

THE IMPACT OF THE ANNUAL FISHING BAN ON THE HOUSEHOLD FOOD SECURITY AND THE COPING STRATEGIES OF CHIWEMPALA FISH TRADERS IN CHINGOLA DISTRICT, ZAMBIA.



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Dedication

I dedicate this piece of writing to my two favourite persons in the world, Chisulo and Chisomo. I love you and I couldn't have made it without you. I also dedicate this research to my father, Michael Simalumba who couldn't live long enough to see my success in life.

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List of Acronyms

AFB	Annual Fishing Ban
CFT	Chiwempala Fish Traders
CFTA	Chiwempala Fish Traders' Association
CMC	Chiwempala Market Chairperson
DoA	Department of Agriculture
DoF	Department of Fisheries
FGD	Focus Group Discussion
MAL	Ministry of Agriculture and Livestock
SLF	Sustainable Livelihood Framework

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Abstract

The research problem that formed the basis of this study was the Ministry of Agriculture and Livestock in particular, the Department of Agriculture's lack of information on the impact of the annual fishing ban (AFB) on the Chiwempala fish traders (CFT)s' household food security of Chingola district. The objective of the study was to research on how the AFB impacts on the CFTs' household food security.

The study adopted a qualitative approach based on literature and preliminary research. The main data collection method was through a survey which involved interviews with 18 female headed fish traders' households and 12 male headed fish traders' households. Triangulation was done through one focus group discussion, 4 stakeholders' interviews, 3 in-depth fish traders' interviews and the direct observation of the researcher. It was expected that the additional respondents would give an in-depth and clearer understanding of how the AFB impacts on the CFTs' household food security and their coping strategies.

The sustainable livelihood framework was adopted for the critical analysis of how the AFB impacts on the CFTs' household food security. It was found that the impact of the AFB was different across different age groups: fish traders within the 39-50 age range experienced a reduction regarding their household food security as a result of the fishing ban. The main reason for this is that this group of households have inadequate capacity to buy fish in bulk which can be sold during the AFB. This for them was an important coping strategy. The fish traders with ages ranging from 23-33 years reported that the AFB had helped to increase their household food security. The major reasons were their ability to diversify their business and the hiking of the fish price during the AFB which was bought before the AFB and was preserved.

The preventive coping strategies that were employed were mainly the food seeking strategies which included business diversification, cultivation and bulk buying of fish. About half of the respondents reported that the preventive coping strategies ensured that their households were food secure and this applied to the fish traders in the age group of 23-33 years. The two most popular reactive coping strategies included food seeking and rationing strategies. The least popular reactive coping strategies included dietary change and household structure. About half of the respondents reported that the reactive coping strategies they employed did not ensure that their household was food secure and this was mainly the fish traders within the age group of 39-50 years.

The outcomes of the AFB included being more persistent, more business minded, having more enhanced social networks and business diversification. The least popular one was the restriction of number of people in the home. Slightly more than half of the respondents reported to belong to the Chiwempala Fish Traders Association (CFTA) whilst the remaining half reported not to be members of the CFTA. The reasons for joining the CFTA were given as being able to be stronger in a group; having access to informal and formal loans; and having access to knowledge about fish trading.

Based on the research findings, this study makes the following recommendations. Firstly, that there should be strict regulation of fish buying in the months of September and October before commencement of the AFB by the fisheries office. Secondly, the AFB sensitisation campaigns should be done in the local language and regularly by the fisheries office. Thirdly, crop production should be taught to the fish traders by the department of Agriculture as a way of helping them diversify their businesses. Fourthly, introduction of fish farming to be among the training activities for the fish traders as it leads to a sustainable fish supply throughout the year. Results from this study are interesting and certainly reflect the local reality in the lives of the Chiwempala fish traders of Chingola. However, for the recommendation to be applied at a more regional scale, further study is needed in other communities that rely mainly on fish trading as their livelihood source.

Chapter 1: Introduction

1.1 Context

Fish makes up around 40% of animal protein in the diet of Zambians according to ACF/FSRP (2009). With an average of 70,000 to 85,000mts in recent past, natural fisheries contribute up to 90% of Zambian fish production with the other 10% coming from commercial fish farming. The same report further states that Zambia has 9 major fisheries namely Kariba, Tanganyika, Itezhi-tezhi, Bangweulu, Mweru Luapula, Mweru wantipa, Kafue River, Zambezi River and Lukanga Swamps. Other minor fisheries include Lusiwash dam, Lower Zambezi and Chambeshi River. Out of the over 400 fish species in these fisheries, only about 17 species have commercial value.

Recently, it has been noticed that the fish stocks in most water bodies are going down. Statistics show that from 1970s to 1980s, the per capita consumption of fish in Zambia was 12.0kg/person/annum and the recent estimates have put the per capita consumption at 7.0kg/person/annum. This drop in the per capita consumption is attributed to the decline in fish stocks in some of the fisheries as a result of excessive fishing, use of poor fishing methods and over fishing in the face of an increased demand due to the increase in the human population (ACF/FSRP, 2009). The World Fish Centre (2007) states that, fish suffers over-exploitation as a result of which the level of fish stocks has drastically gone down in the world and Zambia follows this global trend.

The Government of the Republic of Zambia has taken a number of measures to ensure sustainability of the fish stocks in Zambia's water bodies. These measures include restrictions on the type of fishing gear and mesh size, protection of fish breeding grounds, establishment of collaborative management systems, regular monitoring and inventory of the fishing water bodies; and domesticating the code of conduct for responsible fisheries (World Fish Centre, 2007).

The most widely exercised measure is the enforcement of an annual fishing ban (AFB). The government of the Republic of Zambia has given the Department of Fisheries (DoF) the mandate to enforce this law during the seasonal fishing ban which takes place from December to march every year (World Fish Centre, 2007). This seasonal fishing ban is a way of ensuring sustainability of the fish stocks in the water bodies. However, in as much as it is a good measure, it is said to influence the fish traders negatively as the household food security is said to reduce during this period. There are a number of reports claiming that fish traders have no other sources of survival apart from selling fish. Further, a report by Bene et al., (2010) as cited in Muir F J (2013) supports this assertion by stating that interactions between fish trading and food security are of critical importance in many parts of the world. Particularly in those situations where small-scale and often seasonal fishing activity provides both income and household food supply, there is a concern that over-regulation and restrictions of fishing capacity may cause negative social and nutritional impact which may be of more serious concern than the fish-resource efficiency gains being sought.

Integrated Marine Management (IMM) (2009) states that many people involved in fish trading, dependency and vulnerability are key features that drive their fish trading practices. Such people often have few alternative income generating activities. This in particular affects those households that depend on trading fish as their main source of income and livelihood. The key issue is that while the fishing restriction is a way of ensuring long-term sustainability of the fish stocks, it at the same time affects the fish traders' food security negatively.

Chiwempala compound is a densely populated area found in Chingola town, a mining town of copperbelt province of Zambia. It has a number of structures such as a clinic, schools and most importantly a market which serves a large percentage of the Chingola residents. The total number of households in Chiwempala is 1,591. The population is estimated at 7,820.

Chiwempala market was chosen to study the impact of the AFB on household food security and the coping strategies. This market was chosen because it has approximately 150 fish traders from whom the research can be applied on; and it is very accessible which is very vital due to the time allowance for the research.

Income levels are relatively low among the Chiwempala households. A considerable proportion of the working population have informal employment such as trading at Chiwempala market, fish trading inclusive. As a result of dwindling economic and employment opportunities many households secure their household food security and income by engaging in fish trading among other income generating activities. (GTZ, 2005)

1.2 Problem statement

It has been observed for some time now that the AFB has an influence on fish traders' household food security due to scarcity of fish during this time. This scenario suggests the fish traders adopt coping mechanisms in order to have sustainable household food security.

Most literature on AFB emphasise the importance of the fishing ban thereby neglecting the influence the ban has on the household food security for the fish traders. Further, there is little literature on the expected resulting coping mechanisms to be adopted by fish traders as a response to sustainable household food security. Failure to have adequate information makes it difficult for policy makers to know the usefulness and dangers of the AFB to the fish traders which can make interventions difficult to formulate.

Therefore, this research, on behalf of the DoA, aimed to assess the impact of the AFB on household food security of the Chiwempala fish traders (CFT) and the resulting coping strategies. This research is particularly relevant to the Ministry of Agriculture Livestock (MAL) because according to the statistics of 2011, the township recorded the highest household food insecurity and high levels of hunger-related thefts. (MAL, 2012). MAL has the capability and the resources to intervene and assist this community in promoting household food security.

1.3 Research Objective

To gain an insight into the impact of the AFB on the CFT's household food security and the resulting coping strategies in order to advise the DoA on appropriate government support activities for CFT that may increase their household food security.

1.4 Problem Owner

The problem owner of the research is The Ministry of Agriculture and Livestock, in particular The Department of Agriculture of Chingola district.

1.5 Research Questions

In order to understand the impact of the AFB on CFT's household food security and the resulting coping strategies, the researcher needed the knowledge that is useful to achieve the research objective. To obtain this knowledge, the following main and sub-questions needed to be answered:

1.5.1 Main Research Questions

- I. How does the annual fishing ban influence the Chiwempala fish traders' household food security?
- II. How do the Chiwempala fish traders cope in terms of household food security during the annual fishing ban?

1.5.2 Sub – Questions to main research question I

- I. How do Chiwempala fish traders describe the annual fishing ban?

- II. What is the influence of the annual fishing ban on Chiwempala fish traders' household food security?

1.5.3 Sub-questions to main research question II

- III. What coping strategies do Chiwempala fish traders employ during the annual fishing ban?
- IV. How do these coping strategies influence their household food security?
- V. How have the Chiwempala fish traders used social capital for their coping?
- VI. What has been the impact of fish trading on their household food security?

1.6 Research limitations

The main research limitation of this study was that it was conducted during the months when there was no fishing ban. The responses that the researcher got were relied on the memories of the fish traders and what they remembered to have been doing during the months when the AFB is on.

The other limitation was that the fish traders were 'very busy' with the selling of fish and so the interviews were done from the market which was not so conducive for an interview with accurate responses.

Chapter 2: Literature review and conceptual framework

2.1 Definition of key terms and concepts

In this research, the key words and concepts were defined as follows:

Food security is said to exist, in accordance with its international definition, when in a society all people at all times have enough food for an active, healthy life. Food security as an umbrella term includes: (i) the availability of food that is nutritious and safe; (ii) an assured ability to procure and acquire food of good quality in a socially acceptable way (e.g. without resorting to emergency food supplies, scavenging, stealing or similar coping strategies). In contrast, food insecurity exists when food is not easily accessible and households have difficulty securing adequate food. (WHO, 2013).

AFB is a fish population regulatory measure which targets critical times for fish breeding in order to ensure sustainability of fishing. (TERI, 2006)

Coping strategies refer to all strategically selected acts that individuals and households in a poor socio-economic situation use to restrict their expenses or earn some extra income to enable them to pay for the basic necessities and not fall too far below their society's level of welfare. (Snel and Staring, 2001).

Household in this research will be defined a group of individuals who live together and purchase food and prepare meals together for home consumption.

2.2 What is Food security?

According to FAO (2000), the definition of Food and Nutrition Security has evolved considerably over time. The starting point of 'Food Security' was food availability to balance unequal food distribution regionally and nationally. However, it was rapidly accepted that availability, though a necessary element, is not sufficient for food security, because food may be physically existent but inaccessible for those most in need. FAO (2000) further acknowledges that according to the accepted definition, Food Security is "adequate access to food for all people at all times for an active, healthy life". Food is here defined as any substance that people eat and drink to maintain life and growth. As a result, safe and clean water is an essential part of food commodities. "Food security is achieved, if adequate food is available and accessible for and satisfactorily utilized by all individuals at all times to live a healthy and happy life."

Food has to meet physiological requirements in terms of quantity, quality, and safety and to be socially and culturally acceptable. In the case of food aid, only food that does not change eating behaviours and is socially and ecologically adapted should be distributed to meet the physiological needs of the target groups. The definition of food security stated above emphasizes 'Availability', 'Accessibility', and 'Utilization' of food. (FAO, 2000).

Of importance to take note is that the concept of FNS has four dimensions but for this research, the focus was on the economic accessibility aspect.

Inter-American Institute for Cooperation on Agriculture (IICA, 2009) also reports that food security can be defined as the existence of the necessary conditions for human beings to have physical and economic access, in socially acceptable ways, to food that is safe, nutritious and in keeping with their cultural preferences, so as to meet their dietary needs and live productive and healthy lives. (IICA, 2009).

2.2.1 Definition of food security components

Food availability: The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid).

Food access: Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources). **Food utilisation:** Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security. According to Administrative Committee on Coordination - Subcommittee on Nutrition (ACC/SCN, 1991), household food security requires adequate home production of food and/or adequate economic and physical access to food. Economic access comes from an adequate purchasing power, while physical access refers to the proximity of markets or other distribution channels through which food may be acquired.

Stability: To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can therefore refer to both the availability and access dimensions of food security. The researcher embraced the term of food security to mean a situation which does not risk a household losing the economic access to food as a consequence of cyclical events.

2.2.2 Unravelling the concept of food security

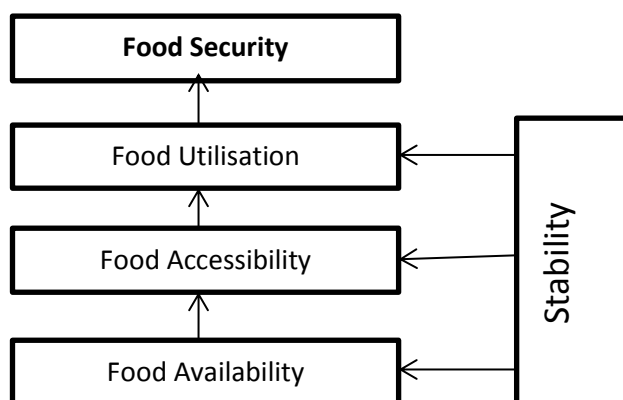
According to FAO (2009), two determinants influence the framework: a physical and temporal determinant. The physical determinant is the food flow: Availability, Accessibility and Utilisation. Availability is achieved if adequate food is ready to have at people's disposal. Access is ensured when all households and all individuals within those households have sufficient resources to obtain appropriate foods (through production, purchase or donation) for a nutritious diet. Adequate utilisation refers to the ability of the human body to ingest and metabolise food. In most cases, utilisation is only discussed from a biological perspective.

However, food also has an important social role of keeping families and communities together. In situations of food insecurity, this role of food security can be achieved only when sufficient culturally adapted food is available within households and community to meet its biological and social needs. (FAO, 2009)

Stability refers to the temporal determinant of food security and affects all the three physical elements. It is important to distinguish between chronic food and nutrition insecurity (e.g. repeated food shortages before harvest "seasonality or lack of caring during harvest) and transitory food and nutrition insecurity (e.g. due to natural and man-made disasters).

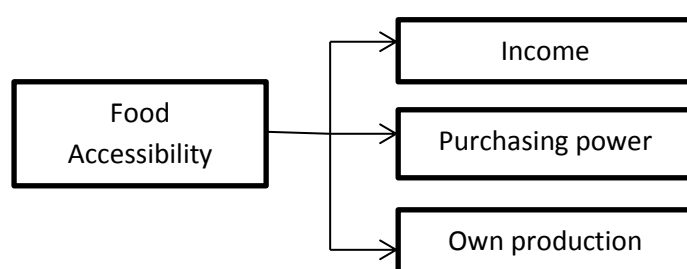
Below in figure 1 is a schematic presentation of the components of food security.

Figure 1: Concept of food security unravelled



Source: FAO, 2009

Figure 2: Tree diagram for the concept of economic food accessibility



Source: FAO, 2009

2.2.3 Household food security vulnerability

According to SARPN (2013), food security is considered differently when the focus is on the macro or the micro level. On the macroeconomic level, food security means that enough food has to be available to cover the population's whole nutritional requirements. On the micro level, i.e. for the households and the individuals, three conditions need to be respected: sufficient food at the macro level, stability in the supply, and a regular access to the corresponding availabilities for all households and their members.

SARPN (2013), further states that within this context, the main concern is to avoid people falling into chronic poverty insecurity, i.e. into a situation where they will suffer from hunger, with all the negative consequences on health, social relationships and economic productivity. SARPN (2013) further elaborates that such a challenge is still part of the fight against poverty since the lack of food for survival remains a key feature of absolute poverty. But the first objective is to prevent people from reaching this turning point beyond which they would begin to suffer from hunger. This implies putting a particular focus on those categories of people that have the greatest chances of reaching such a point, i.e. the most vulnerable. Therefore, taking into account the dimension of vulnerability is, in fact, the clue for the design of food security policies. (SARPN, 2013)

According to SARPN (2013), it is important to know what groups of people have the greatest chance of falling into chronic food insecurity, i.e. are the most vulnerable. Vulnerability can be defined as the probability of an individual (or of a household) of seeing its overall standard of living worsen when confronted with a dramatic event and in this research this

dramatic event is the AFB. This worsening can be, for instance, the falling into poverty traps after suffering from hunger when an increase in market prices prevents the purchase of adequate food. With this definition, the most vulnerable an individual (or a household) is, the greater its probability of falling into a crisis situation, when a risk becomes a dramatic event.

SARPN (2013) further emphasises that this focus on vulnerability, which is complementary to the poverty one, implies first, identifying the threats and, more generally, the risks that people may encounter and, second, assessing their capacity to cope with the consequences of the related dramatic events. Since both the distribution of risks and the capacities to deal with these risks varies deeply from one group to the other, some people are more vulnerable than others. More generally, the level of vulnerability, as well as the level of poverty, is unequally distributed among the whole population.

The capacity of resilience expresses the capacity of overcoming any crisis and consequences of dramatic events. Therefore, reducing the vulnerability of individuals and households implies increasing their capacity of resilience. This can be done by improving their access to appropriate goods and services, by increasing their resources and assets, by developing their capabilities, etc. As a result, when confronted with crisis, they have in hand the opportunity to sell some of their assets in order to get the needed resources, to use information in order to find appropriate solutions, to refer to social networks for help, and so on. (SARPN, 2013)

2.2.4 The contribution of fish trading to household food security

Kawarazuka N (2010) states that fish and fish trading interventions can contribute to improving nutritional status of households through people consuming fish, selling fish for household income to enhance their purchasing power, and by expanding wider accessibility to fish by lowering market prices.

Kawarazuka N (2010) further notes that fish produced are either kept for household consumption or sold for cash income. Fish sold for cash income contributes to purchasing sufficient staple foods, and can also be used for consumption or purchase of non-staple foods which directly improve dietary intake beyond energy intake.

2.3 Livelihoods

2.3.1 What is a livelihood?

According to DFID (1997) as cited in SIDA (2001), a livelihood comprises the capabilities, assets (including both material and social resources), and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. According to United Nations Development Plan (2005), “Making a living”, “supporting a family”, or “my job” all describe a livelihood. The term is well recognized as humans inherently develop and implement strategies to ensure their survival.

This research embraced the definition according to Chambers and Conway (1991) which says that a livelihood comprises the capabilities, assets and activities required for a means of living. Chambers and Conway (1991) further state that a livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.

The course of direction of this research was the influence that the AFB has on the livelihood of the CFTs’ household food security. This involves the capacity of the CFT’s household food security to withstand the pressure from the AFB and what activities and strategies are

used to maintain the household food security when trying to maintain their fish trading which in this case is their livelihood. However, these household livelihoods options will depend on the shocks and trends which will determine their vulnerability.

For a household to be food secure it needs sustainable livelihood options. There are many ways in which a household can acquire a livelihood. This research looked at fish trading as a livelihood source for the CFT and how it gets impacted by the AFB.

2.3.2 Livelihood strategies

Livelihood strategies are described as the range and combination of capabilities, assets and activities that the fish traders use so that they may achieve their livelihoods outcomes and help in reducing the influence of the vulnerability context in which they live. In this research, this will refer to fish trading which they have taken up as a source of income. Other livelihood strategies include home gardening, trading in other goods which are not fish-related. (IFSPC, 2009).

How people access and use these assets, within the aforementioned social, economic, political and environmental contexts, form a livelihood strategy. The range and diversity of livelihood strategies are enormous. An individual may take on several activities to meet his needs. One or many individuals may engage in activities that contribute to a collective livelihood strategy. Within households, individuals often take on different responsibilities to enable the sustenance and growth of the family. In some cultures, this grouping may expand to a small community, in which individuals work together to meet the needs of the entire group. (IFSPC, 2009).

2.3.3 Livelihood assets

According to UNDP (2005), livelihood assets may be tangible, such as food stores and cash savings, as well as trees, land, livestock, tools, and other resources. Assets may also be intangible such as claims one can make for food, work, and assistance as well as access to materials, information, education, health services and employment opportunities. Another way of understanding the assets, or capitals, that people draw upon to make a living is to categorize them into the following five groups: human, social, natural, physical and financial capitals. According to IFSPC (2009), livelihood assets is defined as the context which influences, and to a large degree, defines the options available to, and constraints on, households in pursuit of their livelihoods. IFSPC (2009) further classifies the assets as below;

- (i) Physical asset: basic infrastructure refers to physical environment that helps people meet their basic needs and to be more productive in livelihoods; and producer goods refers to productive capital that refers to productive capital that enhances income and personal consumption.
- (ii) Social asset: refers to the social resources upon which people draw upon in pursuit of their livelihoods. This is developed through social networks and membership or more formalized group. These fish traders belong to an association where knowledge and ideas concerning fish trading are exchanged and through this their social networks are enhanced.
- (iii) Financial asset: This refers to the financial resources that people use to achieve their livelihood objectives and includes flows and stocks that can contribute to production and consumption. It may also be defined as cash or equivalent that enables people to adopt different livelihood strategies such as cash income through self-employment; flows or stocks of capital; and access to informal loans or credit from the association.
- (iv) Natural asset: refers to the natural resource stock from which resource flows and services important to livelihoods are derived. Of importance to this research is the fish in the waters.

- (v) Human asset: Human asset refers to the skills, knowledge, ability to labour and good health that together enable people to pursue livelihoods.

The researcher decided to concentrate on the social capital of the fish traders because from the literature gathered it is evident that social capital helps to produce the other four capitals. It may not be the most important capital but it is central to the other capitals. The section that follows looks at fish trading as a source of livelihood.

2.4 Fish trading as a source of livelihood

According to The New Partnership for Africa's Development (2012), Africa is a huge continent, with an enormous coastline even though it only accounts for 8 million tonnes or 5.1 per cent of the world's total fish production. NEPAD (2012) further reports that trading in fish is a mainstay of many African economies and represents a significant source of foreign exchange earnings. NEPAD (2012) further states that in addition to the sector's important role in income generation, employment and food security. However, there is a lack of market orientation in Africa. African exporters of fish and fish products are generally not competitive in the international market and markets are limited to a few traditional markets and traditional products. Africa's general exclusion from value addition to fish causes fish producers to struggle financially, with little downstream benefits offered to local economies. (NEPAD, 2012)

African countries, sometimes through these hard lessons, are now maturing and taking control of their own destiny. Africa still has a significant natural resource base for international trade. The challenge for Africa to stay competitive lies in differentiating its products. Aiming at the value added product market is a key to success. (NEPAD, 2012).

2.4.1 Fish Trading in Zambia

Worldfish Centre (2009) reports that fish trading makes contributions to rural economic growth and commerce; and provide significant economic opportunities for the poor in Zambia. Although the fisheries sector provides income for over 300,000 people, such benefits are poorly quantified and often overlooked. An estimated 300,000 people earn part of their income indirectly as fish traders. The main domestic markets for fish include the urban centres in the Copperbelt Province of which Chiwempala is a part. With over 40 per cent of population living in urban areas, Zambia is one of Africa's most urbanized countries, a factor that globally correlates strongly with increased demand for fish. (Worldfish Centre, 2009)

Worldfish Centre (2009) further reports that historically, there has been a strong connection between the demand for fish from the country's mining populations and the expansion of fish trade. This continues today as the large fisheries in Luapula and Northern Provinces are mainly servicing the markets in the Copperbelt. (Worldfish Centre, 2009)

A range of fish and fish products are being marketed domestically. The main species include several Tilapia species ('breams') and a number of small pelagic species known as 'kapenta' (*Limnothrissa miodon*). These species have broad market acceptance throughout the country. In addition, catfish and a range of local species have smaller markets. (Worldfish Centre, 2009)

Worldfish Centre, 2009) points out that while breams are typically marketed fresh, and to a lesser extent dried or smoked, kapenta and chisense are usually marketed dried. Processing is almost all at an artisanal level by small enterprises run predominantly by women. A number of enterprises process and market higher-value fish-products through supermarkets in the country and regionally. Frozen bream and kapenta, canned 'bukabuka', a local species from Lake Tanganyika, as well as dried kapenta find their way into these markets.

Overall, however, fish processing and marketing is dominated by artisanal operations that are targeted at the large demand for low-cost products.

Worldfish Centre (2009) further states that major constraints exist for safeguarding and increasing the economic and food security value of this sector. Post-harvest losses of fish between capture and consumption are estimated at around 30 per cent on average – similar to other artisanal fisheries in Africa. Access to improved technologies and services, including business support and financial services, is very limited and investment in post-harvest activities is correspondingly low. This appears to be an immediate entry point for support, but any investment in technologies and services needs to be based on a much better understanding than currently available of relevant markets and the economics of artisanal fish processing and trade.

2.4.2 Small- scale fish trading

According to Future Directions (2013), rural populations take fish trading as a way to increase food production though it is often undertaken as a secondary source of income. In developing states the role of fish farming and fish trading has increased exponentially. As poverty is often worst among rural communities, fish trading presents an opportunity to diversify income and protect against market fluctuations in the prices of agricultural products.

Future Directions (2013) further states that access to financial and social assistance is also a driving factor in successful fish trading venture. Because they are vulnerable to price volatilities, small-scale fish traders rely on access to financial and social assistance to provide a safety net. Small loans and credits to purchase fish are often required to begin a fish trading venture. Fish suppliers are of particular importance as they often provide fish in advance and take payment after the fish has been sold.

Another limitation is access to markets, particularly in urban centres. Prices for fish are highest in urban centres especially during the AFB when there is low supply of fish. The ability of fish traders to access and sell fish in these markets can greatly influence potential income generation. Many fish traders rely on local markets to sell produce; however, with fish production increasing, an over-supply of fish can lower market value and decrease potential income benefits during the non-fishing ban months. (Future Directions, 2013)

To maintain the sustainable levels of fish stocks in the Zambian rivers, the government of the republic of Zambia has laws which regulate fishing and among them is the AFB which is discussed in detail in the next section.

2.5 Annual Fishing Ban in Zambia

As mentioned earlier TERI (2006) describes AFB as a fish population regulatory measure which targets critical times for fish breeding in order to ensure sustainability of fishing. (TERI, 2006). In Zambia this takes place from the month of December to March every year. The AFB is the shock for the fish traders and therefore determines the fish traders' vulnerability. The section below elaborates on how the fish regulations have evolved to what they are today.

Verelst B. (2013) reports that in 1974 fishing regulations in Zambia to deal with juvenile fishing were already introduced, but enforcement capacity was low – the Department of Fisheries (DoF) lacked the necessary resources, namely fuel, to patrol regularly. Throughout the 1980s, the declining catches per capita led experts and policy makers to call for the reintroduction of a closed season or AFB. The last successful closed season policies dated back to the colonial restrictions to protect the 'mpumbu' spawning run. In 1986, the Zambian authorities agreed on a closed season from December to March, following Zairian (Now Congo-DR) success to restrict fishing in this period. The closed season policy was supported by wealthier fishermen who were able to bridge this period financially and who could even support more small-scale fishermen through their patronage network, which in this case

functioned as an informal insurance mechanism. Yet, independent small-scale fishermen – who saw their income, cut off for three months – resented the closed season, just like the fish traders did. (Verelst, 2013)

Gordon (2006) as cited in Verelst (2013) further reports that the issue of compliance was inherently linked with low enforcement capacity of the DoF and state officials who often – in turn for bribes from wealthier traders – turned a blind eye to fishing in the closed season. These practices, whereby some could circumvent regulations using financial pressure while others saw their gear confiscated by state officials, made many fishermen feel that the administrative measures were enforced unfairly. Gordon (2006) as cited by Verelst (2013) further reports that many argued that regulations were only used by state agents to collect personal revenue, by accepting bribes and by keeping income from policing for themselves. The Local Government Act from 1991, which encouraged rural councils to collect their own finances, surely enhanced these practices.

IMM (2009) emphasises that the policies also affect the structure and operation of fishing communities. For small highly dependent communities the loss of the fishery can mean serious effects on the local economy.

Fish traders themselves have to adapt as well and this sometimes means taking more risks to survive. This research therefore would like to study what forms of adaptation the Chiwempala fish traders apply in the face of the AFB.

2.5.1 Influence of AFB on household food security

Food security is an essential requirement for every household. Many households in Zambia and Chiwempala in particular, are unable to be food secure at household level throughout the year. According to FEWSNET (2012), due to the chronic vulnerability and susceptibility of some poorer households to shocks on their livelihoods, there are some households that are unable to meet their basic food needs without assistance. In the context of this research, the shock being referred to by FEWSNET (2012) is the AFB. Many of the fish traders in Zambia can be said to fall in the category of poor households. Chiwempala is among many communities in Zambia that rely on fish trading for their livelihood. According to FEWSNET (2011), food insecure households in Chiwempala rely on the exchange of labour for food, the sale of non-fish, and small livestock sales to meet their food needs. Although fishing is an important livelihood for poorer households in Chiwempala in the lean season, the AFB which runs from December to the end of February restricts this activity. In the event that there are significant increases in grain prices in the Chingola district at the height of the lean season in February, households are expected to intensify their coping strategies. FEWSNET (2011) further states that poorer households are expected to increase their reliance on seasonal coping strategies including: increased labour seeking, barter trade, and selling crafts and charcoal, while reducing expenditures on non-essential (initially) and later essential needs in order to adequately access food. Very poor and poor household members are expected to travel longer distances in search of labour opportunities, while better-off households are expected to increase sales of small livestock, and if their production is not severely impacted, maintain labour demand for weeding, ensuring that poorer households still have a source of income as the lean season continues. In-flow of staple foods from outside of the district will be needed to increase the supply on the market. (FEWSNET, 2011)

To support the above statements, Den Hartog, Staveren and Brouwer (2006) state that, households living in communities with seasonal food shortages have developed ways to deal with food instability. The ability to deal with such situations can be referred to as coping strategies so as to resist a problematic situation, in this case increasing food shortages. Den Hartog et al (2006) further states that households in communities with marked seasonality take two kinds of measures: preventive measures and the actual coping with the shortages when the problem has arrived. In situations where food shortages occur with a distinct

regularity, the first coping strategies will mainly be focused on the diet. (Den Hartog et al., 2006)

According to IMM (2003), fishers themselves operate in a world which is markedly different from most of us and that affects their behaviour. Risk and uncertainty are at the centre of their lives but the negative consequences can, to an extent, be offset in a well-managed fishery where high levels of profitability can be achieved. But even still, entering the fish trading is a costly business and many fish traders risk loss of home, income and even life. IMM (2003) further states that such financial pressures affect their willingness and ability to comply with the management regulation and that willingness is further challenged by the lack of trust between fishers and researcher and managers. This encourages them to circumvent the policy obstacles placed in their way. Even when they are not aiming to circumvent the restrictions the fishers still become more efficient through technological creep and skill development . (IMM, 2003)

According to FAO (2003), food insecurity has a number of causes in communities which depend to a high significance on fishing for their income and food security. For example, food insecurity in fish-reliant communities is known to be so for a number of factors. The severity of household food insecurity varies from one household to another. It depends on the nature of that household's involvement in the fish trading, their level of dependence on fish, the state of their income and savings as well as their ability to shift to other income sources. Some of the most important factors that affect the food security situation of fish trading communities include factors that limit the availability of food (fish), such as processing and exporting fish, factors that reduce people's access to fish and other foods and cultural factors that limit access to food at household level.

Food insecurity may also relate to poor trade policies and shortcomings in fishery management failures such as introducing proper fishing methods. These factors act singly or jointly to limit local communities' access to fish and other useful foods, by either causing or contributing to a decline in the supply of these foods, or lowering local people's ability to purchase them and/ or alternatives (FAO, 2003).

2.5.3 Livelihood Vulnerability

The strength of a livelihood is not only measured by its productive outcomes but also by its resilience to shocks and seasonal changes. (UNDP, 2005). Shocks might include natural disasters, wars, and economic downturns. In the case of the Chiwempala fish traders, the AFB is their vulnerability context in which they trade their fish. Availability of resources, income-generating opportunities, and demand for certain products and services may fluctuate seasonally. More gradual and often predictable, trends in politics and governance, technology use, economics, and availability of natural resources, can pose serious obstacles to the future of many livelihoods. These changes impact the availability of assets and the opportunities to transform those assets into a "living". Under such conditions, people must adapt existing strategies or develop new strategies in order to survive.

Vulnerability context describes the external environment that affects people's livelihoods and includes changes that take place over a longer period of time, sudden events and seasonal changes.(IFSPC, 2009). The focus of this study was how the AFB influences the fish traders' household food security. The data collected focused on understanding how the fish traders describe the annual fishing ban in relation to how it affects their household food security. Through this data, the researcher was able to analyse the coping strategies that are employed by the fish traders in times of food shortage before and during the AFB.

2.5.4 Livelihood Interdependence

UNDP (2005) further explains that one final important characteristic of livelihoods is their interdependence. Very few livelihoods exist in isolation. A given livelihood may rely on other livelihoods to access and exchange assets. Traders rely on farmers to produce goods,

processors to prepare them, and consumers to buy them. Livelihoods also compete with each other for access to assets and markets. Thus positive and negative impacts on any given livelihood will, in turn, impact others. This is a particularly important consideration when planning livelihood assistance. (UNDP, 2005).

2.6 Coping mechanisms

In the article by Schwarzer and Luszczynska (2006), coping is explained as having two dimensions i.e. coping to prevent adversity and coping to promote growth during the adversity. Though the writers were referring to coping during the transition to adulthood, it does apply to the fish traders and how they cope before and during the AFB in terms of household food security. Coping has been further divided into four perspectives as reactive, anticipatory, preventive and proactive coping. For the sake of this research only preventive and reactive was looked at and an elaboration of the two is as below:

Reactive Coping

According to Schwarzer R and Luszczynska A (2006), reactive coping is defined as an effort to deal with an on-going stressful encounter or one that has already happened. Moreover, it might aim at compensation for or acceptance of harm or loss e.g. being criticised or rejected. All these events have happened in the past with absolute certainty; thus, the individual has to compensate for loss or to alleviate harm. Other options might entail readjusting goals or searching for meaning. Reactive coping may be problem focused, emotion-focused or social relation-focused.

Preventive Coping

This can be defined as an effort to build up general resistance resources that result in less strain in the future and an overall reduced risk of stressful events. Schwarzer and Luszczynska (2006), further state that in preventive coping, individuals face a potentially critical event in the distant future. Since any kind of harm or loss could possibly materialise, the individual builds up general resistance resources, accumulating wealth, time, social bonds and skills, 'just in case'.

2.6.1 Coping mechanisms in a household

According to Food security Panda (Undated), one of the most common methods for identifying food insecure households or regions is to look at the frequency and types of coping strategies (in conjunction with consumption, expenditure, food share, and nutritional status indicators). Food security Panda (undated) further elaborates that coping strategies are used to offset threats to a household's food and economic resources in times of hardship. The different types of coping strategies are markers of the severity of conditions, often categorized into four distinct stages of destitution as cited by Corbett (1988) in Food security Panda (Undated). It needs to be noted that there is a spectrum of situations that may precipitate crises, possibly ranging from normal, seasonally-linked low/zero production, to consecutive years of poor production, to natural disasters and armed conflict. When it comes to assessing food security, less emphasis is placed on seasonality-linked insecurity, and more is dedicated to identifying those that are experiencing a "spiralling-down", i.e., progressively more drastic coping strategies practiced due to worsening food security.

Food security Panda (undated) further explains that the issue of complex emergencies and how coping strategies relate to them is also important to keep in mind. Coping strategies need to be seen in context, and in complex emergencies the situation is different than in situations relating to consecutive seasons of crop failure or seasonal dips in the amount of stored food/resources to obtain food. For example, people suffering due to poor agricultural production might slowly move from stage 1 to stage 2 or 3, whereas in complex emergencies, people might be 'shocked' directly into strategies of state 3 or 4, due to sudden external forces such as a flood or armed conflict. One must understand that coping

strategies are employed in order to stave off destitution or great suffering with the hopes of reversing the situation and again attaining food and livelihood security. Thus, generally only when it is absolutely necessary for survival will individuals sell productive assets or migrate in order to feed the household. (Food security Panda, undated)

2.6.2 Food security coping mechanisms

According to Food security Panda (Undated), when food access lessens adaptations employed might be diet change (maize instead of rice), reduction in the number of meals per day (rationing), gathering of wild foods, seeking wage labour, and borrowing from relatives; these are considered first stage strategies. If the shortage continues or worsens, the household would enter the second stage, where more drastic measures would be implemented, such as selling non-productive assets (jewellery, goats), taking out loans outside of kinship network, temporarily migrating for work (or land to farm), or skipping meals for an entire day. In the third stage the situation worsens even further, thus the sale of land, equipment, animals, and other productive assets would occur. Stage four, destitution, involves permanent migration, probably in search of food aid, due to the fact that they are too weak and/or diseased to work. As can be seen, more severe (and sometimes more numerous) Coping Strategies are practiced under worse conditions.

Elsevier Science Ltd (1999) mentions that there are four generic categories of consumption-related coping strategies as will be elaborated in the text that follows. Elsevier Science Ltd (1999) further elaborates that in the short term, when there is insufficient food within the household for the people who have to be fed by that household or insufficient money to buy food, the primary homemaker or person responsible for seeing to it that people are fed can do one or more of the following:

1. Alter the diet, and get by with less expensive foods, according to the money available (dietary change strategies);
2. Do something to increase the amount of food available in the short term which is termed as food seeking strategies;
3. Do something to decrease the number of people to be fed in the short term (household structure strategies); or
4. Do something to manage the insufficiency (rationing strategies). (Elsevier Science Limited, 1999)

2.6.3 Importance of social capital

Fafchamps and Minten (2000) as cited in Tetteh S. A (2007) explains that the concept of social capital has been identified as an important form of capital for a number of reasons. The first reason is that it gives a person access to other forms of capital. An outstanding feature that is unique to social capital is that it involves other human beings. Fafchamps and Minten (2000) as cited Tetteh S.A (2007) further explains that it is also noteworthy that all the other forms of capital are controlled by humans thus a good investment in relationships with humans invariably opens doors for one to access the other forms of capital. Social capital is therefore important for the success of any venture. Fafchamps and Minten (2000) as cited in Tetteh S.A (2007) further reveal the importance of social networks in the reduction of transaction costs. A perfect market presupposes that information is available to all actors in the market. However, the imperfect nature of markets in reality makes it difficult and costly for uninformed actors to gain access to market information pertaining for instance to where to get cheaper raw materials or where to get better prices for products. It will cost a small-scale operator like the Chiwempala fish trader who does not have a research department much money to investigate all these aspects of the market. It is in this light that networking with other actors in the market promotes the dissemination of information thus

reducing transaction costs considerably. This is especially so considering the importance of information in every sphere of life.

Fafchamps and Minten (2000) as cited in Tetteh S.A (2007) further point out that the more extensive a person's network, the more exposed one is to information, presumably. Social capital is also an important source of "shock absorber" in the event of disasters. The investment of time into friendships and relationships pays off in situations of hardships where one could mobilize family and friends to overcome an obstacle. For the case of the Chiwempala fish traders, it is their fish traders' association.

2.6.4 Social capital and the fish traders' livelihood coping mechanism

According to Nahapiet & Ghoshal (1998) as cited in Canadian Centre of Science and Education (2013), social capital refers to the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. It thus comprises both the network and the assets that may be mobilized through that network.

Lehtonen (2004) as cited in the Canadian Centre of Science and Education (2013) further elaborates that social capital describes the networks of social relations characterized by norms of trust and reciprocity that can improve the efficiency of society by facilitating coordinated actions. This form of capital is very important for strengthening communities in Social capital in communities can be categorized into two groups: one established by the government and one arising from the people's participation. In other words, social capital can be said to relate to knowledge-sharing networks.

2.6.5 Types of social capital for the fish traders

Talbot and Walker (2006) as cited by Tetteh S.A (2007) suggests that three types of social capital have been identified to include bonding social capital, bridging social capital and linking social capital. Bonding social capital relates to the strong relationships that exist between people of a similar background and interest. This type of social relationship is the type that exists between family and friends and forms the basis of strong communities. Discussion paper (2002) as cited by Tetteh S.A (2007) further explains that bridging social capital is the type of relationships that exist between members of more distant communities or people who have different backgrounds while linking social capital pertains to the relations between different strata in the social hierarchy who occupy different positions of power.

2.6.6 Role of networking in building social capital.

According to European Urban and Regional Studies (2002), coping strategies include three dimensions: innovation, networking and formation of identity. These dimensions and the ways in which they are interrelated are considered to be important to the forms of local development that can respond to global transformations and transcend institutionalized social fields.

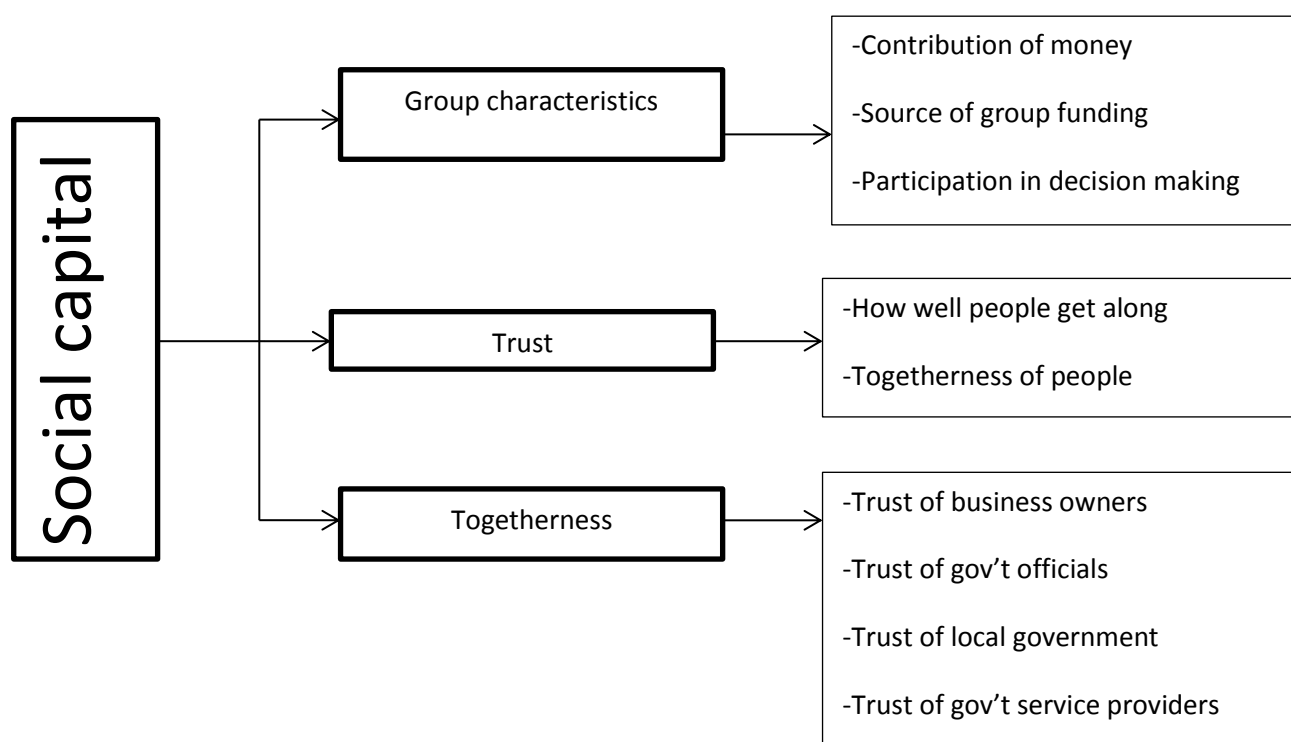
Putnam (2000: 411) as cited by European Urban and Regional Studies (2002) point out that this definition stresses that social capital is produced through networking practices. Networks have to exist so that connecting and 'bridging' can open access to resources otherwise not accessible. Bourdieu and Wacquant (1992) as cited by European Urban and Regional Studies (2002) approaches social capital as all kinds of networks and see it as more applicable in qualitative case-studies of practices of production and use of social relations.

Bourdieu (1992) as cited in European Urban and Regional Studies (2002) points out that it is only through the complex practices of 'social capital' which can be named coping strategies. He further clarifies that social capital is most often accumulating when used in networking practices. Among the dimensions of coping strategies, social capital clearly has a strong connection with network. Connectivity and inclusiveness happen to be the crucial dimensions of social capital, whereas exit and exclusiveness are not. Bonding and bridging

are rather effects of the use of social capital that a feature of social capital itself. In Bourdieu's terms, bonds can be understood as 'social fields' of insiders, whereas bridging is the activity of building connections between social fields. (European Urban and Regional Studies, 2002)

To further elaborate on social capital and which dimensions may be necessary to measure, a schematic view of social capital is shown in figure 3 below.

Figure 3: Dimensions of social capital under consideration



Source: Social capital research (2004)

2.7 Risk taking in fish trading

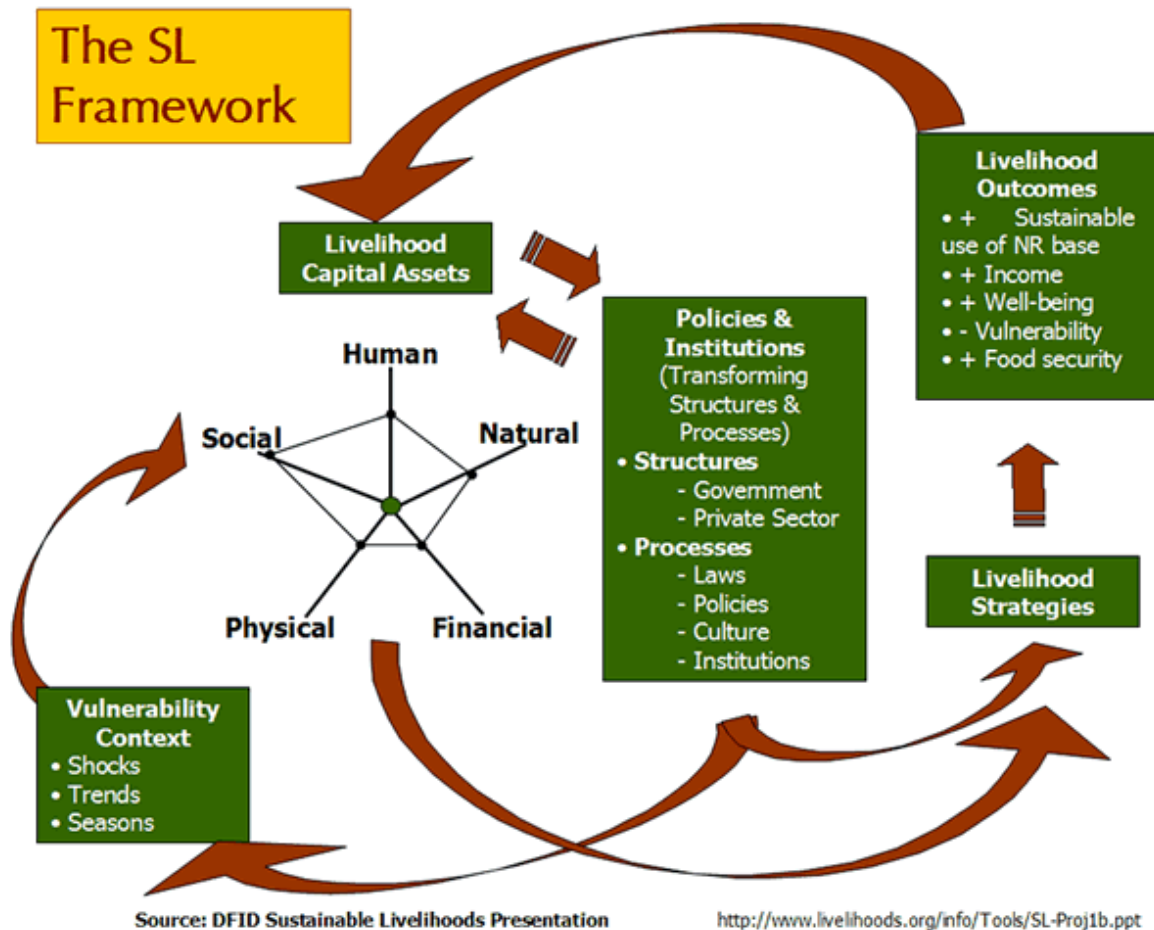
According to Nextbillion Development through enterprise (2006), there seems to be a cultural rejection of risk and aggression in Zambia, which carries over to the business environment. The aversion to risk appears to stem from colonial times, when the British controlled Zambia. NDE (2006) further observes that the Zambian local culture to avoid risk and aggression may hinder competitiveness and innovation in the business climate even though it is good from a quality of life standpoint.

The researcher's observations and experience concerning risk taking among fish traders are that the younger fish traders are able to take risks of even buying fish during the annual fishing ban. They seem not to be scared of the law especially that they have fewer dependents compared to the older fish traders. The Zambian culture makes the older to be more reserved especially with keeping the law of the annual fishing ban. They would rather keep the law than have plenty of food at home and end up behind bars.

2.8 The conceptual framework

From the research objective and the literature reviewed, the following conceptual framework was arrived at and adopted for use in this research, thus:

Figure 4: Sustainable livelihood framework



Source: Sustainable livelihoods framework; DFID (2001)

The framework was adopted to offer guidance to the research and the analysis. The framework illustrated how people operating in a context of vulnerability of which for this research is the annual fishing ban.

It is assumed that the annual fishing ban has an impact on how the livelihood assets are accessed by the fish traders of Chiwempala market.

It is also assumed that the Chiwempala fish traders have ways in which they combine and use assets in pursuit of beneficial livelihood outcomes that meet their household food security especially during the AFB. The fish trading's viability and effectiveness will depend on how the other livelihood assets are available and accessible; also on how the department of fisheries offers their services to them.

The SLF in this research offered a conceptual base for understanding how the AFB influences the Chiwempala fish traders' household food security.

It is a tool which analysed effectively how the AFB impacts on the household food security; and the coping and adaptive mechanisms which the fish traders come up with as a response to external shocks which come in form of an AFB.

3.0 Methodology

3.1 Research area

This study was conducted in Chiwempala market, Chingola district of the copperbelt province of Zambia. The district has a population of 150, 000 and Chiwempala market is the biggest market in the district. It serves both the rich and poor due to its central location. The kinds of fish that are sold at this market are from fisheries where the annual fishing ban is applied and so it was relevant for the research to be conducted in this market. The focus of the study was on the fish traders of Chiwempala, specifically those coming from Chiwempala compound. The researcher works as an agricultural officer in the Ministry of Agriculture and has limited knowledge on how the annual fishing ban influences the Chiwempala fish traders' household food security and the resulting coping strategies; and this prompted her to conduct research on this research unit. Below is a figure showing the map of the copperbelt of which Chingola district is a part.

Figure 5: Map of the research area



Source: www.svon.cz

3.2 Research Design

Prior to data collection, a desk study was conducted in which literature on the influence of the annual fishing ban on the fish traders' household food security was studied. During the desk study, it was also important to look at what coping strategies are done in the case of food shortages at household level. It was through the desk study that the researcher came up with an appropriate framework and the methodology for this study.

The study took a qualitative approach in the collection of data. A survey was conducted to gather information from the fish traders of chiwempala on how the annual fishing ban influences their household food security and how they cope in cases of food shortage at household level. The questionnaire for the survey was in form of semi-structured question. To triangulate the data collected from the survey, stakeholders were interviewed with semi-structured questions. To further confirm the responses that were given in the survey, 3 case

studies were conducted with open ended questions. A focus group discussion was also carried out with some key persons in relation to fish traders' household food security and how it is influenced by the annual fishing ban.

3.3 Selection of respondents

The researcher used a strategic selection of the respondents from the fish traders' association register. There was deliberate decision to target only those fish traders whose residence was chiwempala i.e. 15 males and 15 females. However, the researcher only managed to interview 30 fish traders who were all female and of these 18 were from female headed households and the remaining 12 were from male headed households.

The selection of the focus group discussion members was done with the help of the fisheries officer. One focus group discussion was conducted and comprised four (04) participants. The same composition of the members for the focus group discussion was the same one used for the stakeholder interview. Assuring the interviewees that all the information they were giving out was for academic purposes only and that strict confidentiality would be observed made way for a comfortable atmosphere for the interviews.

3.4 Data collection and Ethical issues

For this research, the main data was collected through the survey in which individual fish traders' household interviews were conducted. To confirm what was collected from the survey, one focus group discussion was conducted and lasted approximately 3 hours with a number of breaks in between. This discussion was helpful in a number of issues concerning how the annual fishing influences the fish traders' household food security were brought to light. The triangulation was also with the 3 case studies and the stake holder interviews.

A written informed consent was provided for the participants who agreed to take part in the research which they signed. The fish traders were comfortable to participate in the research when they were assured that the information they provided would only be used for academic purposes and will be treated with confidentiality and would not affect their fish business in any way. It was also emphasised that they were free to make their own decision to participate or stop when they felt uncomfortable to continue.

In this study, the fisheries officer was used as an expert to provide information concerning technical issues in the fishing industry. The key informant about the Chiwempala fish traders was the chairperson for Chiwempala market who provided relevant information with regard to fish traders and their plights during the annual fish ban and its relation to food security at household level in the area. The community development officer from the ministry of community development was also used to provide information on general livelihoods of the Chiwempala fish traders.

For the information on Chiwempala market and township, reports were sourced from the civic centre though most of these are not yet published. The other source of information was the Department of Fisheries with the help of the fisheries officer.

3.5 The questionnaire

(See appendix 3)

The questions that formed the basis for the questionnaire for the survey covered the following topics:

Vulnerability context: This describes the external environment that affects people's livelihoods and includes changes that take place over a longer period of time, sudden events and seasonal changes. The focus in this study was the annual fishing ban and how this influences stable access to food at household level as a livelihood outcome. The data collected focused on understanding how the fish traders describe the annual fishing ban in

relation to their household food security. Through this data, the researcher was able to analyse the coping strategies that are employed by the fish traders in times of food shortage before and during the annual fishing ban.

Livelihood Assets: According to IFSPC (2009), livelihood assets is defined as the context which influences, and to a large degree, defines the options available to, and constraints on, households in pursuit of their livelihoods. IFSPC (2009) further classifies the assets as below;

Physical asset: basic infrastructure refers to physical environment that helps people meet their basic needs and to be more productive in livelihoods; and producer goods refers to productive capital that refers to productive capital that enhances income and personal consumption.

Social asset: refers to the social resources upon which people draw upon in pursuit of their livelihoods. This is developed through social networks and membership or more formalized group. These fish traders belong to an association where knowledge and ideas concerning fish trading are exchange and through this their social networks are enhanced.

Financial asset: This refers to the financial resources that people use to achieve their livelihood objectives and includes flows and stocks that can contribute to production and consumption. It may also be defined as cash or equivalent that enables people to adopt different livelihood strategies from cash income through self-employment; flows or stocks of capital, e.g. fish stocks; and access to informal loans or credit from the association.

Natural asset: refers to the natural resource stock from which resource flows and services important to livelihoods are derived. Of importance to this research is the fish in the waters.

Human asset: Human asset refers to the skills, knowledge, ability to labour and good health that together enable people to pursue livelihoods. The indicators for human capital in this research included the size of household, age, sex (i.e. whether female or male headed) and the level of skills (ability to preserve fish for sale during the fishing ban).

The researcher decided to concentrate on the social capital of the fish traders because from the findings from the field it was very prominent that it was very essential for the viability of the fish trading. The fish traders have an association which also helps also in allowing them to access informal and formal loans for their business to continue.

Transforming structures and processes: Of importance to this research, the DoF was considered as the structure which enforces the fishing ban and legalities that go with it.

Livelihood strategies: These are described as the range and combination of capabilities, assets and activities that the fish traders use so that they may achieve their livelihoods outcomes and help in reducing the influence of the context in which they live. In this research, this will refer to fish trading which they have taken up as a source of income. Other livelihood strategies include home gardening, trading in other goods which are not fish-related.

Livelihood outcomes: Under this topic, the researcher was able to learn how fish traders' coping strategies help address the food shortages in their households. It was interesting to note that not all households' coping strategies lead to an increased household food security and an increased income. The other interesting part was that a number of the fish traders saw the annual fishing ban as an opportunity to make more money through fish trading whilst the rest saw it to have a negative influence. The researcher decided to concentrate only on food security even though it may not be the only livelihood outcome.

3.6 Researcher's observations

The researcher made observations during the data collection process on what assets the fish traders have in their homes. This was possible by taking time to visit their homes. It was also observed that from the responses that were being given, the fish traders are harassed by police and fisheries department during the annual fishing ban.

The other observation was that the fish traders most dealt with the dried fish due to inadequate capacity to store fresh fish for a reasonable time.

3.7 Data Triangulation

Data collected from the survey was triangulated with other sources. Further information was gathered through the focus group discussion, in-depth interview with the selected 3 in-depth interviews with of fish traders including the 4 stakeholder interviews.

3.8 Data Analysis

The Sustainable livelihood framework (figure 4) was used for data analysis. The three components of concern were the vulnerability context, livelihood strategies and livelihood outcomes which were used to analyse the data. These components were used to analyse the livelihood strategies and activities of the fish traders of Chiwempala market and how these activities may influence their household food security during the annual fishing ban. The data from the quick survey was analysed qualitatively and quantitatively with the use quick and rough interpretation of data. The data from the 3 case studies and the FGD was analysed descriptively by first categorising data into groups. Tables were also used in the categorising the data and later describing the results.

The table below indicates what factors and aspects were considered for data analysis.

Table 1: Factors and aspects considered for data analysis

Component of the SLF	Aspect used in data analysis
Vulnerability context	Annual fishing ban
Livelihood asset	Social asset- membership to the fish traders association which allows for access to loans.
Transforming structures & processes	Department of fisheries
Livelihood strategies	Fish trading
Livelihood outcome	Household food security

Chapter 4: Research findings

4.1 Introduction

This section of the report is a presentation of the outcome of the research from the field. It outlines the responses that were given from the individual interviews through the survey which served as the major data collection method. To triangulate the data from the survey, further data collection was conducted through stakeholders' interviews, focus group discussion, in-depth individual interviews and the direct observations that the researcher made in the field.

The findings are from the 30 respondents that took part in the survey (18 female-headed households, 12 male-headed households). Data collected from one focus group discussion, 3 in-depth individual interviews, 4 stakeholder interviews and the researcher's direct observations were used to triangulate the data from the survey

4.1.1 Chiwempala fish traders' perception about the annual fishing ban

In this section, the researcher was trying to establish the awareness of the fish traders about the annual fishing ban which in this case is their vulnerability context in which they trade their fish. The question that was asked to get this insight was, 'Are you aware that there is an annual fishing ban?' and the responses given are as shown in the table below.

Table 2: Responses by the fish traders their awareness about the annual fishing ban (AFB).

AFB Awareness	Number of respondents	Percentage (%)
Aware of AFB	30	100
Not aware of AFB	0	0

The information in table 1 shows that all of the respondents interviewed were aware of the AFB. It can then be said that there is awareness about the AFB, but what about knowledge on the purpose of the annual fishing ban?

A FGD was organised to further find out the perception of the main stakeholders regarding the fish traders' awareness about the AFB. The following was the response from the fisheries officer, Mr Akalalambili. He's comments were, *'I will be very surprised if any of them said that they were not aware. They are all aware. My office does the sensitisation campaigns a few months before the AFB gets in effect. Through these campaigns, we even give out fliers which are stuck at strategic visible points in the market for them to read. The campaigns are done every year so that we catch up with their memories. So far, I think the job we are doing is quite commendable.'*

Box 1: A case from the Focus group discussion on how fish traders perceive the annual fishing ban (AFB).

The Chiwempala fish traders' association representative had this to say, *'as fish traders they know about the AFB through the notifications and sensitisations campaigns from the department of fisheries. The only problem is that sometimes the sensitisations are done in English and that becomes a challenge to most of them. Otherwise they appreciate that they have the AFB'*.

The next section will look at the Chiwempala fish traders' knowledge on the purpose of the AFB.

4.1.2 Knowledge about purpose of annual fishing ban.

In this section, the researcher was trying to establish if the Chiwempala fish traders knew the purpose of the annual fishing ban. The interview questions were closed and the respondents

had to tick the applicable provided option. The question was ‘Can you give the purpose of the annual fishing ban?’ to which 47% of all the respondents ticked ‘*for fish to breed and repopulate*’ while 27% of all the respondents ticked ‘*to protect fish stocks for the future*’. 20% of all the respondents mentioned ‘*for the government to make money out of fish traders*’ as the purpose of the AFB while 7% of all the respondents ticked, ‘*for the government to stop us from being fish traders*’ as the purpose of the AFB.

Table 3: Responses from the fish traders on perceived purpose of the annual fishing ban.

Purpose	Number of respondents	Percentage (%)
For fish to breed & repopulate	14	47
To protect fish stocks for the future	8	27
For the government to make money out of the fish traders.	6	20
For the government to stop us from being fish traders	2	7
Total	30	100

As can be seen from table, 47% of the respondents said that the purpose of the AFB was for the fish to breed and repopulate whilst 27% of the respondents said AFB was for the purpose of protecting the fish stocks for the future. 20% of the respondents said it was a way for the government was making money out of them. 7% said it was a way for the government to stop them from being fish traders.

The major finding then is that more than half of all the respondents mentioned that the purpose of the AFB was ‘for fish to breed and repopulate’ and also ‘to protect the fish stocks for the future’.

When conducting an in-depth individual interview, one fish trader had this to say this, ‘*I see the AFB as a private business venture by the government officers. They get the money from us and most of the times they don’t even give receipts...The money doesn’t get to the government coffers. They are just ‘thieves’.* Another response from yet another fish trader was that, ‘*The government is using the AFB to stop us from being fish traders. Fish trading is our life-style and we just have to continue trading in fish*’.

A response from an individual interview where Mrs Kombe mentioned that, ‘*the AFB is a way of allowing the fish in the rivers to breed and later on allow the small fishes to grow. At first I didn’t know about this but through the AFB sensitisation campaigns I am now more knowledgeable about why the AFB was put in place. I think it is good for us fish traders because we rely on the fish in the rivers and hence if we don’t give the fish room to grow then our fish trading will not be sustainable and our children’s’ generation will have no fish*’

When asking the key informants about what the fish traders thought about the purpose of the AFB, they mentioned during the interview that some of the fish traders see the AFB just as a way of making money out of them because according to them the fines don’t actually go to the government coffers. This can be supported by the response that the CFTA representative gave, ‘*they are a bit sceptical in how the whole process is carried out. The fisheries office rarely gives out receipts when one has been fined for not observing the AFB. In some way they are right because that is how things are supposed to be done for people to have faith in the government and the AFB.*’

4.1.3 Influence of annual fishing ban on fish traders’ household food security

To get an overview of how the AFB ban has impacted on the fish traders’ household food security, the respondents were asked whether the AFB did or did not increase their household food security. The responses are shown in the table below.

Table 4: Responses from the fish traders on how the annual fishing ban has impacted on their household food security.

Item/Aspect	Number of respondents	Percentage (%)	Range of Age	Household size (range)
AFB has increased my household food security	14	47	23-33	4-9
AFB has reduced my household food security	16	53	39-50	5-12

From the table above, it can be seen that 47% of the respondents reported that the annual fishing ban increased their household food security. The figures in the table above also indicate that 53% of the respondents reported that the annual fishing ban reduced their household food security. It is also interesting to note that the fish traders with ages ranging from 23 to 33 mentioned that AFB had increased their household food security. Whilst, the fish traders with ages ranging from 39 to 50 mentioned that AFB reduced their household food security. So from the findings it can safely be said that age and household size were the factors that contributed to whether the AFB was increasing or reducing household food security.

Box 2: A case of a fish trader on the impact of the annual fishing ban on their household food security.

The narration was by a female fish trader who is also the household head. She looks after 10 children and is a widow. She is 43 years old. She said, *'I started fish trading more than 10 years ago. I never have extra sources of income that can help cushion the effects of the AFB because I don't have any other thing that I can do during the months of AFB. But I am left with no choice but to respect the AFB regulation so that I stay away from being jailed. I am a widow and I have 10 dependents to look after. So I have to avoid jail as much as possible. The food situation at home is very bad during the AFB and we try to live through it.'*

Reasons why AFB has increased household food security

The table below indicates the responses that were given from the individual household survey. The reasons ranged from business diversification, hiking of fish prices, high fish demand to persistence in fish trading.

Table 5: Reasons from fish traders on how the annual fishing ban has increased their household food security.

Reasons given	Number of households)
Business diversification	9
Hiking of fish prices during the AFB (bought in bulk before AFB)	9
High demand for fish due to low supply	7
Persistence in fish trading	5

The figures from the above table show that a third of the households interviewed mentioned that the reasons why the annual AFB had increased their household food security was due to business diversification.

Another third of the respondents reported that the hiking of the fish prices which they buy in bulk to be sold during the AFB contributed positively to their household food security.

About a quarter of all the respondents reported that the reason the AFB had increased their household food security was because fish had high demand due to the low supply whilst 17% of all the respondents reported that for them persistence in fish trading was the reason why the AFB had increased their household food security.

The results in table 5 are confirmed by what Maggie Mutunta mentioned in an interview. She said, *'This AFB is a blessing in disguise. It gives me an opportunity to make more money than when there is no fishing ban. The food situation at home improves from the fish profits we get during the AFB because the fish price is almost tripled. The income we get from the sales helps us to buy food at home for the whole period of the AFB. It is not easy though because if you are not persistent as a fish trader then chances of you making it get slimmer.'*

Reasons why AFB has not increased household food security

The table below show the reasons that were given as to why AFB has not reduced household food security. The percentage of each response given is a representative of all respondents.

Table 6: Reasons given by the fish traders as to why the annual fishing ban has reduced their household food security.

Reason given	Number of respondents	Percentage (%)
Inadequate capacity to buy fish in bulk	11	37
Low income in-flow	7	23
No new fish orders	6	20

The figures in the table show that the majority of the respondents gave 'inadequate capacity to buy fish in bulk' as the reason why the AFB had reduced their household food security. Whilst about 50% of all the respondents interviewed gave 'low income in-flow' or 'no new fish orders' as the reason why the annual fishing ban had not increased their household food security. From the findings it can be said the most popular reason that was given as to why the AFB had reduced their household food security was the inadequacy to buy fish in bulk which could be sold during the AFB.

To confirm the results from the survey, a further view was collected from the focus group discussion and below is one of the responses given. The interview with the Chiwempala Market Chairperson (CMC) where he mentioned the following: *'Some fish traders' household food security reduces during the AFB because they have inadequate capacity to buy fish in bulk which they can sell during the AFB at a hiked price. It is usually the older ones who have this inadequacy'.*

To summarise the findings that were answering the fish traders' perception and knowledge of the AFB; and its influence on household food security it can be said that all the respondents are aware about the AFB and almost all of them know the purpose of the AFB as being a way for fish to breed and repopulate; and to protect fish stocks for the future.

The fish traders with ages ranging from 39-50 reported that the AFB had reduced their household food security with the major reason being inadequate capacity to buy fish in bulk which can be sold during the AFB.

The fish traders with ages ranging from 23-33 reported that the AFB had increased their household food security and the major reasons given were business diversification and hiking of fish prices during the AFB.

4.2 Household coping mechanisms

4.2.1 Coping strategies of Chiwempala fish traders

Preventive coping

The findings are that all the respondents interviewed reported to have used food seeking strategies as a preventive coping strategy. The results are shown in the table below and each percentage is a representative of all the respondents.

Table 7: Preventive coping strategies employed by the Chiwempala fish traders.

Food seeking Strategy employed	Number of households	Percentage (%)
Business diversification	19	63
Cultivation	17	57
Bulk buying of fish	19	63

The figures in the table above show that 63% of the respondents interviewed employed business diversification as a preventive coping strategy. This included trading in non-fish goods such as agricultural products.

57% of the respondents interviewed ventured into cultivation as a preventive coping mechanism.

63% of the respondents interviewed bought fish in bulk before the AFB so that it could be sold at a higher price during the AFB.

Box 3: A case from the stakeholder interview about the preventive coping strategies that are employed by fish traders.

'The AFB has caused some fish traders to be very innovative and more business minded. They know that the AFB comes every year and so they have diversified their business by doing other things that can help bring an income in their homes so that they can have a constant supply of cash to buy food in their homes. Some are now able to do some cultivation where they are able to produce food for sale and for consumption. Fish supply is quite low during the AFB and hence they ensure that they buy fish in bulk so that they can sell it during the AFB at almost a tripled price'.
This was a narration by Ms. Mvula, the CFTA representative

Reactive coping

Based on the literature and the researcher's insight, four reactive coping strategies were identified. To get an insight on what reactive coping strategies the fish traders employed, the responses were grouped into four categories i.e. Dietary change strategies, Food seeking strategies, Household structure strategies and Rationing strategies.

The food seeking strategies included borrowing money to buy food, asking for food from neighbours and buying food on credit.

Rationing strategies included options of managing the food insufficiency such as reducing number of meals, cutting of meal size and skipping of meals.

Household structure strategies included restricting number of people visiting the home and sending children to well-off relatives.

The dietary change strategies included aspects such as eating less expensive foods and eating less preferred foods.

Table 8: Coping strategies employed by the Chiwempala fish traders during the AFB.

Strategy employed	Number of households	Percentage (%) of all respondents
Food seeking strategies	28	93
Rationing strategies	24	80
Household structure strategies	7	23
Dietary change strategies	5	16

From the table above it can be seen that of the four categories of coping strategies, 93% of the households acknowledged to employing food seeking strategies such as borrowing money to buy food. The next popular strategy was rationing strategy which had 80% of the households. For the household structure strategies, 23% of the respondents reported to have used this strategy. Finally, 16% of the households reported to have used the dietary change strategies during the annual fishing ban as a reactive coping strategy.

Box 4: A case of reactive coping strategies employed by fish traders of Chiwempala market

The narration is by a fish trader from a male headed household and this is what she had to say. *‘We are never prepared for the AFB. The AFB comes every year but we never learn that we need to prepare for the effects. During the AFB the household food security is reduced and so we resort to borrowing money to buy food the household. My household size is quite big and so to lessen the impact of the AFB, we send the younger children to the well-off relatives’.*

4.3 Impact of coping strategy on fish traders’ household food security

4.3.1 Impact of preventive coping on household food security

To establish whether or not the coping strategies employed in anticipation of the AFB ensured that the fish traders’ household was food secure, the question asked was whether the coping strategies they employed before the AFB ensured that their households were food secure. The table below shows the responses given from the 30 respondents.

Table 9: Responses from fish traders of whether preventive coping strategies employed in anticipation of the annual fishing ban ensure that the household is food secure.

Item/ aspect	Number of respondents
AFB ensures Household to be food secure	14
AFB does not ensure household to be food secure	16

The figures in the table above show that 47% of the respondents interviewed reported that the coping strategies that they employed in anticipation of the annual fishing ban ensured

their households to be food secure. 50% of the respondents reported that the coping strategies that they employed in anticipation of the annual fishing ban did not ensure their household to be food secure.

Box 5: A case from the focus group discussion on how preventive coping strategies have ensured household food security for the CFT.

The CFTA representative had this to say concerning how that the coping strategies that some of the fish traders used had helped their household to be food secure.

She said, 'before the annual fishing ban commences, they make sure they buy fish in bulk and preserve it for the AFB period. They sell this fish at a much hiked price and their households manage to stay food secure because of this. They are not only into fish trading but they also venture into non-fish businesses even before the AFB commences and they also sometimes do some cultivation though their land is small.'

4.3.2 Impact of reactive coping strategies on CFT's household food security

To establish whether or not the coping strategies during the AFB ensured that the fish traders' household was food secure, the question asked was whether the coping strategies they employed during the AFB ensured that their households were food secure. The table below shows the responses given from the 30 respondents

Table 10: Responses from Chiwempala fish traders about whether the coping strategies they employ during the annual fishing ban ensure that the fish traders' household is food secure.

Coping strategy employed during AFB:	Number of respondents	Percentage (%)
Ensure household is food secure	14	47
Does not ensure household is food secure.	16	53

From the figures in the table above, it can be seen that half of the total respondents employed coping strategies during the annual fishing ban which ensured that their households were food secure.

The other half of the respondents interviewed reported that the coping strategies that they employed during the annual fishing ban did not ensure that their households were food secure.

Box 6: A narration by one the stakeholders of how reactive coping strategies have not ensured household food security for the fish traders.

From the Chiwempala market chairperson it was mentioned how that the fish traders' coping strategies during the AFB do not ensure household food security. This is what was said. *'The coping strategies during the AFB haven't been very helpful because they don't have any other businesses apart from fish trading and there is low income flow. They always rely on the others who have but this is not sustainable. They usually go hungry during the AFB. On some days they have food but this does not continue so they go back to their usual hunger days. It proves to be very challenging for them. Having other businesses may cushion the AFB effects but where can they get the capital from.'*

It then can be said that the preventive coping strategies that were employed were mainly the food seeking strategies which included business diversification, cultivation and bulk buying of fish. About half of all the respondents reported that the preventive coping strategies ensured that their household was food secure.

The two most popular reactive coping strategies included food seeking and rationing strategies. The less popular reactive coping strategies included dietary change and household structure strategies. About half of the respondents reported that the reactive coping strategies they employed did not ensure that their household was food secure.

4.4 Livelihood outcomes

Table 11: Responses from the fish traders on how the annual fishing ban impacts on their usual way of living.

Reasons given	Number of households	Percentage (%)
More focused & persistent	10	33
More business minded	17	57
Restricting number of people in the home	4	13
Enhanced social networks	17	57
Business diversification	15	50

Of the respondents interviewed, 33% said that because of the annual fishing ban, they were now more focused and persistent. 57% of the respondents reported that they were now more business minded because of the annual fishing ban. 13% of the respondents reported that they now restricted number of people in the home because of the annual fishing ban. 57% of the respondents reported that they now had enhanced social networks because of the annual fishing ban. 50% of the respondents reported that now diversified business- wise because of the annual fish ban.

4.5 The use of social capital by the Chiwempala fish traders in their coping

There are other livelihood assets but the researcher decided to concentrate on the social capital of the fish traders of Chiwempala. According to literature, if you have a wider of social capital then the other 4 capitals (financial, human, physical, natural) can't be so hard to come by and in the table below the figures indicate how many of the fish traders interviewed were/were not in the association.

Table 12: Responses from the fish traders about their membership to the Chiwempala fish traders' association.

Membership to association	Number of respondents
Not in association	16
In association	14

The figures in table 12 that 53.3% of the fish traders interviewed had membership to the fish traders' association. 46.7% of the fish trader interviewed reported not to be members of the fish traders association.

Table 13: Reasons given by the fish traders for being members of the Chiwempala fish traders' association.

Reasons for being in association	Number of respondents	Percentage (%)
To be stronger in a group	11	37
To access informal & formal loans	09	30
To have access to knowledge about fish trading	09	30

The figures in table 13 show that 37% of the fish traders interviewed said that they were in the association so that they could be stronger in their group. 30% of the fish traders interviewed said they were in the association so that it could be easier for them to access loans. Another 30% of the respondents said they were in the association so that they could access relevant knowledge about fish trading.

Box 7: A case of how a fish traders' membership to the Chiwempala fish traders' association has helped increase her household food security during the AFB.

A woman fish trader from a male headed household and has been into fish trading for 5 years. Her household size is 10. Her husband has a formal employment but is not very supportive so she decided to join the fish traders association because of what she heard from other fish traders who said they were benefitting from it.

She said, 'when I started fish trading it was difficult for me to source money so I could buy the fish in bulk like the others. I was not a member of the fish traders' association then. But now I have somewhere to run to. And because our group is a formal one it becomes even possible to have fish supplied to us without having to pay for it immediately. We are also able to get loans from other lending institutions and also just within from among our group members. I have benefited quiet a lot from this group. We even have rare opportunities where trainings are held for the group members on business and how to easily make profits in fish trading'.

To get further details on how the CFTA has helped to increase the income levels of which they use to purchase food for home and interview with representative of the CFTA had these revelations. This is what he said, *'The fish traders are able to get informal and formal loans from the association. It also makes them stronger as a group for issues like accessing inputs and fish supplies. It is a source of available knowledge on fish trading business. They are able to get this from affordable training workshops. It a source of available knowledge on fish*

trading business and other business related issues. They are able to get this from affordable training workshops'.

The outcomes of the AFB included being more persistent, more business minded, having more enhanced social networks and business diversification. The least popular one was the restriction of number of people in the home. Slightly more than half of the respondents reported to belong to the CFTA whilst the half reported not to be members of the CFTA. The reasons for joining this CFTA were given as being able to be stronger in a group; having access to informal and formal loans; and having access to knowledge about fish trading

Chapter 5: Discussion

5.1 Introduction

This section of the report will discuss the research findings and how they relate to the literature review. There were a number of findings but only the main ones that answer the research questions will be discussed.

5.2 Impact of the annual fishing ban on fish traders' household food security

The vulnerability context of the fish traders is the AFB. In view of this, the research findings show that the Chiwempala fish traders' household food security has been impacted by the AFB. Almost half of the respondents from the survey indicated that the AFB had increased their household food security and the other half mentioned that the AFB reduced their household food security.

The study revealed three reasons that lead to increased household food security for the fish traders during the AFB as discussed below:

- A households' ability to diversify their business such as starting to sell agricultural products particularly beans and groundnuts; selling of re-packed cooking oil and also the sale of Kapenta (*Limnothrissa miodon*). Another strategy was the venturing into agricultural production of vegetables which acted as a source of food while they sold the surplus. This is in line with the report by FAO (2003) which stated that food insecurity is dependent on the ability of a household to diversify its livelihood options. In agreement with the FAO (2003) report, CFT's households with diversified livelihood sources were found to be more food secure than those that depended entirely fish trading as a source of their livelihood.
- The capacity to buy fish in bulk before the AFB and selling it during the ban at hiked prices was also cited as one of the ways to improve the CFT's household food security.
- A household's persistence to fish trading despite receiving constant harassment by the DoF officers was also revealed as one of the qualities that a fish trader needed to have. This is because during the AFB only the persistent fish traders survived. Fish traders actively in fish trading reduced during the AFB lead to a low supply of fish and hence increasing demand for the fish which is very good for business.

The study also revealed that some CFT households experienced reduced food security during the AFB due to inadequate capacity to buy fish in bulk; so such households had to stop selling fish during the AFB as they had no new fish orders.

The above two scenarios are supported by findings by Den Hartog et al., (2006) who stated that households living in communities with seasonal food shortages have developed ways to deal with food instability. The annual fishing ban comes every year and so from Den Hartog et al., (2006)'s perspective these fish traders have come up with ways to deal with household food instability with the bulk-buying of fish being the major way to secure their food situation .

From the study the researcher also learnt that the fish traders who were willing to risk by disregarding the AFB made more money than what was considered normal because they were able to access fish stocks throughout the year. Mostly the fish traders who disregarded the AFB were the youths whilst the elderly waited for the AFB to be lifted. The major reason that made the elderly to refrain from engaging in the risky behaviour was their household size and family responsibilities. This finding is in agreement with what was stated in Nextbillion Development through enterprise (NDE, 2006) that there seems to be a cultural rejection of risk and aggression in Zambia, which carries over to the business environment. NDE (2006) further states that that Zambian local culture to avoid risk and aggression may

hinder competitiveness and innovation. It is the elderly who may want to continue embracing the local culture of avoiding risks at all costs.

5.3 Household coping mechanisms

The study revealed that the main coping mechanisms employed by the Chiwempala fish traders included food seeking strategies such as borrowing money to buy food; rationing strategy so as to ensure that the little food that was available lasted for a longer period. The other two coping mechanisms included household structure strategies such as sending off younger children to well off relatives and limiting number of people in a home; and dietary change strategies such as reducing number of meals in a day were rarely applied as a coping strategy.

The most common of these was the food seeking strategy with a percentage of 93% of the respondents. The least popular strategy was the dietary change strategies with 16% of the respondents agreeing to use it. This is contrary to what Den Hartog et al., (2006) states that in situations where food shortages occur with a distinct regularity, the first coping strategies will mainly be focused on the diet. This could be attributed to the fact that households in Chiwempala see the AFB as a temporal measure and hence the fish traders wouldn't want to apply drastic measures in order to be food secure. This is probably why the researcher's findings did not agree with what Den Hartog et al (2006).

The study further revealed that the fish traders who mentioned that the AFB had helped to increase their household food security belonged to the CFTA. This assertion can be attributed to their social networks at their disposal through the association. This finding is similar to those by Fafchamps and Minten (2000) as cited in Tetteh S.A (2007) who asserted that the more extensive a person's network are, the more exposed one is to information. In the same vain , Fafchamps and Minten (2000) as cited by Tetteh S. A argued that all the other forms of capital are controlled by humans and thus having a good social network is a good investment. Fafchamps and Minten (2000) as cited by Tetteh S. A (2007) further state that networking promotes the dissemination of information thus reducing transaction costs considerably. Social capital is also an important source of 'shock absorber' in the event of disasters. The aspect of using social capital as shock absorbers is also supported by The Canadian Centre of Science and Education (2013) supports this assertion in their report and state that networks have to exist so that connecting and 'bridging' can open access to resources otherwise not accessible. It is assumed that the building up of social capital will provide good breeding ground for the other four livelihood assets.

5.3.1 Impact of the Chiwempala fish traders' coping mechanisms

The study indicates that the coping mechanisms that have been used by the CFT have had different effects on their household food security. The results show that the preventive coping strategies have a higher chance of reducing the impact of the AFB on the household food security than the reactive coping strategies. This could be due to the fact that preventive coping strategies help increase the resource base. This is supported by Schwarzer and Luszczynska (2008) who define preventive coping as an effort to build up general resistance resources that result in less strain in the future and an overall reduced risk of stressful events. The efforts to increase the resource include diversification of business among others.

Chapter 6: Conclusion and recommendations

This chapter presents the conclusion and recommendations based on the discussion of the research findings.

6.1 Conclusion

The purpose of the research was to gain an insight on how the AFB impacts on the Chiwempala fish traders' household food security and the coping strategies. Findings from this research could assist the Department of Agriculture to come up with appropriate activities in support of the Chiwempala fish traders' household food security. The research also revealed that CFT apply the first stage of coping strategies in particular food rationing, gardening and business diversification. These do not include the sale of productive assets and it is an indication that the older CFT have transitory household food insecurity.

The findings indicate that the annual fishing ban influences the older fish traders' household food security differently from the younger fish traders' household food security. What sets them apart are the age; membership to the CFTA and business diversification.

This research indicates overwhelming evidence that the networking that takes place in the CFTA is the necessary base upon which they can draw their livelihood support through, for example, acquisition of finances in form of soft loans. This networking serves also as a shock absorber due to the AFB when finances are expected to be low for their businesses.

The importance of this research and its findings is that the fish trading does not appear to be very sustainable for the fish traders as a livelihood; however, the fish traders need to survive and hence further investigation is needed to come up with a more sustainable livelihood options.

6.2 Recommendations

Since the Chiwempala fish traders use 'bulk buying' of fish to be sold at higher prices during the AFB as a coping mechanism, there should be more strict regulation from the fisheries department of fish buying before the annual fishing ban with an increased patrol of the fisheries. This restriction of bulk-buying of fish will be appropriate in the months of September and October, just before the AFB commences. There should be stiffer punishment for the younger fish traders who decide to neglect the AFB regulation. The above should apply because both ways of coping in effect result in diminishing fish stocks which the ban intends to address in the first place.

English language seems to be a problem for some of the fish traders; and so sensitisation campaigns by the fisheries department should be done in the local language and regularly so that the fish traders really understand that by neglecting the law and buying fish in bulk they actually not doing any favour for themselves. The fish traders association should help the fish traders to diversify their businesses by enabling them to have access to loans at a lower interest.

Lastly, crop production trainings should be conducted by the department of agriculture for the fish traders as a way of helping them diversify their businesses. And depend less and less on fish trading. Fish farming should be among the training activities conducted by the fisheries department for the fish traders as it leads to a more sustainable fish supply.

Findings from this study reflect the local reality in the lives of CFT but for the recommendation to be applied at a more regional scale; further research is needed in other communities that rely mainly on fish trading as their livelihood source.

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Appendix 1: List of interviewees

No.	Name	Age	Household head	Household size
1	Regina Mwansa	43	Female	10
2	Christine Sikaluzwe	45	Male	15
3	Bridget Mwape	30	Female	05
4	Florence M'hango	33	Female	06
5	Chilufya Mumba	39	Male	05
6	Natasha Mibenge	46	Female	9
7	Pricillah Chipili	40	Female	11
8	Maggie Mutunta	29	Female	4
9	Mubita Lubinda	26	Male	6
10	Virginia Chileshe	29	Male	6
11	Olivia Chileshe	30	Male	9
12	Getrude Mwewa	27	Male	6
13	Juliet Shula	31	Male	5
14	Sharon Nkhata	23	Female	5
15	Kainda Lubaya	25	Female	5
16	Namfukwe Brendah	40	Male	10
17	Alice Mudala	25	Male	5
18	Bubala Mwiinga	42	Male	9
19	Agness Bwalya	50	Female	9
20	Gracious Phiri	40	Male	9
21	Mwape Wimanzi	40	Male	12
22	Joyce Musonda	42	Female	9
23	Janet Bwalya	42	Female	8
24	Getrude Sitengami	37	Female	8
25	Godfridah Mwaba	40	Female	11
26	Love Mumba	45	Female	9
27	Ruth Sampa	29	Female	5
28	Susan Phiri	26	Female	5
29	Alice Nkandu	27	Female	6
30	Hildah Kombe	42	Female	10

Supportive interviewees

No.	Name	Role/ Position
1	Akalalambili Wakumelo	Chingola Fisheries officer-expert
2	Victoria Kabwe	Extension officer-key informant
3	William Simwinga	Chairperson for Chiwempala market-Key informant
4	Saliya Mvula	Fish traders' association representative
5	Chilundika Mweshi	Community development officer
6	Chansa Mbaao	Fish trader representative

Appendix 2: informed consent form

My name is Pamela L. Simalumba. I am carrying out a research on 'The influence of the annual fishing ban on household food security and the resulting coping strategies'. If you decide to participate, I will have to interview you for about 40 minutes and if you need any further clarification I will get back to you. You are assured that the responses you will give will not affect your business in anyway. Be assured that everything concerning your participation will be treated with anonymity and confidentiality it deserves. If you have any questions, do not hesitate to contact me on psimalum@gmail.com or +260 500 400 and I will be happy to answer them. A copy of this form will be availed to you to keep. By signing you indicate that you agree to the discomforts, inconveniences and risks that may come along with this study.

Signature.....Date.....Signature of Interviewer.....

Appendix 3: Household Questionnaire for the Quick survey

A. Introduction

My name is Pamela L. Simalumba. I am a masters' student at Van-Hall Larenstein in Wageningen, The Netherlands. I am interested in finding out how the fishing ban influences household food security; and the resulting coping strategies. I would appreciate if you could be willing to corporate with this interview. Whatever answers you will give out in this interview will be held with high confidentiality and will be used only for the purpose of research.

B. General background data- Household Data

1. Name of Fish trader.....
2. Age
3. Male / Female headed
4. Size of the household
5. When did you register at the Chiwempala fish traders' association?
6. Why did you register?
 - In order to have a legal status and avoid problems with tax by government.
 - To be stronger in a group.
 - To be able to purchase inputs cheaply
 - other (specify).....

C. Fishing ban and food security

1. Fish trading forms my major source of income
Strongly disagree ☐ Disagree ☐ I don't know ☐ Agree ☐ strongly agree ☐
2. Fish trading is essential for my household to be food secure
Strongly disagree ☐ Disagree ☐ I don't know ☐ Agree ☐ strongly agree ☐

D. Fishing ban: Knowledge and awareness

1. Are you aware that there is an annual fishing ban? ☐ Yes ☐ No
2. Can you give the purpose of the annual fishing ban?
 - For the government to make money out of us. ☐
 - To stop us from being fish traders and fishermen ☐
 - To protect fish stocks for the future ☐
 - It has no purpose at all ☐
 - Other (specify).....

E. Impact on food security

1. The annual fishing ban has increased my household food security

2. In case the Annual Fishing Ban does not increase your household food security, what could be the reasons?

i).....
.....

ii).....
.....

iii).....
.....

(Maximum of 3 reasons) Please indicate which ones are the most important.

3. In the case that the AFB has increased household food security, what could be the reasons? (Indicate the 3 most important ones)

i).....
.....

ii).....
.....

iii).....
.....

4. How has the AFB influenced your usual way of living?

i).....
.....

ii).....
.....

iii).....
.....

F. Coping and coping strategies

(i) Reactive coping

1. What coping strategies does your household employ during the annual fishing ban?

i).....
.....

ii).....
.....

iii).....
.....

iv).....
.....

(Indicate which ones are the most important)

(ii) Preventive coping

2. What coping strategies does your household employ before the annual fishing ban to reduce the impact of the ban on household food security?

-trade in other goods ☐

-start a home garden ☐

-start cultivating ☐

-continue selling fish ☐

3. My household's coping strategies during the annual fishing ban ensures that my household is food secure.

Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree ☐

4. In anticipation of the annual fishing ban, the coping strategies employed ensures that my household is food secure.

Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree ☐

5. What do you think the government (Department of Agriculture) should do for your household to be food secure and lessen the impact of the annual fishing ban?

(Indicate your 3 most important reasons)

i).....
.....

ii).....
.....

iii).....
.....