

#### **Demographic Characteristics of the Beneficiaries**

This is sub-section looks at the demographic characteristics of the study sample.

#### 4.2 Sex of House-Hold Head

The majority of respondents were males who made up 50.9% of the sample while the remaining 49.1% were females. Furthermore, a cross-tabulation of the sex of the household head and COMACO membership was made and it reviewed that 56% were male and 44% were females.Refer to Table1 below.The higher participation level of males can be attributed to the fact that most households are male headed and that male are more likely to participate in economic activities in rural areas.

Table1: Cross-Tabulation of Sex by COMACO Membership.

Sex	COMACO Membership				
	# of Member%#of not a Member		%		
Males	24	56	32	48	
Female	19	44	35	52	
Total.	43	100	67	100	

#### 4.3 Age of House-Hold Head

The sample was well represented in terms of age distribution, the oldest household head in the sample was 83 years old and the youngest was 21 years old. The average age was found to be 46 years, this means that the majority of members were of the middle age. These people are still likely to be able to perform agricultural activities. The table is illustrates below:

	#	Range	Minimum	Maximum	Mean
Age of the HH Head	107	62	21	83	46.24

#### **TABLE 2: Distribution of Age of Household Head**

#### 4.4 Education Level of House-Hold Head

Table 3 below shows that majority (41%) of the respondentshad only gone up to primary school followed by 30% who had reached secondary school. A total of 20% of respondents have not been to school and only 7% had attained tertiary education. From these finding it can be observed that the literacy levels among the respondents were low and this can be attributed though not exclusively to the limited numbers of schools in rural areas.

Table 3: Distribution of Education Level of House-hold Head

Membership Status	Education level of hh-head							
	Non		Primary		Seco	Secondary		ary
	#	%	#	%	#	%	#	%
Member /43	9	21	18	42	13	30	3	7
Non-member/67	13	19	28	42	21	31	5	7
Total /110	22	20	46	42	34	31	8	7

#### 4.5 Household Size

With regards to household size, the research findings as illustrated in Table 4 below showed that up to 45% of the households were made up of 6-10 members; this was

followed by 34% of households with 1-5 members. Households with 11-15 members were only 15% and 5% of household indicated having more than 15 members. The relatively high numbers of members per householdcan be looked at as an advantage in that in rural areas almost all the farm labour is provided by household members.

Size of House-Hold	Frequency	Percentage	
1-5	36	33.6	
6-10	48	44.9	
11-15	15	14.0	
More Than 15	5	4.7	
Total	107	100	

**TABLE 4: Distribution of Household Size** 

#### **Socio-Economic Information**

This sub-section looks at the socio-economic activities and status of the study sample.

#### 4.6 Main Economic Activity

The main economic activity in Chama district is rice production. The survey showed similar indications with the production of the cereal being the major agricultural activity in the area. More than 95% of the sales to COMACO that the respondents reported in this survey were made up of rice sales. Farmers in the area sell paddy rice to COMACO markets where it is processed and sold at higher prices at both wholesale and retail levels. The table below shows sales of rice by both members and non-members. From the survey information it can be seen that 80% of the members interviewed sold some produce to COMACO as compared to only 7% of non-members.

Status	Total #	Those w	ho Sold to	Those who	did not Sale
		СОМАС	0	to COMAC	CO
······		#	%	#	%
Members	43	34	80	9	20
Non-members	67	5	7	62	93

Table 5: Cross Tabulation of Membership bySales to COMACO.

## 4.7 COMACO Markets

The other service that COMACO offers to the community is the markets it provides to the farmers. Both members and non-members sale their produce to its trading centres. It is however, the members that enjoy the privilege of premium prices offered by COMACO and have access to trading centres located near the famers with the average travel distances of 2.1km as shown in Table 6 below. This helps in reducing the problems farmers face when it comes to transporting produce to the market.

#### Table 6: distance from COMACO markets.

Distance from Market	Minimum	Maximum	Percentage
Kilo Metres	0.6	8	2.144

#### 4.8 Income from Agriculture

Evidently, the major source of income for most community people in this instance comes from sale of agriculture products. It was for reason that the survey was interested in finding out how much the respondents had earned from agriculture. The collected data reviewed that the minimum annual income for both members and non-membersis<sup>K200</sup>, 000 but the maximum annual earnings differed with the members shown to earn up to K6, 516,200, while that of non-members was K3, 632,600.Premium prices given to the members are one of the contributors to the disparity which was observed between the members and non-members. Non-members sold their paddy rice to COMACO markets at a price of K700/kg as compared to a higher price of K1, 200/kg given to members. This translated into a premium of K500/kg being offered to COMACO member. Table 3 below illustrates the findings:

Income of	Minimum	Maximum	Mean
Members	200,000	6,516,200	1,828,079
Non-members	200,000	3,632,600	1,049,142

TABLE 7: Cross-Tabulation of Membership by Income (K)

#### 4.9 Income from COMACO Sales

Upon establishing the income the respondents received from agriculture sales, the next step was to determine the proportion of that income that came from COMACO. It observed that members had a higher proportion coming from selling their produce to COMACO. The research tried to establish the average income that COMACO members had realised from their sales to the project. It was necessary to determine how much this income contributed to the total annual income to these households. From the table below it can be seen that sales to COMACO contributed over 92% to the total annual income of the members and only 45% to non-members.

TABLE 8: Cross-Tabulation of Income from Agriculture by Income from Sales toCOMACO

Income	Averagefor members	Average for non-members
From all Agric. Sales	1,356,418	1,356,418
From sales to COMACO	1,248,963	617,719
% of sales to COMACO	92	45

#### 4.10 FoodSecurity

Up to 93% of the COMACO members in the survey claimed to have improved food security level as a result of being associated with the project. This is in contrast to the nonmembers of whom only 8% attested to have improved food security as result of COMACO. The food security status of the respondents was as shown in the Figure below:

Membership	Effect of COMACO on Food Security				
Status	No change		Made it better		
	#	%	#	%	
Non-Members	62	92	2	8	
Members	3	7	40	93	

 TABLE 9: Cross- Tabulation of Membership by Food Security

This improvement in food security can be attributed to the policy that COMACO has of only purchasing surplus food crops from members. COMACO only buys food from members who have enough food to last until the following harvesting season. This encourages the farmers to improve on their production of food crops and in addition to this; the project provides inputs such as maize seed and fertilizer to enable farmers produce food for consumption and thus helpimproving the food securitystatus of its members.

#### 4.11 Asset Accumulation

Asset possession in most cases can be used to determine how well people are doing economically. In rural areas, the owning of small livestock and hand tool is one way to tell how well off a household is doing. In this scenario, hoes constituted an assets owned by majority (95%) members and non-members of COMACO.Other assets such as houses (88%) and axes (85%) were shown to be owned by majority members while chickens (91%) and axes (90%) were owned by majority non- members. The table below shows the ownership of some assets according to membership:

Type of Asset	Comaco Members who own		Non-Members who own	
	this Asset.		this Asset.	
	# out of 43	%	# out of 67	%
LIVESTOCK			<u></u>	
Chickens	36	84	61	91
Goats	6	14	12	17
Pigs	6	14	15	22
Cattle	0 0		0	0
OTHER ASSETS				
House	38	88	8	11
Bicycle	12	54	47	70
Ное	41	95	64	95
Axe	33	85	60	90
Radio	17	40	37	55
Cell phone	12	54	47	70

## TABLE 10: Cross-Tabulation of Membership by Asset Ownership

#### **Main Results and Findings**

This section includes what was found out with regard to the objectives of the study. It first shows the results of the hypothesis testing which was done to ensure that the differences between the means were statistically significant. It goes on to show what the study established with respect to the study objectives.

#### 4.12 Hypothesis Testing

The hypothesis was tested at 5% level of significance, and since our t calculated was found to be>+0.56 and is greater than the p value (0.05). This test was done by subjecting the incomes of both the intervention and control group to student test. From the finding we are able to reject the Null hypothesis and confirm the alternative hypothesis which states that there are significant differences between the average annual income of COMACO members and that of non-members.

#### 4.13 Income Levels of COMACO

The main source of income for the majority of people living in rural areas of Zambia is agriculture. It was for this reason that this research used the change in income levels of COMACO members as the indicator of the economic impact the project is having on the target group. To come up with the impact, average income of members and non-members from agriculture sales were compared. Furthermore, national annual incomes for rural areas and valley areas in particular were compared to the annual incomes levels of the members of COMACO.

The table below shows how the impact of COMACO's agricultural interventions is having on the income levels of the project beneficiaries. The income from the members of COMACO was used as intervention variable while that from the non-members was used as the control variable. The intervention variable was further compared to other variables from the secondary data. The magnitude of the impact is the difference between the income of the members and that of the control group.

Data from this research showed that COMACO is having a positive impact on the target group. When average income from of the members (intervention) was compared to that of non-members (control) it was found that there was a positive difference of K798, 937, and when compared to the national annual income for rural areas, COMACO members showed to have a higher income by K484, 079. When compared to the average income and expenditure of GMA's, the members income was higher 'by K976, 079 and K951, 479 respectively.

From the finding, the research was able to show that actually there are economic benefits from being an active member of COMACO. The positive financial impact that the members are getting may be attributed to intervention that COMACO is putting in the area when we hold other variables constant. Interventions like the premium price, ready market and improved method of farming are contributing to the increased income levels. This is illustrated in the table below:

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Status	Pre-Intervention	Intervention	Post-Intervention	Difference
Members	852,000	X	1,828,079	976,079
Non-members	852,000	non	1,049,142	197,142

#### TABLE11: Impact of COMACO on the Income of its Beneficiaries.

COMACO IMPACT=976,079-197,142=<u>K798,937</u>

The pre-intervention income of K852, 000 was annual average income for GMA's in the 2007 (cso. 2008).

The table below shows further comparison between the incomes of COMACO with other annual income levels.

TABLE 12: Cross Tabulation of Income of COMACO Members by Income from	n
rural areas and GMA's.	

Other Income	Amount	Income of COMACO members	difference	
Rural Area	1,344,000	1,828,079	484,079	
GMA expenditure	876,600	1,828,079	951,479	

## 4.14 COMACO's Agricultural Intervention in the Luangwa Valley

The main reason of setting up the COMACO model by WCS was to reduce the human pressure of natural resources in the Luangwa valley. COMACO decided to use agriculture as one of the routes to achieve its goal. The research was able to establish the kind of agriculture interventions that the project is using and some of these agricultural activities that COMACO undertakes in the area are to:-

1. Organize low-income, food insecure farmers or individuals with environmentally destructive livelihoods (like poaching or charcoal making) into agriculture producer groups (cooperatives). All (i.e. 100%) the members of COMACO in the survey belonged to a farmer group in their area as compared to only 57% of the non-

memberswho belonged to any farmer group or cooperative. Such membership was as a requirement within the COMACO design. The Figure below illustrates.

2.



Figure1: Cross-Tabulation of Membership by Farmer Group Membership (%)

3. Offering extension services by training group members in farming practices that increase yields and Mitigate against soil and tree loss (or other practices like bee-keeping to replace destructive practices). The survey findings indicated that 79% of the members received training in the rice production, 47% were trained in soil management, 42% were trained in record management and 18% were trained in conservation farming as illustrated in the Figure below.



#### Figure 2: Extension Services Offered by COMACO (%)

4. Provide inputs to increase production of food-based commodities, particularly marketable cereal and legume crops. Maize seed is provided to ensure food security among members. During survey and as illustrated in the Figure below, 81% of the members indicated having received rice seed at one time with 65% of the members having had accessed maize seed to improve food security and 5% receivedother types of certified seeds that led to recorded improved yields.



#### Figure 3: Type of Seed Offered to Beneficiaries (%)

- 5. Buy surplus yields at favourable commodity prices and offer registered group members a higher price. In the 2011 marketing season, COMACO was offering a price of K1, 200 kg as compared to the market price in the district of K 700/kg. This premium price was only given to members of COMACO who had produced enough food for the rest of the season. Members and non-members in the area are advised to first grow enough of the staple crop which is maize before they concentrate on the production of cash crops like rice.
- 6. Monitor compliance of required farming methods (and production practices of nonfarm commodities like honey). This is done in order to ensure farmers stick to farming methods of production that do not damage the land and other natural resources and follow the designs regulations on land management. COMACO members in the survey confirmed to being visited by the project staff who were enquiring on the farming methods being used by the members. With these measures in place, it is assumed that the people in the Luangwa valley are bound to reduce on their misuse of natural resources by using sustainable methods of farming. COMACO requires that its members conform to the use of conservative methods of farming such as pot holing and minimum tillage.

# 4.15 Participation Levels of Small Scale Farmers in COMACO's Agriculture Activities.

From collected data, it was established that that 39% of the respondents were members of COMACO and 61% were non-members. When these proportions are generalised and applied to the total population of Chikwa area where this survey was conducted, it can be said that up to 39% of the small scale farmers in this area are COMACO members. This shows that despite the positive impact that COMACO is having on its members, there is a lot that need to be done in terms of the participation levels in this area. With only 39% of the community participating, there are a lot more households that can still join the project. It is only when there are more members of the community participate in COMACO's activities that the design will be sure of achieving its aim of conserving the natural resources. From the interviews, it was also observed that from all the males interviewed 44% were members of COMACO and 34% of the female interviewed in the survey were COMACO members. Despite being lower than the male proportion, females have a descent participation level in the design when compared to that of males (44% and 34%). The table below illustrates membership statistics from the survey:-

TABLE 13: Proportion of Members Participating in COMACO from the SurveySample

Membership Status	No.	# of Males	# of females
Total sample	110	54	56
Members	43	24	19
% of members in the	39	44	34
sample			

# CHAPTER FIVE CONCLUSION AND RECOMMENDATIONS

#### 5.1 CONCLUSION

COMACO's agricultural intervention in the Luangwa valley includes the provision of inputs to its members. Members are provided with different kinds of seed for crops like rice and maize. The project also provides extension services and markets for the produce which is bought at a higher price than ordinary markets.

The farmers in the area showed adequate knowledge of the services that are provided by the COMACO design. People are aware of the services the project is caring out in the area and both members and non-members participate through the sale of their agriculture produce at the COMACO markets. But the proportion of participation is less than 50% of the total population in Chikwa.

COMACO's agricultural interventions are having a positive impact of the income levels of the project members in the Luangwa valley. The annual income of the members has improved and since the establishment of the project.

Based on the above conclusion, the following recommendations are made:-

#### 5.2 **RECOMMENDATIONS**

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Considering the successes that the COMACO design is having in providing an alternative livelihood to the poor people in the Luangwa valley, government and other stake holder should encourage the replication of this design in other game reserve areas. Instead of only relying on the traditional law enforcement to protect the natural resources in the country, helping tackle the poverty issues of the potential perpetrators is proving to the better way of conserving the environment.

- People living around GMA's should be educated on the importance of conserving nature for their current and future wellbeing.
- The management COMACO should intensify on recruiting more members to join the design particularly in Chikwa.
- The main intent of this research was only to see how COMACO's agricultural interventions are impacting on the income levels of small-scale farmers in the Luangwa valley, but there is need for other independent researchers to assess the overall impact the project is having on the conservation of natural resources in the Luangwa valley.

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# **APPENDICES**

Questionnaire serial number.

# Assessment of the impact of COMACO on small scale farmers in Chama District.

Department of Agricultural Economics & Extension Education The University of Zambia

This questionnaire is for academic purpose only. You are rest assured that all the information you provide will be treated as confidential as possible. Your cooperation in this regard will be highly appreciated. <u>Instructions:</u> Please write answers in the spaces provided.

1. Farm identification
1.1 District code dist
1.2 District name:
1.5 Constituency code const
1.5 Ward code ward
1.6 Ward name:
1.7 Farm code <b>farm</b>
1.8 Name of the farm:
1.9 a) Name of farm owner own
b) Sex of farm owner (0=Female; 1=Male)
c)Is the owner the main respondent?
0 = No
$1 = Yes \rightarrow G_0$ to question 1.8
1 = 100  for a property of the second on t
b) Relationship to farm owner
b) Relationship to faith owner
(Codes at bottom of Table 2.1)
E sum that the main met on here is knowly donable about the former traduction and intermediates
Finsure that the main respondent is knowledgeable about the farms production and income levels.
a. What is the level of education of the heard of house hold?
(Non = 0, primary = 1, secondary = 3, tertiary = 4)
b. How many are you under this house hold?
(1to5 - 1, 6to 10 - 2, 11to15 - 3, 16  or more - 4)
c. What were the sources of house hold income in the last year (2011)?
(Agriculture – 1, employment – 2, both – 3) if answer is only employment skip next question.
1.11 How much did you raise from agriculture sales? K

a.	Was there ready market for your produce

(No = 0, Yes = 1)

## **2.** COMACO

2.1 Are you a member of COMACO?

(0 = No | 1 = Yes)

2.2 Did you sale any produce to COMACO last season (2011)?

(No = 0, Yes = 1)

2.3 What did you sale to COMACO?

CROP	Quantity kg/Lite	rs Revenue (K)

2.4 How far is the COMACO market from you farm? \_\_\_\_\_km.

2.5 How long have you been a member of COMACO?

2.6 What are the benefits you get from being a COMACO member?

Benefit	Yes = 1, No = 0
Extension services	
Market for commodities	
Inputs	
Premium prices	

2.7 How has being a COMACO member benefited your standard of living?

No change = 0Made it worse = 1Made it better = 2

a. How has being a COMACO member affected your household food security?

No change = 0Made it worse = 1Made it better = 2

# 3. Assets owned on the farm.

## 3.1 What assets do you own on your farm?

		Does the farm have?	How many	What is the current value of each of the
		$0=N_0 \rightarrow G_0$ to	does the	
ſ		next asset	farm	(ZMK)
Asset type		1=Yes	own?	
Asset	Name/description			
1.	Ox=drawn			
	implements			
2.	Cattle			
3.	Donkeys		_	
4.	Sheep			
5.	Goats		_	
6.	Pigs			
7.	Chickens			
8.	Radio			
9.	Others			
<u>    10</u> .	Bicycle			
11.	Treadle Pump			
12.	Yenga Press			
13.	Sewing Machine			
<u> </u>	Mobile Phone			
15.	House			
16.	Truck/ Pick up			
17.	Hoe			
18.	Axe			
19.	Cash at Hand			
20.	Bank account			
21.	Others Specify			
22.	Others Specify			· · · · · · · · · · · · · · · · · · ·
23.	Others Specify			

# Thank you for your participation!

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