Graduate School of Development Studies

Do Fertiliser Subsidies Work for the poor?

Evidence and Challenges of Implementing the Fertiliser Support Programme in Zambia- The Case of Kalomo and Senanga Districts.

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Table of Contents

List of Tables

List of Figures

List of Acronyms

ACF	Agricultural Consultative Forum
CSPR	Civil Society for Poverty Reduction
CSO	Central Statistical Office
DAC	District Agricultural Committee
DACO	District Agricultural Coordinator
FAO	Food and Agriculture Organisation
FNDP	Fifth National Development Plan
FRA	Food Reserve Agency
FSRP	Food Security Research Project
FSP	Fertilizer Support Programme
GRZ	Government of the Republic of Zambia
JAICAF	Japan Association for International Collaboration of Agriculture and Forestry.
MACO	Ministry of Agriculture and Cooperatives
MT	Metric Tones
NIZA	Netherlands Institute for Southern Africa.
NPC	National Programme Coordinator
NGOs	Non Governmental Organisations
PCO	Provincial Coordination Office
POV	Poverty Studies and Policy Analysis specialisation
WFC	Women For Change
PRSP	Poverty Reduction Strategy Paper
ZFM	Zambian Food Security Monitor
ZFSIP	Zambia Food security Issues paper
ZNFU	Zambia National Farmer Union

Abstract

This study examines the nature of the fertiliser subsidy being provided under the Fertiliser Support Programme (FSP) in Zambia. The study focuses on Kalomo and Senanga Districts to assess why despite the programme in place for seven years, food insecurity persists and how the nature of the subsidy has contributed. The study was carried out through primary data collection and the used of secondary data and contrasts the finding in Kalomo and Senanga. The data was obtained by administering five sets of research instruments: the Focus Group Discussions, questionnaire, the semi-structured interview, observation and document analysis. In total 170(93 males and 77females) respondents participated in the research. The findings suggest that the nature of the subsidy and the way the programme is organised and implemented has not really benefited the smallholder farmers in terms of increased maize productivity, income from the sales of maize and household food security. While the prices of maize have usually been low in Zambia, the prices of fertiliser have been high. This reduces the profitability of maize production. To most smallholders, maize production is main source of income, yet the fertiliser subsidy in its current form assumes that the smallholders will have the cash to pay for fertiliser subsidy, when income from maize is not always possible. The FSP is also implemented as a uniform policy in a varied setting as depicted in the contrasting differences between Kalomo district and Senanga district. This study concludes that nature of the fertiliser subsidy policy, how it is designed, defined and implemented has implications for impact in terms of increasing maize production, among smallholder farmers.

Relevance to Development Studies

This study contributes to the sparse literature on the changing role of fertiliser subsidies in the developing countries. The study provides valuable information and knowledge on the short comings of the nature of the fertiliser subsidy being implementation under the FSP in Zambia. This study shows how the targeting criteria and implementation of a fertiliser subsidy programme affects the overall performance. This study provides policy-relevant information on a topical but largely ignored issue in current development debates.

Keywords

Fertiliser Subsidies, Food Security, Smallholder Farmers Targeting,

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Dedication

This Research Paper is dedicated to my daughter Maibiba Mulenga Mulenga who at the time of writing this paper was also busy writing her final secondary school exams. Maibiba, may you go many steps further as a shining example of what women and girls can accomplish despite the huddles of life. I love you and God bless you always.

Chapter 1: Introduction

It is generally argued that that one of the major reasons many countries especially in Sub-Saharan Africa remain poor is because of their inability to cope with the food and agriculture demands of rapidly increasing populations (Abalu and Hassan 1999, Alexandratos 2005). Alexandratos(2005) further adds that the role of agriculture depends on its potential to not only produce staple foods but also produce incomes. It is also generally accepted that the problem of food insecurity is not just about food alone but also about the general problem of poverty as when poverty worsens, food becomes even more important (Adeyemi S 2009,Adeyemi. 2009,Devereux 2001). Therefore, as one way of fighting poverty and food insecurity many governments including the Zambian government are allocating more resources to the agricultural sector Morris et al(2007). The Zambian government has responded by supporting maize production by re- introducing fertiliser subsidy that were abandoned at the insistence of the IMF in the 1980s(Hans 1988,Kherallah 2002 ,Seshamani 1999).

There is common agreement that increased use of fertilizer and other productivity-enhancing inputs is a precondition for rural productivity growth and poverty reduction (Morris et al, 2007,(Gollin 2009a).Therefore, the role of input subsidies[1] in stimulating growth and addressing food security and poverty alleviation objectives has also re-emerged as an important agricultural policy debate Dorward et al(2008a). Morris et al (2007) state that one of the emerging arguments in favour of fertiliser subsidies is that they act as safety nets for the poor and can provide a less costly way to ensure food security(ibid 2007:113). In addition, escalating world food and fertilizer prices in 2007 and 2008 have created a sense of urgency in meeting productivity and social welfare goals, and have put fertilizer promotion programs such as fertilizer subsidies high on the list of options for government and donor responses to the crisis Dorward et al(2008a). Braun, (2008) adds that high food prices have differentiated impacts across countries and populations groups and calls for the urgent need for solutions.

[1] Input subsidies and fertiliser subsidies will be used interchangeably though out the document, but mostly referring to fertiliser subsidy. According to Kherallah et al. (2002) First, Fertiliser is arguably the most important purchased input in African Agriculture.

On one hand, implementing a fertiliser subsidy programme is one aspect of the solution and on the other hand, achieving the necessary results such as ensuring that the intended beneficiaries access and use the subsidised fertiliser to improve production and food security is another aspect. Dorward (2009) indicates that the impact of the input subsidy programme is dependent on the system or form of fertiliser subsidy being perused by governments and other implementers. Pinstrup-Andersen (1988) adds that the design of subsidy schemes has implications for different groups. Minot and Benson (2009)argue that how the fertiliser is provided to the farmer also matters and calls for new ways of designing subsidies so as to increase their effectiveness. Kherallah et al (2002)argue that if a fertiliser subsidy programme has to work well, there is need to design it in such a way that fertiliser marketing competition is preserved and that poor farmers benefit in a cost effective way. Consequently, this research argues that the way any subsidy scheme is designed, organised and implemented and the nature of the subsidy being provided is key to achieving the desired objectives. In Zambia, there have been questions on whether or not the poor are really accessing the fertiliser from the Fertiliser Support programme (FSP) and whether or not the policy has contributed to increased production of maize and food security of smallholder households who are the targeted beneficiaries.

1.2 Statement of the Problem

Crawford et al (2006) state that fertilizer subsidies differ in terms of how they are organised as well as the point at which they are applied: either to the farmer, the trader or the domestic fertilizer producer. Another way would be the form of the subsidy, or how it is provided which can be through either a cash payment, voucher/coupon, reduced market price or transport subsidy. Dorward (2009) argues that there is need to rethink the way input subsidy programmes are designed as the impact of subsidy will vary depending on the type or nature of the subsidy and the level at which it is applied. Currently, Zambia uses the cash payment system where, through the cooperatives, the targeted small- scale farmers pay subsidized down payments and the fertiliser is later delivered (GRZ/FSP 2008). The full fertilizer support pack includes maize seed and fertilizer. The Fertilizer Support Programme as subsidy has been implemented for the past seven years still not clear, as to how much the fertiliser subsidy has contributed to the improvement of income and food security for the smallholder farmers that are the target group. Given the current nature of the subsidy, who finally gets access to the subsidised fertiliser is an important question for analysis in the paper.

1.3 Relevance and Justification

A substantial knowledge gap remains in the area of factors that affect fertiliser use and access under subsidy programmes. The implications of the nature of fertiliser subsidy have not been explored by many evaluations (Dorward 2009). Hence, this research is expected to add value. The literature available only looks at the outputs and processes involved but this research will go further to explore the outcomes from the perspective of the small scale farmers, their impressions about the programme which are vital for redesigning the policy.. However, almost seven, years after the Fertiliser Subsidy Programme was introduced in Zambia, the programme has been marked by less achievement. While studies have been undertaken to establish why this particular programme has achieved far less than expected, no study to the researcher's knowledge has been carried out to establish the extent to which nature or form of the fertiliser subsidy being implemented under the FSP in Zambia has facilitated increased maize production and enhanced food security

1.4 Hypothesis

The main hypothesis of this research is that the FSP has not been as successful in improving food security in Zambia (specifically Kalomo and Senanga) due to the nature of the subsidy, the way it is designed and implemented.

1.5 Main Question

Why has the Fertilizer Support Programme as a subsidy not resulted in increased maize production and enhanced food security among small-scale farmers in Kalomo and Senanga? Other questions to be examined are how does the current form of the subsidy contribute to failure of the smallholders to access the subsidy and what are the constraints faced by smallholder farmers?

1.6. Main Objective

The main objective of this study is to establish whether or not the nature or form of the Fertilizer Support Programme has improved food security among small-scale farmers in Kalomo and Senanga.

1.7 Methodology and Methods.

The main methodology of this research paper was qualitative. The research used qualitative tools mostly because the research is of an exploratory nature.

1.7.1 Sampling

Sampling is a process of selecting a few (a sample) from a bigger group (the sampling population) to become the basis for estimating or predicting a fact, situation or outcome regarding the bigger group in which a researcher is interested (Patton 2000). The vital goal of any sampling design is to minimize the cost, or work to reduce the gap between the values obtained from the sample and those prevalent in the population. Sampling is an important aspect in research because it facilitates the representation of the population from a few participants in the study. According to Robson (1993) sampling in social research is referred to as 'the search for typicality' (ibid 1993). The sample should closely relate to the real population. It is further stated that sampling is an important aspect of life in general and enquiry in particular and that judgements are made based on fragmentary evidence.

Rudestam and Newton (1992)define a sample as a subset of the population that is taken to be a representation of the entire population. They are of the belief that regardless of its size, a sample that is not representing the entire population is inadequate for testing purposes and the results cannot be generalised. Kane (1996) emphasises that it is imperative to sample because studying the entire population would be very costly and time consuming. However, she stresses the fact that the results of the sample should be comparable to those that would be obtained if the whole population was involved in the study.

This study uses the non-probability sampling method because the investigation sought to establish truthfulness and in-depth information on issues relating the implementation of the FSP as well as to bring out the voices of the smallholder farmers in the study areas. Since the study employed non-probability, sampling the information was to be valued in relation to depth and realistic. Probability sampling would not have been appropriate for the present study because the aim of the study was to bring out the voices in a qualitative manner (Doherty 1994).

1.7.2 Sample Size

The target population for this study comprised the smallholder farmers in Kalomo and Senanga districts mainly beneficiaries of the FSP. Whereas all scholars would agree that determining an adequate sample size remains one of the most controversial aspects of sampling, all of them would acknowledge that given the resources, the larger the representative sample used, the better. In this regard, Patton (2002) seems to be more realistic when he observes that when it comes to qualitative research, there are no specific rules to determine the right sample size. He stresses that sample size depends on what one wants to know, the purpose of the inquiry, what is at stake, what will be useful, what

will have credibility, and what can be done with available time and resources(Patton 2002)

The sample for this study was drawn from two study areas of Kalomo in the Southern Province of Zambia to establish how the FSP is implemented in a high maize productive area and Senanga in the Western Province to establish how the FSP is implemented in low maize productivity areas.(The Zambian Food Security Monitor 2008). The sample size is different for each area and this study decided to have reasonable larger sample in Kalomo of 124 and in Senanga a sample size of 42. The reason being that Kalomo has more smallholder farmers and beneficiaries of the FSP amounting to about 4000 compared to Senanga with only 199 beneficiaries for the farming season 2008/2009. In Kalomo the sample was drawn from three different sites , where as in Senanga it was drawn from two different sites. As shown in the table below, a total sample size of 170 was considered sufficient for the study as it was supplemented by direct observation of the post-harvest activities in both the districts.

[2]Table 1 No. Total Respondents

	FGD		**In-depth**		**Questionnaire**		**Total**
	Male	Female	male	female	Male	Female	
Kalomo	**46**	**47**	**7**	**1**	**12**	**11**	**124**
Senanga	**13**	**10**	**6**	**0**	**7**	**6**	**42**
National			**2**	**2**			**4**
Total	**59**	**57**	**15**	**3**	**19**	**17**	**170**

1.7. 3 Sampling Techniques

From the many techniques of purposive sampling suggested in the literature, this study used two: snowball or chain sampling and criterion sampling. Patton (2002) describes snowball sampling as an approach in which initial contact with an informant generates further contacts. The logic of criterion sampling, on the other hand, is to review and study all cases that meet some predetermined criterion of importance. Snowball sampling was used in selecting five participants from each research site to participate in both the questionnaire and the FGD and in some cases in-depth interviews. However, during implementation, it proved to be challenge as some of the participants

[2] The Plan was for 200 respondents.

recommended were the right ones especially in Kalomo where medium scale farmers and small-scale[3] farmers live side by side.

1.7.4 Pre-testing

According to Wimmer and Dominick(1994), pretesting or pilot-testing the questionnaire before administering it is crucial so as to iron out many of the potential unanticipated difficulties during the research process. In this study, a pre-test of the tools was conducted and feedback was used to further improve the questionnaires and some questions for the FGDs.

1.8 Research Instruments

Research methods are the specific techniques a researcher employs to obtain data and information during an investigation (Silverman 1993) This sub-section describes the techniques and research instruments employed in the study and the criteria used to select them. The choice of which research method to use was guided by the six criteria adapted from (Silverman 1993), (Creswell 1994) (Marshall 1995,Straus 1990) and Marshall and Rossman (1995). The six criteria are herein listed; appropriateness, Reliability, Validity Representativeness or generalisability Explanatory power, and Administrative convenience Specifically, five methods were used: Focus group discussions (FGDS), semi-structured interviews, questionnaire, observation and document analysis.

1.8.1 Focussed Group Discussions

There are many definitions of a focus group in the literature, but descriptions like organised discussion (Kitzinger. 1994)social events (Goss & Leinbach 1996) collective activity(Powell et al. 1996) and interaction(Kitzinger 1995) identify the contribution that focus groups can make to social research. The FGD has been acknowledged as an effective methodology for gauging community's perceptions about a particular issue or programme. In this study FGDS were used. In Kalomo district three areas where chosen for FGDs. And five FGDS with beneficiaries and non-beneficiaries of the FSP were conducted with the help of an interpreter. In Senanga, three FGD were conducted, two with smallholder farmers and one with extension officers.

[3] This study uses small-scale and smallholder interchangeably

1.8.2 Questionnaire

Wimmer and Dominick (1994) identify the survey questionnaire as the key research instrument in survey research and suggest four main types of questionnaires. This study applied the personal interview type of survey questionnaire. This was conducted with the help of interpreter especially in Kalomo where Tonga is the main language. In Senanga, the interview was conducted in silozi. In line with the six pieces of criteria identified earlier it was felt that the use of the survey questionnaire would enhance reliability and validity of the findings and as well as to triangulate the information generated from other methods. In total 36 questionnaires were administered in both Kalomo(23) and Senanga(13)

1.8.3 Semi- Structured Interview

As stated above, the semi-structured interview is one of the five methods used to collect data for the this study. Patton (2002) identifies interviews as one of the qualitative research methods and states that the purpose of interviewing is to find out the in-depth information. Kane(1996) states that a semi-structured interview does not have a standard format but has an agenda that is employed as a reminder to ensure that basic points are covered. The semi-structured interview was chosen for this study because it gave the researcher room for additional questions and probing during the course of the interview

1.8.4 Observation

The time of the study had coincided with the post harvest and found it imperative to gather information through observations. This method was used to observe various aspects such as maize fields, storage bins, and infrastructure such as roads, communication, farm-gate prices of maize, mealie-meal and fertiliser at shop gate levels.

1.8.5 Document Analysis

Patton(2002)argues that the significance of document analysis in qualitative inquiry is that they yield excerpts, quotations, or entire passages from organizational, clinical, or program records, official publications and reports. In this study, the researcher was able to generate significant information from various sources in the two districts and at national level. All these materials turned out to be significant sources of information. In view of the six pieces of criteria outlined at the beginning of this section, document analysis was found to be the most convenient, time saving and cheapest method to use. Finally, it ought to be highlighted that the World Wide Web and the Internet proved to be indispensable research instruments.

1.9 Data Analysis

Following Silverman's(1993), proposition analysis starts from the early during the data collection the researcher began the process of data analysis during the interviews by recording what was considered relevant to the research questions according to the interview guide. Quotations of significant portions of responses obtained were also used to depict respondents' perceptions , in their own words.

1.10 Limitations of the Study

No study can be without limitations. This study faced a number of challenges especially concerning access to government documents and other publications from organisations in Zambia. For example, some important documents from government, Ministry of Agriculture and Cooperative (MACCO) and the FSP containing important information and data were not readily available. Poor record keeping and lack of database on maize productivity under the FSP

1.11 Structure of Research Paper

In Chapter 1 part 1 has highlighted the statement problems and justification of this research as well as the methodology and research method techniques employed in the study.

Chapter 2 reviews some relevant literature on fertiliser subsidies and food security in Zambia It focuses on the promotion of fertiliser programmes and fertiliser with special emphasis placed on the nature of subsidies It further provides the theoretical and analytical frameworks that will guide in explaining the situation of the small-scale farmers in chapter four.

In **chapter 3** The FSP as a fertiliser subsidy is introduced and discussed, its nature, the way it is designed and implemented and some implications will be discussed. The way it is designed also has gender implications.

Chapter 4 focuses on the findings from the field case study of how the fertiliser subsidy has contributed food security and income of the beneficiaries as well as non beneficiaries. Chapter four also brings out the challenges being faced by the FSP and the small- scale farmers .

Chapter 5, presents the summary of major findings, the research conclusions reflections for future actions. The main conclusion is that the FSP as a fertiliser subsidy policy in its current form and the way it is designed, defined and implemented has not improved the incomes and food security of the smallholder farmers in Kalomo and Senanga districts.

Chapter 2: Literature Review

This chapter reviews some relevant literature on fertiliser subsidies in Zambia It focuses on the typologies promotion of fertiliser programmes and fertiliser with special emphasis placed on the nature of subsidies. Chapter two further provides the theoretical and analytical frameworks that will guide in explaining the situation of the small-scale farmers in chapter four.

2.1 Typologies of Fertiliser Subsidies

While the urgency of recognizing the raising of fertilizer use among smallholder farmers, for achieving both poverty alleviation, improving food security at all levels and agricultural growth objectives, there has been little consensus on the most appropriate policy and programmatic course of action, that is the form of subsidies. Different countries so far have been using different approaches especially when it comes to fertiliser subsidies and probably the choice of crop for support. According to Crawford et al (2005) fertilizer subsidies can differ in terms of: the point at which the subsidy is applied whether farmer, trader, or even at domestic fertilizer producer. The form or nature of the subsidy, or how it is provided cash payment, voucher/coupon, reduced market price, transport subsidy will also have an implication on access by the beneficiaries (Dorward 2009). And related to the above, fertiliser subsidy can either be direct or indirect, e.g., through subsidized credit for fertilizer purchase.

Zambia uses the market price reduction(cash payment)(GRZ/FSP Manuals) and direct distribution where as Malawi uses a voucher/coupon. And from various literature that has come up different approaches can result in differentiated impacts such as ensuring that the intended beneficiaries access and use the fertiliser subsidy. Chinsinga(2007) as well as Jayne et al (2002) argue that there is no system that is perfect enough to counter the leakage to the unintended beneficiaries, but the form or design of the subsidy also matters, if the poor have to benefit. For the past four years, Malawi has had a national fertiliser subsidy embedded within a wider programme of farmer support called the Agricultural input support programme (AISP). This programme has also evolved in the last few years over the years and has so far has recorded some impact in terms of household food security and national self-sufficiency in food (Chinsinga 2007). Several other evaluation reports have shown Malawi's experience in how a subsidy on fertiliser can boost national production of maize and eliminate the need for imports. This has been attributed to the way the Malawi subsidy programme is designed and

implemented. As a result, Malawi's subsidy programme has been termed as 'Smart' subsidy. What are "smart" fertilizer subsidy programs? de Moor and Beers(2001) in Minde et al (2008a) argue that the effectiveness and efficiency of a subsidy program depend heavily on the specifics of implementation and that designs of subsidy programmes should take into account a number of factors, such as political acceptability, leakage of benefits to households outside the target group.

Minde and Ndlovu(2007a) describe 'smart' subsidies as those involving "(**S**)pecific targeting to farmers who would not otherwise use purchased inputs (or to areas where added fertilizer can contribute most to yield improvement), (**M**)easurable impacts, (**A**)chievable goals, a (**R**)esults orientation, and a (**T**)imely duration of implementation, i.e., being time-bound or having a feasible exit strategy". Morris et al(2007:103-110) discuss the need to make Smart subsidies also market-smart as temporal measure to lower the prices of fertilisers and hence improve fertiliser availability at farm-gate level. Morris et al(2007: 101-104) also suggest the use of vouchers as one sure way of ensuring that the beneficiaries are primary recipients of the subsidy.
Dorward argues that

> "Any targeting system requires a method for restricting access to subsidized inputs. This requires a list of entitled beneficiaries with specification of the subsidised input entitlement and then a mechanism that allows that to access that entitlement. This mechanism may involve either physical distribution of inputs from a specified distribution point against a list of entitled beneficiaries held at the distribution point, with some form of secure identification. Evidence of entitlement is most commonly a paper voucher. Different systems offer different potential benefits but pose different political, technical, administrative and social challenges within communities and households" (Dorward, 2009:26)

Therefore, the nature, design and implementation of subsidy program matters if it has to have positive impact on the beneficiaries. This is not to say that smart subsidies are easy to implement and even when well implemented they are not a magic bullet for success. Other factors have to be taken into consideration such as the need to improve infrastructure, extension services, gender equity and so forth.

2.2. Agric- Economic Situation in Zambia

The Zambian economy had for over two decades, been dominated by government control till 1991 when there was change from the one party state to multi-party democracy. Before, 1991, the government regulated food and commodity prices and food consumption was heavily subsidized (Simatele

2006:1-5)The mainstay of the economy was mining, with income from the export of copper used not only to finance domestic expenditure but also to import food in years of shortages. The impact of the oil crises of the 1970s, falling copper prices and the resulting general economic deterioration shifted the focus to agriculture as a possible source of growth, export revenue and increased food availability(ibid 2006,(Hans 1988, Seshamani 1999)

To recover from the economic problems that the country was experiencing, the government turned to borrowing both domestically and internationally. With no significant recovery in either copper revenues or agriculture, the balance of payments and fiscal deficits became enormous and ultimately the country started to get conditional loans, which was the beginning of structural adjustment programmes (SAPs) in Zambia.(Seshamani 1999). The changes in both the agricultural sector and the macro economy as a whole resulting from the implementation of SAPs in Zambia have obviously had a major effect on agricultural and food production. For example, the exchange rate, affects the maize production on imported fertilizers and other chemicals. This means that the liberalization of the exchange rate affects the cost of production for maize(Simatele 2006:1-5)

As a result of liberalization , credit market has also significantly affected the agricultural sector. Prior to the reforms, the agricultural sector especially small scale farmers was major beneficiary of low-interest loans. When this situation changed, access to credit declined, which may have contributed to the fall in agricultural production.(ibid 2006:2, (Tembo et al. 2009:9-10). It is clear that both macroeconomic and agriculture specific reforms have a potentially significant impact on agricultural output and food production in particular.

The general objectives in the agricultural sector were the reduction of government intervention in the market, the promotion of agricultural or non-traditional exports, and the improvement of food production. In reality , macro level implementation involved freeing the exchange rate, liberalizing trade, freeing interest rates, removing subsidies and all kinds of price controls including maize and fertiliser and abolishing state agricultural companies and marketing boards(ibid 2006)

2.2.1 The Five Phases of Zambia's Experience with Fertiliser Subsidies

In the early 1990s, the Zambian government initiated a process of fertilizer market reform, as part the economy-wide structural adjustment programs (SAPs)(Hans 1988,Seshamani 1999 ,Shawa. 2002) These reforms have evolved in five diverse phases. The first phase which took place from 1991 to 1993,

the government assigned several state-affiliated banks and credit unions to dispense fertilizer to farmers on credit. Low repayment rates of as less as 5% led to the abandonment of the programme. (Govereh et al 2002, (Grz 2006). The second phase, was from 1994 to 1996, where the government appointed a few large private firms to be Credit Managers with Cavmont Merchant Bank Ltd. and SGS Ltd. Being the lead to import and deliver fertilizer on loan to "credit coordinators," who were private retailers tasked with forwarding the fertilizer on credit to farmers. Cavmont and SGS did not have ownership of the fertilizer but rather they were paid management fees for their role of dispensing fertilizer to designated credit coordinators on behalf of government. Government made the designation of both credit managers and credit coordinators. The amount of fertilizer supplied through this approach was determined by availability of donated fertilizer from donors and local production (Govereh et al 2002). This approach was marred by failure of the credit coordinators to account for the fertilisers sold as most of them were engaged in illegal selling of fertiliser instead of forwarding it to designated farmers on loan (Govereh et al. 2002). (Pletcher 2000) further states that as a result of this, government introduced another distribution system which provided selected private agents with the possibility for major financial gains and a protected market. This lead to the private agents to be co-opted into the government system and their advocating a transparent open market system was weakened. Pletcher (2000) further reports that Cavmont and SGS exited the market only after the government insisted that performance contracts be signed and this meant the absorption of some of the repayment losses being incurred. The government responded by introducing the state-run Food Reserve Agency (FRA) to carry out the responsibilities of importing and distributing fertilizer to the agents. This was the third phase, which lasted from 1996 until 1999. In this phase, the FRA also appointed private sector "agents" to distribute fertilizer to farmers and cooperatives on its behalf. This approach was apparently related to past repayment history and collateral, hence the system was again vulnerable to political interference. Evaluations of the program again concluded that a large proportion of the in-kind credit, designed to assist farmers afford fertilizer, was diverted before reaching them(Pletcher 2000), Govereh et al,(2002).

The fourth phase introduced in the 1999/2000 farming season. Under pressure from donors to restrain the state's distribution of fertilizer on credit, the government contracted several large private firms to import and distribute roughly 45,000 tons of fertilizer especially to smallholder farmers through the cooperatives. The private firms operated on a commission basis on behalf of FRA. In 2000, there were four main importers and wholesalers of fertilizer in Zambia: Omnia, Sasol, Norsk Hydro, and Farmer's Friend, with 85% of the volume concentrated in the hands of the two firms that the government chose

to distribute fertilizer to selected cooperatives under its credit program. Evaluations once again indicated that a large proportion of fertilizer acquired on loan from FRA (through Omnia and Farmer's Friend) was sold by implementing agents before it got to farmers (Govereh et al 2002). During the decade of the 1990s, covering these first four phases of relatively limited fertilizer subsidy programs in Zambia, national fertilizer use and maize production actually declined(ibid 2002). Unfortunately, instead of prompting the production of local fertiliser, the government opted to import fertiliser citing high costs of production of the only fertiliser plant in Zambia. The fifth and current phase of Zambia's experience with fertilizer subsidies since liberalization in 1990 is marked by the Fertilizer Support Programme (FSP), which was introduced the 2002/2003 farming season. (GRZ/FSP 2002)

2.3. Fertiliser Marketing in Zambia

Zambia's Agricultural policy has for past several decades focused on fertilizer subsidies and targeted credit programs to stimulate smallholder farmers' agricultural productivity, improve food security and with the ultimate goal of reducing reduce poverty. Therefore, improving maize productivity has been a major goal of the government's agricultural policy over the past several decades. Despite these efforts, overall food security is still a major concern Xu et al (2009:9-10) (FNDP 2006). The Zambian government and other stakeholders have been implementing fertiliser subsidies for a long time before there were done away with and later re-introduced. Prior to 1991, government was heavily involved in the marketing of maize and fertiliser. The nature of fertilizer marketing and pricing policies have produced various market mechanisms over a period of time and these have varied from controlled marketing and pricing at all levels in the 1980s to market liberalization and price deregulation in the 1990s(Shawa et al 2002, Seshamani, 1999).

> "Farmers would benefit more in terms of higher maize prices if the terms of the transaction are commercial oriented. Reducing farm gate prices by indirectly expanding supply in rural areas advantages those who get low cost fertilizer and disadvantage those producers without fertilizer or with full cost fertilizer both of which were found to be lower income households compared with those receiving government fertilizer. The many net buyers of maize in rural areas would also benefit"
> (Shawa et al2002:34).

These marketing mechanism for fertiliser also impacted on prices of maize which have tended to be low especially in the rural areas.

2.4 Prices of Maize and Maize Marketing

Before 1992, the purchase of maize from producers was under the monopoly of the now defunct NAMBOARD (National Agricultural Marketing Board) and Co-operative Unions that had structure from provincial to districts. Buying and selling depots were established in villages throughout the country. Maize when collected from the farmers was transported and sold to millers in urban areas. This meant that the price at each stage of the distribution process) was fixed by the government (Xu et al. 2009a). The current fertilizer marketing and pricing policy in Zambia was expected to remove previous market distortions, introduce new competition into the market and stimulate growth of new markets (Shawa et al 2002). In the present arrangement, the government is not fully involved in the marketing of maize and other crops. Government purchases maize through the Food Reserve Agency(FRA) an agency that has been mandated to purchase crops as approved by the Ministry of Agriculture and Cooperatives from very remote areas of the country which are economically disadvantageous for other buyers on the market. The maize bough by FRA is for meant the country's national reserves. The FRA sets the floor-buying price of maize and its decisions often results in some implication such as elaborated by Jayne et al(2008)

> "The 2008 maize harvest in Zambia was estimated to be slightly below that of recent years. The marketing board, the Food Reserve Agency (FRA), announced a buying price of 45,000 kwacha/ton (roughly US$ 260/ton) and has banned private exports. Because of nervousness in the markets, private millers and traders started the 2008 season by aggressively buying maize at prices higher than the FRA floor price. The FRA countered by raising its buying price to 55,000 kwacha (US$304) per ton in an attempt to procure its target supplies. Aggressive attempts by both private traders and the government pushed prices up quickly after the 2008 harvest. Upward pressure on market prices has been compounded by perceptions that food balance sheet estimates are likely to have underestimated the demand for maize". Jayne et al.(2008:10)

Maize being a staple food in Zambia, the prices have tended to be low, yet the processed maize(mealie meal) is very expensive (interview with ZNFU operations manager, Ms. Florence Phiri, held on August 2009). FAO in their guide to maize marketing to extension officers highlight that s several factors influence the prices of maize such as supply and demand, location, time of the year, information, quality of maize. Some of these factors will be highlighted in chapter four. The prices of fertiliser continue to be very high in Zambia, often beyond the reach of many smallholder farmers who are deficit producers of maize.(Zulu et al 2007,Tembo et al(2009:9-10).

This section has discussed the typologies of fertiliser promotion programmes and gives a historical review of fertiliser programmes

implemented in Zambia. The Chapter also discusses the agric economic situation in Zambia

2.5 Theoretical Framework- Linking Fertiliser Subsidy and Food Security

This section introduces some basic concepts to understand the role of fertiliser subsidies in food security . It then introduces a frame work that will support the claim that the nature of the fertiliser subsidy has implication on food security of the smallholder farmers.

2.5.1 Definition of Concepts

Food insecurity is not just about food. It is also about access. Food insecurity is also linked to poverty as a multi-dimensional phenomena. The Food and Agriculture Organisation (2003)defines the ultimate goal of food security and insecurity as :

> "Food security when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern.
> **Food insecurity** exists when people do not have adequate physical, social or economic access to food as defined above" (FAO 2003:29)

The World Bank defines food security as access by all people at all times to lead to health and productive life(World Bank 2007). (Streeten 1987)defines food security as assured economic and physical access to food, at all times, to all citizens. In Adayemi et al(2009) they acknowledge that while food security could imply the absence of vulnerability such as a low risk of falling prey to hunger through changes in personal or external factors, "people are food secure if they can afford and have access to adequate food at all times."(2009:1150).

Food insecurity is caused by a range of factors from internal to external and international factors. Internal factors can be caused as a result of natural calamities such as drought or floods, lack of resources like land and other assets used to produce food. Other factors such as level of agricultural production and productivity, state of infrastructure, HIV/AIDs prevalence, inefficient marketing systems can also contribute food insecurity. The measurement of food insecurity in Africa has to take into consideration the variability of staple food production Obasanjo &d'Orville(1992). In Zambia maize is the staple food, hence maize production plays a crucial role in food security.

It is widely acknowledged that while food insecurity problems especially in Africa clearly originate in part from the stagnation or decline in food production, ensuring food security also implies the provision of what Amartya Sen(1986) defines food entitlements such as land, credit, income and family support systems. Food security has been described by many as not only about producing own food but also its more about income for people to buy food(Pinstrup-Andersen. 1988). Nevertheless, smallholders produce food for own consumption or for sell and income in the form of cash required to produce food.

This study uses the entitlement approach to analyse the role of the nature of fertiliser subsidy and its implications on food security in Zambia. Sen (1999) states that in order to understand general poverty or regular starvation, it is important to look at both patterns and exchange entitlements and the factors that are behind them. The entitlement approach focuses on the ability to people to command food through the legal means available to them, including the use of production possibilities or trade opportunities (Sen 1999:45-51) Therefore, other patterns such as marketing mechanisms of food and fertiliser are important to look even if the focus of the study is on fertiliser subsidy. Moreover, other entitlements are required if the fertiliser subsidy has to contribute to food security or improved production. These entitlements can either be at macro or micro levels .

Therefore, smallholder farmers would face constraints as a result of macro policies push by governments or entitlement failures at individual or national levels. According to Amartya Sen an entitlement has different and interrelated and thus an entitlement can either be direct or indirect. When a person is able to produce his or her own food using own endowments such as land it is referred to as a direct entitlement. On the other hand an indirect entitlement can be achieved through what a person can purchase in markets by exchanging his or her endowment for food purchase. Smallholder farmers produce their food grains for own consumption, but there are some that produce for both consumption and sell. Yet whether the smallholder famers produce for own consumption or for sell, income for both is important. A small holder farmer who is a deficit producer of grain of maize, will need cash to purchase the inputs including fertiliser. Here it is also important to understand that food security is not only achieved through own production but also through purchase or exchange .

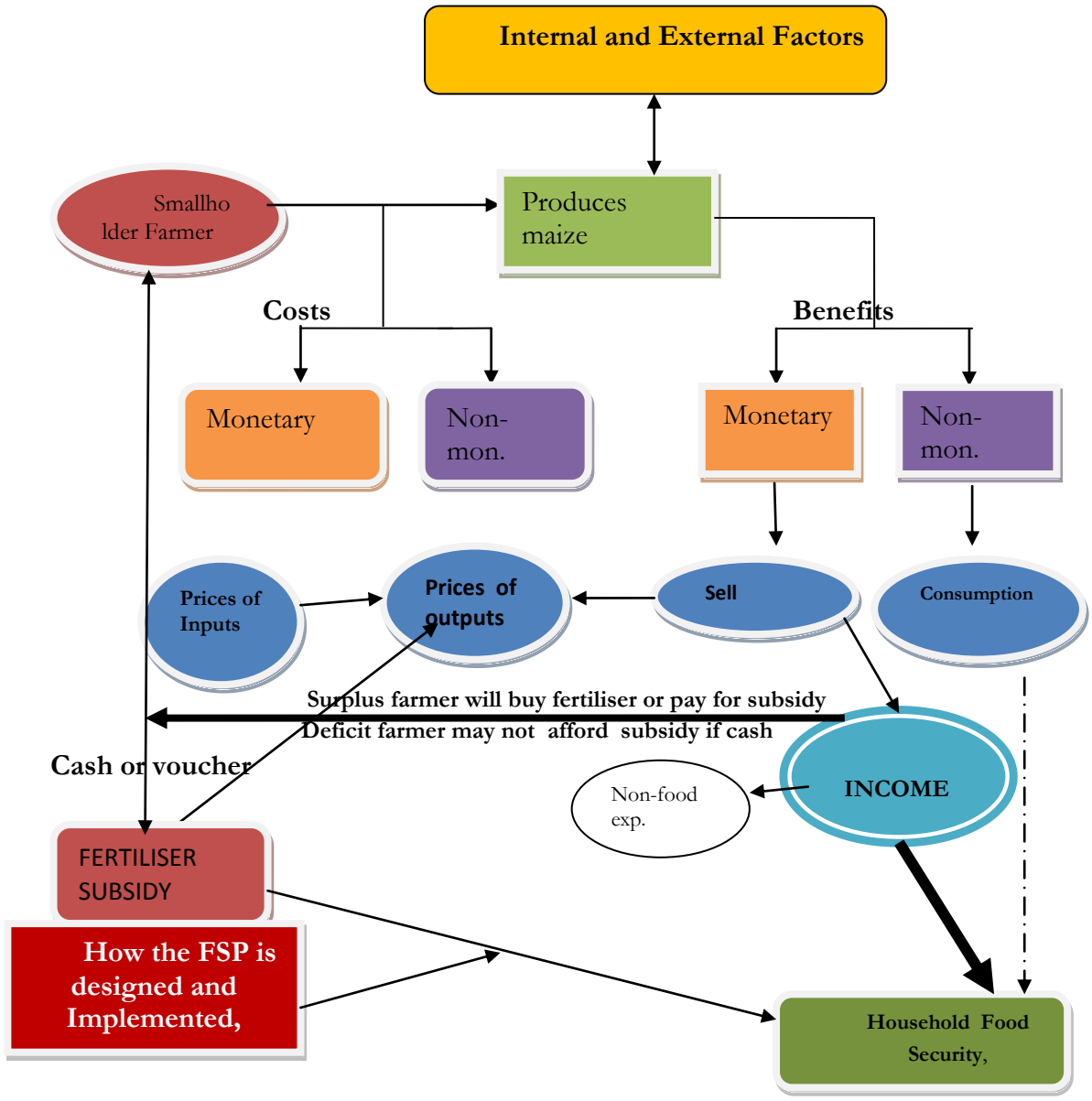
Timmer et al, (1983)state that a food system functions from the production to consumption, including the marketing system will have an impact on food security (ibid 1983). Input subsidies play an important part in contributing for food security through increased production. However, it is not automatic that input subsidy will lead to food security. A number of factors have to be

taken into consideration. Timmer et al (1983) argue that solving issues of hunger or food insecurity involves expanding available choices which are a function of incomes, food prices, food supplies and consumer knowledge(ibid 1983:6). They further add that access to food is enmeshed in processes that produce and consume agricultural commodities and transfer these commodities into the food marketing system and hence and the food prices determine the incomes of farmers. Most people in the rural areas especially in Africa derive their sources of income from farming (Kherallah et al 2002, Adeyemi et al (2009). Therefore prices of inputs and outputs play a vital role in motivating the farmers to produce. Fertiliser subsidies would also be vital not only ensure food security but also to increase the income of the farmers, yet access to the subsidy under the FSP by smallholders remains a challenge in Zambia because on one hand of the way it is implemented and the form(cash payment) in which it is being provided and on other hand due to entitlement failures or constraints that are supposed to be taken into consideration. It is important to point out here that most fertiliser programmes seldom to take the women into account(Ellis 1992) as the case of the FSP that has not mainstreamed the gender policy and participation of the beneficiaries is not considered(Imboela 2005).

2.5.2 The Framework for Analysis

Fertiliser subsidy policy can be categorised or defined as a public good which evolves from the response to poverty other than just providing the services Wuyts et al (1992).How a policy is organised and implemented to ensure that it responds to the needs of beneficiaries is vital. Therefore, the way a fertiliser subsidy policy is organised and implemented, the form in which it is implemented is critical to the overall effectiveness of the programme.

Figure 1 Analytical Framework



In Figure 1, we have been shown that, to start with food security as already stated can be achieved through own production of food as the case of smallholder farmers or can be purchased or a combination of both in a situation where a farmer is a deficit producer. However in order to produce food a smallholder household requires resources or endowments that facilitate the production such as land, labour, farming tools and agricultural inputs. On one hand these resources would be in monetary and non-

monetary form. For example, a smallholder farmer will not have to pay to use land since it is owned by the family, a smallholder farmer will also rely on family labour to cultivate the fields, weeding, and harvesting. On the other hand, the smallholder farmer will need resources that require money, to be purchased such as fertiliser, hybrid seed, transport to collect the inputs whether subsidised or not. Producing own food will also have benefits and these benefits will be of a monetary nature as well as non-monetary. The non-monetary, will be the production of food for own consumption . But because of competing needs, some smallholders sell even food meant for own consumption, or it may not be enough to last till the next season, hence the broken link with food security. The monetary benefits will be derived from the fact that the smallholder will sell the produce and earn income as farming is a major source of income of most smallholders. But the amount of this income is dependent on the prices of inputs and the prices of outputs. The income earned is used for a number of things such as non-food expenditure and the same income will be used to purchase inputs. If a smallholder farmer decides to sell all their maize, the income derived should be able to buy food yet this is not always the case. Timmer et al(1992) point out that farm households decisions are not only based on input and out prices, but also the type of government interventions that could affect household decisions, for example marketing mechanisms put in place by government may not function to the best interest of the small-scale farmer.

On the other hand, a surplus producing smallholder farmer produces enough for food for own consumption and for sell, the price of inputs and outputs is another nexus that has to be considered. The higher the prices of fertiliser and other inputs the lower the income for the farmers and this makes farming especially fertilise use less profitable. On the other hand, deficit producing farmer would also need fertiliser to boost their production. Therefore, a fertiliser subsidy, would required for both type of farmers. However, the form or nature of the subsidy will also determine which of the two will have access to it. For example the Zambian fertiliser subsidy requires that the farmers pays some cash yet most of the small-scale farmers in Zambia are deficit producers of maize and net buyers of maize(Tembo et al. 2009:9-10). Heisey and Mwangi (1996.) argue that for many African smallholders, fertilizer expenditures can take a considerable percentage of the total cash expense for crop production and this can reduce their incomes. It is therefore paradoxical that the current fertiliser subsidy policy is based on the assumption that the smallholder have the cash.

The second level of analysis (not depicted in fig 1,) is that despite some smallholder farmers having access to fertiliser subsidy, there are still affected by low production of maize and hence food insecurity because certain

entitlements and endowments are not sufficient. Most of the smallholders depend on non-monetary costs such as own labour, oxen, own land. In order to get access to monetary costs such as inputs some would need not have enough income, hence would opt to share the costs with other needy farmers especially when it comes to acquiring subsidized fertiliser. Wrong application of fertiliser would also reduce the yield.

The third level of analysis, is how the FSP as a subsidy policy is organised and implemented, and how it includes and excludes the intended beneficiaries, through the self targeting and selection system. The subsidy is not implemented as a universal subsidy but is targeted at small scale farmers who have to select themselves based on the criteria set by the government.

Chapter 3: FSP Design and Implementation Framework

Chapter 3 discusses the nature of the fertiliser subsidy under the FSP, how it is designed and implemented and the implications.

3. 1 Description of The Fertiliser Support Programme and Implications

In recognizing that a large proportion of small-scale farmers in rural areas depend on agriculture for sustenance, the Fertilizer Support Programme (FSP) was established under the Poverty Reduction Strategy Paper(PRSP) as one of the Five Programmes created to increase food production and enhance food security among small-scale farmers by supplying fertilizers and seed at a 50% subsidy (PRSP, 2002 : 52-59). The general objectives of the FSP were to promote the use of low input and conservation farming technologies among selected target small-scale farmers who meet the criteria; distribute the required enterprise inputs in time; and provide extension messages to support the enterprises(Grz/Fsp 2002). The FSP employs a cash system where the expected beneficiaries through their cooperatives make down payments depending on the level of subsidy for one pack[4] of fertiliser for cultivation of one hectar of maize. For example for the 2008/2009 farming season, the farmers were paying on average K450,000 for a full pack. The FSP that is targeted at small- scale farmers and maize as crop is being implemented in all the 72 districts of Zambia regardless of agro ecological differences. The FSP employs a self targeting criteria in order to select the final beneficiaries of the fertiliser subsidy. The private sector is involved through tendering processes in the supply of inputs up to the district level and transporters are also involved to deliver the inputs to the designated depots within the districts.(FSP implementation plans, CSPR(2005). Allocation of fertiliser to the districts is based on the number of small scale farmers in the area.

[4] The input packs consists of 8 bags of fertiliser(4x50kg basal dressing and 4x50kg top dressing) and 20kg of maize seed to support the cultivation of 1 hector of maize. Each beneficiary farmer is allocated only one pack of inputs for cultivation of 1 hector of maize.

Table 2 FSP in Brief

Question	Description
What is the FSP and how is it funded	The Fertiliser Support Programme- introduced by the government to improve on the prior programmes meant to assist the smallholder farmers and private sector in the wake of liberalised economy. The FSP is 100% funded by the government.
When and Why was it created	The FSP was introduced in 2002 to assist the small-scale farmers use fertiliser and improve private sector firms provisioning of fertiliser and related inputs. The FSP was a justification for government involvement in managing a transition to build the capacities of both the private sector and smallholder farmers
What are the Objectives	The objectives are aimed at improving , maize production, household food security and national food self sufficiency, incomes, accessibility to inputs by smallholder farmers through the subsidy, and to building the capacities of the private sector to participate in the supply and distribution of inputs. Through the FSP, Government also aimed to rebuild the resource base of the of the small-scale farmers
Who are the target Group and where are they located?	The FSP targets smallholder farmers that meet the criteria set out by government though out the country, in all the 9 provinces and 72 districts. According to Tembo et al , rural household surveys in Zambia indicate that "small-scale farm households generally fall into one of the following four categories: (i) net sellers, (ii) net buyers with production, (iii) buyers without production, and (iv) households that are neither buyers nor sellers". (2009:6)
What is the Criteria used to identify beneficiaries	Small-scale farmer who are actively involved in a cooperative or farmers group, Have capacity to cultivate 1-5 hectares of maize Capacity to pay 25% of the cost of inputs Not benefiting from the Food security pack Not to be in default of loans from the FRA
What is the nature of the subsidy	In the 2008/2009 farming The beneficiaries pay 25% of the cost of inputs in **cash**, government pays 75%. The district offices for agriculture are responsible for submitting the proposal to the national office that approves the request, but not necessarily the allocation as it is determined by the national office.(FSP manuals, 2003-2008 and from in-depth interviews.)
What is the pack	Comprises 8 X 50kg bags of fertiliser(4basal and 4 to dressing) and 1 X 20kg bag of hybrid seed. Each farmer is allocated one pack for one hectare.
What is the Crop supported	Maize, most of the small holder depend on rain fed agriculture
How long does a farmer benefit	Initially a farmers was supposed to be graduated after three years but no mechanism is in pace to allow for graduation. *Source:* own elaboration from the FSP manuals, ACF and FSRP documents

3.2 Targeting and Selection Criteria

The FSP Program Implementation Manual establishes criteria for targeting farmers through a self selection system. The intended beneficiaries are supposed to be chosen from the participating cooperatives. Should be a small scale farmer and actively involved in farming within the cooperative coverage area. Has the capacity to grow 1 to 5 hectares of maize Should have the capacity to pay 25% of the cost of inputs, should not concurrently benefit from the food security pack should not be a defaulter of any government loan. The criteria of being possession of or access to at least 1-5 hectares of land and the capacity to produce maize on that area. Given that approximately 40 percent of the farms nationwide own less than one hectare of land, this criterion effectively excludes the poorest farmers from receiving subsidized fertilizer under the FSP(Weber 2008).

The selection take place is at different levels. First the cooperatives/ farmer groups which are the main channels in the distribution of inputs are selected by the District Agricultural committee and then the cooperative in turn select the beneficiaries. This has led to the missing out of the real and intended beneficiaries. The selection criteria is based on first come first serve in terms of who has the money as the nature of the subsidy require payment of cash. Since allocation is to individuals other than households, it is common to certain households to receive more allocations just because they are members of the cooperative and other households would have nothing because they did not have the cash. Therefore, it is common for one well -off farmer to receive more than one allocation but under different names. The well -off farmers would in some cases be registered under the names of the poor farmers especially women. As can be seen from the allocation process in Fig2 the community and other stakeholders are not involved in the selection of beneficiary farmers. Initially the programme was only meant to last for three years, because of the absence of the monitoring system, the programme does not detected which farmer has been receiving.
Therefore, the targeting through cooperatives and farmers organisations leads to inaccurate targeting and selection of beneficiaries. The FSP is not gender sensitive and therefore, does not pay particular attention to the different needs of female and male farmers. It also does not pay attention to the differences in the areas as the subsidy is implemented in a uniform manner throughout the country and different groups of people. The FSP assumes that all members of the cooperatives are smallholder farmers and does not recognise that smallholders are in various categories(Tembo et al, 2009:6-8).

Allocation of the packs is determined at national level, though request are made by the DACOs after receiving all the applications. Table 3 shows that

there has been a steady increase in the number of beneficiaries as well as the allocation of the fertiliser. The level of subsidy by government has also been increasing. The number of farmers is not gender aggregated, which make it difficult to monitor how women and men are benefiting

Table 3Allocation of Inputs from 2002 to 2008

Farming years	# of targeted beneficiaries	Mt of fertiliser	Mt of seed	Est. Subsidised maize production	Level of Subsidy
2002/2003	120,000	48,000	2,400	360,000	50%
2003/2004	150,000	60,000	3,000	450,000	50%
2004/2005	115,000	46,000	2,500	375,000	50%
2005/2006	125,000	50,000	2,500	375,000	50%
2006/2007	210,000	84,000	4,200	630,000	60%
2007/2008	125,000	50,000	2,550	375,000	60%
2008/2009	200,000	80,000	4,000	600,000	75%
Total	1,505,000	422,000	21,150	3,165,000	

Source: Own elaboration from FSP implementation manuals 2003-2009

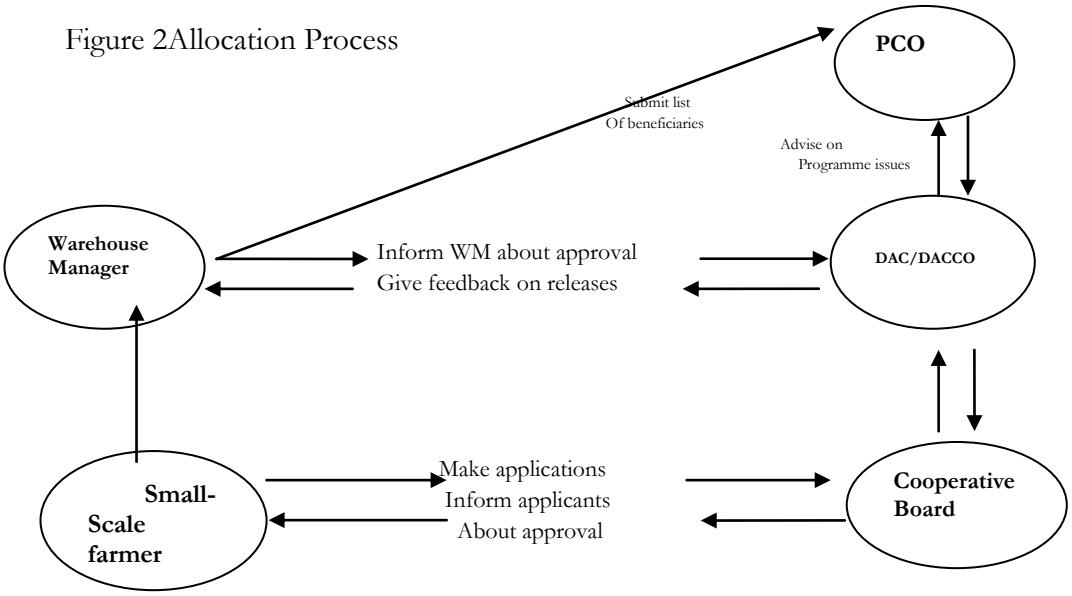
Table 4Number of farmers and recipients in the two study districts (2008/2009)

District	No of small-scale Farmers	FSP beneficiaries			% of Beneficiaries
		Males		females	
Kalomo	33,000	9,848	*	*[5]	30%
Senanga	6,000	199	107	82	3.4%

Source: Own elaboration from FSP Implementation manuals and in-depth-interviews

[5] There was no gender disaggregated data and gender is not even mentioned in implementation manuals . the manual also does not provide statistics on the number of small scale farmers in Zambia.

Figure 2Allocation Process



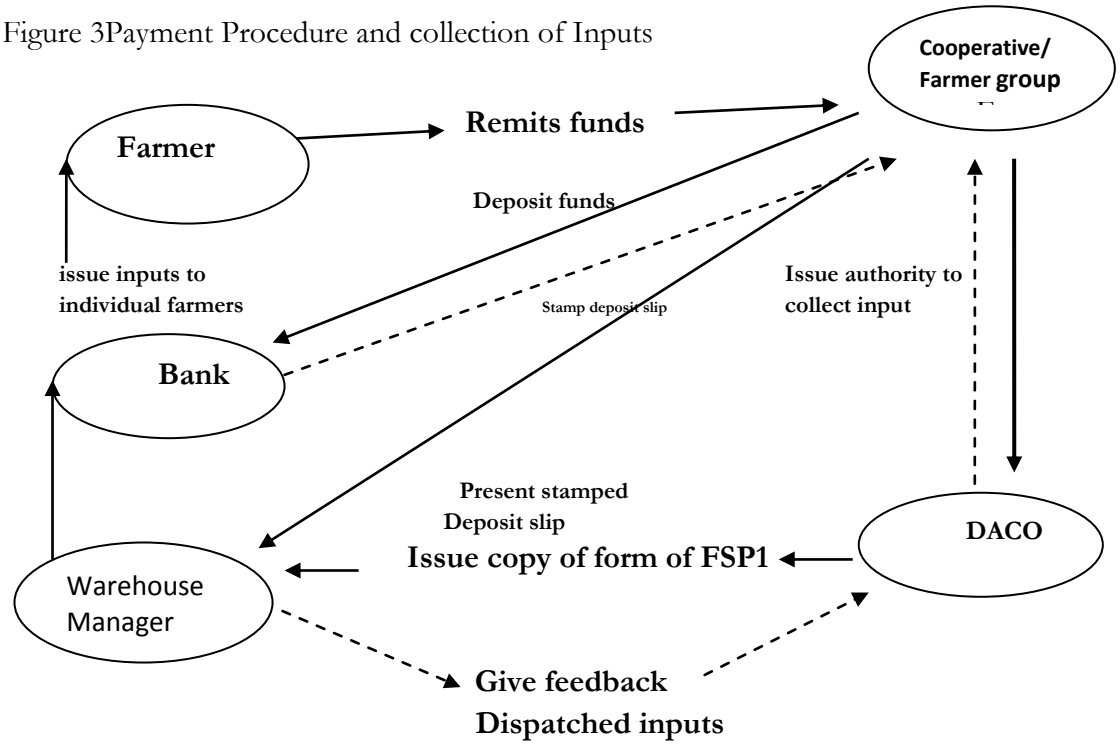
Source: FSP Implementation manual 2008/2009

Fig2 the coordination and implementation arrangements of the FSP. Programme Coordination Office(PCO) is the main coordinator.

3.3 The Nature of the Fertiliser Subsidy

The FSP which is being implemented throughout the country and targets smallholder farmers employs a cash system where the intended beneficiaries that are selected through the cooperatives, pay a percentage of the subsidy to the cooperative and the cash is then deposited in a designated bank. The distributors of the inputs then distribute the inputs to the designated depots. The farmers then have to collect the inputs and deliver to their holding. The FSP is based on the assumption that the farmers will have the cash and the cooperatives or farmer groups will follow the criterion the selection processes. The way the FSP is organised and implemented at different levels and also the nature of the fertiliser subsidy from the selection criteria to actual receiving. The payment procedure is elaborated in a flow chart below. Fig 2 shows the procedures that the beneficiaries have to go through, before accessing the fertiliser. In all these processes money is spent. In practice the process of fertiliser allocation is not as it is depicted in figure2.

Figure 3Payment Procedure and collection of Inputs



Source: FSP Implementation Manual 2008/2009

Figure 3 shows the payment procedure and collection of inputs. In most of these transactions money has to be spent before they actually get the fertiliser. First, to be a member of a cooperative, one has to pay some membership fees, the farmer has pay cash (K450,000[6]) as down payment for the subsidy to the cooperative, the cooperative members have to contribute money for transport to allow some members to take the money to a bank in town, spend a night or two to ensure the DACO approves, they then go back and wait for inputs. The inputs are not delivered at farm gate, so they also have to keep on checking and finally when the inputs are distributed they farmer has to collect from the depot and transport is paid for. But with a voucher the system is different and short, less expenses for a farmer(Minot and Benson 2009).

[6] US$1=K4,500.

3.4 Implications of the Design and Nature of fertiliser subsidy

3.4.1 Gender Implications

Despite the fact that Zambia has a gender policy that dictates that gender is supposed to be mainstreamed in all policies including the agriculture policy (Gender Policy (2000), the FSP is not responsive to gender in all aspects of its design. As a result most of the women that are perceived to be the beneficiaries of the fertiliser subsidy, receive the subsidy on behalf of their husbands or other male relatives with cash at hand. Most of the women and poorer men usually get less than the recommended allocation of one pack especially where the cooperative has more than twenty members. This problem can be removed if the nature or form of subsidy is revised. Instead of the cash requirement, the intended beneficiaries are supplied with vouchers that they present to the fertiliser dealers. This is not to say the leakage problems will be sorted out, but there will be higher chances of the intended beneficiaries accessing fertiliser subsidy as argued by Dorward(2009)

3.4.2 Uniform Subsidisation

The FSP is implemented in all the 72 districts of Zambia, uniform subsidization can lead to an inadequate appreciation of fertilizer's actual value and a complete neglect of issues like timeliness and availability. For example in Senanga findings indicate that there was less appreciation of the fertiliser subsidy compared to Kalomo that is a high productivity area. In Senanga there were reports that beneficiaries tend to engage fertiliser as a non-farm activity by selling fertiliser to other farmers in productivity areas such as Kaoma district with the same province. Findings of this research indicate that Selling the fertiliser received from the FSP is more profitable because of the big difference between the subsidy cost and the market cost. Hence the subsidy is more attractive to the rich and well –off. This also has attracted the formation of fake cooperatives with farmers that just want to benefit from cheap fertiliser so they can resale it. The FSP price is K50,000, where as the market price in some places as high as K320,000 per 50kg bag. Several considerations should be taken into account with respect to agronomic response Byerlee al(1994.) First, absolute potential yield level is as important as marginal response at zero nutrients. In addition the availability of improved, more-responsive maize varieties is likely to be important an important factor (ibid).

CHAPTER 4: Evidences And Challenges

This chapter focuses on the findings from the field case study of how the fertiliser subsidy in its current form, its design and implementation has impacted on maize production, food security and income of the beneficiaries as well as non-beneficiaries. As discussed in the theoretical analysis, that when a farmer produces products there is need to take into consideration that both monetary and non-monetary resources are required. Chapter four also brings out the challenges being faced by the small- scale farmers and government and shows how it does not fit into a smart subsidy This study brings out the voices of the various respondents.

4.1. Fertiliser Subsidy as a Policy

A policy can be termed as a public good(Wuyts et al 1992) which is supposed to have common interpretation by Policy makers and implementers, however, in the case of the FSP interpretation differs in terms of who is to benefit at all levels. From the in-depth interviews with various key informants, the findings indicate that there was no common agreement on who are the actual target of the FSP . A senior official in the Department of Agribusiness said that the FSP was only targeted at small-scale farmers that are viable and not the poor farmers. Therefore, any viable farmer can access, if a civil servant is also a farmer and is a member of a cooperative, they can also access the inputs as long as they are able to pay for the pack. Others within the Ministry of Agriculture said the FSP was targeted at viable but vulnerable farmers but could not elaborate further as to what is meant by being vulnerable. The beneficiaries see the target as those with money as the whole system is based on who has the cash at hand- "the selection criteria is okay as long as you have money and able to pay based on first come first serve"[7] the other interpretation of the policy that is not clear is whether the policy is a fertiliser subsidy policy or not. The unclear definition of who is targeted has contributed to mis-targeting or elite capture, e.g. finding indicate that civil servants also purchase the subsidised fertiliser.

[7] This was a common in all the interviews with the male respondents in Kalomo and Senanga,. Most of the females expressed dissatisfaction with the selection criteria. held July 2009

4.2 Targeting and Selection Criteria

The FSP Program Implementation Manual establishes criteria for targeting farmers, one of them being possession of or access to at least 1-5 hectares of land and the capacity to produce maize on that area. Given that roughly 40 percent of the farms nationwide have less than one hectare of land, this criterion effectively excludes the poorest farmers from receiving subsidized fertilizer under the FSP (Weber, 2008). Therefore, the selection criteria through the cooperatives has also tended to exclude the intended beneficiaries by employing a first come first serve system. There is no regard for gender al levels of implementation Some women in the FGD in Kalomo also complained of the administrative procedures involved in the accessing of the inputs such as registration of the groups, opening of accounts where to deposit the money and so forth.[8]

> "The gender policy is there on paper. But identification is done by the farmers. So it is very difficult to engender the policy. The farmers have been sensitised on gender but when it comes to identification of the farmers, it is based on who has the money. "Identification is not done by us that are executing the policy but identification is done by the farmers. So it is difficult for us to ensure gender equity. However, consideration is given for purely women's groups".[9]

Though women's groups are considered, there are very few that benefit.[10] For example in Senanga out of 14 cooperatives that accessed fertiliser in 2008/9 farming season, only two women's group's had their application approved and the records showed that they had received fewer packs when compared to the mixed groups or cooperatives.

4.3 Nature Of The FSP Subsidy And Implications For Food Security

As already indicated in chapter 3, the FSP employs a cash payment system where the farmers through the cooperative have to make down payments at some point during the year before the start of the farming season. The system is based on the assumption that the small holder farmer will have the cash. Members of the cooperative who have been selected to be beneficiaries, will have to raise K450,000 each and then together the monies are deposited as

[8] FGD with Women beneficiaries and non- beneficiaries in Kalomo, held July 2009

[9] Interview with Senior Agricultural officer for Senanga district- Likando Mubiana held on 23rd July 2009

[10] Interview with Extension officers in Kalomo and Senanga

down payment in a commercial bank enlisted for participation by government. The study findings in both Kalomo and Senanga, indicate that there is a problem with this requirement. As indicated by Zulu et al(2007) and Tembo et al (2009) most of the small-scale farmers in Zambia are deficit producers of maize, few sell maize and very few have other sources of income, to give them the cash. The already cash strained farmers have to have the cash to pay for the monetary resources that go with maize production such as inputs, transport, hire labour for those that do not have adequate family labour. And in addition, the income realised from the sale of maize may not be enough for some farmers to pay for the subsidy, because most of the maize produced is for own consumption. The FSP subsidy system works on the first come first serve basis when it comes to making payments, so those without cash at that particular time will be left out. This system puts the not so well off farmers especially women at a disadvantage and in the process are excluded from accessing the fertiliser subsidy.

Though the level of subsidy is reasonable and affordable to those with high income, Most farmers interviewed complained that they did not have enough income to enable them pay for the subsidy inputs. They said that they put their money together and share a pack. For example two people and in some cases three would put money together and share the pack comprising of four 50kgs bags of basal dressing, four bags of top dressing and a 20kg bag of maize seed. Each person would get four 50kg bags in total and 10kg of seed. The practice of sharing the fertiliser was common among women in Kalomo. It was also common to find civil servants, teachers that work in rural areas such as Kalomo and Senanga, as members of cooperatives and would have access to fertiliser subsidy because they have ready cash because they are employed and have ready income. Yet for most smallholders, their only sources of income is farming which is not too profitable due to various factors such as low prices of the output, long distances to the depots and for some lack of market to sell their products or even lack of storage.

4.4 Prices of Maize and Marketing

The fertiliser subsidy also has an implication when it comes to prices of maize. Firstly, the price of maize is distorted due to the government floor price since the fertilizers are supplied on subsidy though not all farmers enjoy the subsidy. The marketing mechanisms have been left mainly to the not so developed private sector. Though, the government through the FRA buys maize from the smallholders, most of the buying of maize is left to private sector that buy maize at very low prices from the desperate farmers.

> "The price of maize has remained very low because of the subsidy, and this affects the other farmers that do not access the subsidy. Even at the current floor price of K65,000- this is still very low considering what goes it growing the crop. ZNFU has been advocating for the price of maize to be upped at least K75,000 per 50kg".[11]

Though the smallholders farmers who are net deficit producers of maize would benefit from the low prices maize, but this is not always the case. The net sellers of maize will tend to and make maize production unprofitable. The second problem is related to the level of subsidy. The difference between the fertiliser subsidy cost and the market cost is too high and this has made the fertiliser subsidy to be 'elite captured' (Ellis 1992). In both Kalomo and Senanga, the findings indicate that there are many cooperatives that have been formed just for the sake of accessing the fertiliser subsidy and the fertiliser is later sold. Dorward (2009) argued that is anticipated if the fertiliser subsidy level is too attractive. Basic calculations of profit made from selling the subsidised fertiliser is very high. Considering that the selection process does not restrict access to the inputs as highlighted by Dorward(2009). A pack of 8 bags at subsidy cost is K450,000 this makes 1 bag to cost K50,000. Where as a pack of 8 bags at market price for example in Kalomo costs (1 bag=K250,000x8)= K2,000,000 = K1 550,000. Yet a smallholder farmers in Senanga will on average harvest(according to the findings) 20by 50kgs to be sold for K50,000(**K200,000**) after four months of waiting. So the better option would be to sell the fertiliser and make profit. That is why in Senanga, where there is less productivity in terms of maize, the fertiliser usually finds its way back to more productive areas such as Kaoma, within the same province.[12] In Kalomo, those with money, access the fertiliser subsidy by using those that cannot afford or do not have ready cash.

Currently not all small-scale farmers are benefiting directly from the fertiliser under FSP. Therefore, the low prices of maize have a negative impact on the small scale-farmers that sell maize. The price of maize is the same there, for the farmers that do not get the fertiliser sell their maize at a lose, where as those that get the subsidised fertiliser, sell at a profit or even below as long as they get some cash. Incentives for private fertiliser companies to supply rural areas have not been provided despite the FSP. Few supplies and distributors

[11] In-depth Interview with Florence Zulu-Phiri, Senior Manager: small-scale operations ,ZNFU held on 28th July 2009, Lusaka

[12] Interview with SAO Mr. Likando Mubiana held on 23rd July 2009

operate in the rural areas thereby reducing completion resulting into higher prices.

4.5 Food Insecurity Persists Despite FSP

Generally, the FSP has contributed to increased maize production and food security at national levels (ZFSM 2008). Yet at household level it is difficult to attribute increased or reduced food security to the FSP because of lack of monitoring mechanisms, since the FSP is not the only source of fertiliser for most farmers. However, the findings attribute the lack of entitlements both at micro and macro levels.

4.5.1 Selling and Buying of Maize

Most of the respondents in both the FGDs and Questionnaires attributed the food shortages to the fact that farming was their main source of income and that the crops grown such as maize served as a 'bank' where one goes to withdraw to deal with the competing needs. And when asked in the FGDs whether the food situation has improved since the FSP was introduced, most of them responded that the situation had not improved much. At a national level, the production of maize has been fluctuating since the FSP was introduced(ACF, 2009). The findings below show that in both Kalomo and Senanga, food security is at risk. The questionnaire analysis of the production levels and sells of maize suggest that, the farmers interviewed in Kalomo sell maize regardless of the size of production. Farmers that produced less than 50 bags of maize, and had larger households also sold maize. Production levels where high among the male farmers where the highest in 2008/2009 farming season had harvest more than 400 X50kg bags, but at the time of the interview had sold more than 200X50 kg bags of maize. For the females in Kalomo, the most of those interviewed had produced less than 60 and attributed the low yields to lack of fertiliser despite enlistment.

For the Senanga farmers, most of those interviewed in the FGDs and questionnaires had been producing less than 30 X 50 kg bags of maize since 2006. They give various reasons for their low yields despite accessing the fertiliser subsidy such as fertiliser not being enough, crop washed away by floods.

Figure 4 Responses on selling maize

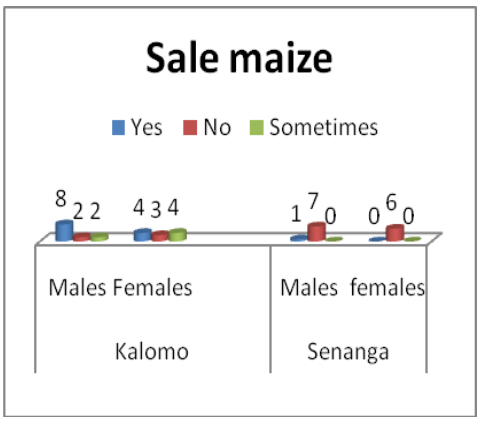
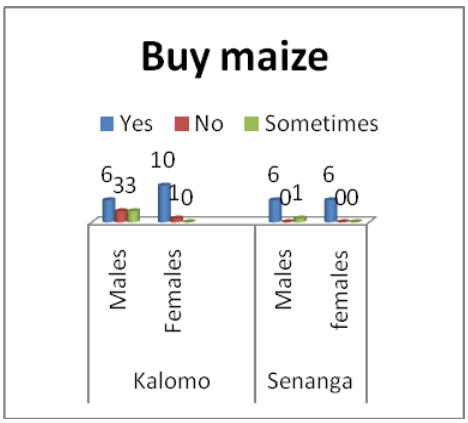


Figure 5 Reponses on buying

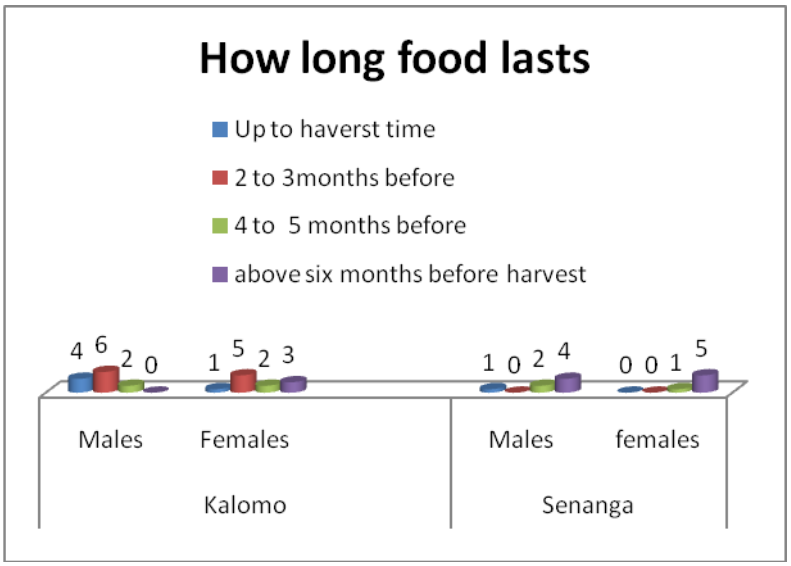


Source: own elaboration from questionnaire.

The Reponses in fig 5 and 6 that most of the male respondents in Kalomo are engaged in the selling of maize from their own production, whereas most of the females, buy maize. Though the food produced for some households could last up to the next farming season if properly planned. "We grow enough food but at times we do not plan properly in terms what is to be consumed and what is to be sold and the end result is that people sell most of the food. Most smallholders would sell their maize early soon after harvest at low prices and only to re-buy maize at higher prices."[13] In Senanga, the respondents both females and males buy maize almost throughout the year , and in Kalomo more females than males had their maize lasting four months before harvest and would therefore, have to buy maize as shown in the figure 7 and 8 below. The situation is better off in Kalomo than Senanga. However, during FGD discussions, both low producing males and females said they sell maize meant for own consumption to deal with other needs such as clothes, pay schools.

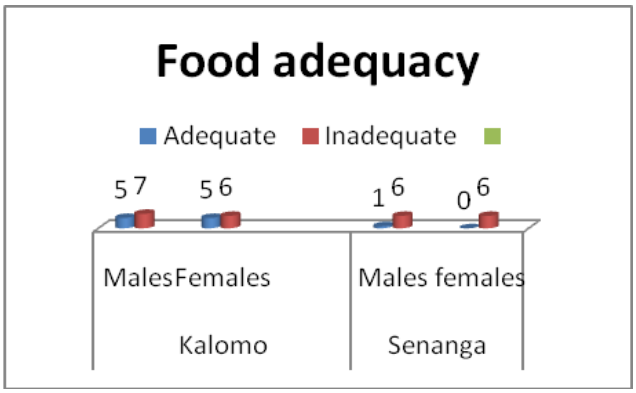
[13] FGD discussion with Mskika beneficiaries and non- beneficiaries held on July 2009

Figure 6How long maize lasts



Source: Own elaboration from questionnaire 2009

Figure 7 Is FSP Support adequate for food?



Source: Own

And when asked why the farmers sell maize when do not have no enough food? The response in most cases was

> "The maize is our bank where we have to withdraw so we can buy other things such as clothes, relish and other day to day needs"[14]

In Senanga the Some farmers attributed the food shortages to the lack of knowledge on the use of fertiliser, and general crop management. This was explained by the absence of extension workers whole role is to advise the farmers. The prices of maize and mealie meal are very high in Senanga. At the time of this research, one 25kg bag of mealie was costing K75,000.

> "There is also a problem of hunger and in times of hunger people even consume the seed so they can survive. As a result seed is always in short supply."
>
> "People eat only once a day and hunger is though out the year from January to December though the critical periods are November to February. This depends on some years. So Senanga is not predictable. This year most people were expecting good yields but the crops were unfortunately destroyed by floods."
>
> "So this year there is no food. By August most of us will have no food- it will completely run out. Especially for people that do not have *litapa*[15]- hunger is throughout the year. Only 2 out of 15 will have enough food. The rest will be faced with hunger."[16]

Generally, most of the small scale farmers are deficit producers of maize(Zulu et al 2007, Tembo et al,2009) which has been explained by various farmers behaviours and decisions that they make and also implications of government policies, as well as the prices of inputs and outputs. Though the Kalomo farmers have the potential to pay for fertiliser subsidy, they are some who are the net deficit producers that do not have enough income from maize and other sources, yet the way the fertiliser subsidy is designed assumes that the smallholder in Kalomo will have the cash to pay for the subsidy. In Senanga, production is low and may be another form of support related to social protection would be more ideal than the current subsidy.

4.5.2 Inadequate Access To Resources

In order to produce food, individual households need to access to factors of production; which could be described as a prerequisite to ensure direct food entitlements Sen(1990). Initial endowments of a household to produce food

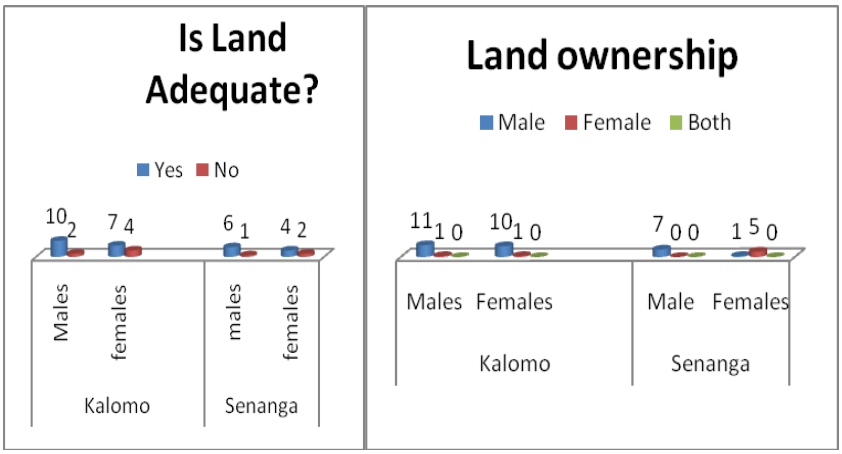
[14] FGD with Msika community in Kalomo, held on 15th July 2009
[15] Winter fields
[16] FGD with small-scale farmers mostly rice growers from various areas in Senanga, held 23rd July 2009

represent factors of production. Food security is all about whole range of entitlements that producers require for them to have access to food (Sen 1991, Timmer et al. 1983). Therefore, a fertiliser subsidy that operates in the absence of other entitlements will not yield much impact in terms of food security at beneficiary household level. The FSP is implemented as a uniform policy throughout the country and population groups, this is regardless of the fact that smallholders, districts and other categories are different in terms of access to resources, and other factors.

4.5.2.1. Access to Land

Land is one of the most important resources for a farmer because in order to produce food, individual households need to access to land which is an endowment that can be described as a prerequisite to ensure direct food entitlements.

Figure 8 Land adequacy and ownership



Source: author

From the responses in fig 9 it appears that both ownership of land for cultivation and adequacy of land is not a problem among the small holder farmers in the study sites. However, when asked further of who in the household owned the land. The responses in fig 10 show that most of the land was under male ownership especially in Kalomo. In Senanga, the female-headed households are the ones that had ownership to land. The implication of this is that the criteria for FSP is to own land. In Kalomo, 10 out of the 11 female respondents, land was owned by their husbands and it was probable that most of them accessed the fertiliser on behalf of their husbands.

Figure 9Farm Power Mechanisation

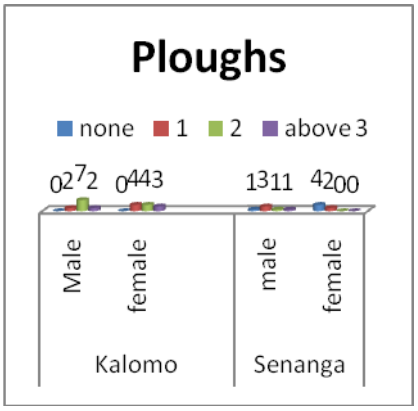
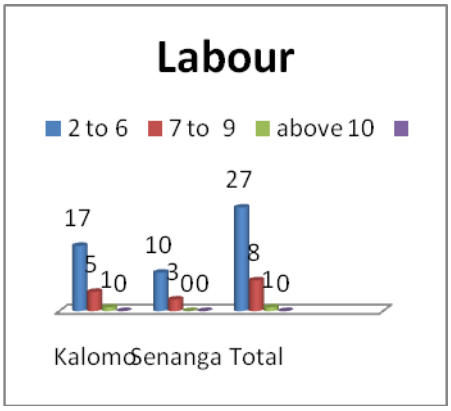


Figure 10 Family Labour



Source: author

Farming implements form part of the asset base of the small scale farmers. The findings show in table one the number of ploughs owned by the respondents. On average each male respondent in Kalomo owns at least two ploughs. In Senanga, on average each male respondent owned 1 plough, whereas most of the female respondents had non except for two. Considering fertiliser allocation in the FSP is for one hectare, it would be more efficient where the smallholder farmers are adequately equipped with farm tools, otherwise they would have to hire tools of pay for labour.

4.5.2.2 Labour Constraints

Fertiliser use in maize requires the use of more labour as it has to be applied twice and requires weeding. In fig 12 the results show that out of the total of 36 respondents, 27 had 2 to 6 people providing farm labour. In Kalomo, households are generally large, but mostly consist of children that are school going. Only one household had more than 9 members providing labour. This was a household of a farmer with 3 wives and over twenty children. For the rest it was usually couple and four to six members of household providing labour. So this means that extra cost of hiring labour have to be taken into consideration.

The FSP allocation of a fertiliser pack one hectare for Senanga is not feasible as the farmers have smaller fields and at the same time facing a labour constraint. In Kalomo, the farmers could manage because of the other farming implements they own. Though there is an outcry from most of the farmers for government to increase the allocation of the fertiliser subsidy, most of the deficit small farmers cannot manage to plant and manage one hectare.

4.5.2.3 Lack of Access to Credit

There appears to be a high dependency on the fertiliser subsidy by some of the small scale farmers and have since neglected some of the other important ways of financing their inputs. In the FGDs some of them confessed that they had bad experience with loan and vowed never to get loans. Most of the small-scale farmers interviewed have never accessed credit. Very few had ever attempted to access loans. Some said they lacked information while others confessed that there were afraid to get loans because of high interest rates and that farming especially maize was not profitable.

4.5.3 Late delivery of Inputs

In farming time is everything especially in Zambia where small-scale farmers depend on rain for water. Because of the way the FSP is designed the process of delivering the inputs is long and not consistent. The suppliers of fertiliser inputs are most of the time delivered late. This was the case in both Kalomo and Senanga and even throughout the country. Some farmers do not wait for the hybrid seed which is part of the pack but source their own seed which is in most cases recycled. The famers apply the fertiliser that they receive from the FSP and end up with low yields. Those who wait for the seed end up planting late and the fertiliser is also applied late. This also results in low yields, hence food insecurity. In farming timing is very important. Almost all the farmers and stakeholders interviewed alluded to the late delivery of inputs as a major problem also affecting farmer productivity.

4.5.4 Marketing Mechanisms

Linked to the delivery system are the marketing arrangements. As a result of the liberalisation policy, the government is not fully involved in the marketing of maize and other crops. Government buys maize through the Food Reserve Agency(FRA) an agency that has been mandated to purchase crops as approved by the minister of Agriculture and Cooperatives from very remote areas of the country which are economically disadvantageous for other buyers on the market. However, even in these areas Government buys little from the farmers and at the same time pays them late which was also a general over cry from the farmers. Therefore, most of the farmers have to find market for their maize and other crops. Government encourages farmers to form cooperatives that could buy and sell maize on behalf of the members. However, the cooperatives are only involved only in the receiving of fertiliser from the FSP and have no bargaining power. Therefore, individual farmers depend on the private buyers that buy maize at low prices and pay prompt cash despite low buying prices. Cash is more attractive to the farmer for them

to deal with the competing needs. Private buyers also consider themselves to be providing a service to the farmers that government is not able to provide.

> "We as businessmen are offering a service to the farmers. Government is not buying maize at this time. We are assisting that poor farmers that need to sell their maize so as to have income to attend to their various needs that cannot wait. Look at the roads. There is no transport. So we as businessmen buy the maize from the farmers to transport it to Lusaka. We are buying maize at K1000 per KG which makes it K50,000 per 50kg bag. We pay the farmers cash as opposed to government where the farmers have to wait to be paid. In Lusaka we sell the 50kg bag at K65,000".[17]

> "We have not seen the real benefits from the FSP as only those that are well-off and have money and their own transport are the ones that are benefiting because it is easy for them to access the inputs as well as sell the maize when they have harvested. But us the poor when we access the inputs it is the thieves that buy from us and hence our situation never improves."[18]

4.5.5 Poor Infrastructure

Road infrastructure is poor, very few transporters are involved in the transporting of maize. In Kalomo, the researcher observed that a number individuals who own light trucks are involved in the transporting of maize at a small scale, where as Senanga, there are very few transporters. The area depend on water transport which is underdeveloped. It was also observed that some farmers in Kalomo who own light trucks transport their maize but the tear and wear of the vehicles is very high and spend their income to repair the vehicles. Poor road infrastructure also affects the delivery of inputs. The prices of maize are also influenced by the distance from the depots or selling and buying points. For example, the finding in Kalomo indicated that the furthest the farmer from the depot the lower the prices of maize. Therefore, all these factors are interconnected and keep the smallholder farmers in low productivity and hence low real income from maize.

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[17] Interview with maize buyer- Paul Lilongwe of Kalomo held on 13th July 2009

[18] FGD with Chalimongela community in Kalomo, held on 17th July 2009

4.5.6 Weak Cooperatives/Farmer Groups

The cooperatives are formed merely to receive fertiliser and have not developed their capacities to market their products and therefore, do not have a voice on the prices of their products. Most cooperatives only become active when it is time for FSP activities such as taking money to the bank and when making follow ups on delivery of inputs. The buyers are the one who determine the price and most farmers sell their maize below the government floor price of K65,000 per 50kg bag of maize. At the start of the selling period some farmers were selling for as low as K30,000 per 50kg bag. In the past the cooperative movement used to be strong and had a voice of the farmers at all levels. There is need to strengthen the cooperatives/farmers groups and their participation the in FSP should not only end at receiving fertiliser. The cooperatives /farmer groups should also be strengthened in collective action and bargaining when it comes to marketing of out puts. These cooperatives need to be transformed into effective forums for articulating and effecting change(Kherallah et al 2002) Hence there is need for capacity building of the cooperatives or farmer organisations in the marketing of agricultural products including maize.

4.5.7 Inadequate Extension Services And Information

Extension services are in adequate in the two districts. There is inadequate technical advice to the farmers on how to apply fertiliser, and other general knowledge when it comes to maize production. Though the Situation is better-off in Kalomo, where only 7 out of the 37 extension camps are vacant, the available extension officers are also over loaded as they have to deal with more farmers and have inadequate transport to reach the farmers. In Senanga the situation is more pathetic as half the number of camps are without extension officer. They are only 13 extension officers out of the available 26 extension on camps. In General extension workers are loaded with work as they are the final implementers of most of agricultural activities in the district. Wrong application of fertiliser in Senanga is common among the farmers which attribute to lack of technical knowledge

4.5.8 Natural Calamities

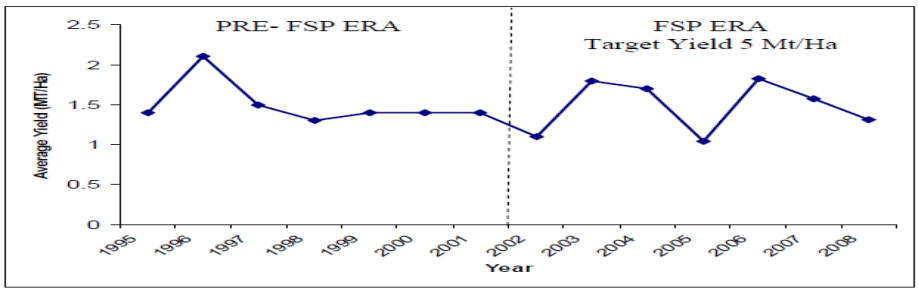
Natural calamities such as floods, droughts also affect farmer productivity and hence food insecurity. Both Kalomo and Senanga have had their share of natural calamities. Kalomo is prone to draught where as Senanga is prone to both draught and floods with the recent floods being in the last farming season of 2007/8. Most farmers interviewed said they do receive information on weather or the current changes in climate. Early warning is important as it

enables the farmers to be prepared and take the necessary precautions such as planting early maturing varieties when floods are anticipated.

4.6 Maize Production Trends Before and After the FSP

Various evaluations have indicated that despite the FSP there has been little overall maize productivity. The evaluations also point to poor targeting of the beneficiaries to achieve its overall goal of food security. Other the key findings from the evaluations have been late delivery of inputs, Poor use of fertilizer efficiency a among many targeted farmers due to poor crop management practices, just to mention a few CSPR, 2005, Dorward 2009,Minde et al 2008, ACF reports) On the trends on maize production before and after the FSP (See also appendix)

Figure 11 Maize production Trends from 1995-2008



Source: Food Security Research Project and the ACF 2009

Fig 4 shows the production of maize before and after the introduction of FSP the highest maize production having taken place in 1996 and the lowest during the FSP era in 2005. The area under cultivation of maize has been increasing but yields of maize have remained low despite the FSP. This situation can be attributed to some of factors outlined in the next chapter.

Table 5How does the FSP fit into the SMART subsidy?

	Specific targeting	Targeting the small-scale famers through the self targeting and self selection criteria has proved a challenge at all levels of implementation. The contribution of fertilizer subsidy programs to improving the incomes and food security of the small holder farmers would be higher if they could be designed and implemented so as to (a) target households with little ability to afford fertilizer; the case of Kalomo and Senanga have shown that the wrong targets have been benefiting due to

		mainly the form of the subsidy(cash)
	Measurable impacts	Mostly wring target ,hence the impact cannot easily be detected. There is no monitoring mechanisms in place.
	Achievable	In the absence of other investments, such as good roads, storage, training of farmers, the FSP subsidy on its own cannot achieve much
	Results orientation	With current nature of the subsidy, most smallholder farmers that are deficit producers of maize, cannot access to the fertiliser subsidy
	Timely implementation and time bound	Late deliveries of inputs are rampant. There is also no exit strategy in place. No one knows when the FSP will be phased out or when the farmer is supposed to graduate to allow others to benefit.

Source: Own elaboration from findings.

The findings show that the nature of the fertiliser subsidy and how it is implemented has implications of food security. It is implemented in an environment where various entailments of the small scale farmers are eroded. The prices of food play an important role in ensuring food security of most of the small scale farmers that are net buyers of maize. However, as a result of the subsidy and other government policies, the prices of maize favour the net buyers than the net sellers of maize whose major source of income if farming.(Tembo et a 2002, Zulu et al 2007). Several other factors that affect maize production and incomes of the smallholder farmers such as poor road infrastructure, slow private sector involvement, as the current FSP only has about four major companies involved in the supply of fertiliser, which results in delay in fertiliser distribution.

Chapter 5: Summary Of Findings And Conclusion.

This chapter covers summary of findings conclusions made from this research based on the research objectives, research questions and analysis of the findings. It shall also make some reflections based on literature, theoretical framework and researcher's field experience.

5.1 Summary of Findings

As stated in Chapter One, the purpose of this study was to establish whether or not the nature or form of the fertilizer support programme being implemented in Zambia had facilitated the enhancement of maize production, food security and poverty reduction. One of the major findings suggesting that due to its nature FSP had not achieved its intended target relates to the exclusion of the majority of the intended beneficiaries in three ways: the down payment system, the gender dimension and the hectarage dimension

5.1.1. Exclusion Of Intended Target

The need for farmers to make a down payment before they can access the fertilizer through FSP severely disadvantages those who cannot afford and most of whom are in the majority. Since generally in Zambian society men wield more power as heads of households and have more access to financial and other resources, more men than women are able to raise the down payment thereby disadvantaging the women folk even further, creating, and enhancing the gender dimension. Further, the stipulation that only farmers with at least one hectare of land qualify for the FSP leaves out many vulnerable communities in remote rural areas who do not have that size of land and yet suffer from food insecurity, lack of income and poverty. Another aspect which excludes the majority of farmers is the requirement that they should be members of a cooperative through payment of membership fee in order to access FSP fertilizer. Most of the farmers do not have capacity to raise the membership fee. All these findings suggest that in its nature the FSP is more exclusive than inclusive thereby defeating its own intended purpose.

5.1.2.Persistence Food Shortage Despite FSP

The findings have sown that despite the implementation of the FSP over the years, food shortages have continued. This has been attributed to a number of factors which include inadequate maize production due FSP implementation-related factors such as late delivery of fertilizer, inadequate extension services, persistent high poverty levels which cause farmers to sell most of their maize

to earn some money for accessing other needs such as health services and education as well as inadequate labour. The findings suggest that even if issues relating to the nature of FSP were addressed there would still be need to address those relating to its implementation on the ground.

5.1.3 Inadequate Income from Maize Sales

The expectation of FSP is that poor small-scale farmers would be helped to produce enough maize for both home consumption and for sale to raise income for their families. This is not the case because whatever they produce is not sold at a profitable price as the buyer rather than the seller, thereby creating persistent dependence on FSP by the small-scale farmers, determine the market value of the commodity. The farmers' cooperatives are too weak to determine the price of maize. The maize price dimension suggests further the multiplicity of other external factors that militate against the successful implementation of FSP.

Agricultural inputs subsidies in general and specifically fertiliser subsidies play an important role in the success of agricultural production in general and maize production in particular, by offering major potential gain for beneficiaries when effectively applied to overcome market and information failures constraining agricultural production in poor rural areas. These fertiliser subsidy programmes come also with considerable risks of costly, ineffective and inappropriate design and implementation using large amounts of scarce government and national resources for little impacts in terms of food security, or maize production. Therefore, fertiliser subsidies when rightly designed and implemented can contribute to overcoming producer constraints on input use in staple food production and also offer benefits for consumers from their incentives to increased production of maize for example.

If properly administered a fertiliser subsidy will commonly contribute to the raising of income for the consumers who are the net buyers through lowering prices of maize, while also benefiting the producers, though the double benefits for both consumers and producers would require properly designed and large scale implementation to bring the prices down. Due the way the programme is organised, designed, defined will have implications for its impact. In addition the nature of the fertiliser subsidy being provided by the FSP is based on the assumption that the intended beneficiaries, who are the smallholders, will have the cash to pay for the down payment. The FSP has failed to recognise that most of the target group (smallholders) are deficit producers of maize and farming being their main source of income, would fail to raise the cash required for the subsidy failed. Therefore, instead of addressing the low productivity of the smallholders, the programme has instead trapped especially the net deficit producers of maize in a low

production trap. This is due to several other factors, such as the technical or resource constraints being faced by the smallholder farmers and also the government's inability to invest in other equally important agricultural activities such as extension services, improve infrastructure and so forth.

5.1.3 The gender dimensions

Despite the fact that ministry of agriculture has a gender policy and also the national gender policy that are supposed to be mainstreamed or implemented in all areas to ensure the participation of Gender is not considered or even mainstreamed in the FSP. As a result most of the women that are perceived to be the beneficiaries of the fertiliser subsidy, receive the subsidy on behalf of their husbands or other male relatives with cash at hand. Most of the women and poorer men usually get less than the recommended allocation of one pack especially where the cooperative has more than twenty members. This problem can be removed if the nature or form of subsidy is revised. Instead of the cash requirement, the intended beneficiaries are supplied with vouchers that they present to the fertiliser dealers. This is not to say the leakage problems will be sorted out, but there will be higher chances of the intended beneficiaries accessing fertiliser subsidy.

Marketing mechanisms and issues of prices of maize and fertiliser are important for smallholders, who produce maize both sell ad own consumption. High prices of fertiliser reduce on the profitability of maize and hence income of the net sellers, though high prices of maize are good for the net sellers of maize, where as low prices of maize would benefit the net buyers of maize who are the majority of smallholders(Xu 2008). An increase in the price of maize is considered to be leading to a reduction in the real income of deficit producers, who are the majority of smallholders in Zambia, while net sellers producers could increase their real income. An increase in the prices of fertiliser could be seen as reducing the real income of all categories of producers, and at the same time, affecting the profitability and thereby reducing future incentives for more production. All these aspects affect the smallholder farmers' access to cash income either improve or worsen food security situation. Therefore, the current form of the fertiliser subsidy being provided in Zambia will mainly benefit the net sellers of maize and other groups with other sources of income.

The FSP supports maize as hybrid seed is part of the pack. The success of maize hybrid production depends upon the timely allocation of expensive inputs. To meet this crucial condition, appropriate infrastructure is needed. The inadequate infrastructure in rural areas, coupled with government mismanagement, has perpetuated the situation as inputs are constantly

delivered late. The inadequate marketing mechanism, non- payment of farmers on time, to allow them to purchase inputs for the next season also poses problems for small scale farmers. Hybrid maize is unsuited for traditional storage facilities(Chizuni 1994). Due to this some smallholders farmers find it better to sale rather than store grain and later buy mealie meal which is more expensive. Therefore, would be better if that the fertiliser subsidy would target areas where applying fertilizer can actually increase total output such as Kalomo where the small holder farmers are more productive. Or if low productivity areas are being targeted, it is important to invest more for example in extension services, to ensure increased and right application of fertiliser.

5.2 CONCLUSION

It is now a well known fact that fertiliser subsidies play an important role for smallholders in agricultural production. However, it is not any fertiliser subsidy programme or policy that will deliver the desired results. Fertiliser subsidies have many goals. Therefore, it is important that the FSP redefines its goals to make the subsidy smart. The re-organisation and redefinition of the subsidy has to take place at all levels, from national to community.

The main goals of the programme have to be redefined and made clearer as to what the main objects are. The beneficiaries of the programme also need to be redefined and hence will make targeting more effective, than in the current programme where a few criteria are given. For example one of the criteria is land those smallholder cultivation between one and five hectares, this automatically excludes the poor especially women smallholders that own less than a hectare.

Related to the targeting is the selection process. The selection should not be left to the cooperatives but the camp extension officers that are closer to the farmers. There is need to involve the community leaders in the selection processes and a gender policy should accompany the design and implementation of the fertiliser policy. There is need to adapt a selection criteria that is easy and more meaningful to apply and verifiable. In actual fact there is need open up the programme by removing the restrictive criteria. Currently there is no farm registers where all farmers are registered in Zambia. There is need to have these registers at all level so that beneficiaries are easily tracked and monitored. Graduation of the farmers from the subsidy is necessary but will be difficult without the farmer registers.

There is need to strengthen the cooperatives/farmers groups and their participation the in FSP should not only end at receiving fertiliser. The

cooperatives /farmer groups should also be strengthened in collective action and bargaining when it comes to marketing of out puts. These cooperatives need to be transformed into effective forums for articulating and effecting change. Hence there is need for capacity building of the cooperatives or farmer organisations in the marketing of agricultural products including maize.

Targeting the small-scale famers through the self targeting and self selection criteria has proved a challenge at all levels of implementation. The contribution of fertilizer subsidy programs to improving the incomes and food security of the small holder farmers would be higher if they could be designed and implemented so as to target households with little ability to afford fertilizer Minde et al(2008a), the case of Kalomo and Senanga have shown that identifying the not so poor from the poor of the well do farmers has not been an easy task. The nature of the fertiliser subsidy under the FSP requires that the intended beneficiaries pay cash as down payment. Those with ready cash within and outside the cooperatives have tended to pay first, living out the intended beneficiaries. The current form of the fertiliser subsidy being provided by the FSP should be reformed so as to enable it respond to the challenges and more especially the cash constrained being faced by the small holder farmers. The voucher system is being suggested here because, considering the cash constraints, with the voucher or coupon system they farmer will be relived of the need to look for extra cash to pay for the fertiliser under subsidy. The nature of the subsidy- the way it is organised implemented is important for its success. The fact that there is cash involved, it is difficult for intended beneficiaries to benefit compared to the voucher system used in Malawi(Chinsinga 2007). The voucher system also empowers the private sector. The current system of subsidy should be replaced by the voucher system so as to create dealer network and that farmers even those without cash can buy the fertiliser using a coupon other than cash. The farmers should be given a choice in terms of where and when to get the fertiliser. This will also remove the cash payment that other farmers have used to benefit while the intended beneficiaries were excluded because of lack of cash.

There are negative implications of government policy bias towards hybrid maize production for smallholder food security. While maize is an important crop for both consumption and for sale, the promotion of the same has affected food security for most of the rural poor. Government should consider extending the subsidy to other crops like for rice farmers in Senanga. The profitability of maize on a small scale has a questionable record; therefore, the subsidy should be extended to other high-income crops as the case in Malawi where tobacco is being subsided alongside maize. The subsidy level has been very high and this has made the subsidy to be attractive to all farmers. Though

according to the finds of this study, most farmers were requesting government to increase the allocation of fertiliser, even in Senanga, It would be better to actually reduce the size of the pack to 2 *lima*[19] instead of hectare. The findings show that labour is a big constraint for most of the respondents. No farming implements most of them used hoes. A hectare is too big especially in Senanga where most farmers have smaller fields.

Finally this research has concluded that the nature of the fertiliser subsidy, and how it is organised and implemented, who is included and excluded has an implication of food security and income of the farmers. The link between fertiliser subsidy and the prices of food or maize are also important factors in determinants of food security and income of the maize producers. Fertiliser subsidy is not just about food security or increasing maize production but also access to food by the smallholder farmers ability to sell their maize and later be able to buy food. But at what price is an important factor. An increase in the price of maize is considered to be leading to a reduction in the real income of deficit producers, who are the majority of smallholders in Zambia, while net sellers producers could increase their real income. Therefore, there is need to for the FSP to redesign its subsidy policy in order to increase its effectiveness on increasing maize productivity and improving food security in Zambia in general and Kalomo and Senanga in particular. Though no form of subsidy including the voucher system can completely deal with the leakage problem, (Dorward 2009) the voucher system is a better alternative that needs further thinking in Zambia.

[19] Half hectare

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7 Appendices

Appendix1 : Areas of Study

As already indicated in the methodology two districts were chosen as areas of study out of the 77 districts in Zambia. The main purpose of selecting the two that is, in Kalomo and Senanga districts was to offer some contrasting comparison of the two districts to show how the FSP as a policy is implemented as a uniform policy in differentiated setting throughout the country.

Kalomo is a district in the Southern Province of Zambia. The district which is still one of the high maize productivity in the country is situated about 400km south of Lusaka the capital of Zambia. Agriculture and farming especially maize have a long tradition in the district in the Cattle ownership is the traditional form of wealth, where men's prestige and the respect they command are related to the number of cattle they own. Agriculture is one of the major economic activities in Kalomo district. The main crop produced by small scale farmers in the district is maize and one farmer can produce up to 5000bags of maize making it one of the highest productivity area in terms of maize. The district has a mix of commercial, medium and small scale farmers, though the medium and small scale famers are the majority. The district is easily accessible with a main road and railway line. Though over the years the production of maize has been reduced mainly affected by a number of factors such as; Frequent droughts, Inadequate animal draft power, Inadequate credit and so forth. Food availability in the district can be categorised into broad groups. On the plateau, food lasts up to December while in the valley it lasts up to October.(Kalomo is situated in region 11A, a relatively high potential area of Zambia well suited for maize production (The profile has been adapted from Policy synthesis FSRP, 2008, Kalomo District Council profile 2006)

Senanga District-This research was done in **Senanga** district of Western Province. Senanga district is situated about 712kms from Lusaka. Senanga is a low maize productivity area and is one of the poorest provinces. The area is good for rice production. in Zambia with about 80% of the population in the province is regarded as being poor and at least 70% of those in the poor category are women. The district has a general has high influence of the traditional structure under the auspices of the Baroste royal establishment.[20] The district has varied farming system based on the types of land and individuals usually own pieces of land in different locations meant for different crops.[21] . The wetland is mainly used for the production of rice. In general crop production is constrained by low soil fertility and water retention. Maize production usually suffers from various pests mainly stalk borers and poor drainage. Most of the farmers are small scale and there is no known commercial farmer in the district. Crop production is constrained by low soil fertility and water retention resulting in recurrent floods are some of the

[20] The BRE is some kind of local/traditional government responsible not only for traditional matters but is also parallel with the central government.

[21] *Lishanjo* are wet gardens used for production of maize, sweet potatoes, vegetable. *Litapa*-low lying gardens consisting of peat soil for also growing maize, *Mazulu*-elevated circular mound gardens for maize and sorghum, *Litongo*-seepage gardens with loamy sandy soils and *matema* mainly used for growing cassava, millet

obstacles to agriculture production in the district.(CS0 2007, CSPR 2005, Senanga District Council profile)

Main differences between Kalomo and Senanga

KALOMO	SENANGA
High maize production for food and cash Bigger fields Located in Zone 11A suitable for maize production and other cash crops Some areas within the district are prone to drought Mostly sandy loam soils Culturally liberal Sufficient labour. High asset base among the smallholders.	Low maize productivity Smaller fields Agro ecology not suitable for maize, but has high potential for rice, cassava. Prone to floods, especially the past three years Mostly sand soils Culturally conservative Labour constraint Low asset base among the smallholders.

Appendix 2: Research tools

Appendix 2 A Questionnaire For Individual Beneficiaries Of The Fertiliser Support Programme

Introduction

Hallo! My name is Lumba Siyanga a student from the Institute of Social Studies in the Netherlands. I am conducting a research study on the impact of the Agricultural Policy in relation to the Fertiliser Support Programme as part of my dissertation leading to the award of Master in Development studies specialising in Poverty Studies and

Policy Analysis. Therefore, the answers that you will provide will be confidential and used only for academic purposes.

I would be grateful for your assistance in responding to the following questions to the best of your knowledge. If you do not know the answers to the questions, feel free to indicated so. Thank you in advance.

Section A. General Identification Information

1. Province..... 2. District.....

2. Name of village.....4

Date.....

Section B. Household Characteristics

7. Age of Respondent [ ] 8. Gender: Male [ ] Female [ ]

9. Are you head of household? Yes [ ] No [ ]

10. Marital Status:

Married [ ]

Single [ ]

Divorced [ ]

Separated [ ]

Widowed [ ]

Polygamous Marriage [ ]

11. If No, what is the relationship with the head of household?.....

12. Educational Status of respondent:

None [ ]

Up to grade 7 [ ]

Grade 8 to 9 [ ]

Up to grade 10 [ ]

Up to grade 12 [ ]

Certificate level [ ]

Diploma level [ ]

University Degree [ ]

13. What is the size of your household?

Age	Male	Female	Total
Under 6			
6 to 15			
16 to 25			
26 to 35			
36 to 45			

46 to 55			
Above 56			

14. Number of biological children[ ]

15. Number dependents [ ]

16.How many members of the household provide farm labour [ ]

17. Are there disabled persons in the household? Yes [ ] No [ ]

18. Do you have people in the household who are chronically ill? Yes [ ] No [ ]

Section C. Farming Activities

19. Is the land under crops owned by the household? Yes [ ] No [ ]

20. Who in the household owns the land. Female [ ] Male [ ]

21. Is the land adequate for food production Yes [ ] No [ ]

22. a) Do you keep livestock? Yes [ ] No[ ]

22. b) List the livestock you keep in the table?

	Type of Livestock	**No.**
1	**Cattle**	
2	**Goats**	
3	**Sheep**	
4	**Chickens**	
5	**Pigs**	
6	**Donkeys**	
7	**Others**	

23. Farm Tools owned

No	**Item**	**No**
	Tractor	
	Plough	
	Cattle	

	Hoes	
	Hand shellers	
	Storage bins	
	Ox-Harrow	
	Treadle pump	
	Ox-cart	
	Hand mill	
	Other	

Section D. Implementation of the Fertiliser Support Programme(FSP)

24. Are you a recipient of the FSP? Yes [ ] No [ ]

25. If No, why and would you like to get support FSP?

.....

.....

.....

26. If yes, briefly describe the selection criterion of FSP

.....

.....

.....

.....

27. How satisfied are you with the selection criteria/mechanism for FSP beneficiaries

a) Very satisfied [ ]

b) Satisfied [ ]

c) Not Satisfied [ ]

28. From which depot do you get the Fetiliser and seed under FSP?

a) Name of depot.....

b) Distance to depot.....

29. Do you get seed and fertiliser at the same time? Yes [ ] No [ ] sometimes [ ]

30. Is the seed and fertiliser you receive (a) adequate [ ]

(b) Inadequate [ ]

31. For how long have you been receiving fertiliser and seed subsidy?[ ]

32. Is the fertiliser and seed you received through the FSP adequate to enhance food security and income in your household?

.....

.....

.....

.....

33. Indicate the appropriateness of maize seed you receive under the FSP

a) Very appropriate

b) Appropriate

c) Not appropriate

d) Do not know

34. Indicate the appropriateness of fertiliser you receive under the FSP

a) Very appropriate

b) Appropriate

c) Not appropriate

d) Do not know

35. Indicate crop production and sales level (2006- 2008 from) the FSP subsidy

Crop	2006/7		2007/8		2008/9	
Maize	50kgBags produced	50kg bags sold	50kgBags produced	50kg bags sold	50kg Bags produced	50kg bags sold

36. If you have not sold maize during the last three farming seasons, give reasons why.

.....

.....

.....

.....

37. Does your household have adequate food all year round?

a) Adequate [ ]

b) Inadequate [ ]

38. For how long did the maize last after the harvest? .....

39. Do you buy maize for food during the year? Yes[ ] No[ ]

Indicate.....

Do you sale maize ? Yes[ ] No [ ]

40. Indicate if income from your maize sales is adequate

a) Adequate [ ]

b) Inadequate [ ]

Section E; Input Distribution

41. Is time followed in the distribution of inputs? Yes [ ] No [ ] Sometimes [ ]

42. Are there other organisations involved in the distribution of inputs in this area? Yes [ ] No [ ] do not know [ ]

Section F. Livelihood and household food security/Income

43. List the sources of livelihood for your household in order of priority

44. Indicate in the table the things you have bought using farm income between 2005 to 2008

Items	**2006/7**	**2007/8**	**20008/9**

45. List the sources of food shortages/income in your household?

Section G. Membership to farmer group/Cooperative

46. Are you a member of a farmer group/cooperative? Yes [ ] No [ ]

47. If yes for how long have you, been a member of the group/cooperative? [ ]

48. For how long has your group/cooperative been in existence? [ ]

49. How do you describe your involvement in the group/cooperative?

a) Active [ ]

b) Passive [ ]

c) Do not know [ ]

Section H. Credit/Financial facilities

50. Have you ever applied for a agricultural loan? Yes [ ] No. [ ]

51. If No, give reasons why

.....

.....

52. Finally, can you make suggestions for improving the performance of the FSP

.....

.....

Once again thank you for taking time to respond to my questions.

Appendix 2B: Questions Focused Group Discussions

A. Livelihood and Food Security/access to food

1 List the sources of livelihood in this community.

2 List the causes of food shortages in the area.

3 List the causes of low income from productive actives in this area

4 Since you started, getting support from the FSP has the status of food security and income improved in this area

5 List things you think should be done to reduce food shortages and improve household income in this area.

6 List the things that you think should be done to reduce poverty in the area

7 How is labour organised- family or hired?/Land ownership and farming implements

8 Maize profitability , prices of inputs, prices of maize

B. Programme implementation, marketing, community and stakeholder involvement

9. Mechanisms, forms and extent of community involvement in the programme activities

10. Agencies involved in the programme activities and their role/impact

11. Indicate how satisfied you are with the way the programme is being run in this area;

12. Timeliness of delivery of inputs

13. Selection criteria of beneficiaries, crop type(maize) and implications on gender

14. Coverage of programme

15. Community benefits from programme

16. How are the marketing arrangements for maize crop

17. Problems/obstacles of implementation(rank the problems and obstacles) What do you suggest to improve the programmes

18. What are your views on the nature of subsidy provided by the FSP?

19.In your view, do you think that this programme helps?

a) Reducing food security

b) Increasing household/individual income,

c) Improving general wellbeing individuals within household?

d) Reducing vulnerability?

C. Agricultural extension /communication

20. What type of extension do you require and which organisations provided what in your area

21. In the last 3 years have you received any training or extension services? List them

22 How do you describe the communication strategy of the FSP

D. Participation of beneficiaries in the FSP

23. Describe your participation and involvement in the programme?

E. Other activities

24. What are coping strategies are there in the community to achieve food security

25. Comment on suitability of Type of seed and fertilisers

26. Overall knowledge of role of the FSP

Appendix 2C: In-depth Interview Questions for key Informants

1. District Agric Coordinator/ Senior Agricultural Officer

- How many blocks/camps
- Brief profiles of catchment areas
- Beneficiaries are in the district?(by gender, age)
- How many farmers- small, medium large farmers are in the district
- Production levels of maize since 2005(average production per hector)- what are the factors

- Selection mechanism of the FSP and its challenges- who is included and excluded
- Mechanisms are in place to ensure that the intended beneficiaries are included?
- Distribution system of the input and its challenges
- Nearest and furthest distance
- Strengths and Weaknesses of the current FSP
- Challenges in the implementation of the programme- , targeting ,administrative, financial,
- Major achievements on the part of the beneficiaries- any success stories?
- Storage facilities
- Comment on suitability of Type of seed and fertilisers-
- Role of financial institutions
- Prices of maize , fertiliser, seed

2. Block Extension Officer /Camp Extension Officer

- How many farmers are in the Block
- How many beneficiaries of the FSP
- What have been the changes in the community
- What are the main livelihoods of the people in the area
- What role does the community play in the selection criteria in particular and other processes in the FSP
- What are the production levels of maize since 2005(average production per hector)- what are the factors
- What marketing arrangements for maize are there
- What type of extension services/training are provided for the farmers
- What have been the price of fertiliser, seed and maize
- How is labour organised- family or hired?
- Comment on suitability of Type of seed and fertilisers-

3. Cooperative Chairperson/Executive member

- For long has the group been in existence
- How many members, by gender
- How is the selection criteria
- How do you participate in the FSP
- What are the benefits of the FSP
- How do the members raise the money and what role does the cooperative play
- Is the cooperative satisfied with the performance of the programme
- How do you receive the inputs and when?
- What are marketing arrangements of maize
- Prices of maize,
- Levels of income, food security, access to food
- Are the members happy that only maize is being supported?

4. Transporter

- What are the challenges of transporting inputs/products as well

5. Community leaders

- What are the benefits of the FSP to the community
- How have the community leaders been involved?
- Comment on the selection criteria, distribution, timeliness of the programme
- Comment of selection of maize as crop for support
- Is the community food and income secure
- Prices of maize verses the price of fertiliser/seed

National key Informants

1. National programme Coordinator (FSP)/ Director Policy and Planning

- How the programme is defined, organised and financed
- Implications of selection criteria and choice of crop for support
- Level of coverage and support

- Exit strategy- what mechanisms are in place to ensure farmer graduation from subsidy
- What is the sustainability and future of the programme
- Role of financial institutions
- Prices of maize visa vi fertiliser/seed

2. Farmer organisation-

a) ZNFU

- How are you as ZNFU involved in the programme
- How are you involved at policy level
- How are the members participating in the FSP
- What are the strengths and weaknesses of FSP and the challenges
- Impact of programme on food security and income of small scale farmers
- What is the level of support and can be extended to other crops
- What are your views on the nature of fertiliser subsidy and what are the implications
- Prices of maize

b) NAPSSFZ

- How are you as NAPSSFZ involved in the programme
- How are you involved at policy level
- How are the members participating in the FSP
- What are the strengths and weaknesses of FSP and the challenges
- Impact of programme on food security and income of small scale farmers
- What is the level of support and can be extended to other crops
- What are your views on the nature of fertiliser subsidy and what are the implications
- Prices of maize

3. Participating banks- ZANACO

- Accessibility

4. Suppliers of fertiliser

- Issues of payments
- Accessibility to areas
- Challenges
- Issues of demand and effective demand
- Prices of fertiliser- under the FSP and non-FSP

5. Suppliers of Seed

- Issues of payments
- Accessibility to areas
- Challenges
- Issues of demand and effective demand
- Prices of seed- under the FSP and non-FSP

Appendix 2D: Observations

	Poor	Satisfactory	Good	Very Good	Reasons for score
Harvesting					
Storage facilities					
Quality of Infrastructure					
Quality of health/wellbeing					

Appendix 3: Maize Production trends from 1995-2008

Year	Area cultivated (hectors)	Maize production (Mt)	Average Yields (Mt)	% Yield Change
1995	520,165	737,835	1.40	N/A
1996	675,565	1,408,485	2.10	50
1997	649,039	960,188	1.50	-29
1998	510,376	638,134	1.30	-13
1999	597,494	822,057	1.40	8
2000	605,648	850,466	1.40	-
2001	583,850	801,889	1.40	-
2002	575,685	601,606	1.10	-21
2003	631,080	1,157,860	1.80	63
2004	699,276	1,213,601	1.70	-6
2005	834,981	866,187	1.04	-39
2006	784,525	1,424,439	1.82	75
2007	827,812	1,366,158	1.57	-14
2008	928,224	1,211,566	1.37	17

Source: ACF 2008

Generally when you increase hectors in terms of cultivation, yields go up considering the following variables or factors such as rain, time of input distribution, extension services, seed variety , areas of supply such as high productivity areas like Kalomo district.

Appendix 4 Production and Sale levels of maize - 2006-2009: Questionnaire Reponses

Maize Production and Sales levels						
	Kalomo			Senanga		
2006/2007 Maize Produced	Male	female	Total K	Male	Female	Total
Less than 29	1	5	6	5	6	11
30 to 59	3	4	7	2	0	2
60 to 99	5	1	6	0	0	0
100 to 199	1	1	2	0	0	0
200 to 299	2	0	2	0	0	0
Above 300						
	Kalomo			Senanga		
50kgs sold	Male	female	Total K	Male	Female	Total
None	0	3	3	4	6	10
Less than 29	3	5	8	3	0	3
30 to 59	4	2	6	0	0	0
60 to 99	3	1	4	0	0	0
above 100	2	0	2	0	0	0
	Kalomo			Senanga		
Year 2007/2008 Maize Produced	Male	female	Total K	Male	Female	Total
Less than 29	0	1	1	7	6	13
30 to 59	3	4	7	0	0	0
60 to 99	4	2	6	0	0	0
100 to 199	2	4	6	0	0	0
200 to 299	2	0	2	0	0	0
300 to 399	1	0	1	0	0	0
above 400	0	0	0	0	0	0
	Kalomo			Senanga		
Year 2007/2008	Male	female	Total K	Male	Female	Total
50kgs sold						
None	0	0	0	0	6	6
Less than 29	2	6	8	7	0	7
30 to 59	3	3	6	0	0	0
60 to 99	2	2	4	0	0	0
above 100	5	0	5	0	0	0
Year 2008/2009 Maize Produced						
Less than 29	0	1	1	5	6	11
30 to 59	0	1	1	2	0	2
60 to 99	3	4	7	0	0	0
100 to 199	2	4	6	0	0	0
200 to 299	3	1	4	0	0	0
300 to 399	4	0	4	0	0	0
above 400	0	0	0	0	0	0
50kgs sold						
None	0	6	6	7	6	13
Less than 29	0	3	3	0	0	0
30to59	1	1	2	0	0	0
60 to 99	6	1	7	0	0	0
above 100	5	0	5	0	0	0