

**FISHING BY THE LAMP: *CHISENSE* FISHING IN MWERU-
LUAPULA FISHERY, 1975-2010**

BY

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the Requirements for the Degree of Master of Arts in History

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DECLARATION

I, Chola Mwaba, declare that this dissertation

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APPROVAL

This dissertation by Chola Mwaba, is approved as partial fulfilment of the requirements for the award of the degree of Master of Arts in History by the University of Zambia.

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ABSTRACT

Fishing is an important human activity which has for a long time attracted and supported human settlement. In Mweru-Luapula, fishing was accepted by fishermen as an important source of income after 1920. The quantities of fish caught and sold assumed much importance. Therefore, the exposure of the fishing population to the money economy gradually changed fishing from a subsistence activity to a dependable regular source of income. This development resulted in thousands of tons of fish being caught which in turn led to a noticeable decline in the number of the commercially important fish species in the 1960s forcing people to exploit the formerly unexploited pelagic fish species such as *chisense* (*Microthrissa Moeruensis*). The word *chisense* simply means the small fishes which move in a large shoal as there are drifted by wind. The commercial value of exploitation of *chisense* became more apparent in the mid-1970s and was made possible by use of light from a lamp.

The study demonstrates that *chisense* fishing on a commercial basis started in 1975 to replace demersal fishing, though the latter type of fishing has continued on a much diminished scale. Fishing by the lamp was identified as one of the advanced and successful means that could be employed to catch and increase landings of pelagic fish species. Abundant catches of *chisense* led to improved wellbeing of people in the fishery since it could be purchased in smaller quantities especially for poor consumers. The high catch also facilitated all manner of business activities which had not been the case before. The fishery continued to employ more fishers and traders (the majority of whom were women) compared to the traditional bream fishery. The study concludes that between the 1970s and 2010 *chisense* fishing became an important source of protein for the local and urban inhabitants as well as an important avenue for a continuous flow of money into the Mweru-Luapula fishery. The income realised from *chisense* fishing greatly contributed to

improved living standards in local communities and in particular, among the fishermen and members of their families.

DEDICATION

I dedicate this piece of work to my late father, Joseph Mwaba, my mother Annie Mwaba and all my brothers, Manasseh Mwaba, Moses Mwaba, Joseph Mpundu Mwaba, Chishala Mwaba and my only sister Precious Mwaba for their support and encouragement.

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ABBREVIATIONS

| | |
|------------|--|
| AIDS..... | Acquired Immune Deficiency Syndrome |
| AR..... | Annual Report |
| CSO..... | Central Statistics Office |
| DC | District Commissioner |
| DoF..... | Department of Fisheries |
| DRC | Democratic Republic of Congo |
| FAO..... | Food and Agriculture Organisation |
| GDP..... | Gross Domestic Product |
| HIV..... | Human Immunodeficiency Virus |
| LFZ | Lakes Fisheries of Zambia |
| NAZ | National Archives of Zambia |
| NEAP..... | National Environmental Action Plan |
| PLARD..... | Programme for Luapula Agricultural and Rural Development |
| TNDP..... | Third National Development Plan |
| ZFMU..... | Zambia Fisheries Marketeers Union |

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LIST OF PLACES

A. Names of Towns

| Old | New |
|--------------------|------------|
| Abercorn | Mbala |
| Broken Hill | Kabwe |
| Fort Jameson | Chipata |
| Salisbury | Harare |

B. Names of Countries

| Old | New |
|--|------------------------------------|
| Congo Leopoldville/Congo Kinshasa/Zaire..... | Democratic Republic of Congo (DRC) |
| Northern Rhodesia | Zambia |
| Nyasaland..... | Malawi |
| Southern Rhodesia..... | Zimbabwe |

Introduction and Historical Background

Mweru-Luapula fishery is a riverine area lying between Zambia's Luapula Province and the Democratic Republic of Congo's (DRC) Katanga region. Lake Mweru is a large shallow lake into which the Luapula River drains from the swamps of Bangweulu. It is some 120 kilometres (km) long and 40 to 50 kilometres wide (a total area of 4. 650km²).¹ The full name of the Lake is Mweru *Mukata Mukandanshe* which in the local *Chibemba* means "the great wide expanse of water which the locusts cannot cross".² This shows how wide or vast the lake is. Mweru-Luapula is an open fishery which brings people from different places together especially those interested in fishing. It is for this reason why people from different ethnic backgrounds interested in fishing are found along the Mweru-Luapula fishery. However, there are only three major ethnic groups that inhabit the fishery – the Bwile to the North, the Shila in the middle and the Lunda to the South.³ Therefore, we can safely note that fishing has been an important human activity which has for a long time attracted and supported human settlement. It is not only important because of its economic and nutritional value, but also that in historical times, fisheries played an important role in shaping the destinies of societies.⁴

During the period between 1920 and 1964, the Mweru-Luapula fishery became an important source of smoked and fresh fish to feed the urban population on Northern Rhodesia's Copperbelt. The growth and development of the fishing industry attracted the flow of money

¹ David Gordon, 'Growth without capital: A Renascent Fishery in Zambia and Katanga, 1960s to Recent Times', *Journal of Southern African Studies*, 31, 3 (Sep., 2005), p.499.

² Mwelwa Chambika Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula 1920-1964', PhD Thesis, University of Wisconsin-Madison, 1981, p.28.

³ M.C. Musambachime, 'Rural Political Protest: The 1953 Disturbances in Mweru-Luapula', *The International Journal of African Historical Studies*, 20, 3 (1987), p.439.

⁴ Joshua Chilonge, 'Poverty in the Midst of Abundance: The Case of Fishermen of Samfya District, 1935-1970', MA Dissertation, University of Zambia, 2011, p.1.

to the fishery.⁵ Therefore, fishing became a way of life of the people of the fishery with an established division of labour. While men were involved in demersal fishing, women were involved in pelagic fishing especially in smaller streams. It is worth to note that fishing was the main occupation of the people of the fishery. It was both a source of livelihood providing relish (*umunani*) eaten with *nshima* (a thick porridge made from cassava, maize or millet meal) which formed the staple for the people and income earned from the sale of fish.⁶

The fishing industry developed out of a haphazard beginning to feed the urban workers of Katanga. The mining company in Katanga – *Union Minière du Haut Katanga* wanted to ensure a steady supply of fish to its workers thus, it entered into a contract with the *Compagnie d'Élevage et Alimentation du Katanga* (ELAKAT) to be their supplier of fish from Mweru-Luapula. In turn, ELAKAT entered into contracts with European traders to deliver fresh, smoked and dried fish on a regular basis. There was increased demand for fish during the Second World War and this development contributed to an increase in the tonnage of fresh fish from 998 in 1939 to 1500 in 1941 and to 3500 tons in 1942.⁷ This eventually made the Mweru-Luapula fishery the single most important source of fish in Katanga.

By 1952 fishing and trade in fish in Mweru-Luapula had developed into a viable rural industry attracting a steady flow of money and capital to the fishery. The fishing industry in Mweru-Luapula fishery offers an excellent opportunity to study it and its attendant socio-economic changes on a micro level.⁸ This is because Mweru-Luapula is an important fishery supplying a large proportion of fresh and dried fish sold on the Copperbelt and in the Democratic Republic of Congo. Besides fishing, the people of the fishery were also engaged

⁵ Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula 1920-1964', p.1.

⁶ Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula', p.39.

⁷ M.C. Musambachime, 'The Role of Kasenga (Eastern Shaba) in the Development of Mweru-Luapula Fishery', *African Studies Review*, 38, 1 (April 1995), p.59.

⁸ Musambachime, 'Development and Growth of the Fishing Industry', p.5.

in agriculture. Agriculture went hand in hand with fishing; this is because in times of fish scarcity fishermen could depend on farming for sustenance.

Fishing was not an easy occupation at all. It required great skill in handling the boat, a thorough knowledge of the fish species, their habitat, feeding and spawning habits. A fisherman was required to know the locality in which he was fishing; the different types of winds, their names, direction from which they blew and whether they were stormy winds or not.⁹ This knowledge enabled the fishermen to know when to go fishing and the direction to use. The knowledge of the winds enabled fishermen to cast their fishing nets in a direction that would enable them to catch fish. This is because some fish species move according to the direction of the wind while others oppose the wind direction.

Since time immemorial, fishing was a whole year round activity until 1986 when the fish ban was introduced. The Department of fisheries was empowered by CAP 200 (1974) to institute a fishing ban to a fishery faced with over-fishing or any danger that could lead to the reduction of fish. The fish ban which covers the period between 1st December to the end of February is instituted annually in order to allow fish to increase in quantity, grow and breed and also to give time to finger-lings of fish to pass the vulnerable stage.¹⁰ After the introduction of the fish ban, fishing became limited to nine months – March to November each year. The rationale for the fish ban is that although fish breeds throughout the year, conditions are more ideal for breeding during this period and as such there should be minimum disturbance on the fish stocks emanating from fishing activities.¹¹

⁹ Musambachime, 'Development and Growth of the Fishing Industry', p.39.

¹⁰ Dennis M. Mulikelela and Evelyn M. Mbulo, Fishing Conservation in Zambia: Knowledge, Attitude and Practice of Fishermen/women Towards the Fish Ban Policy. The Case of Kashikishi, Nchelenge Fishing Villages of Mweru-Luapula Fishery (for the Ministry of Environment and Natural Resources), December, 1999, p. 12

¹¹ Department of Fisheries (DoF), Mweru-Luapula Fishery Artisanal Frame Survey, July 2013. p.10.

As a way of reacting to the fish ban, fishermen during this period involved themselves in some farming activities. They grew crops such as cassava and maize which they sold for cash and part of it was kept in granaries for subsistence. This improved their livelihood by improving food security. However, some fishermen would go against the fish ban policy by sneaking at night to catch some fish. This was mainly because fish provided the people's daily relish.

By the 1930s the fishing industry had transformed what was economically a neglected area into one of the most developed rural areas of Zambia. The money accrued from fishing activities gave the communities and traders opportunity to develop the desire to save, invest in retail business, and build better brick houses.¹² The fishing industry enabled the people of the fishery to lead a much higher standard of life than their neighbours on the plateau. Therefore, to the people of the fishery, fishing was a source of income.¹³ Additionally, P. N. B. Jackson in his study the *Fishes of Northern Rhodesia*, also observes that fish in terms of hard cash are a valuable resource and have the great and growing contribution to make to the bringing of money in the country.¹⁴ Therefore, fishing has been one of the country's most valuable resources. Fish provides the people with the essential protein component of their diet.

Before the development of the commercial fishing industry, fishing had largely been for consumption. The quantities of fish caught by fishermen were small which could only feed a few households for a few days. After 1920 when fishing became accepted by fishermen as a source of income, the quantities of fish caught and sold assumed importance, for it

¹² Musambachime, 'Development and Growth of the Fishing Industry', p.4.

¹³ Mabilia Eric Kashimani, 'Constraints on the Growth of the Fishing Industry in Western Province, 1924-1964', MA Dissertation, University of Zambia, 1987, p.3.

¹⁴ P.N.B. Jackson, *The Fishes of Northern Rhodesia: A Checklist of Indigenous Species* (London: Unknowing Binding, 1961), p.IX.

determined the amount of income a fisherman earned. Therefore, with the development of the fishing industry and the exposure of the local population to the money economy, fishing gradually changed from a subsistence activity into a dependable regular source of income.¹⁵ The development of the fishing industry increased the flow and circulation of money specifically in the fishery and Luapula Province generally. This eventually attracted a number of people into the fishing industry, thereby creating pressure on the commercially important fish species leading to their depletion. This development resulted in thousands of fish being caught before they spawned and by 1930, this had contributed to a noticeable decline in the number of the commercially important species such as the *mpumbu* and others.¹⁶ The decline in the bigger fish species made people to start exploiting the pelagic fish species of the fishery such as *chisense*.

In the 1960s, synthetic gillnets were introduced which meant a rapid rise in fish yields. Good catches became attractive for many people such that by the 1970s the number of fishermen had risen up to 6,000 from 2,000 ten years earlier.¹⁷ Therefore, fishing became an economic activity and important source of livelihood. Retired and retrenched miners from the Copperbelt entered the fishery and were partly responsible for a considerable increase in the number of fishers. A number of these miners entered the fishery as gear owners.¹⁸ Since fishing attracted many people, there was considerable pressure on the commercially important demersal species of the fishery. During the 1960s and 1970s a decline was

¹⁵ Musambachime, 'Development and Growth of the Fishing Industry', pp.206-207.

¹⁶ Musambachime, 'Development and Growth of the Fishing Industry', p.207.

¹⁷ Hannu Molsa, 'Fisheries Management Plan for Mweru-Luapula, Zambia. Programme for Luapula Agricultural and Rural Development (PLARD)', Fish Innovation Centre, 2 December 2009. p.5.

¹⁸ Kees (P.C) Goudswaard, *A Dynamic Fishery in Zambia: A Case of Change in the Mweru-Luapula Fishery. Report of the Frame Survey in 1997*, SNV Netherlands Development Organization, April 1999. p.8.

witnessed in the catches of *mpumbu* and *pale* in the Mweru-Luapula fishery.¹⁹ This eventually resulted in the shift to pelagic fishing

Fishing in the Mweru-Luapula fishery was characterised by a number of artisanal fishers who harvested fish mainly for sale (84% of annual yield was sold; 16% was consumed in the home households). The artisanal fishery was characterised by extensive usage of canoes and plank boats.²⁰ Thus, fishing was clearly a commercial activity rather than for subsistence from the time it was accepted as a source of income after 1920. Therefore, in terms of income generation, economic value and profitability, fishing was of paramount importance.²¹ It is also important to note that fishing was also used in these areas as an alternative source of income and food security.²²

From the time ethnic groups started living in the fishery, they traded some of their catch for agricultural produce, pottery and many other goods among themselves and with their neighbours. Fish, therefore contributed to the development of trade between the riverine communities which caught fish and agricultural communities which grew crops. Fish used to be an item of the last resort and shield that prevented starvation among the people in the riverine areas.²³ Therefore, the availability of dependable income from the sales of fish and agricultural produce enabled the people of the fishery to transform their social and economic lives gradually.²⁴ Changes also began to take place in the living habits of the people especially after the 1920s. They adopted the great desire for European goods such as furniture

¹⁹ Brian Verelst, 'Managing Inequality: the Political Ecology of Small-scale Fishery, Mweru-Luapula, Zambia', *Journal of Political Ecology*, 20 (2013), p.20.

²⁰ Southern African Development Community (SADC), *Towards A Common Future, SADC Fisheries Fact Sheet: Focus on the Zambian Fisheries Sector*, 1, 2 (April 2016), p.2.

²¹ Molsa, 'Fisheries Management Plan for Mweru-Luapula', p.18.

²² Chilonge, 'Poverty in the Midst of Abundance,' p. V.

²³ Chilonge, 'Poverty in the Midst of Abundance', p.40.

²⁴ Musambachime, 'Development and Growth of the Fishing Industry,' p.150.

and many others. Musambachime observed that this eventually led to another form of affluence which was seen in the rapid proliferation of small shops in the fishery where they sold what were becoming some necessary necessities such as salt, soap and a few clothes.²⁵

Between 1963 and 1988, Zambia registered a phenomenal increase in human population from 3,490,170 to an estimated population of 7,500 000 at an annual growth rate of 3.7 per cent.²⁶

To meet the increasing demand for fish as a consequence of rapid population growth, excessive fishing became common usually by employing bad fishing methods such as the seine and drag nets with either small or graduated mesh enabling fishermen to catch all sizes of fish leading to the depletion of the *mpumbu* and *pale*.²⁷ Mulikelela and Mbulo also observes that the major threat to sustainable fish production in Zambia is overfishing caused by the ever growing numbers of fishermen that exert pressure on many fisheries due to excessive fishing and the use of bad fishing methods.²⁸

A rapid increase in the human population has been a major reason causing the exploitation of formerly unexploited pelagic fish species of African lakes such as *Microthrissa Moeruensis* locally known as *chisense*. The word *chisense* simply means the small fish which move in a large shoal as if it is being drifted by wind.²⁹ *Chisense* are small lake sardines that live in

²⁵ Musambachime, 'Development and Growth of the Fishing Industry', p.152.

²⁶ M. C. Musambachime, 'Population growth, the Environment and Problems of Conservation in Zambia', in Sumaili *etal*, (eds.) *Population Growth and the Environment: Proceedings of the 10th PWPA Conference Eastern, Central and Southern Region, Held at Livingstone, Zambia, July 1989* (Lusaka: Professor of World Peace Academy, 1990), p.42.

²⁷ Musambachime, 'Population growth, the Environment and Problems of Conservation in Zambia', p.46, and David Gordon, 'Growth without capital: A Renascent Fishery in Zambia and Katanga, 1960s to Recent Times', *Journal of Southern African Studies*, 31, 3 (Sep., 2005), p.503.

²⁸ Mulikelela and Mbulo, *Fish Conservation in Zambia: Knowledge, Attitude and Practice of Fishermen/Women towards the Fish Ban Policy*, pp.17-18.

²⁹ C. K. Kapasa, and P. M. A. Van Zwieten, 'Preliminary on the Fishery and Biology of the *Chisense* Complex (*Pocillothrissa Moeruensis*, *Neobola Moeruensis*) of Lake Mweru-Luapula (Zambia) including notes of the feeding of the Species of the By-catch', p.1.

large shoals in the upper layers of its open waters.³⁰ The exploitation of the small pelagic fish of Mweru-Luapula a complex known as *chisense* and their commercial value became more apparent in the 1970s. In the early 1970s a new dip net fishery with light attraction on a small pelagic fresh water clupeid (*chisense*) – a species reaching a maximum size of 5cm started which is now the most important fishery in terms of production.³¹

Chisense was first witnessed in the 1970s by women who were washing dishes in the lake. They started using pieces of cloth to catch *chisense* which was prepared as extra relish to accompany the cassava porridge eaten by their families. However, due to the increasing amount of fish and the ease of capture they began to dry the fish and use them for barter and trade.³² As their profitability became more apparent, men became involved in their capture. Enterprising fishers from Luapula with some capital acquired from salaried employment adopted the technique used on Lake Tanganyika to catch *kapenta* (*Stolothrissa tanganicæ*) to catch *chisense*.³³ It can be noted that *chisense* and *kapenta* fishing use the same fishing technique and they are both caught through the use of the lamp. Fishing by the lamp is a method where light is used to attract the fish. The use of artificial lights for attracting fish and increasing catch is a common practice in the world fisheries. It has been regarded as one of the most advanced, efficient and successful methods for capturing the sardines.³⁴

The *chisense* fishery is now widespread all over the lake and throughout the Luapula River. It has become one of the major fisheries both in terms of production and labour input. Prior to

³⁰ Verelst, “Managing Inequality: the Political Ecology of a Small-scale fishery, Mweru-Luapula, Zambia”, p.22.

³¹ J. Kolding and P.A.M. Van Zwieten, ‘Sustainable Fishing of Inland Waters’, 73, 51 (2014), p.140.

³² Gordon, ‘Growth without Capital: A Renascent Fishery in Zambia and Katanga, 1960s to Recent Times’, p.504.

³³ Gordon, ‘Growth without Capital’, p.504.

³⁴ Solomon Oluniyi Ogunola, and Onada Olowale Ahmed, ‘Fishing with Light: Ecological Consequences for Coastal Habitats’, *International Journal of Fisheries and Aquatic Studies*, 4 (2), 2016. p.474.

1974 *chisense* appeared to be restricted to the northern part of the lake and at that time was not considered worthy of exploitation. However, in the following year fishing increased along the north-eastern shore line adjacent to an extensive area of the deep water (20-30m). Today *chisense* is caught along the whole shore line between Mpweto in the north and Chisenga Island.³⁵ The *chisense* fishery became increasingly important in the Mweru-Luapula fishery because of its high reproductive turn-over in light of the decreasing catch per unit effort of other traditional fish (especially the breams). The fishery has continued to employ more fishers and traders (the majority of whom are women) compared to the traditional bream fishery.³⁶

Around the Puta area *chisense* was caught by fishermen who had abandoned catching the demersal fish species.³⁷ This was mainly because the status of *pale* (*Sarotherodon Macrochir*) population which had been declining in recent years showed no noticeable improvements during the year 1974.³⁸ This eventually led to the shift by fishermen to pelagic species in 1975. Like in Bangweulu, *chisense* fishing took the place of gill net fishing and were exploited in most fishing villages between Mulundu and Puta.³⁹ It is also important noting that *chisense* fishing can be traced from 1975 and it was at its peak along the Luapula river sector during the same period.⁴⁰

The rise of the *chisense* fishing throughout the 1970s and the early 1980s is an example of the adaptability of the Mweru-Luapula fishing population as a consequence of its ecological resilience. This is because the people of the fishery quickly moved to pelagic fishing

³⁵ DoF, Annual Report 1983, pp. 48-49.

³⁶ Ng'onga Musonda, 'The Reproductive Biology of *Mesobola Brevianalis* Bouleger, 1908 and *Barbus Trimaculatus* per 1852 in the Lake Bangweulu Fishery', Msc. University of Zambia, 2010, p.1.

³⁷ DoF, Monthly Report REP/5/2. September, 1976. p.2.

³⁸ DoF, Annual Report, 1974, p.25.

³⁹ DoF, 1st Quarterly Report 1977, p.5.

⁴⁰ DoF, Monthly Report, December 1976, p.3.

immediately after the decline in the demersal fish species. What makes *chisense* special is its incredible resilience to high exploitation levels, caused by its extremely high turnover rate.⁴¹ It is important to note that traditionally, *chisense* was initially caught for subsistence needs in shallow waters close to the sandy shores by women using small seine nets or even clothing. The increasing numbers of *chisense* and the ease of capture gradually led women to drying the fish and selling it locally. The commercial potential of *chisense* was high on both sides of the fish chain. It was easy to catch and process, it was plenty and the urban markets demanded a large supply of cheap fish.⁴² This made *chisense* ideal because it was cheaper compared to other varieties of demersal fish species such as bream (*pale*), hump-backed bream (*intembwa*) and armored catfish (*mpifu*).

The commercial potential of *chisense* attracted entrepreneurs to start using a more capital-intensive method of *chisense* fishing by means of paraffin lamps to attract the sardines by night and small meshless material to drag the fish.⁴³ The paraffin lamps became very important in *chisense* fishing because they provided the much needed light to attract the sardines. Without the lamps, *chisense* fishing was practically impossible to conduct, hence the phrase in the title of this study “Fishing by the Lamp” simply because *chisense* fishing hinges greatly on artificial light from the lamp. The light fishery on *chisense* was estimated to produce 25,000-45,000 tonnes per year, far exceeding the production of all previous and present fisheries of Mweru-Luapula.⁴⁴

⁴¹ Verelst, ‘Managing Inequality: the Political Ecology of a Small-scale fishery, Mweru-Luapula, Zambia’, p.22.

⁴² Verelst, ‘Managing Inequality: the Political Ecology of a Small-scale fishery’, p.22.

⁴³ Verelst, ‘Managing Inequality: the Political Ecology of a Small-scale fishery’, p.22.

⁴⁴ P.A.M. Van Zwieten, P.C. Goudswaard and C.K. Kapasa, ‘Mweru-Luapula an Open Exist Fishery where highly dynamic population of fisheries make use of a Resilient Resource’, FAO Fisheries Technical Paper 426/2, Management, Co-management or no management? Major dilemmas in Southern African freshwater Fisheries, p.1.

Chisense fishing using a lamp emerged in the late 1970s in the central and northern part of Lake Mweru while other fishers were still targeting bream in the gill-net fisheries.⁴⁵ It expanded rapidly beginning in 1981 and spread to the whole lake by 1983. Much of the *chisense* production was initially exported to Democratic Republic of Congo, due to its low demand in Zambia. Fishermen only began paying attention to such small and ‘useless’ fish when the favoured ones became scarce.⁴⁶ From the start, *chisense* fishing was perceived as a useless venture by fishermen since their main focus was on the commercially important demersal fish species. However, this perception changed when the fishermen realised that the catches of *chisense* were more than that of the demersal fishing since *chisense* was easily attracted to light. Therefore, it can be stressed that *chisense* fishing was made possible through the use of the lamp.

Historically, the source of light has changed with centuries. It began with artificial light in form of fire lit at the beach which has been used for thousand years when man discovered that some fish were attracted to light.⁴⁷ As time went by, fishermen began fishing at night using the flame of the dry *mwenge* branches or wood set at the bow of the canoe to attract fish.⁴⁸ The fish was then driven into the nets by beating the water (*ukutumpula*). Later on the use of fuel oils; kerosene gas was introduced. A number of countries such as Hawaii, the Philippines, Indonesia, Ghana and Zambia and many others use this method of light fishing.

Light fishing involves the use of lights attached to some square floater above water to attract fish to specific areas and facilitate harvesting. This practice has been in existence since the 1920s and described to be very effective in fresh water for catching and increasing landings

⁴⁵ Molsa, Fisheries Management Plan for Mweru-Luapula, p.10.

⁴⁶ Peter B. Hayward, Evaluation Report on Feeder Roads for Fishery Development, submitted to Canadian International Development Agency, April 1986. p.50.

⁴⁷ Ogunola and Ahmed, ‘Fishing with Light’, p.474.

⁴⁸ Musambachime, ‘Development and growth of the Fishing Industry’, p.140.

of single and shoaling pelagic fish species.⁴⁹ In 1975 light fishing was intensive around Kafulwe fishing camp. It was reported that tilley lamps were being used to attract *chisense* just along the shore line.⁵⁰ In the same year, light fishing to catch *chisense* was also initiated at Mununga using small beach seines of mosquito mesh.⁵¹ It can be emphasised that fishing by the lamp as a technique using mosquito netting material was made in a similar manner as the Kapenta nets of Lake Tanganyika. The fishermen reported good catches at 03 to 05 hours.⁵² But this does not imply that they did not catch anything during the night hours until in the morning. Light fishing has been a good means and efficient way of obtaining adequate catches of the lake sardines. The fishermen usually worked between 14-21 nights per month for eight to twelve hours per night. It is important to note that since its inception in 1975, *chisense* fishing has been ongoing alongside the demersal fishing and has been a source of livelihood for most people of the fishery and other beneficiaries in urban areas. The study covers the period from 1975 when *chisense* fishing began to 2010 when the fishery recorded its highest catch.

Statement of the Problem

In the study of the growth and development of the fishing industry in Zambia specifically the Mweru-Luapula fishery, much emphasis has been on demersal fishing of species such as the bream, rednose labeo (*mpumbu*), tilapia, tiger fish among others and its socio-economic impact on the people associated with it. Previous studies have not shown how a rapid increase in human population has been one of the major drivers of the exploitation of formerly unexploited pelagic fish species such as *chisense*. *Chisense* fishing has never been regarded or considered as a viable rural industry by earlier scholars such as Mwelwa Musambachime

⁴⁹ Ogunola and Ahmed, 'Fishing with Light', p.474.

⁵⁰ DoF, Monthly Report for April 1976. p.3.

⁵¹ Hayward, Evaluation Report on Feeder Roads for Fishery Development, p.50.

⁵² DoF, Monthly Report, PFDOLP/REP/5/2 August, 1975.p.3.

and Joshua Chilonge among others. This oversight has created a wide gap in the understanding of the socio-economic history of the Mweru-Luapula fishery. It is the aim of this study to narrow this gap and enable scholars to appreciate the importance of *chisense* fishing and its contribution to the socio-economic history of the fishing industry in Luapula Province.

Objectives of the study

The overall objective of the study was to examine *chisense* fishing in the Mweru-Luapula fishery.

The specific objectives of the study were as follows:

- i. examine the origins and development of *chisense* fishing in Mweru-Luapula fishery,
- ii. analyse the role played by fishermen, women and fish traders in *chisense* fishing and
- iii. examine the socio-economic impact of *chisense* fishing in Luapula Province.

Rationale

While most previous studies have investigated the benefits and importance of the fishing industry in line with demersal fishing in the Luapula Province of Zambia, this study investigates the origins, development and impact of *chisense* fishing in the Mweru-Luapula fishery. The study will contribute to understanding how pelagic species such as *chisense* have contributed to the development of the Mweru-Luapula fishing industry. The study will also contribute to the socio-economic history of *chisense* fishing in Mweru-Luapula and lastly it is hoped that the study will arouse interest among other scholars to look at other pelagic fish species elsewhere in Zambia.

Literature Review

A number of scholars such as Mwelwa Musambachime, Joshual Chilonge, and Eric Kashimani, among others, have contributed greatly to the history of the growth and development of the fishing industry in Zambia and its socio-economic impact. The works include dissertations, books and journal articles. However, these works focus much on demersal fishing and make little mention of pelagic fishing (*chisense* fishing). Despite this, these sources are still significant to this study as they provide background information regarding the origins and development of the fishing industry in Zambia.

M.C. Musambachime's work, 'Development and Growth of the Fishing Industry in Mweru-Luapula', gives background information regarding the growth and development of the fishing industry in Mweru-Luapula from 1920 to 1964. This work shows how fishing became an important rural industry leading the people of the fishery to be incorporated in the colony's money economy. Musambachime's work focuses much on demersal fishing and its role in the development of the fishery. This work provides insights on the fishing gears that were used and how they helped to transform the lives of the people of the fishery.

Musambachime's work also observes that the fishing industry increased the flow and circulation of money in the fishery. This eventually attracted many people to the fishing industry thereby leading to pressure on the commercially important fish species. This resulted in the depletion of the demersal fish species thereby forcing people to start exploiting the previously unexploited smaller fish species such as *chisense*. Musambachime's work further observes that in 1960, there was a reduction in the catch indicating a sharp decline in the population of bream.⁵³

Musambachime's work notes that the development of the fishing industry brought about a number of changes in the household. Before the commercialization of the industry, the role of

⁵³ Musambachime, 'Development and Growth of the Fishing Industry', p.273.

women was confined to collecting the fish from the river, cooking and smoking it. After 1922, women began participating in the industry bartering cassava meal and other food stuffs for fish which they smoked and sold to traders or recruiting agents.⁵⁴ On the contrary, this study seeks to show that women in *chisense* fishing did not only end on selling fish to the traders but also embarked on transporting it from the Mweru-Luapula fishery to urban centres. Women played a crucial role regarding the development of *chisense* fishing. Unlike demersal fishing which entirely depended on men, the thriving of *chisense* fishing greatly depended on both men and women.

Musambachime's article 'Rural Political Protest: The 1953 Disturbances in Mweru-Luapula' is also crucial to our understanding of the major fish species found in the Mweru-Luapula fishery. Musambachime observes that there are 119 species of fish of which 20 were of commercial importance. Among these are the Luapula Salmon (*Labeo altivelis*) locally called *Mpumbu*, bream (*Saratherondon macrochir*) popularly known as *pale* and tiger fish (*Hydrocyon Vittatus*).⁵⁵ This work also provides information regarding the major ethnic groups that inhabit the Mweru-Luapula fishery. These are the Bwile to the North; the Shila in the middle and the Lunda to the south whose main occupation was fishing.⁵⁶ These ethnic groups were greatly involved in demersal fishing and also witnessed the ushering in of *chisense* in the mid-1970s.

Musambachime's chapter, 'Population growth, the Environment and Problems of Conservation in Zambia' provides information on how population increase eventually led to the depletion of commercially important fish species thereby leading to the exploitation of *chisense*. This work notes that fish from the Zambian lakes was far below par to meet the

⁵⁴ Musambachime, 'Development and Growth of the Fishing Industry', p.145.

⁵⁵ M.C. Musambachime, 'Rural Political Protest: The 1953 Disturbances in Mweru-Luapula', *The International Journal of African Historical Studies*, 20, 3 (1987), p.439.

⁵⁶ Musambachime, 'Rural Political Protest', p.439.

high demand for fish by the ever growing population. Therefore, to meet the increasing demand, excessive fishing was undertaken usually employing bad fishing methods such as seine and drag nets with small mesh enabling the fishermen to catch all sizes of fish leading to the depletion of some species such as the Luapula salmon and bream.⁵⁷ This gradually made the people of the fishery to turn to the lake sardines.

Additionally, Musambachime's article, 'The Role of Kasenga (Eastern Shaba) in the Development of Mweru-Luapula Fishery', notes information on how mining in Katanga created the need for fish from the Mweru-Luapula fishery. Katanga provided a ready market thus the people of the fishery transported increasing quantities of foodstuffs and fish there for sale. Musambachime further notes that there was high demand for fish during the Second World War and this development contributed to an increase in the tonnage of fresh thereby making Mweru-Luapula fishery the single most important source of fish in Katanga. This trade link has been on-going since then. This explains why there has been continuous transportation of fish including *chisense* from the Mweru-Luapula fishery to the Democratic Republic of Congo (DRC) even in the recent past.

The work by the Food and Agriculture Organisation (FAO), 'Fisheries Management for Marine Protected areas and Fisheries' examines the value of fish and also how bad fishing gears lead to fish depletion. This work further observes that the dramatic increase in abusive fishing techniques worldwide and illegal unreported and unregulated fishing activities lead fish stocks to decline often at alarming rates.⁵⁸ This work informs the present study in that *chisense* fishing emerged due to the decline in commercially important demersal fish species

⁵⁷ Musambachime, 'Population growth, the Environment and Problems of Conservation in Zambia', p.46.

⁵⁸ FAO, *Fisheries Management for Marine Protected areas and Fisheries. FAO Technical Guidelines for Responsible Fisheries* (Rome: FAO, 2011), p. XIII.

caused mainly by population pressure which eventually saw the use of bad fishing methods in order to maximise on the catch.

Greboval, Bellemans and Fryd's work observes that in the 1950s and 1960s catches from Mweru-Luapula were dominated by *O. Macrochir* and *Labeo altivelis*. Over the years, catch rates in the demersal gillnet fishery fell drastically and this ushered in the development of a new pelagic fishery based on *chisense*. This work is important because it provides background information to the development of *chisense* fishing. This study observes that landings of *chisense* are still largely unreported in official data.⁵⁹ The present study investigates the landings of *chisense* and examines the socio-economic importance of *chisense* to the people of the fishery.

The work by C.K. Kapasa and P.A.M. van Zwieten is very important to this study in that it provides the background information on the origins of *chisense* fishing in Mweru-Luapula fishery. The two argue that a rapid increase in human population has been a major reason causing the exploitation of formerly unexploited pelagic fish species of African lakes such as *chisense*.⁶⁰ The information is vital in tracing the origins of *chisense* fishing in the Mweru-Luapula fishery. However, in this work the two did not assess the socio-economic impact of *chisense* fishing in the lives of the people of the fishery and the fishing industry at large. Since *chisense* fishing touches most of the important aspects of community life along the fishery such as the timber sowers, paraffin and petro sellers, marketers' and those in the transportation business, it is important that its impact is assessed. Establishing this link will enable scholars and many people to appreciate the impact of *chisense* fishing and its overall contribution to the thriving of the fishing industry in the Mweru-Luapula fishery.

⁵⁹ D. Greboval, *etal*, *Fisheries Characteristics of the Shared Lakes of the East Africa Rift* (Rome: FAO, 1994), p.45.

⁶⁰ Kapasa and Van Zwieten, 'Preliminary on the Fishery and Biology of the *Chisense* Complex', p.1.

Bram Verelst's article, 'Managing Inequality: the Political Ecology of a small-scale fishery, Mweru-Luapula, Zambia', also provides the background information to the fishing industry in the Mweru-Luapula fishery. It provides details on the rise of *chisense* fishing in Mweru-Luapula fishery. Verelst's work observes that the commercial potential of *chisense* was due to the fact that it was not only easy to catch and process, but also that the urban markets demanded a large supply of cheap fish.⁶¹ This work observes that the commercial potential of *chisense* attracted entrepreneurs who started using a more capital-intensive method of *chisense* fishing by means of paraffin lamps to attract the lake sardines by night and small mesh or meshless material to drag the fish.⁶² Verelst's work also provides information on processing of *chisense* which was usually done by women.

Annear's work provides the geographical location of the Mweru-Luapula fishery. This work also provides information on the origins of *chisense* fishing in Mweru-Luapula. It was observed that labour in the Mweru-Luapula was divided based on gender, age and gear ownership.⁶³ As men and boys dominated the occupation of fishing and gear ownership, local fish trading became the domain of women and girls. Annear's work observes that even married women whose husbands had stable employment as teachers, farmers or civil servants also worked as traders to supplement household income.⁶⁴ This is also the focus of the present study as it discusses the role of women in *chisense* fishing.

David Gordon's work is also very important regarding the understanding of the socio-economic impact of *chisense* fishing. This work gives the background geographical information of Mweru-Luapula fishery. Gordon's work also provides information regarding

⁶¹ Verelst, 'Managing Inequality', p.22.

⁶² Verelst, 'Managing Inequality', p.22.

⁶³ Christopher M. Annear, 'Navigating Constriction Channels: Local Cooption, Coercion and Concentration under co-management, Mweru-Luapula Fishery, Zambia', *Journal of Political Ecology*, 16 (2009), p.40.

⁶⁴ Annear, 'Navigating Construction channels', pp. 40-41.

the origins of *chisense* fishing and some of its socio-economic impact. He points out that between 1990 and 2000 the Zambian districts of Nchelenge and Chiengi where fishing was most profitable experienced some of the highest population growth rates in all of Zambia.⁶⁵ This study is also cardinal because it touches on the role of women in *chisense* fishing which is one of the themes to be addressed in the present study. Gordon observes that the most profound effect of the *chisense* fishery was the formation and support of female fish traders and eventually gear-owners. Therefore, through *chisense* fishery, women were drawn into a money based commercial economy.⁶⁶

Gordon's work notes that the role of women changed greatly in that some emerged as gear owners and also dominated the urban trade. Unlike earlier periods of fisheries development in Mweru-Luapula fishery where men were put at the centre of every activity especially in demersal fishing, the *chisense* fishery provided opportunities for women to make money and become influential just like men. Therefore, the rapid rise of the *chisense* fishery gave an opportunity for women to gain a degree of economic autonomy.⁶⁷

Joshua Chilonge's work is very important to our understanding of the fishing industry in Zambia. His study analyses the lifestyle of the fishermen and how their dependence on fishing as the only source of livelihood led to overexploitation of the Bangweulu fishery. This study notes that the rapid increase in people taking up fishing as a source of livelihood exerted a lot of pressure on the industry leading to the depletion of fish stocks in Zambian rivers and lakes.⁶⁸ This work is relevant to the study at hand especially regarding our understanding of how population increase coupled with bad fishing habits led to the depletion of big fish and the adoption of *chisense* fishing as in the case of Mweru-Luapula.

⁶⁵ Gordon, 'Growth without capital', p.500.

⁶⁶ Gordon, 'Growth without capital', p.507.

⁶⁷ Gordon, 'Growth without capital', p.507.

⁶⁸ Chilonge, 'Poverty in the Midst of Abundance', p.1.

Chilonge's work also shows that smaller fish species such as *lumanse*, *chisense* and *kapenta* types were processed through the sun drying method.⁶⁹ However, the smaller fish species were just mentioned in passing. This work is important because it examines the methods of fishing and fish processing. Most importantly, Chilonge's work stresses the relationship between fish and food security. Fish used to be an item of the last resort and a shield that prevented starvation among the people of the riverine areas.⁷⁰ In times of low food supplies and insecurity, people in permanent fishing villages intensified their activities in order to catch more fish to exchange for mealie-meal and other items from the mainland. This is cardinal to the present study especially when looking at migrant *chisense* fishermen who stayed in camps for some periods of time.

Mortimer's chapter 'The Location and General Organisation of Fisheries in Zambia' examines the various roles played by fish in the lives of different people in the country. This study observes that most fish produced from the major fisheries is exported to the line of rail towns, in particular the Copperbelt where it is needed as a protein food for industrial workers.⁷¹ This study further noted that during the colonial period, fish was also exported to adjacent countries such as the Congo and Southern Rhodesia (present day Zimbabwe). The markets in the DRC have been important with regards to *chisense* fishing in Mweru-Luapula because most of the traders come from there. In a similar manner the chapter by T. G. Carey, 'Lake Mweru-Luapula' also provides a detailed description of the area of study at hand. This work outlines the commercial fish species of Lake Mweru such as the *Gnathoremus*

⁶⁹ Chilonge, 'Poverty in the Midst of Abundance', p.32.

⁷⁰ Chilonge, 'Poverty in the Midst of Abundance', p.40.

⁷¹ M.A. Mortimer, 'The Location and General Organisation of Fisheries in Zambia', in M.A. Mortimer, (ed.) *Natural Resources Handbook: The Fish and Fisheries of Zambia* (Ndola: Falcon Press Ltd, 1965), p.2.

monteirii, *Hydrocynus vittatus*, *Syno dontis sp*, *Tilapia macrochir* and many others.⁷² For us to appreciate the origins of the *chisense* fishing it is important to look at the demersal fish species whose depletion eventually ushered in pelagic fishing.

The work by W.V Brelsford, *Fishermen of the Bangweulu Swamps: A Study of the Fishing Activities of the Unga Tribe* is also very important because it discusses methods and organization of fishing and also the role of fish in the Unga peoples' lives. Brelsford's work notes that the whole life of the Unga centred on fish. Fish was the only commodity they had in their area which they could sell to obtain money or exchange for other necessities.⁷³ Fish among the Unga was a major source of animal protein and vitamins A and D while the fish bones even when boiled still contain a certain amount of calcium.⁷⁴ This work is also important because it shows how fish facilitated the barter system of trade. Fish was used in exchange for other food products such as cassava meal, a trend that has continued to date. With regards to *chisense* fishing, the barter system of trade enabled women to raise money capital and later on became established traders.

Beatty and Pike in 'Fish Utilisation – Processing and Marketing' observe that a very important aspect of the exploitation of any perishable natural resource, such as fish, is that the product should not be wasted after capture and that it should reach the consumer in the best condition.⁷⁵ The study emphasizes the purpose of fish processing to stop it from rotting before it is sold to the consumer. It is worth noting that fish processing is very important in

⁷² T.G. Carey, 'Lake Mweru-Luapula', in M.A. Mortimer, (ed.) *Natural Resources Handbook: The Fish and Fisheries of Zambia* (Ndola: Falcon Press Ltd, 1965), p.65.

⁷³ W.V. Brelsford, *Fishermen of the Bangweulu Swamps: A Study of the Fishing Activities of the Unga Tribe. The Rhodes-Livingstone Papers Number Twelve* (Livingstone: The Rhodes-Livingstone Institute, 1946), p.34.

⁷⁴ Brelsford, *Fishermen of the Bangweulu Swamps*, p.38.

⁷⁵ D.M.F. Beatty and E.G.R. Pike, 'Fish Utilisation – Processing and Marketing', in M.A. Mortimer, (ed.) *Natural Resources Handbook: The Fish and Fisheries of Zambia* (Ndola: Falcon Press Ltd, 1965), p.44.

any study dealing with the fishing industry. The present study examines the processing of the pelagic fish species through the sun drying method.

The work by Kashimani is also relevant to our understanding of the fishing industry in Zambia. Even though the primary focus of this work is the constraints on the growth of the fishing industry in Western Province from 1924 to 1964, it highlights the socio-economic importance of the fishing industry as a whole. Among the many aspects outlined in this study, includes the fact that fish is of major nutritional importance being an excellent source of proteins essential for body growth and repair.⁷⁶ Additionally, the work also examines the division of labour by exploring individual roles played men and women in fishing. However, the proposed study will further add the roles played by children in *chisense* fishing. Similarly, the work by Robert S. Pomeroy is vital to our study in that it examines at the role of women and children in small scale fishing households. In contrast to the agricultural sector, very little is known about the economic roles performed by women and children of small scale or artisanal fishing households.⁷⁷ This works further explores the role played by women as they are actively engaged in many productive activities which provide added income and needed services to the household or community.

Nsonga and Mwiya's work describes the challenges and emerging opportunities associated with aquaculture in Zambia. What is paramount about this work is that it observes that fishing is important to the national economy in Zambia and contributes significantly to employment provision, income generation and food production. The two observe that it is estimated that up to 55 per cent of the national average protein intake is from fish.⁷⁸ Additionally,

⁷⁶ Kashimani, 'Constraints on the Growth of the Fishing Industry', p.5.

⁷⁷ Robert S. Pomeroy, 'The Role of Women and Children in Small Scale Fishing households: A Case Study in Matalom Leyte, Philippines', *Philippines Quarterly of Culture and Society*, 15, 4 (December 1987), p.353.

⁷⁸ Albert Nsonga and Mwiya Simbotwe, 'Challenges and Emerging Opportunities associated with Aquaculture development in Zambia', *International Journal of Fisheries and Aquatic Studies*, 2, 2 (2014), p.232.

Hermitte's work also observes that fish together with game provided most of the protein in the Barotse diet.⁷⁹ Therefore, this work just like the present study, emphasizes on the importance of fish in the Zambian household.

Eggert and Greaker's work discusses the importance of fish with respect to trade. This work observes that fish today provides the main source of animal protein for 20 per cent of the world's population. The two note that trade in fish is usually seen as a positive factor in improving the standards of living for a country's population thus trade offers an opportunity to achieve higher levels of consumption for all involved parties.⁸⁰ Furthermore, the importance of fisheries in a country cannot only be measured by the contribution to the Gross Domestic Product (GDP), but fisheries resources and products are fundamental components of human feeding and employment.⁸¹ Similarly, Sally Washington and Lahsen Ababouch's work observes that the perceived health benefits of fish have been the key reason for the rise in the consumption of fish.⁸² This work is important to the present study in that it highlights the importance of fish regarding the provision of employment and proteins to the people which is exactly what *chisense* fishing does for the people of the Mweru-Luapula fishery.

The recent work by Ogunola and Ahmed, 'Fishing with Light: Ecological Consequences for Coastal Habitats', provides historical background to the use of light in fishing. The purpose of this work was to review some literatures on light fishing by using the case studies of

⁷⁹ Eugene Leon Hermitte, 'An Economic History of Barotseland, 1800-1940', PhD Dissertation, North-western University, 1973, p.114.

⁸⁰ Eggert Hakan, and M. Greaker, 'Effects of Global Fisheries on Developing Countries: Possibilities for Income and Threat of Depletion', *Environment for Development Discussion paper series* (January 2009) EFD DP 09-02. p.2.

⁸¹ Emygdio L. Cadima, *Fish Stock Assessment Manual* (Rome: FAO, 2003), p.1.

⁸² Sally Washington and Lahsen Ababouch, *Private Standards and Certificate in Fisheries and Aquaculture: Current Practice and Emerging Issues. FAO Fisheries and Aquaculture Technical Paper 553*. Rome: FAO, 2011.

Indonesia, Ghana, Lake Victoria and Tanganyika. The work demonstrates how the source of light for fishing has changed with centuries. This is very important to the present study which also looks at fishing by the lamp where artificial light is used as a bait to attract the fish. Furthermore, this work observes that the practice of light fishing has been in existence since the olden days and described to be very effective in freshwater for catching and increasing landings of single and shoaling pelagic fish species.⁸³ This is also in line with the present study in that it also notes that light fishing is a good means and efficient way of obtaining adequate catches of the lake sardines.

Research Methodology

This study was accomplished through consultation of both secondary and primary sources. Data was collected from the University of Zambia (UNZA) main Library where theses, dissertations, reports, journal articles, and books were consulted. The second part of the research was the continuation of data collection at the National Archives of Zambia (NAZ). Primary sources in form of government documents and other unpublished documents that included Provincial Annual Reports (PAR) for Mweru-Luapula, District and tour reports on government policies on the fishing industry were also consulted.

The third part of data collection involved consultation of the fishing records at the Department of Fisheries Headquarters Main Library in Chilanga where various Monthly, Quarterly, Annual reports, Frame survey reports, journals, conference reports, Minutes of meetings and books were consulted. Other sources were consulted at the Department of Fisheries in Nchelenge. The Central Statistics Office (CSO) main library was visited for Annual Fish Statistics for Mweru-Luapula fisheries and some books.

⁸³ Ogunola and Ahmed, 'Fishing with Light', p.474.

The last part of the research was a field study along the Mweru-Luapula fishery where interviews were conducted in selected fishing centres/ settlements such as Kashikishi, Kabuta, Mukwakwa, Kafulwe and Lupiya. Interviewees included Mulenga Chengo, Matthews Musonda, Agness Bwalya, Benjamin Chisunka, Edward Kapapula, and Mervian Tembo who were all traders in *chisense*. Anthony Mwenya and James Siame who had witnessed the origins of *chisense* fishing using lamps were also interviewed. It is worth noting that a lot of information was collected through interviews regarding the origins, growth and economic impact of the *chisense* fishing because most of the people who witnessed the birth of this rural industry were still alive. Therefore, the methodological process involved was qualitative collection and analysis of both secondary and primary data.

Organisation of the study

The study consists of five chapters. Chapter one is the Introduction. Chapter two investigates the origins and development of *chisense* fishing in the Mweru-Luapula fishery. Chapter three examines the role of women, fishermen and traders in the development of *chisense* fishing whereas chapter four examines the socio-economic impact of *chisense* fishing since its inception in 1975 to 2010. The fifth chapter is the conclusion of the entire study.

CHAPTER TWO

THE ORIGINS AND DEVELOPMENT OF *CHISENSE* FISHING IN MWERU-LUAPULA FISHERY

Introduction

Fishing from lakes and rivers has been a major source of food, a provider of employment and other economic benefits for humanity since ancient times. From the old times, fishermen and the people of the Mweru-Luapula fishery greatly depended on the demersal fish species and

never paid attention to pelagic fish species such as *chisense* until around 1975. Therefore, the aim of this chapter is to acquaint the reader with the development of *chisense* fishing industry in the Mweru-Luapula fishery from 1975 to 2010. The chapter provides a detailed account of the origins of *chisense* fishing and its development. Furthermore, the chapter provides a description of fishing by the lamp. Lastly, the chapter looks at the fishing gears used in *chisense* fishing and its processing in the Mweru-Luapula fishery.

Origins of *chisense* fishing

The Mweru-Luapula fishery was, and still is, one of the most important fisheries in the region supplying a large proportion of the fresh and dried fish sold in the markets of both Zambia and the neighbouring Democratic Republic of Congo (DRC). The Mweru-Luapula fishery has a rich variety of fish fauna. There are 119 species, of which 20 are of commercial importance. Among these are the Luapula Salmon (*Labeo altivelis*) locally called *mpumbu*, which between 1920 and 1950 formed about half of the catch; bream (*Saratherondon Macrochir*) popularly known as tilapia locally called *pale* and tiger fish (*Hydrocyon Vittatus*) locally called *imanda*.¹ From the commercial aspect, the cichlid fish *Tilapia macrochir* locally known as *pale* was the most important species. It was extremely popular in both the European and African markets.²

Fishermen therefore devised various fishing nets in order to maximise on the catch to supply to the readily available markets. In the 1960s, synthetic gillnets were introduced. Other nets which were used in the Mweru-Luapula fishery included the seine nets and scoop nets. Each of these nets had a uniform mesh, measured by the number of fingers that could go through to

¹ M.C. Musambachime, 'Rural Politics Protest: The 1953 Disturbances in Mweru-Luapula', *The International Journal of African Historical Studies*, 20, 3 (1987), p. 439.

² National Archives of Zambia (NAZ), SEC 6/579 Mweru-Luapula Report, 3/FN/6 Vol. III, T.G. Gley's Minutes FR/1/AB of 27/6/62. A Report on the Decline of the Mweru-Luapula Fishery and its Future Prospects, p. 1.

indicate the size of fish intended to be caught.³ Musambachime observes that the seine net was introduced from Nyasaland by migrant Tumbuka and Henga fishermen who settled in Kashiba and Mulundu areas.⁴ The seine net was a long sheet of netting varying in length between 100 and 300 metres long. It had a graduated mesh varying between five and 12 centimetres which enabled it catch all sizes of fish in its way.

Before the development of the commercial fishing industry, fishing was largely for local consumption. The quantities of fish caught by fishermen were small which could only feed a few households for a few days. When fishing became accepted by fishermen as a source of income after the 1920s, the quantities of fish caught and sold assumed importance, for it determined the amount of income a fisherman earned. Therefore, with the development of the commercial fishing industry and the exposure of the fishing population to the money economy, fishing gradually changed from a subsistence activity into a dependable regular source of income.⁵ This development increased the flow and circulation of money in the fishery. This also attracted a number of people into the fishing industry thereby putting pressure on the commercially important fish species.

By the 1970s the number of fishermen had risen from 2,000 to 6,000 mainly because fishing had become an economic activity and important source of livelihood.⁶ Retired and retrenched miners from the Zambian Copperbelt were also reported to have entered into the fishing industry as either gear owners or fishers. A number of these former miners entered the

³ Mwelwa Chambika Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula, 1920-1964', PhD Thesis, University of Wisconsin-Madison, 1981, p.49.

⁴ Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula, 1920-1964', p. 55.

⁵ Musambachime, 'Development and Growth of the Fishing Industry', pp. 206-207.

⁶ Hannu Molsa, Fisheries Management Plan for Mweru-Luapula, Zambia. Programme for Luapula Agricultural and Rural Development (PLARD), Fish Innovation Centre, 2 December 2009. p.5.

fisheries as gear owners.⁷ This explains why there was a considerable increase in a number of fishermen in the Mweru-Luapula fishery. Fishing was clearly a commercial activity which was not just meant only for subsistence. Therefore, the income generation, economic value and profitability of the fishing were of paramount importance to the people of the fishery.⁸

Fishing attracted high population densities and was also used in certain areas as an alternative source of income and food security.⁹ As many people got attracted to fishing, there was pressure on the commercially important fish species. The presence of many people therefore contributed to the development of trade between the riverine communities which caught fish and agricultural communities which grew crops. Fish used to be an item of the last resort and shield that prevented starvation among the people in the riverine areas.¹⁰ Therefore, the people of the fishery got involved in fishing due to its assumed benefits. This development resulted in thousands of fish being caught before they spawned and this eventually contributed to a noticeable decline in the number of the commercially important species such as the *mpumbu* and many other fish species in the 1960s and *imanda* in the 1970s.¹¹ This decline in the bigger fish species eventually forced people of the fishery to turn to *chisense* fishing which was able to stand extensive human predation.

The pressure on the commercially demersal fish species of the Mweru-Luapula fishery resulted not only in decreased catches but also in the increased diversification of fishing methods. The decrease in fish landings especially of commercial fish species in most of the fishing camps gave birth to *chisense* fishing in the mid-1970s. This was mainly because of

⁷ Kees (P.C) Goudswaard, 'A Dynamic Fishery in Zambia: A Case of Change in the Mweru-Luapula Fishery. Report of the Frame Survey in 1997', SNV Netherlands Development Organization, April 1999, p.8.

⁸ Molsa, Fisheries Management Plan for Mweru-Luapula, Zambia, p.18.

⁹ Joshua Chilonge, 'Poverty in the Midst of Abundance: The Case of Fishermen of Samfya District, 1935-1970', MA Dissertation, University of Zambia, 2011, p. v.

¹⁰ Chilonge, 'Poverty in the Midst of Abundance', p.40.

¹¹ Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula 1920-1964', p.207.

the increase in the number of people in the fishing industry who eventually started using bad fishing habits which were destructive; such as the use of the seine nets in order to maximise their catch. It is worth noting that seine netting was identified as a destructive fishing method which was greatly discouraged to be used in the fishery.¹² Therefore, bad fishing methods came in because every fisher wanted to maximise on the catch especially with the declining levels of demersal fish species.

In the mid-1980s, *chisense* fishing was intensified as a result of low catches or decline in the commercially important fish species such as *Labeo altivelis*.¹³ This increase in the demand of fish resulted in increased fishing pressure to an extent of using unsound methods of capturing fish thereby leading to the emergence of non-traditional fishes on the market¹⁴ such as *chisense*. It is important to note that the demersal fish species such as bream among others were considered as traditional fish species.

From the 1970s, fishermen still caught demersal fish species alongside *chisense* up to somewhere around 1980 when they experienced very low catches in demersal fish species. Fishermen attributed this to the increase in the number of fishers.¹⁵ This is because the people of the fishery solely depend on fishing for sustenance and this made them to start using abusive fishing methods. The Food Agriculture Organisation (FAO) also observes that the dramatic increase in abusive fishing techniques worldwide and illegal unregulated fishing leads to fish stocks to decline often at alarming rates.¹⁶ Stock depletion negatively impacted

¹² Department of Fisheries (DoF), Annual Report, Samfya, 1975, p.6 and ACF/FSRP, The Status of Fish Population in Zambia's Water Bodies, 9th April, 2009, p.1.

¹³ Background of Collaborative Management Presentation, Tuesday, December 21, 2010.

¹⁴ Agricultural Consultative Forum/ Food Security Research Project (ACF/FSRP), The Status of Fish Population in Zambia's Water Bodies, 9th April, 2009, p.1.

¹⁵ DoF, Fisheries Research Branch Annual Report, 2003. p.22.

¹⁶ FAO, *Fisheries Management for Marine protected areas and Fisheries. FAO Technical Guidelines for Responsible Fisheries* (Rome: FAO, 2011), p. xiii.

food security and economic development because the people of the fishery depended entirely on fishing for sustenance and to develop their societies out of the monies realised from the sale of fish.

From the initial stages of the *chisense* fishery, men were not involved in *chisense* fishing because it was not profitable compared to demersal fishing. However, as the profitability of *chisense* became more apparent, men became involved in its capture. This was mainly because of a decline in catches in Mweru-Luapula's fishing industry and decreased levels of capital investment through the 1960s and early 1970s.¹⁷ For example, during the same period there was a noticeable decrease in the catches of *pale*.¹⁸ Therefore, because of such developments, fishermen began paying more attention to such small and 'useless' fish when the favoured ones became scarce.¹⁹ Musambachime also noted that in the 1960s no one talked about *chisense* because people focused much on the demersal fish species which had high commercial value.²⁰ This was mainly because fishermen had not yet known the economic value of the *chisense* fishery.

In the early 1970s a new dip net fishery using attraction of artificial light on the small pelagic fresh water clupeid (*chisense*) – a species reaching a maximum size of 5cm started which is now the most important fishery in terms of production.²¹ It is important to note that a rapid increase in the human population has been a major reason causing the exploitation of formerly unexploited pelagic fish species of African lakes such as *Microthrissa Moeruensis* locally known as *chisense*. The word *chisense* simply means the small fishes which move in a

¹⁷ Gordon, 'Growth without Capital', p.503.

¹⁸ DOF, Annual Report, 1978, p. 4.

¹⁹ Peter B. Hayward, Evaluation Report: Feeder Roads for Fishery Development submitted to Canadian international Development Agency, April, 2008. p.50.

²⁰ Interview, Mwelwa Musambachime, University of Zambia, 6 May 2016.

²¹ J. Kolding and P.M.A. Van Zwieten, 'Sustainable Fishing of Inland Waters', *Journal of Limnology*, 73 (51), 2014, p.140

large shoal as they are drifted by wind.²² These are small lake sardines that live in large shoals in the upper layers of open waters. The commercial value of exploitation of *chisense* became more apparent in the mid-1970s and was made possible through the use of tilley lamps. Artisanal exploitation of the pelagic started in 1975 at Lake Mweru.²³

In the 1970s, women who washed dishes in the lake noticed that there was a proliferation of *chisense* as it came to feed on food waste cleaned out of pots. *Chisense* fishing was therefore first witnessed by the women who began catching it using the *chitenge*²⁴ material (wrap-over cloth) and the stocks were considered worthwhile to exploit. *Chisense* fishing using mosquito nets and even women's wrap-over cloths (*chikwembe*) started on the village beaches by women. *Chisense* became a commercial species way before lights were introduced for catching it. Fishing was done in shallow beaches even without using boats for casting the fishing nets. The *chisense* caught by women was used as extra relish to accompany the cassava porridge eaten by their families. Due to the increasing amount of fish and the ease of capture, women began to dry *chisense* and use it for barter and trade.²⁵ In this regard, *chisense* fishing became one strategy adopted by poor women who needed access to cash.

When men realised the commercial value of *chisense* fishing, they joined and even intensified the fishing. Women were displaced since they just fished for subsistence. Thus, their role came to be limited to processing and trade in *chisense*. Since *chisense* could stand extensive

²² C. K. Kapasa, and P. M. A. Van Zwieten, 'Preliminary on the Fishery and Biology of the *Chisense* Complex (*Poecilothrissa Moeruensis*, *Neobola Moeruensis*) of Lake Mweru-Luapula (Zambia) including notes of the feeding of the Species of the By-catch', p.1.

²³ Ng'onga Musonda, 'The Reproductive Biology of *Mesobola Brevianalis* Boulenger, 1908 and *Barbus Trmaculatus* Peter, 1852 in the Lake Bangweulu Fishery', MSc, University of Zambia, 2010, p.14.

²⁴ A *chitenge* material (wrap-over cloth) is a long piece of cloth which is worn by women around their waists. In villages it is also used to tie babies in the back of women.

²⁵ David Gordon, 'Growth without Capital: A Renascent Fishery in Zambia and Katanga, 1960s to Recent Times', *Journal of Southern African Studies*, 31, 3 (Sept. 2005), p.504.

human predation and the catch was higher compared with that of demersal fishing, fishermen decided to take the *chisense* fishery more seriously. This was because fishing formed the way of life of the people of the Mweru-Luapula fishery. *Chisense* fishing was done alongside demersal fishing since its inception. Fishing for *chisense* came at the decline of bigger fish species especially bream.

Prior to 1974, *chisense* fishing appeared to be restricted to the northern part of the lake and at that time its catching was not yet intensified. However, in 1975, *chisense* fishing increased along the north-eastern shore line adjacent to an extensive area of the deep water (20-30m). *Chisense* was caught along the whole shore line between Mpweto in the north to Chisenga on the Luapula River.²⁶ The *Chisense* fishery became increasingly important in the Mweru-Luapula fishery because of its high reproductive turn-over in light of the decreasing Catch per Unit Effort of other traditional fish species (especially the breams). The *chisense* fishery has continued to employ more fishers and traders compared to the traditional bream fishery.²⁷

Around the Puta area *chisense* was caught by fishermen who had abandoned catching the demersal fish species.²⁸ This was mainly because the status of bream population which had been declining from the 1960s showed no noticeable improvements.²⁹ This eventually led to the shift from demersal to pelagic fishing in the 1970s. The pattern of fishing differed from places to place and according to the season and weather. *Chisense* fishing took the place of gill net fishing in that the demersal fish species were over exploited in most fishing camps and villages between Mulundu and Puta.³⁰ It was also observed that along the Luapula river

²⁶ DoF, Annual Report, 1983, pp. 48-49.

²⁷ N'gonga Musonda, 'The Reproductive Biology of *Mesobola Brevianalis* Boulenger, 1908 and *Barbus Trimaculatus* Peter, 1852 in the Lake Bangweulu Fishery', p.1.

²⁸ DoF, Monthly Report REP/5/2 September, 1976. p.2.

²⁹ DoF, Annual Report, 1974, p.25.

³⁰ DoF, 1st Quarterly Report, 1977, p.5.

sector, the *chisense* fishery was also getting sharp in the mid-1970s.³¹ This was mainly because the catches of *chisense* were worthwhile compared to the declining levels of the demersal fish species.

The method of *chisense* fishing by light was copied from lamp fishing for dagaa in Lake Tanganyika in 1975. Light fishing was introduced into Mweru-Luapula in the mid-1970s by a man known as Sikasote from Lake Tanganyika who came with all his fishing gear he used for *Kapenta* (*Limnothrissa* and *Stolothrissa* species) fishing.³² Even at this time, *chisense* fishermen confined themselves to the shoreline and at times even hauled their catches on the beach – drawing their light slowly onto the shore before casting their net behind the light. *Chisense* fishing using light attraction and nets emerged in late 1970s in the central and northern part of Lake Mweru although other fishers were targeting bream in the gill-net fisheries.³³ The *chisense* fishery expanded rapidly beginning in 1981 and spread to the whole lake by 1983. Much of the *chisense* production was exported to Democratic Republic of Congo, due to the lower demand on the Zambian market. However, with the sharp decline in the demersal fish species, people turned to *chisense* for sustenance and also for trade. Eventually, fishermen who had abandoned demersal fishing became fulltime *chisense* fishers due to its economic value and also that this pelagic was in abundance to survive human predation. Gordon also affirms that smaller fish are often better able to withstand intense human predation since they generally reproduce faster and they have a higher ratio of annual

³¹ DoF, Monthly Report, December 1976, p.3.

³² E.S. Ngula, 'Problems of Fisheries Management on the Zambian Sector of Lake Mweru-Luapula', Appendix 3.4, M. Maes (ed.), Report on the Technical Consultation on Lake Mweru shared by Democratic Republic of Congo and Zambia (Lusaka, 08-10 August 1990).

³³ Molsa, Fisheries Management Plan for Mweru-Luapula, Zambia. Programme for Luapula Agricultural and Rural Development (PLARD), Fish Innovation Centre, 2 December 2009. p.10.

production.³⁴ Therefore, rapid reproduction means that they can be heavily exploited without much fear of resource collapse.

Successful fishing of the *chisense* complex by the artisanal fisheries was reported along the north-eastern shore of the lake after the introduction in 1984 of what is still known as “Scullion Nets”. During the same period there were about 200 fishers recorded along the northern shore who were using meshless netting materials, that is, nets made out of mosquito nets, maize meal bags and cotton cloth. The *chisense* fishery became widespread all over the lake and throughout the Luapula River. In 1985, it was estimated that 500 metric tons of *chisense* were produced by 40 fishermen.³⁵ Since then, the number of *chisense* fishermen has increased and also the catches. *Chisense* fishing became one of the major fisheries both in terms of production and labour input. For instance, the first three months of 1986 alone, a total of 82,905kg of *chisense* was caught compared to 52,271kg of demersal fish species.³⁶

Development of *Chisense* Fishing

The intensification of *chisense* fishing in the late 1980s and early 1990s was connected to the growing numbers of fishers and the demand for the fish. Some people who had been previously employed in the mining sector and those with limited capital from trade or salaried employment chose to invest in the fishery instead of taking their chances in urban areas.³⁷

The 1980s saw the greater need for economic subsistence which eventually led to the exploitation of smaller fish species. Men who could not find jobs in the mining and agricultural sectors became fishermen and rural women with limited access to farmland or

³⁴ Gordon, ‘Growth without Capital’, p.508.

³⁵ V.M. Kanondo, ‘Fishery Statistical Systems in Zambia with Particular Reference to Lake Mweru-Luapula’, Appendix 3.3, M. Maes (ed.), Report on the Technical Consultation on Lake Mweru shared by Democratic Republic of Congo (DRC) and Zambia (Lusaka, 08-10 August 1990).

³⁶ DoF, Sales Record on fish - Monthly summary, 1986.

³⁷ Gordon, ‘Growth without Capital’, p.506.

salaries of spouses became fish processors and traders. Together they formed new gendered economic associations and adopted new technologies of resource exploitation which drove forward the commercialisation of the Mweru-Luapula fishery.³⁸ The rapid expansion of this industry transformed economic roles of village members and consolidated new gendered associations. Men with links to urban areas or at least access to limited capital became the *chisense* fishermen and rural women became the processors and small-scale traders.³⁹

Many people in the Mweru-Luapula fishery depended on *chisense* since it was cheaper. This eventually made it a target by both the people of the fishery and Copperbelt including those in the Democratic Republic of Congo starting from the 1980s onwards. It is important to note that the Copperbelt and DRC had been important markets for fish products of the Mweru-Luapula fishery as early as the late 1940s when Greek traders and fishers arrived with capital and new technologies to exploit the fish in the open waters before they spawned.⁴⁰ This also led to the disappearance of the Mweru-Luapula's most important commercial fish species.

The development of *chisense* fishing went through several stages. During the initial stage, the *chilimina* method was used to catch *chisense*. This method was an innovation by the fishermen who started with the beach seine nets adopted from Lake Tanganyika. Under this method, fishermen used two small boats – a heavy boat which was used to carry *chisense* after hauling and a light boat which carried the fishing gears. Fishermen under the *chilimina* method used two to four tilley lamps to attract *chisense*. The catches in this method were worthwhile. The tilley lamps were later on increased to 7-8 per boat in the period 1991 to 1992 in order to increase on the landings of *chisense*.⁴¹

³⁸ Gordon, 'Growth without Capital', p.499.

³⁹ Gordon, 'Growth without Capital', p.507.

⁴⁰ Gordon, 'Growth without Capital', p.499.

⁴¹ Interview, James Siame, Kabuta, 9 November 2016.

However, the *chilimina* method was later on challenged in the 1980s and early 1990s when some fishermen adopted the Japan frame method. This was because the *chilimina* method was labour intensive and also fishermen spent too much time to haul *chisense*. The hauling process in the *chilimina* method was slow in that it was done in the same manner as the beach seine except it was done from the heavy boat. In other words, the method was slower compared to the Japan frame method where fishermen only used one boat. This was made possible because the plank boats were made bigger to accommodate both the fishing gears and the fish. The other disadvantage of the *chilimina* method was that in instances where one boat developed a fault, then fishermen stayed ashore since the system required the use of two boats. Fishermen adopted the Japan frame method since it proved very successful in the hauling process of *chisense*. In the early 1980s, fishermen used both the *chilimina* and Japan until the early 1990s.

The Japan frame method was the second phase or stage in the development of the *chisense* fishery. It was called so because it originated from Japan and it was initially called the stick-held dip net.⁴² This method was intensified in the early 1990s leading to the complete abandonment of the *chilimina* method.⁴³ The Japan frame was a flat, square net of 8mm and occasionally even 1mm mesh on a bamboo frame with plastic floats.⁴⁴ It was carried unfastened on the boat and used as a dip net. This method was adopted because it was very easy to catch *chisense* unlike the *chilimina* method. It involved the use of only one boat and it was easier to scoop the fish.

⁴² J.A. Krug, Japanese Fishing Gear: Fishery Leaflet 234, May 1947, p.29.

⁴³ Interview, James Siame, Kabuta, 9 November, 2016.

⁴⁴ Hayward, Evaluation Report: Feeder Roads for Fishery Development, p.51.

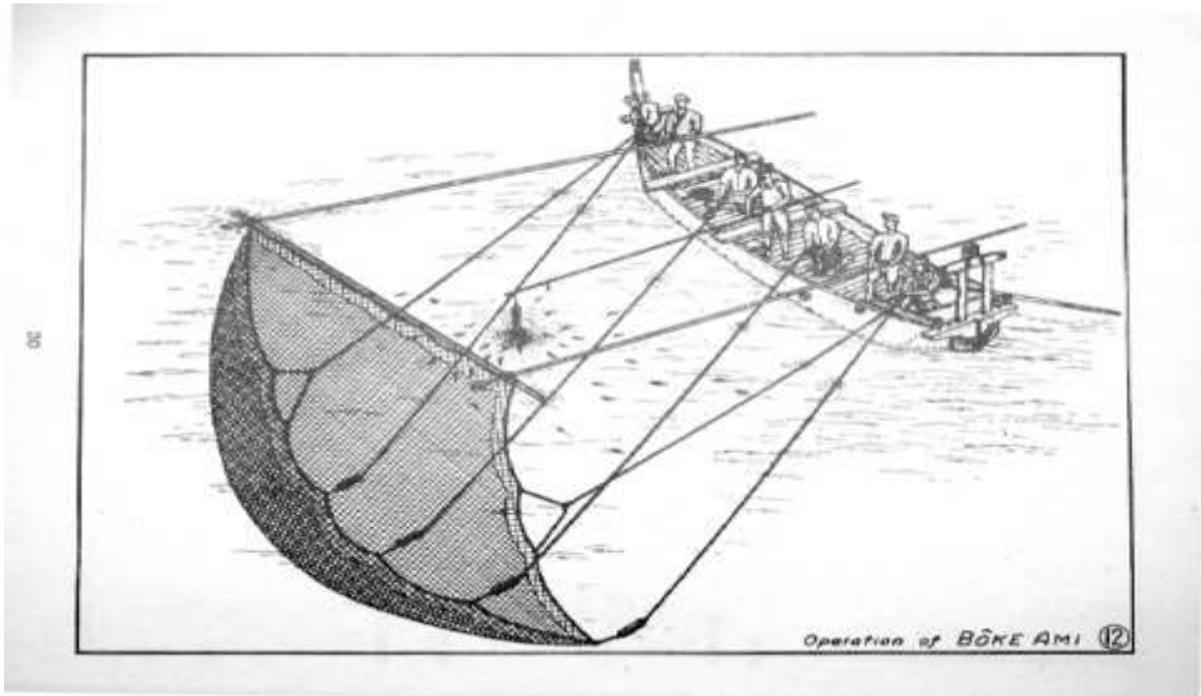


Figure 1. Stick-held dip net (Japan frame method)

Source: J.A. Krug, Japanese Fishing Gear: Fishery Leaflet 234, May 1947, p.30

The Japan frame method was greatly used in the northern shores and the catches in the initial stages were good. It worked well in shallow inshore waters. This method had been used on the Mweru-Luapula fishery since 1981. It was 5m deep in the bag, 3m deep in the wings and 15-20m wide. Some of these nets were manufactured in Kitwe and they lasted for 1-3 years while others were made by fishermen from cheaper netting material obtained illegally from DRC.⁴⁵ It was worked by a crew of 5-6 men who divided the cash realized from the catch by half (50% to the owner and the other 50% to the crew members) and the average catch was 30-40kg per haul or 3 hauls per night.⁴⁶ This method is still being used up to now since it proved to be very efficient in catching *chisense*. It is important to note that both the *chilimina* and Japan fishing methods greatly depended on the use of the lamp.

⁴⁵ Hayward, Evaluation Report: Feeder Roads for Fishery Development, p.52.

⁴⁶ Hayward, Evaluation Report: Feeder Roads for Fishery Development, pp.51-52.

Fishing by the Lamp

Fishing by the lamp in Zambia went through several stages and was intensified through *chisense* fishing. It began with artificial light in form of fire lit at the beach which was used for thousands of years when man discovered that some fish were attracted to light.⁴⁷ As time went on, the use of fuel oils such as kerosene gas was introduced. A number of countries such as Hawaii, the Philippines, Indonesia and Ghana used the method of light fishing. Musambachime observed that in the initial stages fishermen began fishing at night using the flame of the dry *mwenge* branches or wood set at the bow of the canoe to attract the fish.⁴⁸

Therefore, fishing by the lamp is a method where light from the lamp was used to attract the fish. This type of fishing was conducted at night and only during those nights or hours of the night when there was no moonlight.⁴⁹ This was because the light from a lamp only became effective to attract the lake sardines when it was dark. This method entailed attracting and concentrating the fish beneath the light. As soon as sufficient fish had concentrated under the lamp at anchor, taking note of the wind, a large dip net was quickly drawn into the water to scoop the lake sardines within 2 or 3 minutes.⁵⁰ It is important to emphasise that whenever a sufficient fish concentrate beneath the lamp was noticed, fishermen quickly scooped up the sardines using a large dip net.

For many years before 1954, the method of using light to attract the fish had been a wood fire carried on a small iron grate fixed forward of the canoe. A considerable quantity of fuel was

⁴⁷ Solomon O. Ogunola and Onada Olowale Ahmed, 'Fishing with Light: Ecological Consequences for Coastal Habitats' *International Journal of Fisheries and Aquatic Studies*, 4, 2 (2016), p. 474.

⁴⁸ Musambachime, 'Development and Growth of Fishing', p.140.

⁴⁹ NAZ, SEC 6/241 Fisheries Research, Usumbura, Lake Tanganyika 1956-57/ G. J Lockley, 'Dagaa Fisheries in Lake Tanganyika', *East African Agricultural Journal*, XIX, 4, (April 1954), p.251.

⁵⁰ NAZ, SEC 6/241 Fisheries Research, Usumbura, Lake Tanganyika 1956-57/ A Collart, Notes on Ndagaa, p.10.

carried in each canoe for a full night fishing obviously difficulties with the fires was encountered during the rains.⁵¹ Some earlier light devises proved unsuccessful in attracting fish, others presented difficulties of operation or maintenance or were viewed with a remarkable lack of enthusiasm by the fishermen. However, in the latter half of 1954 the answer was found in an ordinary paraffin pressure lamp of the hurricane or storm lantern type of 300 to 350 candle power, fitted with a reflector to direct the light to the water.⁵² Since light was directed directly to the water, the pressure lamps proved very effective in attracting the lake sardines.

The African fishermen, knowing that the lake sardines such as *chisense* are attracted to lights suspended over the surface of the water on dark nights developed the method of fishing by the lamp.⁵³ Their equipment for fishing consisted of dugout canoes and torches with dip or scoop nets. On moonless nights they waited for small shoals of fish to gather under lights suspended from the bows of fishing canoes, but catches were small and irregular and appeared to be seasonal.⁵⁴ Their efforts were later hampered through a shortage of materials for use as torches and of wood for making the dugout canoes. So the industry was in danger of dying out. It was during this period that incandescent pressure lamps came in to replace the torches and also the introduction of steel canoes.⁵⁵ This development saw the coming in of Greek fishermen who had experience of fishing with lights and had established a new

⁵¹ NAZ, SEC 6/241 Fisheries Research, Usumbura, Lake Tanganyika 1956-57/ G. J Lockley, 'Dagaa Fisheries in Lake Tanganyika', *East African Agricultural Journal*, XIX, 4 (April 1954), p.251.

⁵² NAZ, SEC 6/241 Fisheries Research, Usumbura, p.251.

⁵³ NAZ, SEC 6/20, R/2309 Fishing Lake Tanganyika (Northern Fisheries Limited), p. 2. See also NAZ, SEC 6/126 Northern Area – Mweru-Luapula System, Gen. Dev. 1, Marketing, 3/FN/5 Vol. I, D Hey, Extracts from Report on Fisheries Survey of the Katanga Province, the Fisheries of the Luapula and Lake Mweru visited 19-11 November 1945, p. 4.

⁵⁴ NAZ, SEC 6/20, R/2309 Fishing Lake Tanganyika (Northern Fisheries Limited), p.3.

⁵⁵ NAZ, SEC 6/20, R/2309 Fishing Lake Tanganyika, p.3.

industry which saw a very considerable increase in the total catches of dagaa.⁵⁶ It is important to note that dagaa (*Rastrineobola agrentea*), had been mainly a subsistence fishery activity until the 1960s and started to be commercially exploited in the 1970s.⁵⁷ Dagaa is Tanzanian name given to the tiny silver pelagic fish which is also attracted to artificial light.

Fishing for dagaa was only possible in calm nights when there was no moon; they were caught by means of an immense landing-net (lusenga) using a lamp. The part played by the lamp was to attract the fish towards the surface and to concentrate them there in a ray of light so that they were accessible to the landing net.⁵⁸ It is important to note that *chisense* just like dagaa's feeding was influenced by light. During bright nights, artificial light had little effect and the fish concentration was insufficient to permit fishing. Thus, each month the fishermen were forced to take a few days rest during the period of full moon.⁵⁹ The fishing activities only resumed during the dark nights for the light to be effective. Therefore, increased yields had resulted from more intensive fishing using the lamp. The number of productive nights had almost doubled and individual catches by crews using pressure lamps had doubled.⁶⁰ *Chisense* fishing just like dagaa was made possible by use of the lamp to attract the fish. This practice had been in existence since the olden days and is noted to be very effective in fresh water for catching and increasing landings of single and shoaling pelagic fish species.⁶¹

The method of light fishing in *chisense* fishery was copied from lamp fishing for dagaa in Lake Tanganyika in 1975. Light fishing was introduced into Mweru-Luapula in 1975 by a

⁵⁶ NAZ, SEC 6/20, R/2309 Fishing Lake Tanganyika, p.3.

⁵⁷ Damien Legros and Joseph Luomba, Dagaa Value Chain Analysis and Proposal for Trade Development, Smart Fish Report/Rapport: SF/2011/19, August 2011, p.12.

⁵⁸ NAZ, SEC 6/241 Fisheries Research, Usumbura, p.2.

⁵⁹ NAZ, SEC 6/241 Fisheries Research, p.2.

⁶⁰ NAZ, SEC 6/241 Fisheries Research, p.6.

⁶¹ Oluniyi and Ahmed, 'Fishing with Light', p. 474.

man known as Sikasote from Lake Tanganyika who came with all his fishing gear he used for *Kapenta* (*Limnothrissa* and *Stolothrissa* species) fishing.⁶² It was observed that night light fishing using mosquito netting material made in the same manner as the lusenga net of Lake Tanganyika was being used in the northern part of Lake Mweru to catch *chisense*. Fishing by the lamp method was introduced and intensified around Kafulwe fishing camp in 1975. It was reported that tilley lamps were being used to attract fish to the boat while the lusenga type of net was used to scoop *chisense* just along the shore line.⁶³ In the same year (1975), light fishing of *chisense* was also initiated at Mununga using small beach seines of mosquito mesh.⁶⁴ The fishermen reported good catches at 03 to 05 hours.⁶⁵ However, this does not mean they did not catch anything during the night hours until the morning. Light fishing acted as a good means and efficient way of obtaining adequate catches of the lake sardines. The fishermen usually worked between 14-21 nights per month for eight to twelve hours per night. The net operations in *chisense* fishing were always headed by the light boatman whose role was to reduce the intensity of the light some minutes before hauling and the dimming of light affected the fishing results.⁶⁶ Therefore, if the light was well channelled then a good catch was recorded.

Fishing Gears in *Chisense* Fishing

⁶² E.S. Ngula, "Problems of Fisheries Management on the Zambian Sector of Lake Mweru-Luapula", Appendix 3.4, M. Maes (ed.), Report on the Technical Consultation on Lake Mweru shared by Democratic Republic of Congo and Zambia (Lusaka, 08-10 August 1990).

⁶³ DOF, Monthly Report for April 1976. p.3.

⁶⁴ Hayward, Evaluation Report: Feeder Roads for Fishery Development, submitted to Canadian International Development Agency, April 1986. p.50.

⁶⁵ DOF, Monthly Report, PFDOLP/REP/5/2 August, 1975.p.3.

⁶⁶ Keith H. Hill, *Artisanal Fishing: A Report prepared for the Fisheries Training and Development Project*. FAO, Rome, 1977. p. 13.



Figure 2. Chisense fishing boat (Picture taken by author, 08/11/2016)

A myriad of fishing gears were used in the Mweru-Luapula fishery. These included gillnets of various sizes, seine nets, *chisense* nets, tilley lamps, long lines, hook and lines, drift nets, baskets and traps. Seine nets and drift nets were outlawed on 29th October 1948 due to their seemingly destructive nature on the stocks.⁶⁷ However, they were still used by fishers in violation of the fisheries regulations. These gears had different targets. *Chisense* nets and tilley lamps were used in unison to harvest the pelagic species whilst all the other gears targeted demersal species.⁶⁸

Fishing gears are simply tools used in fishing. A number of fishing gears had been employed in the fishing industry from ancient times. The fishing gears that were used in catching the demersal fish species could not be used in *chisense* fishing. This was because fishing gears evolved in response to wide variety of factors such as the type of fish being caught.⁶⁹ Therefore, the increasing demand for fish and the desire to maximise profit encouraged

⁶⁷ Sabuni Kasereka, Appendix 3.2 ‘Development and Management of Lake Mweru Fisheries’ in Maes, M. (ed.), Report on the Technical Consultation on Lake Mweru shared by Zaire (DRC) and Zambia. Lusaka, 08-10 August 1990.

⁶⁸ DoF, Mweru-Luapula Frame Survey Report, 2008, first draft. p.12.

⁶⁹ FAO, Fisheries Department, *The State of World Fisheries and Aquaculture* (Rome: FAO, 2000), p.13.

innovation in fishing gears. *Chisense* fishing called for change in fishing nets and boats unlike the ones used in demersal fishing. There was need for a bigger and stable boat in *chisense* fishing unlike the canoes and small boats used in demersal fishing.

A boat is simply any water craft whether powered or unpowered used for or in connection with fishing. Therefore, a fishing boat is a specialised vessel which was intended to perform certain well defined tasks. Its size, deck layout carrying capacity, accommodation, machinery and equipment are all related to its function in carrying out its planned operation.⁷⁰ The *chisense* fishery had specific plank boats made from sawn timber by trained carpenters. Plank boats were usually made by local carpenters using local timber which was generally suitable for boat building.⁷¹ People with carpentry skills took advantage of the shift from dugout canoes to plank boats which came with *chisense* fishing in the late 1970s and intensified the boat building activities. This in return helped them to support their families. Plank boats had replaced the dugout canoes because they were larger, more stable on water than the average dugout canoe and that they could be fitted with outboard engines.⁷² Additionally the carrying capacity of the dugout canoe could not carry many tonnages of *chisense* hence the need for a bigger boat. Plank boats introduced in 1978 contributed to increased mobility of the fishermen.⁷³

Unlike gillnet fishing, *chisense* fishing used bigger boats because its tonnage turn out per catch was higher than demersal fishing. Therefore, dugout canoes that were used in demersal fishing were largely superseded by plank boats, an increasing number of which were being

⁷⁰ FAO, *Design of Small Fishing Vessels: Survey on Fishing* (Rome: FAO, 1985), p.21.

⁷¹ Edward Chilimunda, SADC Country Report on the Inland Fisheries sector in Zambia: description, Analysis of areas of concern and Regional Opportunities, DOF, Chilanga, n.d., p.13.

⁷² Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula 1920-1964', p.62.

⁷³ Peter B. Hayward, Evaluation Report: Feeder Roads for Fishery Development submitted to Canadian International Development Agency. April 1986, p.50.

powered by outboard engines.⁷⁴ The use of outboard engines on most Zambian fisheries was limited to plank boats, fibre glass boats and bigger collecting boats. However, the only challenge faced was that of fuel in that most fuel supplying points in most fisheries were situated far away from most fishing villages. Therefore, the scarcity of fuel pumping stations in the waterfront seriously restricted the use of engines.⁷⁵ However, the problem was solved when some businessmen began transporting in fuel drums from Ndola to the Mweru-Luapula fishery from the 1980s onwards.



Figure 3. A boat fitted with an outboard engine (Picture taken by author, 08/11/2016)

The engines made it easier for the fishermen to move from one point to another. Most importantly, fishermen could not paddle back to the shore especially if they went into the deeper waters (interior) of the lake. In times of a high catch, the boat tended to be heavy thus, with the help of the outboard engine, it became much easier to transport *chisense* to the shore because the work was generally tiresome. Therefore, an engine reduced travel time to the

⁷⁴ NAZ, Economic Development: Fisheries, MRN/2240/12 SEC 6/1016. RED Working Party, 14th October, 1960. p.2.

⁷⁵ Chilimunda, SADC Country Report on the Inland Fisheries sector in Zambia, p.14.

fishing grounds and allowed the fishermen to carry their products with much ease.⁷⁶ It is worth to note that operating the outboard engine needed some skill such as being able to swerve around waves thus extra money was given to the one who operated the engine since he held the lives of his colleagues in his hands. It was not each and every boat that could be fitted with an outboard engine because of its weight. Therefore, *chisense* fishing boats were big and they had a provision of where an outboard engine could be attached.

Tilley Lamps

The other gear for *chisense* fishing other than a boat is a tilley lamp. As noted earlier, tilley lamps were introduced into the Mweru-Luapula fishery in 1975. These lamps provided light to attract fish. Fishing by the lamp was therefore a technique used to attract and aggregate fish and eventually capture them using various fishing gears such as hooks, gillnets, purse seine, beach seine, cast net or other means.⁷⁷ This method involved the use of tilley lamps attached to floaters above water to attract fish to specific areas and facilitate harvesting. The use of tilley lamps had been in existence since 1954 and described to be very effective for catching and increasing landings of single and shoaling pelagic fish species.⁷⁸

Chisense fishing is greatly dependent on light. Thus, the more lamps a company had the better the catch they recorded. Before 1981 when the Japan method was introduced, fishermen greatly used the *chilimina* method where they used to carry a maximum of five

⁷⁶ Republic of Zambia, Ministry of Lands and Natural Resources, (Draft) Zambia Inland Fisheries Development Project Interim Report Volume 1. Summaries and Projects, December 1981. p.219.

⁷⁷ Oluniyi and Ahmed, 'Fishing with Light', p. 474.

⁷⁸ Oluniyi and Ahmed, 'Fishing with Light', p. 474.

tilley lamps. One fisherman affirmed that they experienced a higher catch of *chisense* in the 1980s with only five lamps compared to the late 2000s when the number of tilley lamps had been increased to ten.⁷⁹ As many people got involved in the *chisense* fishery, the gear owners had to increase on the number of tilley lamps so as to maximise on the catch. Lamps were increased from the initial five to ten in the late 2000s and others went even up to twelve lamps per boat. However, having many lamps did not always guarantee a high catch in that sometimes the catch was just dependent on the waters that the fishermen went to fish from. Sometimes the fishing companies with fewer lamps could record a higher catch compared to those with many lamps depending on the waters.



Figure 4. Fishermen working on Tilley lamps (Picture taken by author, 08/11/2016)

Tilley lamps were very important in the thriving of *chisense* fishing in the Mweru-Luapula fishery. This was because *chisense* was attracted to light thus, without good working lamps fishermen could not even go fishing. The catch was affected whenever lamps gave problems whilst fishing.⁸⁰ Therefore, the company's operator made sure that the lamps were in good condition before they went fishing. The company referred to in this work means the fishing

⁷⁹ Interview, Anthony Mwenya, Seasoned *chisense* fisherman, Kabuta, 8 November 2016.

⁸⁰ Interview, Chongo Francis, Kafulwe, 23 November, 2016.

crew members. Some fishermen noted that they left companies that had tilley lamps that used to give problems to join other companies in order to maximise on a catch and also to make money.⁸¹ Fishermen always wanted to work with fishing companies that were reliable and with well-organised fishing gears. *Chisense* fishing companies were owned by the individuals while others were in partnership where two people put their money together to purchase the fishing gear. For the fishing gears owned by two people, they share whatever was earned on daily basis while others did so monthly depending on the agreement.

Chisense fishing was not just labour intensive but also capital intensive. It required a lot of money to organize the *chisense* fishing gear.⁸² This was because it required a boat, tilley lamps and floaters, wires and sack bags and the meshless fishing net (like a mosquito net) and finally there was also need for a big and strong plank boat.⁸³ All these items required money. This explains why some companies were owned by two people because it was easy to raise money to buy everything at once.

Other Gears

The other gears that were vital in *chisense* fishing were floaters, locally known as *ifitenge*.⁸⁴ The kerosene lanterns (lamps) were tied to small wooden floats (60cm by 60cm) and each one carried one lamp.⁸⁵ These were useful because that was where tilley lamps were tied to prevent them from sinking. The type of floaters determined the stability of the lamp especially during windy periods. Each lamp was tied to one floater and *chisense* fishing could

⁸¹ Interview, James Siame, Kabuta, 9 November 2016.

⁸² Interview, *Bana Olipa*, Kabuta, 8 November 2016.

⁸³ Interview, Lasky Mwaba, Kabuta, 9 November 2016.

⁸⁴ Ifitenge (floater), these were the supporting structures where the Tilley lamps were attached with wires to prevent them from dropping into the water. These structures are the ones that balance the lamp since they are anchored with small size rope. They are very important in that without such, fishing by the lamp will be impossible.

⁸⁵ Oluniyi and Ahmed, 'Fishing with Light', p. 474

not have been possible without the floaters. Each floater had an anchor which was in form of a sizeable stone tied to it for stability. When catching *chisense*, fishermen used a long thin stick (*akasonkwelo*) to move the lamp through the floater to the set net which was supported by two long sizeable poles (*insengu*). When the lamp was put in the middle of the set net, the light was dimmed (reduced) and then a catch was made.⁸⁶



Figure 5. Floaters where Tilley lamps are tied (Picture taken by author, 07/11/2016)

Fishermen go round all the tilley lamps to catch *chisense*. Depending on the catch, they could just do three rounds per night, but the maximum catch was recorded in the early hours of the morning.⁸⁷ Sometimes fishermen had to wait for the morning catch because it was the one which determined their pay. Sometimes fishermen would report a maximum catch which filled the carrying capacity of a boat before mid-night and could come out and offload the *chisense* and go back for some more catch.⁸⁸ This was common especially when catching was done not very far from the shore. The fishing process involved the setting of the tilley lamps

⁸⁶ Interview, James Siame, Kabuta, 9 November 2016.

⁸⁷ Interview, James Siame, Kabuta, 9 November 2016

⁸⁸ Interview, Bwalya Aaron, Lupiya, 25 November 2016.

above the water and waiting for 30 minutes for fish to congregate around the tilley light. The *chisense* net was lowered in the water, about 1 meter beyond the presumed bottom of the observed shoal of fish. Thereafter, the net was hauled with the help of five fishers. Upon hauling the nets, the fish were removed and put in the boat and the process continued.



Figure 6. Hauling (catching) of *chisense*

Source: N’gonga Musonda, ‘The Reproductive Biology of *Mesobola Brevianalis* Boulenger, 1908 and *Barbus Trimaculatus* Peter, 1852 in the Lake Bangweulu Fishery’, MSc, University of Zambia, 2010. p 22.

After *chisense* was caught, it was sold to local women who processed and sold it to urban traders.

The Processing of *Chisense*



Figure 7. Fresh *chisense* (Picture taken by author, 08/11/2016)

A very important aspect of the exploitation of any perishable natural resource, such as fish is that the product should not be wasted after capture and it should reach the consumer in the best possible condition. Therefore, fish processing involved the application of preservation techniques in order to retain quality. In fact the purpose of processing fish was to stop it from going bad before it is sold to the consumer.⁸⁹ The way *chisense* was processed determined its value on the market either locally or in urban areas. The processing phase of *chisense* was not capital intensive in that it did not require a lot of money for it to be processed. However, in certain instances, women were employed by some *chisense* fishing companies (Kamba) to process their fresh *chisense*. Women were paid their money after selling *chisense* to urban traders.

On the Mweru-Luapula fishery, there was basically one method of processing and value addition technique that was practised regarding the preservation of *chisense*. The most practised one was sun drying.⁹⁰ Therefore, sun drying became ideal in the preservation of

⁸⁹ D. M. F. Betty and E.G.R. Pike, 'Fish Utilisation – Processing and Marketing' in Mortimer, M.A.E. (ed.) *Natural Resources Handbook: The Fish and Fisheries of Zambia* (Ndola: Falcon Press Ltd, 1965), p.44.

⁹⁰ DoF, Mweru-Luapula Fishery, Artisanal Frame Survey, July 2013. p.12.

chisense and it was dependent on the availability of sun shine. This method took two forms, that is, the slab method and the sandy one.

The method of using sand was commonly utilised in Lupiya area in the northern area of the lake. This method entailed casting *chisense* on sand. After landing, *chisense* was sun-dried on the beach and packed the same afternoon in sacks by the crew themselves. It was much easier for the fishermen to spread the *chisense* on the beach after landing in the morning since the fish could not be turned. However, this kind of *chisense* was not consumed locally but was exported to the Democratic Republic of Congo.⁹¹ This type of *chisense* was not liked in the Zambian markets either in local or urban areas because of the sand that got attached to the fish during the drying process. This method was however not common in other fishing camps such as Kashikishi and Kabuta. This method worked very well during the rainy season because *chisense* could not go bad in the sand as compared to the one sundried on a slab. It can be stated that drying *chisense* in the rainy season caused problems in that it took longer to dry and lost its quality (different colour) and this eventually decreased the price on the market and increased the post-harvest losses.⁹²

The other form of the sun-drying method was done on a slab. A slab is simply a smooth area where *chisense* was sun dried from. Instead of laying the fish out to dry on the natural sand, the processors organised areas surfaced with fine gravel, where the fish was exposed to the sun.⁹³ Slabs took various forms; some were in form of a large smooth rock or one made by women on the floor or the ones made in form of concrete by builders (brick layers). Concrete slabs were constructed to maintain a high quality of *chisense* and to meet the growing market

⁹¹ Interview, Besa Chisha, Lupiya, 25 November 2016.

⁹² Kiewied Tilleke, Socio-Economic Study of Fishing Communities along Lake Mweru, Luapula province Zambia. Aquaculture for Local Community Development Programme (ALCOM) Field Document No. 21.

⁹³ NAZ, SEC 6/241 Fisheries Research, Usumbura, Lake Tanganyika 1956-57/ A. Collart, Note on Ndagaa, p.7.

demands.⁹⁴ Women also made slabs by using a mixture of cassava meal porridge and soil which was then smeared on the ground to keep *chisense* from settling dirty. The slabs made by women were the ones which were common in the Mweru-Luapula fishery because they were cheaper compared to the concrete one. It was not every person who had access to either the rock slab or enough money to construct a concrete one. Thus, women improvised by making the ones with porridge smeared on the floor so that they could capitalise on the trade. The *chisense* that was processed on the slab was marketable in urban markets and was also good for local consumption. Therefore, slabs were used by traders who managed to buy fresh *chisense* straight after landing and the wives who had been given a bowl for home consumption.⁹⁵



Figure 8. Types of slabs used in *chisense* drying process (Picture taken by author, 25/10/2016)

The above were the three types of slabs that were used to sun dry *chisense*. These slabs helped to maintain the quality of *chisense*.

⁹⁴ Molsa, Fisheries Management Plan for Mweru-Luapula, p. 39.

⁹⁵ Kiewied Tilleke, Socio-Economic Study of Fishing Communities along Lake Mweru, Luapula province Zambia. Aquaculture for Local Community Development Programme (ALCOM) Field Document No. 21.



Figure 9. *Chisense* being sun-dried on a large rock (Picture taken by author, 08/11/2016)

Chisense preserved on a slab was clean and was greatly consumed in most urban places of Zambia. *Chisense* traders from the urban areas also targeted the *chisense* processed on a slab since it had great demand in urban markets.⁹⁶ The marketability of *chisense* was therefore dependent on the way it was processed. The dried *chisense* was transported to a number of small home markets within Luapula province and also to the urban markets. Women who were involved in the processing of *chisense* and the small-scale trade were able to earn an income independently.⁹⁷

Conclusion

Chisense fishing emerged in the mid-1970s and was initially done by women. This was because men were involved in demersal fishing which had more economic value than *chisense*. The chapter also examined that *chisense* fishing substituted the declining levels of the demersal fish species since it could withstand extensive human predation. *Chisense* fishing involved the use of light in order to attract the fish. Therefore, fishing by the lamp was a method employed in *chisense* fishing. The significance of light regarding attracting fish

⁹⁶ Interview, Mulenga Chengo, *Chisense* Trader, Kashikishi Markets, 5 November 2016.

⁹⁷ Bram Verelst, 'Managing Inequality: the Political Ecology of Small-scale Fishery, Mweru-Luapula, Zambia', *Journal of Political Ecology*, 20, (2013), p.22.

made people to adopt devices such as Tilley lamps to maximise on the catch of the pelagic species in the 1950s. Therefore, Tilley lamps formed an important part of the fishing gear in the *chisense* fishing.

Additionally, the chapter has also discussed the fishing gears used in *chisense* fishing such as the big plank fishing boat which were fitted with outboard engines in order to increase mobility. *Chisense*, just like any other fish species needed to be preserved to prevent it from going bad. The most commonly method used in *chisense* processing was sun drying and this was usually done by women. The quality of *chisense* determined its value on the market. In order to maintain the quality of *chisense*, the processing was done on slabs and this type of *chisense* was liked by both the people of the fishery and those in urban areas, compared to the *chisense* dried on the sandy beaches.

CHAPTER THREE

THE ROLE OF WOMEN, FISHERMEN AND TRADERS IN THE DEVELOPMENT OF *CHISENSE* FISHING IN MWERU-LUAPULA FISHERY

Introduction

The previous chapter looked at the origins and development of *chisense* fishing in Mweru-Luapula fishery which saw a number of people getting involved in various *chisense* fishing related activities. Therefore, the aim of this chapter is to examine the role played by women, fishermen and traders in the development of the *chisense* fishing industry in Mweru-Luapula fishery. The fishing industry in Mweru-Luapula contributed greatly to the wellbeing of individual households along the fishery and also in urban areas. However, the people who played significant roles in the development of the fishing industry such as fishermen, women and traders have not been studied in depth to show their contribution. Therefore, this chapter

shows the role played by these people in the development of *chisense* fishing in the Mweru-Luapula fishery. Unlike demersal fishing where women played a minor role, *chisense* fishing called upon the engagement of large numbers of women and also an increase the number of fishermen and traders since it was labour intensive. The chapter begins with the role of women in the fishing industry after which it looks at the role of fishermen and traders in *chisense* fishing.

The Role of Women in *Chisense* Fishing

The role of women in the development of the fishing industry in Zambia from the 1920s was not known in that very few women were involved in the fishing activities. Women were just limited to carrying fish from boats to their homes. Men did most of the fishing activities ranging from the actual fishing to processing. This was the case especially for those who used to camp for a period of time at the lake making salted fish (*baleleke/basalele*). Therefore, in the process of salted fish making, women only came in to help in carrying salted fish from the lake shore to their homes so that it can be sundried. Additionally, women were also only involved in the fish smoking process as fire wood fetchers. However, with the introduction of *chisense* fishing in the mid-1970s, women assumed a new role in the fishing industry in that all the activities other than the actual fishing centred on them. Women were the ones who were at the centre of processing *chisense*. The process of sun drying was very significant and profitable to the women who were involved. This was because women were able to raise money to better their living standards.

Through active participation in the processing and trade in *chisense*, some women of the fishery such as *Bana* Olipa and Given Chilemba among others, eventually emerged as gear owners while others such as *Bana* Rhoina and Mrs Katontoka became powerful local traders transporting *chisense* from the fishery to urban markets. Because of the diverse roles played

by various people in fishing, the fishing communities in the Mweru-Luapula fishery developed a recognised and acceptable division of labour.¹ Both men and women had specific roles to play in the fishing industry. Women were involved in the transportation of *chisense* to urban markets within Zambia while men mainly went to the Democratic Republic of Congo (DRC).

It can therefore be noted that the three groups – fishermen, women and traders depended on one another for their businesses to thrive. The absence of one, greatly affected the flow of business activities along the fishery. For instance, if fishermen stayed ashore, then the local women and the traders were affected since their business depended on the fishermen. On the other hand, the fishermen also depended on the women and traders for them to make money on a daily basis. Unlike demersal fishing where only men transported fish bundles to urban markets, in *chisense* fishing, women became the initial traders of fresh *chisense* supplying both the local as well as urban markets.

Chisense fishing contributed to the rise of a class of female rural-urban fish traders. By the mid-1980s, fish markets within the fishery and also the Chisokone market in Kitwe of the Zambian Copperbelt were full of female *chisense* traders. A few brought their profits back to Luapula and invested them in fishing equipment that would be used by their sons or employees. By 1997, women formed about 15 percent of Zambian gear owners in the fishery compared to only 10 percent in 1992.² The rapid expansion of the *chisense* fishing changed the economic roles of village members of the fishery and led to the emergence of new gender relations. Men with links to urban areas or at least access to limited capital became the

¹ Mwelwa Chambika Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula 1920-1964', PhD Thesis, University of Wisconsin-Madison, 1981, p.64.

² David Gordon, 'Growth without capital: A Renascent Fishery in Zambia and Katanga, 1960s to Recent Times', *Journal of Southern African Studies*, 31, 3 (Sep., 2005), p.507.

chisense fishermen and rural women became processors and small-scale traders.³ Therefore, unlike before, the poor local women were at the base of the *chisense* fishery. Gordon further observes that the rapid use of the *chisense* fishery allowed opportunities for women to gain a degree of economic autonomy.⁴

Many people were involved in pelagic fishing because smaller fish were often better able to withstand intense human predation since they generally reproduced faster.⁵ Women normally dominated the trade and processing of *chisense* however, some men also got involved in the processing of *chisense* in order to fully maximize on the profits. Some men preferred buying fresh *chisense* and sun-dry it on their own to the one which was already processed. This was because when one bought fresh *chisense* and sun-dried it on their own, they made more profit compared to those who bought the already processed one from women. The local women made more profit by buying and sun drying fresh *chisense* on their own. This is because the quantities of fresh *chisense* used to multiply once it was sundried. For instance, if one bought a tub of fresh *chisense*, they were able to get two after processing and this meant more profit once sold to urban traders. The picture below shows that the *chisense* fishery was purely based on women as both local traders and processors.

³ Gordon, 'Growth without capital: A Renascent Fishery in Zambia and Katanga', p. 507

⁴ Gordon, 'Growth without capital', p.507.

⁵ David Gordon, 'Growth without capital', p.508.



Figure 10. Women activities in *chisense* fishing (Pictures taken by author, 14/11/2016)

Women continued to play an important role since the inception of *chisense* fishing in the Mweru-Luapula fishery. As noted in chapter two, *chisense* fishing was initially done by women before it got dominated entirely by men. Even though men took over *chisense* fishing fully, women still played an important role as they acted as both local traders of fresh *chisense* as well as processors. In certain instances women provided the starter money especially after the fish ban because they had developed a culture of saving some money out of every profit realised from the daily sales during the normal fishing season. Fishermen in most cases were not saving money from their daily income and the impact of this was reflected in the negative sentiments expressed over lack of money during the fish ban period.⁶ This was mainly because fishermen and gear-owners did not save enough money to see them through to the opening or the beginning of the new fishing season after the fish ban.

The failure to save money resulted in fishermen obtaining money on credit from women especially during the fish ban period for sustenance. The money was shared between the fishers and the gear owner in a ratio of 50:50 which was settled in kind immediately after the

⁶ Dennis M. Mulikelela and Evelyn M. Mbulo, 'Fishing Conservation in Zambia: Knowledge, Attitude and Practice of Fishermen/women Towards the Fish Ban Policy. The Case of Kashikishi, Nchelenge Fishing Villages of Mweru-Luapula Fishery', December, 1999, p.73.

fish ban by giving the fresh *chisense* to women equivalent to the money they got.⁷ The gear owner got 50% while the other 50% was shared among the fishers. For instance, in March 2002, the average amount shared by the two parties was K100,000.⁸ The *chisense* fishery was greatly dominated by the women as small scale traders and processors. As a result of the significant role played by women, strong ties were established between fishermen and women since the two depended on each other.

Apart from establishing good business bonds with the fishermen, some women also established good relations with urban traders from areas such as the Copperbelt and the DRC. Such relationships facilitated the fast selling of processed *chisense* in good time. In certain instances, some women developed sexual relations with traders from urban centres to obtain favours during the selling of processed *chisense*. This is because first priority during the selling of processed *chisense* went to those who were close (*abakaya*) to the urban traders. In certain instances, such relations eventually resulted into marriages between urban fish traders and the local women. Women who got married to urban traders and those who were just cooking for them took advantage of such bonds to make a lot of profit since their processed *chisense* was sold at a slightly higher price than the rest as a way of appreciating their services.⁹

On the other hand, *chisense* traders from Zambian urban places also developed good relations with specific households who provided them with accommodation while those from the DRC rented depots or rooms until they finished buying *chisense*. The close relationship between urban traders and the women of the fishery in the long run ended up breaking up families in that most of the traders were already married. Therefore, some women used charms to make

⁷ Interview, James Siame, Kabuta, 9 November 2016.

⁸ Interview, James Siame, Kabuta, 9 November 2016.

⁹ Interview, Mulenga Lombe, Kashikishi, 28 October 2016.

the urban traders neglect/abandon their own families and be fully attached to them.¹⁰ This explains why some traders ended up in polygamous marriages with one wife being in an urban area while the other along the Mweru-Luapula fishery. These relationships also intensified the spread of sexually transmitted disease in cases where one partner was infected.

Women influenced all manner of business activities along the Mweru-Luapula fishery through their trade in *chisense*. As earlier stated, trade in *chisense* centred on women as both local small scale and urban traders. Women who traded in fresh *chisense* were locally known as *bana matabu*.¹¹ Women made huge profits in the months of March, April, July and November. These months were very important to women because they made twice the normal profit in that *chisense* was on high demand especially in March after the fish ban. This in return empowered women economically to support their households. The money earned from the trade in *chisense* by the local women as small scale traders and that which was earned by the fishermen was put together in order to support the running of individual households.¹² It was for this reason that women in the fishing camps of the Mweru-Luapula fishery married fishermen so that they could easily buy fresh *chisense*. Women greatly participated in *chisense* processing because of the economic empowerment that came with participating in this trade. It is worth to note that sometimes women made approximately K300 per day depending on the weather pattern of the lake. Prices of both fresh and processed *chisense* went high whenever the fishery experienced lower landings of *chisense*.

¹⁰ Interview, Anonymous, Kabuta, 7 November 2016. Note: Some sources remained anonymous because of the nature of information given especially that to do with charms and other sensitive information.

¹¹ The term *bana matabu* (women with tub) was developed because the fishermen used a tub as a measure for selling fresh *chisense*. A tub was also used when selling the dried *chisense* to urban traders hence the name. It is worth to note that each woman who was involved in *chisense* processing and trade moved with a tub in order to quickly sell processed *chisense* to the urban traders unlike depending on other person's tub. This information came from my own experience in Mweru-Luapula fishery from 2004 to 2008.

¹² Interview, Robert Mwandu, Kafulwe, 20 November 2016.

The presence of many traders along the fishery created a competitive environment where each trader wanted to get a share of the available *chisense* at any price so that they leave the fishery. Therefore, women took advantage this situation by hiking prices in order to maximize on profit.¹³ The simple logic is that fishermen hiked the prices of fresh *chisense* to the local traders who also in turn hiked when selling to urban traders who were in large numbers thereby resulting in competition amongst themselves to buy the processed *chisense*.

Chisense fishing captured a lot of economic activities done by women. Some women without capital in cash form prepared sweet potatoes or cassava and roasted groundnuts to exchange (barter) with fresh *chisense*. These women involved themselves in selling cooked food stuffs in order to raise money.¹⁴ The *chisense* gotten out of the barter system of trade was sundried and sold to the urban traders. Through this trade, women were able to raise capital to buy fresh *chisense*. Therefore, barter system of trade became a means used by poor women to raise capital for them to buy fresh *chisense* directly from fishermen. *Chisense* fishermen also looked forward to the food prepared by women because the work was tiresome since it was done throughout the night. Seeing groundnuts, sweet potatoes, cassava and fresh maize depending on the season, came as a sigh of relief to the fishermen's hunger. Therefore, women usually took advantage of the situation to make money. Through the barter system of trade, women were empowered to become economically independent.

Women became involved in trade around the fishing camps and with the Copperbelt urban areas, forming about half of the rural-urban *chisense* traders.¹⁵ It is worth to note that there were two types of women or female traders in the Mweru-Luapula fishery – a woman who processed her husband's fish and then traded the commodity as a joint endeavour with her

¹³ Interview, Iness Chitalu, Kabuta, 7 November 2016.

¹⁴ C.L. C. Kabalu, Women Statistics and informal sector in Zambia. Paper prepared for the United Nations International Research and Training Institute for the Advancement of Women (INSTRAW), January 1990, p. 9

¹⁵ Gordon, 'Growth without capital', p.507.

husband. Such family businesses were typical of the wealthiest families.¹⁶ The other group did not rely on husbands to give them money. Since they did not automatically gain money or fish from their husbands, they had to look for other activities to meet their commercial needs such as preparing different food stuffs which they exchanged for fresh *chisense*. Therefore, through the *chisense* fishery, these women got engaged with a money-based commercial economy.¹⁷

Trade in *chisense* was one strategy adopted by poor women who needed access to cash. They bought small amounts of fresh *chisense* from the fishermen with the little money earned from other activities or bartered *chisense* for cassava that they farmed.¹⁸ Once processed, women sold their sundried *chisense* to the urban traders. If they made a substantial profit, their trading activities expanded and many of them began going to the urban areas to trade.¹⁹ It is important to note that even married women whose husbands had stable employment such as teachers or civil servants worked as traders to supplement household income.²⁰ In this case, women through the *chisense* fishing helped to supplement meagre salaries of their husbands

Women and Sex in Fishing Camps

During the early 1980s, the *chisense* fishing industry became popular and widely participated in the area. In order to maximise the catch, fishermen used to migrate from one area of the fishing zone to another especially from April to September. As a result of such migrations, a group of traders both men and women followed the fishermen and went to buy bags of dried *chisense* for sale in the DRC or Copperbelt. Having realised the economic value of *chisense*

¹⁶ Gordon, 'Growth without capital', p.507.

¹⁷ Gordon, 'Growth without capital', p.507.

¹⁸ Gordon, 'Growth without capital', p.507.

¹⁹ Gordon, 'Growth without capital', p.507.

²⁰ Christopher M. Annear, 'Navigating Constricted Channels: Local Cooption, Coercion and Concentration under co-management, Mweru-Luapula Fishery, Zambia', *Journal of Political Ecology*, 16, (2009), pp.40-41

business, many people in the fishery wanted to maximise on this trade and this eventually created competition for fish among the people. This made women vulnerable to sexual abuse, sexual favours in order to get the fish.²¹ Therefore, in a bid to raise capital or obtain *chisense* cheaply or even freely, some women engaged in sexual activities with fishermen or male traders.

Some women developed intimate relations with the fishermen while other just worked for money. The sex sellers in the last category were girls or women who had sex with a man strictly for cash and no relationship developed between the two except for business in future.²² This was happening even in the fishing camps and it was very common to migrant fishermen especially in Lupiya area. It can be noted that even women migrated from one fishing camp to another simply to do prostitution. Some wives committed adultery because their husbands were stingy with money.²³ Therefore this explains why some women who needed to raise money to buy fresh *chisense* engaged in illicit sex. It was observed that because of the need for money, even some married women compromised their morals for money.²⁴ When it comes to sex, women in the mining areas or Copperbelt and those in the Mweru-Luapula fishery operated on the same principles.

Women from within the fishery and urban areas also compromised their morals for fish and money. Many of them got involved in sexual immorality to easily access the fish while others did so for money. For instance, such behaviour among women made Chief Bwalya Ponda of Ncheta Island in the Bangweulu swamps to ban Copperbelt women fish-mongers from

²¹ Shinga Mupindu, 'Assessment on the Role and Situation of Women in Lake Kariba Fisheries', Report: SF-FAO/2012/07, p.30

²² A. L. Epstein, *Urbanisation and Kinship: The Domestic Domain on the Copperbelt of Zambia 1950 – 1956* (London: Academic press, 1981), p.311

²³ Bbole Dandule, 'Women and Mineworkers Struggles on the Zambian Copperbelt, 1926-1964', MA Dissertation, University of Zambia, 2012, p.33.

²⁴ Dandule, 'Women and Mineworkers Struggles on the Zambian Copperbelt', p.35.

entering the swamps unaccompanied by their spouses to control sexual immorality among women.²⁵ This was mainly because there was high divorce and prostitution rate since many women traders travelled to the fishery unaccompanied. The local women also got involved in sexual immorality due to their desire for fish. Thus, traditional rulers banned local women from being involved in fishing activities because their participation led to high illiteracy among children.²⁶ It can be emphasised that lessons on the conduct of women in fishing camps can be derived from other fishing camps since the same women were involved in buying both pelagic and demersal fish species.

Some women used charms on their husbands before they left as migrant fishers to make them incapable if they tried to make love to other women.²⁷ This trend was not just in mining compounds but also in fishing villages. Wives to miners also used charms before going to visit their relatives in the village in order to make their husbands inactive while they were away. This method applied greatly to migrant workers. Some women used charms on their husbands before they left for Lupiya as migrant fishers because women wanted to protect their marriages and husbands from sexually transmitted infections.²⁸ This brought fear among men which in return resulted in men not getting involved in extramarital affairs.

Sex also brought about death in many cases especially for married women who slept with married men and vice versa. Another aspect that made sex selling so repugnant was its association with Sexually Transmitted Infections (STIs) like syphilis and gonorrhoea.²⁹ Such infections in certain instances resulted in death. Similarly some men also used charms on their women before they left as migrant fishermen. For example, in the case of the mine workers, Bbole Dandule observes that some husbands used a custom of bewitching wives so

²⁵ NAZ, LP/04/27/4, Fishing Industry, Lake Bangweulu, 1972-1997.

²⁶ NAZ, LP/04/27/4, Fishing Industry, Lake Bangweulu, 1972-1997.

²⁷ Epstein, *Urbanisation and Kinship*, p.327.

²⁸ Interview, Anonymous, Kabuta, 7 December 2016.

²⁹ Epstein, *Urbanisation and Kinship*, p.312.

that they became a danger to other men who had sex with them.³⁰ This also applied to the migrant fishermen in some cases. Women also used charms to make men give them money.³¹ This explained why some fishermen remained poor in the fishery because it is alleged that they could just give out money to women anyhow since they were under the control of some spell. On the other hand, some fishermen spent their money on commercial sex workers who normally came from places as far as the Copperbelt province.³²

Having looked at women and sex in the *chisense* fishery, it can be noted that some women just developed their businesses genuinely. Even though some women were married to fishers, they still remained independent entrepreneurs financially and logistically often avoiding their husbands as business partners for other fishers who provided their source of fish.³³ Therefore, to those who were economically disciplined, they made use of the *chisense* fishery and improved the standards of living for their families.

Some women engaged in beer brewing to raise some money which was later on used in the *chisense* business. In villages women were traditionally beer brewers for hospitality, rituals and payment for work. Women made money out of beer brewing especially during the full moon when fishermen stayed ashore. During this period most men used the little money that they saved in beer drinking which was a form of leisure in most areas of the fishery especially during the full moon. A considerable number of women earned money by brewing and selling beer in their homes in that beer brewing was profitable.³⁴ It is important to note that money was spent on a daily basis on various supplies that included food, beer and

³⁰ Dandule, 'Women and Mineworkers Struggles on the Zambian Copperbelt', p.35.

³¹ Dandule, 'Women and Mineworkers Struggles on the Zambian Copperbelt', p.35.

³² Dennis M. Mulikelela and Evelyn M. Mbulo, Fish Conservation in Zambia: Knowledge, Attitude and Practice of Fishermen/Women towards the Fish Ban Policy. The Case of Kashikishi/ Nchelenge Fishing Villages of Mweru-Luapula Fishery, December 1999, p.73.

³³ Annear, 'Navigating Constricted Channels', p.41.

³⁴ Dandule, 'Women and Mineworkers Struggles on the Zambian Copperbelt', p.35.

clothes. Women therefore, adopted a two tiered economic structure where during the full moon they concentrated on beer brewing and some farming activities on the one hand and got involved in *chisense* business when the fishermen resumed the fishing activities after the full moon on the other hand.

Women's participation in economic activities in the fishery was a result of the low incomes earned by their men. With increased economic hardships and rising male unemployment in the 1990s, poor women were working outside the home in larger numbers than ever to supplement high household budgets.³⁵ Traders and fishers were predominantly male although through barter, female controlled cassava farming production which was linked to the booming fishery and were able to raise capital to actively participate in the fishing activities. Women also dried and smoked fish that men traded in the Copperbelt towns.³⁶ However, this trend changed as women also started transporting both *chisense* and salted fish. Therefore, it can be noted that women played an important role in the development of *chisense* fishing in the Mweru-Luapula fishery.

In many cases, male unemployment and deepening economic stress in the 1990s as a result of the decline in the urban economy placed greater responsibilities on women to seek other economic activities in order to raise money. Eventually this resulted in women from urban areas getting involved in transporting *chisense* from the fishery to urban markets. Some women found that their increased earnings helped to increase their decision making authority in the household.³⁷ This eventually influenced some men in one way or another to work hard in order to maintain their respect as the household heads. Therefore, some men partnered with their wives and started transporting *chisense* and other demersal fish to the urban markets in

³⁵ Deepa Narayan, *etal*, *Voices of the Poor Crying out for Change* (Oxford: Oxford University Press, 2000), p.110.

³⁶ Gordon, 'Growth without capital', p.501.

³⁷ Narayan, *etal*. *Voices of the Poor Crying out for Change*, p.110.

order to maximise on the profits. Through participation in *chisense* fishing related activities women developed the ability to generate savings which was crucial for starting business in the informal sector.³⁸ Trade in *chisense* from a gender perspective was an essential impulse for women's empowerment. Until now, women continue to have a very strong position in the *chisense* fishing economy. They provided start-up capital for fishermen at the beginning of the fishing season which was exchanged for *chisense*.³⁹

The Role of Fishermen in *Chisense* Fishing

The Zambia Fisheries Act of 1974 defines a fisherman as “any person who as a regular or occasional occupation, undertakes fishing for the supply of fish to any market or industry” or for personal consumption.⁴⁰ Therefore, a fisherman in this study will mean any person who undertakes fishing as a regular occupation, draws his income and sustains his livelihood from fishing whereas fishing will mean any act which is directed at the taking or killing of fish for household supply or supply to any market or industry.⁴¹ Fishermen in Mweru-Luapula fishery played an important role with respect to the development of *chisense* fishing as industry. An industry in this case refers to an economic sector in which employed persons carry out their activities.⁴² As observed in chapter two, *chisense* was first witnessed by women who started

³⁸ Kabalu, ‘Women Statistics and the informal Sector in Zambia’, p.131.

³⁹ Bram Verelst, ‘Managing Inequality: the Political Ecology of Small-scale Fishery, Mweru-Luapula, Zambia’, *Journal of Political Ecology*, 20 (2013), p.22.

⁴⁰ Republic of Zambia, Fisheries Act, Number 21 of 1974, p.110.

⁴¹ Dennis M. Mulikelela and Evelyn M. Mbulo, Fishing Conservation in Zambia: Knowledge, Attitude and Practice of Fishermen/women Towards the Fish Ban Policy. The Case of Kashikishi, Nchelenge Fishing Villages of Mweru-Luapula Fishery (for the Ministry of Environment and Natural Resources), December, 1999, p.12.

⁴² CSO, Zambia Labour Survey Report 2012, September 2013, p.13.

catching using some pieces of cloth mainly for consumption. However, fishermen later on took over from women and intensified its catching.

From as early as the 1920s, fishing in the Mweru-Luapula fishery was a male dominated activity and the majority of those involved were married and household heads.⁴³ Some of these fishermen had attained some form of education whereas others had never been to school. It was very easy for many people to become fishermen mainly because fishing was an open activity and did not require any educational attainment. Most importantly these fishermen had some knowledge of arithmetic which helped them in their business transactions. It is important to note that fishermen used the *chisense* business to improve the livelihood of their families and also to raise money to pay tuition fees for their school-going children and in some cases, for themselves in improving their education standard.

Types of fishermen

With the development of commercial fishing, three types of fishermen emerged: full time, part time and occasional fishermen. Full time fishermen can be defined as people who spent at least ninety per cent of their time and earned at least ninety per cent of their income from this activity.⁴⁴ The second category of part-time fishermen were persons who spent from thirty to less than ninety per cent of their working time fishing. The third category was that of the occasional fishermen who spent less than thirty per cent of their time fishing.⁴⁵ *Chisense* fishing was mainly done by fulltime fishermen. This was because *chisense* fishing was the main occupation of the people of the fishery starting from the late 1970s and early 1980s.

⁴³ Mulikelela and Mbulo, *Fishing Conservation in Zambia: Knowledge, Attitude and Practice of Fishermen/women Towards the Fish Ban Policy*, p.xi.

⁴⁴ Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula 1920-1964', p.65.

⁴⁵ Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula 1920-1964', p.66.

On the other hand, some fishermen still participated as part time fishermen especially for the secondary school-going children who only got involved in *chisense* fishing in order to raise money for school. When schools closed (holiday), a good number of school-going children participated in *chisense* fishing in order to raise tuition fees. The role of fishermen was paramount to the thriving of *chisense* fishing in the fishery. Fishermen did not completely abandon the demersal fishing despite its decline but was carried alongside *chisense* fishing. They came up with measures meant to react to the decrease in the catch of demersal fish species. Firstly, they had to increase the number of nets and effort, secondly, they embarked on using nets with smaller mesh size and thirdly they moved into *chisense* fishery.⁴⁶ Therefore, without fishermen, it could have been very difficult for the fishing industry to continue in Mweru-Luapula fishery. Unlike the demersal fishing which was greatly dominated by the Greeks who acted as both fishermen and buyers in the initial stages,⁴⁷ *chisense* fishing was dominated by the African fishermen and traders.

The role of fishermen in the fishing industry was noticed through their continuous effort to support the continuation of the fishing activities after the decline in the demersal fish species. Before 1975, fishermen did not regard *chisense* as something worth exploiting but the situation changed after the decline in the demersal fish species. In 1975, *chisense* fishing was mainly in the hands of women who fished for consumption and sold the surplus. When men saw that the *chisense* species were worth exploiting, they came in full time. Therefore, fishermen changed the *chisense* fishing done by women into something that could generate more income for the people of the fishery. *Chisense* fishing eventually changed from a subsistence activity into a dependable regular source of income for the people of the fishery

⁴⁶ DoF, Frame Survey, 1986.

⁴⁷ NAZ, SEC 6/126, Northern Area – Mweru-Luapula System, Gen. Dev. 1, Marketing, J.L. Boyd Wilson, Letter to the Economic Secretary, 2nd February 1951.

especially in the early 1980s when it was intensified. This was because the people of fishery were accustomed to operating within a cash economy.

Labour in the Mweru-Luapula fishery was segregated by gender, age and gear ownership. As boys and men dominated the occupation of fishing and gear ownership, local fish trading became the domain of women and girls.⁴⁸ *Chisense* fishermen left for fishing by sunset and returned to the shore the following day in the morning. During the full moon and periods when there was strong wind on the lake, fishermen stayed ashore. They only went during times when they were assured of high catch especially during calm dark nights. It is important to note that most *chisense* fishermen had background knowledge in fishing and the types of winds that were favourable for effective fishing as most of them had been actively involved in demersal fishing. Therefore, fishing required some special skill of knowing the wind type and its effect on the fishing activities. The fishing effort in the Mweru-Luapula fishery was steadily increasing especially the *chisense* fisheries which had grown tremendously since the early 1990s. When *chisense* fishing became popular during the early 1980s, *chisense* fishermen used to migrate from one area to another in order to maximise on the catch. It can be noted that some fishermen migrated from DRC to Mweru-Luapula in order to maximise on catching fish.⁴⁹

In certain instances, women could not buy and process fresh *chisense* on account of hiked prices by the fishermen. Therefore, fishermen took up the challenge of processing *chisense* when women refused to buy the commodity. This was usually the case in Lupiya where it was very easy for the fishermen to cast *chisense* in the sand since it did not require turning the fish afterward. Usually the *chisense* processed by fishermen was transported to urban areas by the owner of the fishing company accompanied by one of the fishermen to verify the

⁴⁸ Annear, 'Navigating Constricted Channels', p.40.

⁴⁹ DoF, Monthly Report, 23rd May, 1977, p.4.

price at which it was sold. Fishermen sometimes sun-dried their own fish because they did not want to spend money to pay female processors especially if they wanted to maximise on profit.

The Role of *Chisense* (Fish) Traders

Fishing activities in the Mweru-Luapula fishery did not just end up at catching fish. The caught fish had to be sold to willing customers or fish traders. These constituted a market for fishermen and women who caught and processed fish in the fishery.⁵⁰ Therefore, trade in fish has a long history and was made possible through the presence of both local and urban traders. Since fishing commands a lucrative market, it became the most important and attractive activity in the fishery. Traders played an important role in the development of *chisense* fishing in the Mweru-Luapula fishery. *Chisense* traders who only intervened in the marketing stage were forced to buy *chisense* from the local female traders.⁵¹ Most traders of *chisense* came from the Copperbelt due to the readily available markets provided by the Copperbelt mines while others were from the Democratic Republic of Congo (DRC). It can be noted that the Katanga region provided and still provides a ready market for the fish products from the Mweru-Luapula fishery. It is for this reason that most of the dry fish was exported to the DRC.⁵² Therefore, it is against this background that even *chisense* found its way to the DRC since most of the traders of the demersal fish species also got involved in the pelagic fish species as well.

⁵⁰ Mulikelela and Mbulo, 'Fish Conservation in Zambia: Knowledge, Attitude and Practice of Fishermen/Women towards the Fish Ban Policy', p. 59.

⁵¹ Bram Verelst, 'Managing Inequality: the Political Ecology of Small-scale Fishery, Mweru-Luapula, Zambia', *Journal of Political Ecology*, 20 (2013), p.22.

⁵² NAZ, 3/FN/6, Tour Report: Mweru-Luapula Fisheries Area, 20th July to 29 July 1960. p.4.

Chisense traders were divided into two groups. The first group comprised women whose families were based within the fishery. Since this group was based within the fishery, they used the labour of their families to buy and process fresh *chisense* and thereafter transported it to the urban markets. Whilst they were away, their family members continued buying and processing fresh *chisense* to ensure the continuation of the business. Examples of such families include Given Chilemba, *Bana* Rhoina and *Bana* Kapya among others.⁵³ The second group of traders comprised men and women from urban areas who specifically went to the Mweru-Luapula fishery to buy already processed *chisense* by the local female processors. These were locally referred to as *utusama* (plural) or *akasama* (singular).⁵⁴ This group entirely depended on the local female processors of *chisense* in order for them to buy processed *chisense*.

Most of the *chisense* landings were sold to urban traders and most of it ended up outside the Province. For instance, in May 1994, a total number of 115 traders visited Kashikishi fishing camp and bought 54,460Kg of *chisense* which was transported to various urban centres. Of the 115, six went to Kapiri Mposhi, 33 to Lusaka, 20 Mufulira, 22 Chingola, 21, Kitwe and finally 13 went to Ndola.⁵⁵ Additionally, in June 1994, 81 traders transported 30,410Kg of *chisense* from Kafulwe fishing camp.⁵⁶ The above statistics shows that *chisense* fishing attracted a number of urban traders to the Mweru-Luapula fishery and that *chisense* went to various urban markets. Barter was not very common when it came to selling the already processed *chisense*. In most fishing camps, trade in *chisense* was left in the hands of women.

⁵³ Interview, Bana Olipa, Kabuta, 8 November 2016.

⁵⁴ *Utusama*, is the term used to refer to urban traders of *chisense* since they came with a lot of money to buy huge amounts of processed *chisense*.

⁵⁵ DoF, Sales Record, *Chisense*, Monthly Summary, Kashikishi, May 1994. Compiled by S. Lwamba and P. Kabinda.

⁵⁶ DoF, Sales Record, *Chisense*, Monthly Summary, Kafulwe, June 1994, Compiled by D. Siame.

It is worth to note that for women, Copperbelt was their destination while some men usually took *chisense* to the DRC in that most of them were Congolese nationals.

The only ponderable source of fresh and dry fish for the DRC had been the lower Luapula and Lake Mweru which together provided huge amounts of fish to the markets there in a highly organised trade.⁵⁷ Therefore the trade between Zambia and DRC regarding fish products has a long history. Thus, it is of importance to international relations to the two countries. This connection started way back before 1975 when *chisense* fishing came on the scene thus, even when *chisense* fishing started, it simply found its way to the DRC as a result of the already established trade link between the two countries.

Traders in *chisense* greatly impacted the fishing activities of the area in that their presence in the fishery determined the price at which fresh and dried *chisense* was sold. When the area had few traders, they monopolised trade by lowering the prices at which *chisense* was purchased and this in turn affected the price of fresh *chisense*. In 2008 for instance, if the local traders bought a tub of fresh *chisense* at K60,000, once sundried, they were expected to get at least two tubs which they sold to urban traders who lowered prices, to K35,000 per tub. This resulted in women not making enough profit while others just recovered their capital. This in turn made local women traders also to demand for a reduction in the prices of fresh *chisense* from the fishermen to at least K50,000 per tub so that they make some profit as well.⁵⁸ This is because the three players involved in the *chisense* fishery greatly depended on each other. The pictures below depict how processed *chisense* was sold to urban traders.

⁵⁷ SEC6/126, Northern Area – Mweru-Luapula System. Gen. Dev. Marketing/ T. Vauchan Jones, Letter to the Economic Secretary. 29th July, 1952. TCCV-J/CM.p.1.

⁵⁸ Interview, Nelly Mushota, Kabuta, 7 November 2016

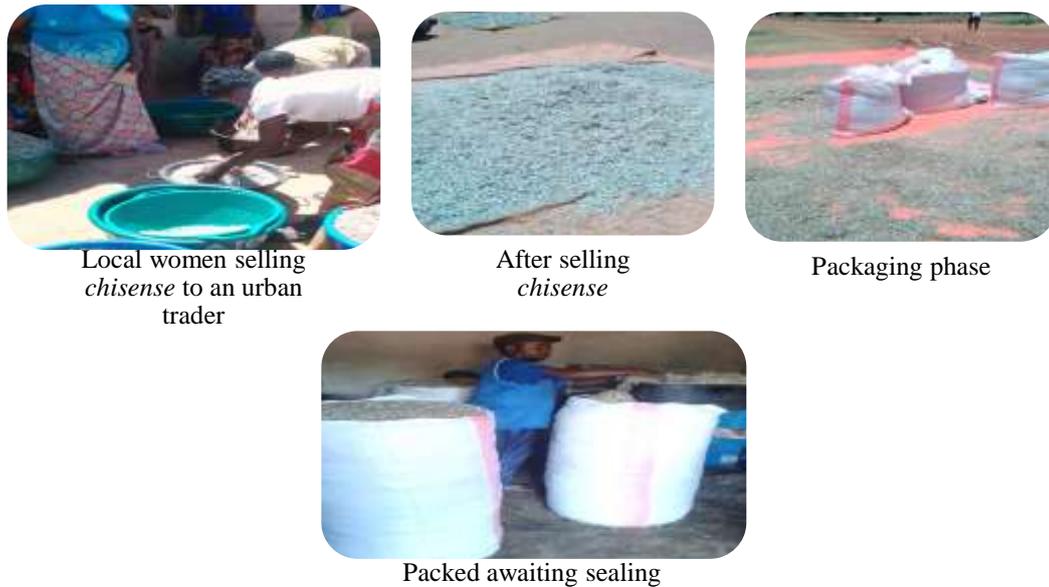


Figure 11. Selling *chisense* to urban traders (Pictures taken by author, 14/11/2016)

In some fisheries, especially the less accessible areas, the trader exerted considerable power over both the fishermen (imposing low purchase prices) and marketeers.⁵⁹ This was mainly because in most fisheries the fisherman was poorly educated and informed and was not organised sufficiently to counter the influence held by traders.⁶⁰ On the other hand, the presence of so many traders in the area worked to the advantage of the local women traders because each trader wanted to buy *chisense* as soon as possible. This in turn led to competition among urban traders. The competition eventually led to high prices of dried *chisense* for the traders who wanted to quickly buy *chisense* and leave the fishery. For instance, if a group of urban traders from Mufulira bought processed *chisense* at K35,000, those from Kitwe bought at K40,000 while those from Lusaka bought at a slightly higher price than the rest. Therefore, the local *chisense* processors targeted the urban traders with a higher offer in order for them to make a lot of profit.

Markets

⁵⁹ NAZ, LP/04/27/7, Fish Prices 1977-1985, p.10.

⁶⁰ NAZ, LP/04/27/7, Fish Prices 1977-1985, p.10.

Between 1975 and 2010 fishing activities in the Mweru-Luapula fishery did not just end up at catching fish only. The caught fish had to be sold to willing customers or fish traders. These constituted a market for fishermen and women who catch and process fish in the fishery.⁶¹ The demand for fish in Zambia, just like elsewhere in Africa, grew in response to population growth and increased urbanisation which started in the 1900s. The market for fish depended on their commercial value. Therefore, marketing for fish did not start with the product rather it started with the consumer or the final customer. The customer was the final and primary concern of the marketer and every marketing activity was designed to provide the customer with a product which he/she wanted to buy at a place which was convenient for him and at a price which was appealing to him.⁶² The local fish markets were concentrated in the more densely populated regions. Therefore, the main domestic markets for fish included urban centres in the Copperbelt Province and the capital Lusaka where over 40 per cent of the population lives.⁶³

Fish markets in Luapula province were poorly organised in the early 1970s. As a result, the Lakes Fisheries of Zambia (LFZ) made attempts to organise an orderly marketing system in the province during the same period. However, such attempts were met with failure in that the LFZ lacked fish marketing expertise and incurred great losses which led to the temporal closure of the company for a period of two years – 1979-80. Although the company resumed its operations during the late 1980, it failed to establish a satisfactory marketing system because it had restricted itself to the purchasing of only one species of fish most popular to

⁶¹ Mulikelela and Mbulo, 'Fish Conservation in Zambia: Knowledge, Attitude and Practice of Fishermen/Women towards the Fish Ban Policy', p.59.

⁶² NAZ, LP/04/05/35, Fish Marketing General Correspondence, 1961-1989, p.1.

⁶³ Musole M. Musumali, Simon H. Saskia, M.C. Husken and Marcus Wishart, *Fisheries in Zambia: An Undervalued Contributor to poverty reduction*. World Fish centre, Policy Brief, 2013, p.6.

consumers, *Saratherondon macrochir* (bream or *pale*).⁶⁴ Only people with money bought the breams.

The breams were however not as popular with the low income households as pelagic fish species such as *chisense* due to its in affordability. Since the LFZ failed to fully organise the marketing system in Zambia, it remained greatly a free market system which allowed prices to find their natural level and vary seasonally and with changing condition at each stage of distribution.⁶⁵ In a free market, marketeers greatly influenced the prices for their products. Therefore, the Zambian fish trader (wholesaler or transporter) was able to exercise substantial control over the market and continued to be the case especially when production is far below demand.⁶⁶

The Zambian Copperbelt mines provided a readily available market for fish coming from the Mweru-Luapula fishery. There was an increased demand for fish from the 1920s onwards, since it was cheaper than meat products. Therefore, the mining population on the Copperbelt provided a strong market for fish. The demand for fish by the mining population eventually led to the expansion of this trade. The link between the Copperbelt markets and the Mweru-Luapula fishery started a long time ago with a good number of European traders who eventually transformed the fishing industry overnight. This saw the transportation of fish to the copper mine markets and sold at a high profit.⁶⁷ This explains why *chisense* found its way mainly to the Zambian Copperbelt in the late 1970s since the link had already been established and also that *chisense* was cheaper than demersal fish species making it ideal for low income households.

⁶⁴ NAZ, LP/04/27/7, Fish Prices 1977-1985, Pricing and Marketing of Fish, 29th September 1981, p.2.

⁶⁵ NAZ, LP/04/27/7, Fish Prices 1977-1985, p.9.

⁶⁶ NAZ, LP/04/27/7, Fish Prices 1977-1985, p.9.

⁶⁷ NAZ, SEC 6/126, The Bulawayo Chronicles, Friday 4/8/50.

The proximity of the Copperbelt markets to the Mweru-Luapula fishery via Pedicle road in DRC made most traders to transport *chisense* there. This was so because traders wanted to make a lot of profit by cutting on the transportation costs. On the other hand, the fisheries in the Central and Southern Provinces were more focused on the Lusaka market.⁶⁸ This is because Lusaka is closer to the two provinces and this meant more profit unlike taking the fish to distant markets. However, this does not mean that traders were only limited to the markets closer to the fishery since some traders were able to transport their fish across the country. *Chisense* is found in almost each and every market be it in urban or within the Mweru-Luapula fishery due to its affordability. The picture below shows that *chisense* was more common than demersal species at the Chisokone market in Kitwe.



Figure 12. The selling of *chisense* at Chisokone Market, Kitwe (Picture taken by author, 14/04/2017)

In addition to domestic markets, the Mweru-Luapula fishery also served regional markets. By far the most important market was in the neighbouring DRC. The large population in urban centres and mining areas in Katanga Province attracted fish trade from Zambian fisheries as early as the 1950s. This was mainly because meat in the DRC was scarce and expensive thus

⁶⁸ Musumali, *etal*, *Fisheries in Zambia*, p.6.

fish became a vital protein supplier in the miners' diet.⁶⁹ Most of the fish came from the Mweru-Luapula fishery since it was closer to the DRC. For several years the Belgian Congo Copper Mines proved to be the nearest natural market for Mweru fish.⁷⁰ Apart from the Mweru-Luapula fishery, some others fish supplied to the DRC came from the fisheries of Northern Province. The proximity to these fisheries, higher market prices and relating good transport infrastructure made the markets in Lubumbashi and the rest of Katanga Province very competitive compared to domestic markets.⁷¹ Therefore, it was roughly estimated that of all the fish caught from the Mweru-Luapula fishery, 90% went to the DRC while the balance remained in Zambia.⁷² Since *chisense* fishing went along side demersal fishing, traders were involved in both species and that's how *chisense* also found its way to the DRC.

Therefore, when looking at the role of traders in *chisense* fishing, it can be noted that they had a major role to play with regard to the development of *chisense* fishing and the fishing industry in general. This was simply because their absence from the industry affected all manner of business activities. Women were not in any place to buy fresh *chisense* before the arrival of urban traders from within Zambia or the DRC because they were scared of making losses in that their business greatly hinged on the presence of urban traders. Additionally, the urban traders were only interested in buying the *chisense* that was looking good and not the one that had lost colour. The quality of *chisense* was determined by its colour. *Chisense* of high quality was whitish in colour while the one of low quality was brownish. Therefore, to safeguard their capital, women made sure that their *chisense* was properly processed by turning it regularly with a long stick so that it maintains its whitish colour.

⁶⁹ NAZ, SEC 6/126, The Bulawayo Chronicles, Friday 4/8/50 and J.S. Moffat, Commissioner for Native Development Letter to the Director of Development, 5th December 1950.

⁷⁰ NAZ, SEC 6/126, The Bulawayo Chronicles, Friday 4/8/50.

⁷¹ Musumali, *etal*, *Fisheries in Zambia*, p.7.

⁷² NAZ, 1/FG/10, Fisheries General Minutes of Meetings.

Urban traders opened up the Mweru-Luapula fishery to both social and economic change. These traders became a channel through which good values such as saving money and investing it in small business like establishing a small shop were introduced to the people of the fishery. Some fishermen such as *Bashi* Bwalya of Kabuta fishing village and Makungu Andrew of Kashikishi among others, through such interaction started saving some money and ended up being gear owners. Other people like *Bana* Olipa joined hands with urban traders by sending one bag of dried *chisense* to urban markets and eventually started transporting *chisense* to urban markets on their own after raising enough capital.⁷³ Therefore, the interaction between the urban and the local traders helped to transform the way of life of the people in that a good number of them developed the desire to work hard and better their lives through the building of modern houses along the fishery and getting involved in transporting *chisense* to urban markets. By 2010 some local *chisense* traders such as *Bashi* Rose among others changed their settlements from the fishery to the Copperbelt and still continued transporting *chisense* from the fishery.⁷⁴

Conclusion

This chapter has looked at the role played by fishermen, women and traders in the development of *chisense* fishing in the Mweru-Luapula fishery. The study observes that fishermen ensured a steady supply of fresh *chisense* to the local traders who were predominantly women. Most of the fishermen involved in *chisense* fishing were the ones who had earlier been in the gill net fishing. Women played a significant role in the development of *chisense* fishing. In the initial stages women caught *chisense* for domestic consumption. When men realised that the *chisense* landings were worth exploiting, they became involved fully and replaced the women. Women were only limited to processing *chisense* and some

⁷³ Interview, *Bana* Olipa, Kabuta, 8 November 2016.

⁷⁴ Interview, *Bashi* Rose, Kitwe, 14 March, 2017.

eventually started transporting *chisense* to the urban markets. Through participation in *chisense* related activities, women were able to sustain their families and improve their livelihood out of the profit realised every day. Traders in *chisense* determined all the business activities along the fishery. Their absence greatly affected all the fishing activities in the fishery. The traders took advantage of the markets in urban areas to ensure the steady supply of *chisense* since it was affordable by most low income earning families. The study has established that there was a strong link among the fishermen, women and traders because *chisense* fishing greatly depended on their linkages. Through such interactions, there was exchange of cultural-values between the fishery and the urban areas.

CHAPTER FOUR

SOCIO-ECONOMIC IMPACT OF *CHISENSE* FISHING ON THE PEOPLE OF THE FISHERY

Introduction

The previous chapter discussed the role of women, fishermen and traders in the development of the *chisense* fishing. It is important to note that the interplay of the three had an impact on the lives of the people of the fishery. Therefore, this chapter aims at providing information on the socio-economic impact of *chisense* fishing in the Mweru-Luapula fishery. The chapter discusses the socio-economic impact of *chisense* fishing on the people of the fishery and those outside the fishery who were involved in the *chisense* related activities. It will further discuss the impact of labour migration that came with the *chisense* fishery on marriages and its connection to the spread of diseases such as the sexually transmitted ones. Additionally, the impact of *chisense* fishing on education is discussed after which the chapter assesses the economic impact of the *chisense* fishery on the people of the fishery. In order to appreciate

the impact of *chisense* fishing in the Mweru-Luapula fishery, comparisons will be made with demersal fishing. The chapter also highlights both the positive and negative impact of *chisense* fishing.

Social impact of *chisense* fishing

Migration

Migration has been a phenomenon existent in all human societies. In the past, groups of pastoralists moved perpetually in search of better fields and water for their animals and periodically in relation to the rainfall. Movement and migration were an integral part of most African fisheries and fishing population. Initially most populations migrated in response to the movement of fish. Migration can be categorised into two forms – internal and short-term migration. Internal migration took place between fishing settlements within the same country in order to follow stocks or to take advantage of certain facilities of prices during a particular period of the year while short-term migration was that which lasted for a few weeks but less than a fishing season.¹ Therefore, both the internal and short-term migration were applicable in *chisense* fishing. Fishermen migrated from one camp to another in response to the movement of fish in Lake Mweru coupled with the rise and fall in lake level due to flood water.² It is important to note that there were also some external migrations which involved the Kasai from the DRC. Fishermen were involved in migration because they wanted to maximise on the catch and make more money.

¹ S. Randall, Review of Literature on Fishing Migrations in West Africa from a demographic perspective. Sustainable Fisheries Livelihood Program Report, 2005, p.86 and NAZ, SEC6/599 Mweru-Luapula Reports 3/FN/6 Vol. III.

² NAZ, SEC 6/138, Annual Reports, Fisheries and also NAZ, SEC 6/599 Mweru-Luapula Reports 3/FN/6 Vol. III. See also NAZ, Fisheries Symposium Lusaka 1960, R/2013/1/1. Vol. I., D Harding, Preliminary Observations on the Effects of Seasonal change in Water Condition on the Fishery in the Bangweulu Area of Northern Rhodesia.

The Mweru-Luapula region has historically been characterised by strong seasonal and permanent migratory patterns.³ This was greatly influenced by the seasonal migration of fish. Therefore, fishermen moved in response to the fish because they wanted to maximise on the catch. Fishermen established temporary fishing camps in the new areas where they went whose houses were grass-thatched and lacked sanitary facilities. During the early 1980s when the *chisense* fishery became popular and widely practised, *chisense* fishermen migrated from the northern coast to the southern coast and vice versa in order to maximise on the catch.⁴ For instance, *chisense* fishermen used to camp at Kabuta in May, June and July in that the area recorded a high catch during the same period. After Kabuta, some either migrated to Lupiya or Kashikishi fishing camps from August to November every year. Fishermen had to migrate from one camp to another simply because by nature, *chisense* was a migratory species.⁵ Therefore, whenever fishermen migrated, a group of traders both men and female followed them to buy bags of dried *chisense*.

Young boys and girls of school going age also took part in the migration. The boys were trained to become *chisense* fishers while girls participated in the processing of fresh *chisense*. Their motivation to migrate was the money made through the participation in the *chisense* related activities. Therefore, fishing allowed for income generation almost year-round. This participation in the sector was very broad as it included women, the youth and urban poor who had few alternative income opportunities. Fishers and fish workers decided to migrate for various reasons. For some, it was an opportunity to save money to be invested in the buying of fishing gears and starting up small businesses while others it was time for them to

³ Bram Verelst, 'Managing Inequality: the political ecology of a small-scale fishery, Mweru-Luapula, Zambia', *Journal of Political Ecology*, 20 (2013), p.18.

⁴ Kiewied Tilleke, Socio-Economic Study of Fishing Communities along Lake Mweru, Luapula Province. Aquaculture for Local Community Development Programme (ALCOM) Field Document No. 21.

⁵ Verelst, 'Managing Inequality: the political ecology of a small-scale fishery, Mweru-Luapula, Zambia', p. 22.

enjoy drinking and having multiple sexual partners. Most of the migrant groups in the fishery were attracted by the abundance of fish, opportunities to find casual employment, trade in fish and setup retail businesses. Therefore, the movement of people from one area to another in pursuit of economic opportunity was an on-going process. The positive part of migration was that some fishermen managed to save money whilst away which was later on invested in other businesses such as *kantemba*⁶ and this helped improve their standard of living. On the contrary, migration created a number of problems for the people involved in that some became careless with their lifestyles by having multiple sexually partners thereby making themselves susceptible to sexually transmitted infections (STIs).

Fishing and Health, Diseases – HIV/AIDS

Fishing communities have recently been recognised as a target population in the national response to HIV/AIDS. The HIV/AIDS epidemic is a major challenge both to public health and the socio-economic development of the country. Human Immunodeficiency Virus (HIV) is the virus that causes Acquired Immune Deficiency Syndrome (AIDS).⁷ HIV/AIDS is a dangerous epidemic which is known for claiming lives of both the youth and the old. It is for this reason that it is cited as one of the leading causes of death worldwide for both women and men aged 15 to 49 years.⁸ The people who belong to this age group are very active and productive thus, death caused by this epidemic leads to permanent loss of labour which eventually leads to loss of family income.⁹

⁶ Kantemba was a small business or stand where people sold things like cooking oil, salt and sugar in small quantities. It was a shop where the people of the fishery used to buy their necessities.

⁷ Ministry of Health, Central Board of Health, HIV/AIDS in Zambia: Background Projections, Impacts, Interventions, September 1999, p.3.

⁸ United Nations, Department of Economic and Social Affairs, 'The World's Women 2015, Trends and Statistics', New York, 2015, p.52. See also CSO, Selected Social Economic Indicators, 2004-2005, p.46.

⁹ Ministry of Health, Central Board of Health, HIV/AIDS in Zambia, p.47.

While fish is important for food and nutrition security and income, people in fishing communities are at high risk of contracting HIV/AIDS and other diseases. Fishing communities are considered to be particularly susceptible to the risk of HIV/AIDS on account of various risk factors associated with accompanying lifestyles. This is mainly because people from various places are brought together in one place especially during migratory fishing which comes with a good number of social effects. Migratory fishing is a situation where fishermen travelled or moved from one fishing camp to another in order to maximize on the catch. Usually this was as a result of the differences that prevailed in fishing seasons that enabled fishermen to fish at and away from home. Even though the core aim of migratory fishing in the Mweru-Luapula fishery was to increase the landings, it also came with some negative effects.

Mobility is a dominant theme in much of the HIV/AIDS literature, because the circumstances associated with mobility have been shown to cause susceptibility to HIV/AIDS. This rests on the assumption that migrants are more likely than non-migrants to engage in risk behaviour such as having unprotected sex with multiple partners.¹⁰ Anna McPherson also noted that the mobile nature of the vast proportion of fisher folk in their services had a double handicap as it increased risk taking behaviour and situated them in environments where physical health services was unavailable or inappropriate.¹¹ This system greatly applied to *chisense* fishing in that fishermen moved from one camp to another with the aim of increasing the landings.

Migratory fishing in the *chisense* fishing industry called for the creation of temporary landing sites by the lakeshore. Fishing landing sites therefore, became hubs of trading activities and

¹⁰ A. Kher, 'Review of Social Science Literature on risk and vulnerability to HIV/AIDS in Fishing Communities in Sub-Saharan Africa', August, 2008, p.11.

¹¹ Anna McPherson, 'Health Service delivery and other HIV/AIDS related Interventions in the fisheries sector in sub-Saharan Africa: A Literature Review', 2009, p.14.

thus attracted other mobile groups such as vendors, casual labourers, traders, transport workers, commercial sex workers and women from nearby villages who migrated to landing sites to run bars, restaurants and offer sexual services.¹² The landing sites were very active with different activities due to the presence of many people who gathered in one place. For instance, from March to May, *chisense* fishermen from Kashikishi, Kabuta, and Mukwakwa would camp at Lupiya fishing camp because that is when the area experienced a high catch. From Lupiya, they would camp at Kabuta fishing camp from May to July and finally at Kashikishi in August after which they went back to Lupiya in September up to November.¹³ This was done yearly however, it was not each and every fishing company that migrated. Through these migratory patterns, both men and women ended up contracting HIV/AIDS and other Sexually Transmitted Infections (STIs) such as Syphilis and Gonorrhoea.

Therefore, to prevent the spread and contracting of HIV/AIDS and STIs some measures were put in place. The first one was that fishermen were encouraged to get condoms at clinics or health posts. In certain instances the community health volunteers would distribute condoms in the fishing camps in that some fishermen felt shy to visit the health posts to collect the condoms. The other measure was that some fishermen especially in the late 1990s and early 2000s decided to migrate with their wives each time they changed the fishing camp.¹⁴ This was because some men could not stand being without their wives for a long period of time. On the contrary, the movement of both the husband and wife had some negative effects on their children. The children were left home alone and would do anything since their parents were not around and this eventually led to moral decay in some children.

¹² Kher, 'Review of Social Science Literature', p.11.

¹³ Interview, Anthony Mwenya, Kabuta, 8 November 2016.

¹⁴ Interview, Anthony Mwenya, Kabuta, 8 November 2016.

In order to assess the impact of HIV/AIDS on the fisheries sector in Zambia, lessons can be drawn from other countries and within. The growing evidence from other countries in Africa suggests that fisher folk and fish traders were severely affected by the disease. Factors that made fisher folk vulnerable to HIV include high mobility and migration, access to cash incomes within a broader context of poverty, long periods of time spent away from home, demographic profiles of fisher folk, availability of commercial and transactional sex in fishing ports and lakes and high levels of drug and alcohol abuse.¹⁵ Additionally, women who earned their living directly and indirectly from fisheries and, who often moved into fishing communities for economic reasons were particularly at risk of HIV infection due to their social and economic vulnerability.¹⁶ Women used sexual relations with fishermen to secure fresh *chisense* because priority was given to the wives and those related to fishermen. Those without any relations to the fishermen or gear owners found it very difficult to buy desired amounts of *chisense*. This was however not the case especially with women who were committed to their religious affiliations because by virtue of congregating together with some fishermen, they were also favoured when buying fresh *chisense*.

Apart from HIV/AIDS, fisher folks were also susceptible to both air-borne and contagious diseases. It is a well-known fact that congested communities (high population density) are very susceptible to outbreaks of air-borne and contagious diseases such as tuberculosis (TB), cholera and dysentery. This was an on-going trend in most African fisheries because fishermen have many things in common such as staying in overcrowded fishing camps thereby making them susceptible to various diseases as stated earlier. Some fishermen were careless about their health in that in certain instances, they just drank water from the lake directly without treating it by either adding chlorine or boiling it. Therefore, this made them

¹⁵ Lungu and Husken, Assessing Migration and Mobility Patterns, p.3.

¹⁶ Lungu and Husken, Assessing Migration and Mobility Patterns, p.3.

vulnerable to diseases such as Malaria, Diarrhoea and cholera among others. This is because such diseases are usually transmitted through the use of contaminated water.

In 1990 for instance, there was a cholera outbreak in various parts of Luapula Province where a total of 175 people got sick.¹⁷ Nchelenge alone also experienced a series of cholera outbreaks from 2002 to 2007 where a total number of 1,155 people got sick while 51 died.¹⁸ The figures given show that many people were affected greatly by cholera and there is also a chance that the numbers were way higher than reported in that some cases were not recorded by health personnel. The causes of cholera were mainly due to poor personal hygiene practices and poor environmental sanitation which was a common feature of the *chisense* fishing camps. Therefore, fishing in the Mweru-Luapula fishery had both the negative and positive effects on the people of the fishery and the traders

Marriages

According to the Christian Bible, marriage is a solemn ritual that was instituted in the Garden of Eden when God ordained the first couple.¹⁹ From that time onwards, marriage has been an important ceremony celebrated by different societies in Zambia and world over. In Zambia, marriage is conducted based on different reasons. There were factors that influenced one to marry. For instance, among the Tonga speaking people, one needed to have a piece of land and some animals (cattle). Elizabeth Colson observes that to a large extent, the Tonga have

¹⁷ United Nations, Department of Humanitarian Affairs, Situation Report No.1, *Zambia Cholera Outbreak*, 20 December, 1990.

¹⁸ Kambita Kambita, Knowledge, Attitude and Practice of Cholera Outbreaks in Nchelenge District, A Research Project submitted to the Department of Nursing Sciences, School of Medicine, University of Zambia, 2010, p.6.

¹⁹ Holy Bible, Genesis 2vs18-25

used increased herds to further their customary interests.²⁰ Along the Mweru-Luapula fishery, having a skill in fishing was key for one to marry. *Chisense* fishing attracted many marriages along the fishery. Boys in the age range of 15-20 years got into marriage provided they had a skill of catching *chisense*.²¹ *Chisense* had become paramount in Mweru-Luapula fishery especially with the depletion of the demersal fish species such as bream, tilapia and many others. Thus, whoever knew how to catch *chisense* for boys was eligible of getting into marriage because they were in a position to provide for and sustain their family. The man's strength in marriage was measured based on one's ability to provide for the family.

The Kasai people from neighbouring DRC were part of the fishing communities along the Mweru Luapula fishery. Most of them were integrated in various communities through marriages. The Percentage of married fishers of the Mweru-Luapula fishery was high at 90% by 2008.²² This shows that the fishing industry brought people from different places such as the DRC and within Zambia which resulted into intermarriages. Some traders from the DRC usually got married to the local women to help them with daily activities such cooking among others.

Education

Chisense fishing in Mweru-Luapula fishery had both negative and positive impact on the school going children. Education can simply be defined as an organised and sustained communication process designed to bring about learning.²³ *Chisense* fishing negatively

²⁰ E. Colson, 'The Role of Cattle among the Plateau Tonga of Mazabuka District', *Rhodes-Livingstone Journal*, XI (1970), p.25.

²¹ Interview, Anthony Mwenya, Kabuta, 8 November 2016.

²² Mweru-Luapula Frame Survey Report, 2008, First Draft, p.21.

²³ M.J. Kelly, *The Origins and Development of Education in Zambia: From Pre-colonial Times to 1996* (Lusaka: Image Publishers Limited, 1999), p.1.

affected the lives of the school-going children of the fishery especially in the 1980s when it became popular. Some of them were forced to drop out of school because they were enticed by the money attached to the *chisense* fishery. For instance in 1988, it was estimated that in Chief Bwalya Mponda's area, over 3,000 people were staying in the Bangweulu fishery permanently with their school going children who had prematurely stopped schooling or never enrolled in schools at all.²⁴ This shows the negative impact of fishing on the local communities. Other children were greatly influenced due to the movements of their parents who were involved in migratory fishing. This was mainly because most children followed their parents and camped with them at fishing areas.²⁵ Attaining education proved futile for such children as most of them dropped out of school.

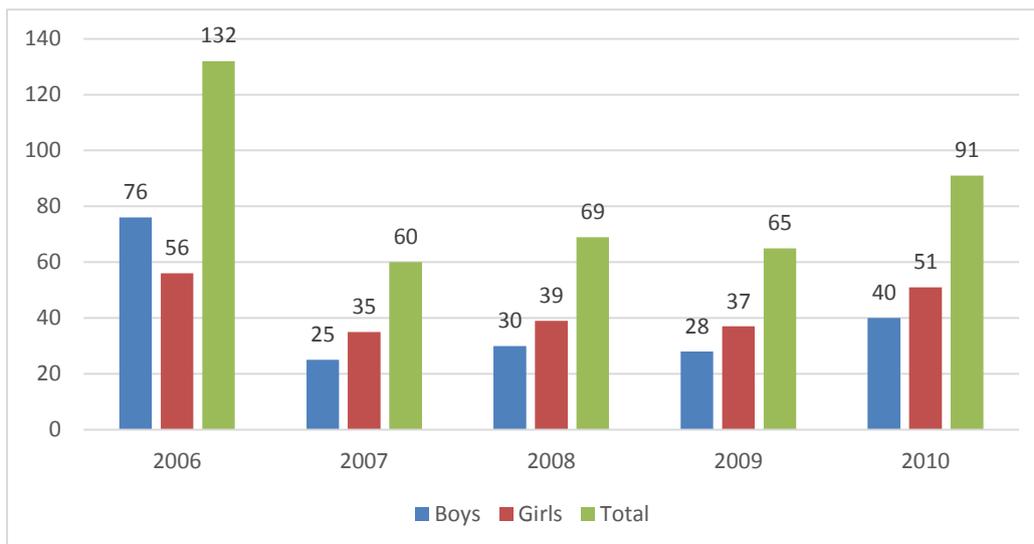
School dropout became a common feature for most school going children. Since the late 1970s and early 1980s, the *chisense* fishing industry came with increased daily landings compared to the demersal fish species. Many people got attracted to the money realised from this fishing activity. This prevented them from seeing the value of education. Thus, very few people from the Mweru-Luapula fishery completed Form Five or Grade Twelve in the 1980s and 1990s because their focus was mainly on fishing. Young people had no role models to look up to for them to appreciate the value of education. The only picture that they had was that of a *chisense* fisherman and processor who were making money on daily basis. It is important to note that most drop outs were recorded at primary school level unlike secondary in that most of them were boarding schools. Pupils in boarding schools detached themselves from fishing related activities until when schools closed.

²⁴ NAZ, LP/04/27/4, Fishing Industry, Lake Bangweulu 1972-1997, Evacuation of Fishermen from Specified Areas in Bangweulu, p.2.

²⁵ NAZ, LP/04/27/4, Fishing Industry, Lake Bangweulu 1972-1997.

Table 1 below shows a sample of the number of school dropouts from Kabuta Primary School which is located in a fishing society. The table demonstrates that *chisense* fishing among other factors contributed to the increased rate of school dropouts for most pupils of the fishery. From the table, it is clear that more boys dropped out of school compared to girls, except in 2006. As people started knowing the value of education through interactions with people from urban areas, the number of dropouts reduced from 132 in 2006 to 91 in 2010.²⁶ Due to poor record keeping in other schools of the fishery, it was difficult to find other statistics. However, the table is proof enough to show that *chisense* fishing led to school dropouts in the Mweru-Luapula fishery.

Table 1. School Drop Outs at Kabuta Primary School, 2006-2010



Source: School Records, Kabuta Basic School, Nchelenge. Collected on 8 November 2016.

It is just recently that most people of the fishery have realised the importance of education hence there has been a drop in the number of pupils dropping out of schools. On the other hand, *chisense* fishing also came with some positive influence on education in that most of the people involved in this fishery were able to raise money to pay school fees for their

²⁶ School Records, Kabuta Basic School, Nchelenge.

children.²⁷ Some parents were able to send their children to the University of Zambia and many other tertiary institutions within Zambia and were in a position to supplement on the tuition fees in cases where children were put on 50 to 75 per cent government bursary.²⁸ When the area recorded a high catch, parents easily raised tuition fees for their school going children. This was because *chisense* fishing was at the centre of other businesses in the fishery. Participation in various fishing activities in a bid to raise money for school tuition fees was a common trend along the Mweru-Luapula fishery. It did not just work in *chisense* fishing but also worked in demersal fishing in the 1960s. Musambachime observed that boys especially during the fishing seasons caught their own fish to sell to earn money for school fees.²⁹ This shows how important fishing was with respect to raising money for school fees.

On the other hand, *chisense* fishing negatively impacted the lives of gear owner's children. This was mainly because these children were usually charged with the responsibility of supervision. With such tasks, they did not usually have time for school. *Chisense* fishermen reached the lake shore in the morning around 6am to 7am and sometimes they even reached around 8am. This was the same time pupils were supposed to be in class, but most of them preferred being at the lake shore to being in class. To this effect, some decided to drop out of school. School going children at times dropped out because of the lack of money and by the time funds were found considerable amount of time had been lost to catch up with academic work.⁹⁸³⁰

²⁷ Interview, Head teacher, Kabuta Basic School, 8 November 2016.

²⁸ Interview, Chishimba Manda, Kabuta, 7 November 2016.

²⁹ Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula', p.65.

³⁰ Musumali, *etal*, *Fisheries in Zambia*, p.2. Dennis M. Mulikelela and Evelyn M. Mbulo, 'Fish Conservation in Zambia: Knowledge, Attitude and Practice off Fisheries/Women towards the Fish Ban Policy. The Case of Kashikishi/ Nchelenge Fishing Villages of Mweru-Luapula Fishery', December 1999, pp.86-87.

Some children were actively involved as fishermen locally known as *bakajai* (*chisense* fishermen). The children who were in primary schools worked for fishing groups as carriers of the fishing gear from the shore to the camp. They were also in charge of cleaning or washing the inside of the boat after the selling of fresh *chisense*. These children were locally known as *gololwela* (someone who picked up the remaining scanty fresh *chisense* from a boat). *Chisense* fishermen deliberately left some fresh *chisense* in the boats for such children as bonus or motivation for them to clean/wash the boat afterwards. The *chisense* collected by the children (*gololwela*) was sold to the local women traders who later on sundried it and sold it to the urban traders from the Copperbelt province of Zambia and the DRC.³¹ Therefore, the money made on daily basis by these children eventually made some of them to drop out of schools. Additionally, since some women of the fishery were school dropouts and others were forced into early marriages, they did not see the value of education thus they also incorporated their own children into the *chisense* business as processors. On the other hand, some parents did not want their children to go through what they went through thus, they encouraged their children to go to school. However, some pupils just stopped school not because of their parent's influence but because they were caught up in the *chisense* fishery.

³¹ Comes from my personal observation from the Mweru-Luapula fishery at Kabuta fishing camp from 1999 - 2008.



Figure 13. Children's participation in *Chisense* fishing. (Picture taken by author, 07/11/2016)

The money made out of *chisense* fishing made some pupils not to see the relevance of education. Unlike civil servants who get paid at month ends, *chisense* fishermen made money every day thereby making the industry to be attractive in the area. It is also worth to note that some secondary school going children positively benefited from *chisense* fishing as they were able to raise money for their tuitions.³² When schools closed especially for those in boarding schools, they usually returned to *chisense* fishing in order to raise money for their next school fees. It can be noted that some were able to complete their secondary school education out of *chisense* fishing.

Economic impact of *chisense* fishing

Fishing is one of the oldest ways by which people have fed themselves and their families. *Chisense* fishing is an economic activity for the people of the Mweru-Luapula fishery.

³² Interview, Nicholas Kaoma, Mukwakwa, 15 November 2016.

According to the Central Statistical Office (CSO), an economic activity entails production and provision of goods and service for the purpose of improving living standards both at individual and national levels.³³ There are several ways through which *chisense* fishing impacted the lives of the people of the fishery.

Employment

Fishing in the Mweru-Luapula fishery was very important in that it provided the people of the fishery with employment. This was because the fishing industry was the mainstay of the economy of the Luapula Province providing approximately 40 per cent of the national fish production. Employment is a key indicator of a nation's economic development and efficiency in allocation of resources.³⁴ Therefore, the fishing industry played an important role as the main economic driver of the province. The fishing sector continued to contribute significantly to rural development in terms of employment and income generation and poverty reduction. It was estimated that the sector supported more than 300, 000 people by 2009 deriving their livelihood directly as fishers or indirectly as traders, processors and other service providers.³⁵ In a nut shell, many people of the fishery were employed in the fishing industry as fulltime and part-time fishermen and many are believed to be active in support functions tied to processing and preservation, transport, marketing and production and maintenance of boats and gear.³⁶

³³ CSO, Zambia Labour Survey Report, September 2013, p.28.

³⁴ CSO selected socio-economic indicators, 2000-2003, November 2004, p.32.

³⁵ Agricultural Consultative Forum/ Food Security Research Project (ACF/ FSRP), The Status of Fish Population in Zambia's Water Bodies, 9 April 2009, p.1. See also Mulikelela and Mbulo, Fish Conservation in Zambia, p.17.

³⁶ Inge *etal*, *Freshwater Fisheries and Fish Management*, p.4.

Employment was an integral part that came with *chisense* fishing since its inception in the mid-1970s. When the *chisense* fishery was fully established in the early 1980s, many people got employed in various activities related to this fishery. The contributions of fishing to rural economic growth and commerce provide significant economic opportunities for many people, however such benefits are poorly quantified and often overlooked.³⁷ *Chisense* fishing became the major occupation of most residents of the Mweru-Luapula fishery from the 1980s to recent times. Therefore, through the provision of employment we can safely note that *chisense* fishing positively impacted the lives of the people of the fishery.

Chisense fishing became an important source of income for both men and women including the young people. For instance, in 1981 the period when the *chisense* fishery was being expanded, it was estimated that 17,000 fishers were engaged in the fishing industry while a good number also derived a living through fish processing and marketing.³⁸ Therefore, it can safely be said that *chisense* fishing offered significant levels of employment opportunities to the people of the fishery. Most of the men who had abandoned demersal fishing depended on the *chisense* fishing for survival. The employees on *chisense* fishing boats mostly worked one year for a gear owner to be able to buy their own gear and to start their business.³⁹ *Chisense* fishing was capital intensive and if one only worked for a year to get their own gear, then it can be concluded that the *chisense* fishery was profitable. For instance, at Kabuta village, Chitalu Ndaiseka, Ba Kapapula, Silvester Kalobwe, Ba Polo, Chintamba and Chituma among others having worked as *chisense* fishermen eventually emerged as gear owners and started employing others in the early 2000s.⁴⁰

³⁷ Musumali, *etal*, *Fisheries in Zambia*, p.2.

³⁸ NAZ, LP/04/27/7, Fish Prices 1977-1985, Pricing and Marketing of Fish, 29th September 1981, p.1.

³⁹ Verelst, 'Managing Inequality: the political ecology of a small-scale fishery, Mweru-Luapula, Zambia', p.22.

⁴⁰ Interview, Anthony Mwenya, Kabuta, 8 November 2016.

Both dry and fresh fish, happened to be the greatest revenue earner for both fishermen and people engaged in ancillary occupations such as boat-building, fish processing, marketing and transportation.⁴¹ Carpenters greatly benefited from the *chisense* fishery especially during the transition period from demersal to pelagic starting from the mid-1970s onwards which called for the change in the boat size from a canoe or a very small to a sizeable boat. This is because in demersal fishing only very small boats or canoes were used. However, in the 1990s when the Japan fishing method was fully operational, most carpenters were employed either in boat-building or maintenance in that only one big boat was used to carry both the fish and the gears. During this period, carpenters made a lot of money because a 4-5 metre boat used to cost K350,000 to K400,000 respectively while a 6-7 metres boat which were very common in the *chisense* fishery used to cost K450,000 to K500,000, respectively.⁴² The following are some of the names of the well-known carpenters from the 1980s and 1990s that benefited from boat building in the *chisense* fishery, *Ba Matete*, *Bashi Kalenge*, *Happy Kaluba* and *Moses Chishimba*.⁴³

Other people were employed as processors and traders of *chisense*. The other point to note when stressing the importance of *chisense* fishing is that it saw an increase in the number of fishermen and women involved in various activities from 9,301 in 1992 to 12,047 in 1997.⁴⁴ *Chisense* fishing offered employment to the people of the fishery in various ways such as the actual fishing itself, processing and also trade. Trade is usually seen as a positive factor in improving the standards of living for a country's population. Therefore, trade offered an opportunity to achieve higher levels of consumption for all involved parties in the fishing

⁴¹ NAZ, LP/04/27/7, Fish Prices 1977-1985, Pricing and Marketing of Fish, 29th September 1981, p.1.

⁴² Interview, Titus Chama, Kashikishi, 28 October 2016.

⁴³ Interview, Titus Chama, Kashikishi, 28 October 2016.

⁴⁴ Mulikela and Mbulo, 'Fish Conservation in Zambia', p.3.

related activities.⁴⁵ The number of people dependant on fishing directly as in employment or indirectly as in fishing related activities is not easy to ascertain due to the migratory nature of fishermen. Additionally some were just involved in *chisense* fishing as part-time fishers.

Looking at the numbers involved in the fishing related activities, it can be noted that the fishing industry was and still is a major employer in Zambia, third largest occupation from the agriculture and mining sectors.⁴⁶ The fishing industry has for over the years continued to be one of the important contributors to animal protein, food and employment. The ever constricting economy had compelled many people to the fishing industry. The closure of companies, retrenchments, early retirements, youth unemployment had left many economically stranded with less or no options to earn a livelihood. Thus, they were compelled to join the fishing industry.⁴⁷ Undoubtedly, the *chisense* fishery has the potential to sustain the lives of the people of the fishery. Many people benefitted from *chisense* fishing because of its capacity to absorb many people unlike the demersal fishing which only employed a few people.

Building of burnt-brick houses with iron sheets

In the late 1970s before *chisense* fishing became fully established in the Mweru-Luapula fishery, there were only a few burnt-brick houses roofed with iron sheets along the fishery. During that period, the Mweru-Luapula fishery was dotted with many small and medium grass-thatched houses built with raw bricks. However, in the early 1980s when *chisense* fishing had become fully established, many people who were involved in its fishing

⁴⁵ Haken Eggert and Mads Greker, 'Effects of Global Fisheries on Developing Countries: Possibilities for income and Threat of Depletion', Environment for Development Discussion Paper Series 09-02, January 2009, p.2.

⁴⁶ Mulikelela and Mbulo, 'Fish Conservation in Zambia', p.17.

⁴⁷ Mulikelela and Mbulo, 'Fish Conservation in Zambia', p.22.

developed a desire to build houses with burnt-bricks and roofed with iron sheets unlike the common grass-thatched ones. This was because money became readily available in that the *chisense* landings were higher than that of the demersal fishery. Additionally, many people were employed in the *chisense* fishery since it was labour intensive. All these people became active participants in the *chisense* fishery and developed a desire to better their lives by building their dream houses according to the rural standards along the fishery.

The 1990s and 2000s saw a proliferation of many burnt brick houses roofed with iron sheets in the area. Therefore, these houses became some form of affluence along the fishery. Some fishermen began saving money so that they could build such houses. Unlike in demersal fishing, the *chisense* fishery saw an increase in a number of burnt-brick houses roofed with iron sheets in the Mweru-Luapula fishery especially among gear owners. Such houses became every man's dream along the Mweru-Luapula fishery thus, it became the first priority for each and every gear owner. Therefore, very few gear owners failed to build nice burnt-brick houses roofed with iron sheets along the fishery because money was readily available.⁴⁸

Investment in fishing gear

Chisense fishing was very important to the people of the fishery in that it empowered them economically. Many of them developed the desire to invest in *chisense* fishing gears due to the benefits that came with it and also to employ others. Gear owners were greatly respected in society such that they were referred to as *abasungu* (A term used to refer to someone of higher status in society especially along the fishery or simply an employer) since they provided employment for others. An employer can simply be defined as a person who operated his or her own economic enterprise and used hired labour.⁴⁹ *Chisense* fishing greatly

⁴⁸ Interview, Titus Chama, Kashikishi, 28 October, 2016.

⁴⁹ CSO, Zambia Labour Survey Report, September 2013, p.35.

hinged on hired labour and the gear owners benefited most in that whatever money was raised after selling fresh *chisense* was shared equally between the crew members and the gear owner. The sharing was done in the ratio of 50:50, meaning the crew members divided 50% among themselves and the other 50% went to the owner.⁵⁰

The Mweru-Luapula fishery received a significant number of new-comers from urban places who invested in rural fisheries between 1980s and 1990s with Nchelenge and Chienge districts, where fishing was very profitable, experiencing some of the highest population growth rates.⁵¹ Therefore, the rise in urban unemployment on the Copperbelt caused the migration from urban to rural areas. Some of the people who were laid off by their employers in urban areas used the money that they had to invest in the fishing industry. During this time, the only thriving and dependable sector was *chisense* fishing which greatly absorbed many as traders, gear owners and some as fishers or processors. With the new-comers, there was a lot of investment in fishing gears because the landings of *chisense* were higher compared to demersal fishing.

Shop owners and retailers

Chisense fishing greatly affected all manner of business activities along the fishery. The shop owners, including all business activities in the fishery depended on the high catch of *chisense* landings. It can be noted that shop retailers only made profits whenever the area recorded a high catch. The business rates were usually facilitated by the high catch. Business tended to be slow when there was low catch. Thus, the thriving of all manner of business activities greatly hinged on *chisense* fishing. Some shop owners and retailers interviewed testified to

⁵⁰ Peter B. Hayward, Evaluation Report: Feeder Roads for Fishery Development Submitted to Canadian International Development Agency, April 1986, pp.51-52.

⁵¹ Musumali, *etal*, *Fisheries in Zambia*, p.4.

the fact that they only made huge profits when the catch was high. This was because their businesses highly depended on the lake. They pointed out that money only went into circulation once there was a high catch especially when fishermen from various places gathered at one fishing camp.⁵² Fishermen and women were known for shopping each time they had some extra money. Among the shop owners whose business greatly thrived each time the area recorded a high catch include Rabson Kapaya Kanyangala and J.C. Mulenga among others.

Fishermen only ‘lived’ for that a day. Most of them had a tendency of spending money earned for the day without considering future needs. This explains why some fisher folks remained poor amidst abundance. Most women used the profit they earned after processing *chisense* to buy *salaula* (second hand clothes). One *salaula* businessman who wished his identity to remain anonymous pointed out that between 2005 and 2010 he could make approximately K100,000 per day provided there was a high catch and the presence of urban traders.⁵³ The tendency of spending whatever money was raised without saving by both the fishermen and women explains why most of them remained poor and stagnant. On the other hand, those who were financially disciplined were able to save some money and eventually emerged as gear owners such as Chitalu Ndaiseka and *Bashi* Chisha in 1992, Silvester Kalobwe in 1998 and Sichalwe in the 2000s among others.⁵⁴

Transport business

A major element in marketing costs is transport. However, very little data has been made available by either private traders or developed companies on the costs of transporting fish

⁵² Interview, Robinson Kapaya Kanyangala, Kabuta, 8 November 2016.

⁵³ Interview, Anonymous, Kabuta, 8 November 2016.

⁵⁴ Interview, Titus Chama, Kashikishi, 28 October, 2016.

from the major fishery.⁵⁵ Fish transporters especially those with lorries benefited greatly out of the *chisense* fishing industry through its transportation to urban markets on the Copperbelt and DRC. Many people got involved in transporting *chisense* from the fishery to urban places. For instance, in June 1994 about 28 trucks were reported to reach Kafulwe fishing camp to transport the fish.⁵⁶



Figure 14. Transporters of *Chisense* (Picture taken by author, 26/10/2016)

Transportation of *chisense* attracted many transporters from within the fishery while others came from elsewhere, especially the Copperbelt. From the 1980s to 1994 the local transporters were ‘God Knows’ based in Mununga, Mpukis in Kashikishi, Kalumbeta, Katakwe, Zaloums, Maria Butota, *Ba* Chitupi and A. Mulenga who was based at Kabuta.⁵⁷ These transporters were also involved in the transportation of demersal fish species from the fishery to various urban markets especially on the Copperbelt. Between 2000 and 2007, each bag of *chisense* was charged between K60,000 and K100,000 to be transported to the Copperbelt depending on the transporter. On contrary, a charge between K120,000 and K200,000 was imposed on a bag of *chisense* to be transported specifically to Kasumbalesa and Lubumbashi respectively.⁵⁸ On average, each truck was able to load about 40 bags of

⁵⁵ NAZ, LP/04/27/7, Fish Prices 1977-1985, p.9.

⁵⁶ DOF, *Chisense* Sales, Monthly Summary, Recorded by D. Siame, 1994.

⁵⁷ Interview, Titus Chama, Kashikishi, 28 October, 2016.

⁵⁸ Interview, Chengo Mulenga, Kashikishi, 5 November, 2016.

chisense. Therefore, the number of bags multiplied by the charge per bag gives the average earnings made by the transporters (charge/bag x no. of bags – expenditure = average earning). On the other hand, the Congolese traders decided to transport their *chisense* to Lubumbashi in the DRC because they made a lot of profit compared to the urban areas of Zambia.⁵⁹ It was observed that fish trader's trucks used the Kashiba road via Mwenda in transporting *chisense* and other demersal fish species to the DRC.⁶⁰

Chisense was easily accessible by traders compared to demersal fish species. It was bought in large quantities within a short period of time. On the contrary, fish mongers took time for them to buy demersal fish species as they spent weeks in fishing camps in order for them to organize the fish. Even though the traders took long to organise the demersal fish species, the profits realised out of the sales were substantial compared to the *chisense* fishing industry. Traders took *chisense* to different places based on the perceived outcomes or profit to be realized. *Chisense* was more profitable in Kabwe as compared to Kitwe even though, it took longer time for it to be sold there than in the latter town.⁶¹ This required an efficient transport system in order for the fish to reach urban centres. Therefore, those with lorries benefited from the *chisense* fishery through its transportation to various urban centres. In the 2000s, transportation of *chisense* was dominated by the Mpukis, 'God Knows', Morgan Kapindi, Mr Ndalusa and Mr Matukuta.⁶²

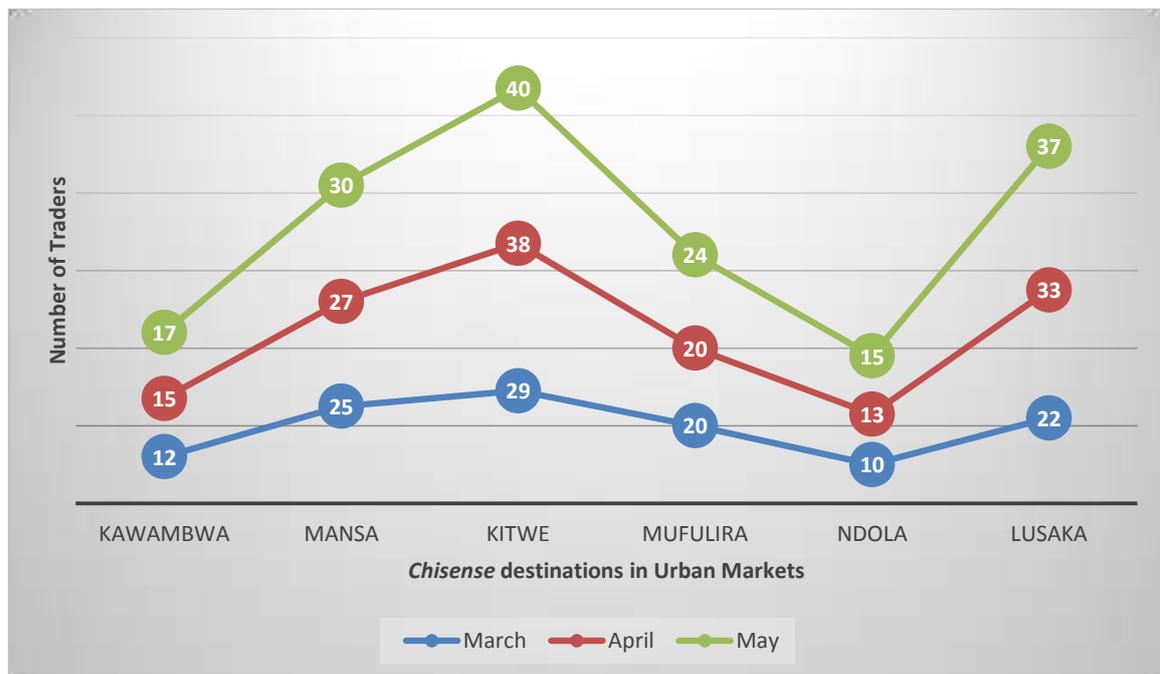
Chart 1. *Chisense* Traders and their destinations, 1994

⁵⁹ Interview, Peter Lukwesa, fish trader, Lupiya, 27 November 2016.

⁶⁰ NAZ, LP/04/27/15, Fisheries Luapula, 1983-1991.

⁶¹ Interview, Besa Chisha, Lupiya, 25 November, 2016.

⁶² Interview, Titus Chama, Kashikishi, 28 October, 2016.



Source: DOF, Mweru-Luapula Sales Records Monthly Summary, 1994.

The chart above shows the sample of the number of traders who transported *chisense* from the fishery to various urban centres. The number of traders was increasing in most cases because of the profitability of the trade and this in turn helped boost the transport business in that transportation of *chisense* was by lorries/trucks. All the traders above needed transport for them to move their fish from one point to another. As shown in the chart above, all the 427 traders who visited the fishery in 1994 needed to transport their fish to various urban centres.

Local businesses

Local traders greatly benefitted from the trade in *chisense* in that some of them started with a minimal capital but ended up acquiring massive capital. Perhaps the most profound effect of the *chisense* fishery was the formation and support of a class of female fish traders and eventually gear-owners.⁶³ As noted in the previous chapter, some women such as Given

⁶³ David Gordon, 'Growth without Capital: A Renascent Fishery in Zambia and Katanga, 1960s to Recent Times', *Journal of Southern African Studies*, 31, 3 (Sep., 2005), p.506.

Chilemba and *Bana Olipa* through active participation in the *chisense* fishery eventually emerged as gear owners. The impact of *chisense* on the local businesses of the fishery was noticed especially during windy periods and the full moon where fishing was not possible as most businesses came to a standstill. During these periods, for instance in 2007, local businessmen and women only sold between K50,000 and K100,000 per day.⁶⁴ This was as opposed to the days when the area experienced a high catch because the sales were high in that money easily circulated within the fishery such that they would make about K350,000 each per day.

Tilley lamps employed in *chisense* fishing used paraffin (Kerosene). Therefore, paraffin was on high demand in the fishery. The price of a bottle of paraffin determined the price at which fresh *chisense* was sold. During times when paraffin prices went high, the fishermen used to correspondingly increase the price of fresh *chisense*. Similarly, local female traders increased the rate at which they sold their product to the urban traders. One of the local traders noted that in certain instances where the urban traders could not buy the fish at the price at which it was being sold, they kept their product and would transport it for sale in urban markets on the Copperbelt and Lusaka.⁶⁵ In this way, more profit was made and thereby helped to improve the standards of living of the people involved. Those who sold paraffin were assured of a readily available market provided to them by the fishermen simply because *chisense* fishing depended on the availability of paraffin. Paraffin was also used to provide light in most of the houses in that most were not connected to the national grid of electricity.

Many people who were engaged in the paraffin trade made huge returns on their investments and built houses roofed with iron sheets unlike the traditional thatched houses. These traders were able to provide adequately for their families. One paraffin businessman noted that he

⁶⁴ Interview, Simon Matende, Kabuta, 5 November 2016.

⁶⁵ Interview, *Bana Olipa*, Kabuta, 8 November 2016.

started with only one drum of the commodity in 1999 but by 2008 was able to buy about 70 of such drums.⁶⁶ This shows that indeed *chisense* fishing greatly impacted the economic lives of the people of the fishery. The people in the business of selling paraffin were able to employ others to sell paraffin to fishing companies on their behalf.

With the introduction of outboard engines in the fishing industry in the 1960s, businessmen in fuel saw another opportunity to make money by transporting petrol to the fishery. Trade in fuel greatly impacted the lives of those involved. The profits realised from this trade were enormous.⁶⁷ Each time the fishermen went with an outboard machine, they experienced a high catch depending on the waters they went to and in return they received a high pay. However, this was not usually the case because sometimes fishermen burnt fuel for nothing if they went to the waters that did not support the high catch. In that way they ended up in credit for them to organise paraffin and petrol for the next catch.⁶⁸

Another group that benefited from *chisense* fishing was the one that offered accommodation. *Chisense* traders rented the rooms in the fishing camps. The prices for the rooms were negotiable depending on the presence of traders. If the area received a good number of traders locally referred to as *utusama* (plural), *akasama* (singular) literally meaning people with money, rooms rates went up and in this way the owners made huge profits. In 2005, the rates ranged from K20,000 to K30,000 per day mainly because *chisense* traders did not take long to finish buying the desired quantities of *chisense*.⁶⁹ Accommodation for visiting traders was not easily found in most fishing camps except for Kashikishi which is a bit developed compared to the rest of the fishing camps within the Mweru-Luapula fishery. Therefore,

⁶⁶ Interview, Dan Chende, Lupiya, 28 November, 2016.

⁶⁷ Interview, Evans Kapyia, Kabuta, 7 November 2016.

⁶⁸ Interview, James Siame, Kabuta, 9 November, 2016.

⁶⁹ Interview, Gershom Mwape, Kabuta, 6 November, 2016.

people with rooms took advantage of the situation to make sure that they benefitted greatly from the presence of the urban traders. Below is an example of some of the rooms that traders stayed in.



Figure 15. Rooms for Urban Traders at Kabuta Village (Picture taken by author, 07/11/2016)

Source of proteins

The fishing sector is important because it contributes to national food security and public health. It was estimated that around 50% of animal protein was supplied by fish and fisheries products.⁷⁰ Fish is a rich source of protein that is easily accessible compared to other sources such as eggs, milk and meat. It is worth to note that affordability is a major aspect of access to food. This can be understood in line with *chisense* in that it was easily accessed by both the poor and low-income earning families. This is because people of the fishery and urban areas could afford to buy *chisense*. There was also a considerable trade in dried fish to the

⁷⁰ The Institute for Policy Studies, *The State of Aquaculture Development in Zambia: An Inception Report for the Formulation of the Fisheries Development Plan*, July 2002, p.2; NAZ, SEC 6/126, *The Bulawayo Chronicles*, Friday, 4/8/50 and also Inge Tredten, *etal*, *Fresh Water Fisheries and Fish Management in Namibia: A Socio-economic Background Study*. May, 1994, p.4.

Copperbelt, supplying an important protein element in mine workers.⁷¹ What made *chisense* special with regards to proteins is that it was cheaper and affordable to poor families since it was sold in smaller quantities.

Zambia's recent development strategy of improving the economy through diversification gave a high priority to agriculture and rural development, in the wake of declining copper production, increased costs and softening of international copper prices. Attention was directed to increasing support for the fisheries subsector as a means of supplying badly needed proteins in the diets of both the rural and urban population.⁷² In addition to raising nutritional levels, the expansion of fish supplies also has significant economic, social and employment benefits. Fish represents the lowest cost per unit animal protein of all food consumed in Zambia.⁷³ It is worth to note that fish is often the cheapest form of animal protein available.⁷⁴ Therefore, *chisense* was ideal especially to large families since it was affordable by the poor unlike the demersal fish species which turned to be very expensive for low income families.

Fish Levy

Fish levy in Zambia has a long history and sometimes came in form of fishing licences. The licensing system during the colonial period had a dual purpose: the registration of all nets with the accompanying power to limit numbers and type of nets provided a basis for the

⁷¹ NAZ, SEC 6/126 Northern Area – Mweru-Luapula System, Gen. Dev. 1, Marketing, 3/FN/5 Vol. I, F.I. Parnell, Mweru Fish Prices R/2396/1, Fish 13.

⁷² NAZ, LP/04/27/17, World Bank Fisheries Project, 1986-1993, p.1.

⁷³ NAZ, LP/04/27/17, World Bank Fisheries Project, 1986-1993, p.3.

⁷⁴ Intermediate Technology Source Books in association with United Nations Development Fund for Women (UNIFEM), Fishing Processing (London: Intermediate Technology Publications Ltd, 1993), p.ix and see also Inge Tredten, *etal.*, Fresh Water Fisheries and Fish Management in Namibia: A Socio-economic Background Study. May, 1994, p.8.

control of fishing itself and the fees charged for licences provided the Native Authority with revenue which could not conveniently be obtained from the fishing in any other way. In 1954, the government introduced a fish levy.⁷⁵ The levy was collected at the fishing camps, bus stations and road check points. Immediately the fish levy became a major source of income for the Native Authorities. The sector generated public revenues at different levels of government including local and district councils as well as Central government.

Even when *chisense* fishing became fully established in the early 1980s, the system of fish licences continued to be implemented. All the people who had the *chisense* fishing gears were supposed to possess licences. It was an offense to fish without a licence or with an unregistered fishing boat and any person found was liable for conviction to a fine or punishment or both such fine and imprisonment.⁷⁶ To avoid such punishments, gear owners made sure that they paid for their licences. *Chisense* fishing licence was pegged at K122.40 from March to 30th November each year since its inception.⁷⁷ It is important to note that the money collected was receipted by respective government officials. Therefore, through the fish levy in form of licences, the government was able to raise money from the *chisense* fishery. Additionally, even urban *chisense* traders paid fish levy which was acknowledged with the issuance a council receipt for each and every bag of dried *chisense* moving out of the fishery. The amount charged varied according to the size of the bag of *chisense*. For example, a 100kg bag of *chisense* was levied at K30,000 per bag from 2002 to 2010.⁷⁸ Therefore, the *chisense* fishery was important with respect to generation of money through fish levy. It is important to note that *chisense* levy varied according to the size of the bag. For instance, a

⁷⁵ Musambachime, 'Development and Growth of the Fishing Industry in Mweru-Luapula', p.264.

⁷⁶ NAZ, LP/04/27/15 Fisheries Luapula, 1983-1991.

⁷⁷ Interview, Zulu Jones, Acting District Fisheries Coordinator, DoF, Nchelenge, 8 November 2016.

⁷⁸ Interview, Chengo Mulenga, Kashikishi, 5 November 2016.

50kg bag stood at K10,000, 75kg was at 15,000 while a 90kg was at 20,000.⁷⁹ It can therefore be estimated that for every 100 bags transported out of the fishery levied at K30,000 per bag, a total sum of K3000,000 was realised as levy by the council.

Economic value of *chisense* fishing

Many people had resorted to *chisense* diet since it was affordable and could sustain their lives. This made it attractive to many low income earning families. This explains the reason why *chisense* fishing continued to attract the masses since its inception in 1975 mainly due to its accessibility to fishers and affordability on the part of the customers. *Chisense* traders especially from the neighbouring DRC sold it alongside the demersal fish species so that they could cater for all the categories of customers. This was because people with money in urban areas preferred bigger fish species such as bream to *chisense* whereas the low income groups went for *chisense* since it was cheaper than the former. It was, therefore, more profitable to trade in both pelagic and demersal fish species.⁸⁰ The few bream fished was mainly sold to people who could afford to buy it especially those from the line of rail or neighbouring countries and government workers. The fish prices for demersal species were therefore very high beyond the reach of the ordinary villager⁸¹ and that was the more reason why *chisense* became ideal to most families who could not afford the breams among other demersal fish species. In as much as people with money were willing and able to pay higher prices for bream, the poorer section of the population looked to the pelagic fish species since they were affordable.⁸²

⁷⁹ Interview, Evaristo Mwansa, Council Fish Levy collector, Kabuta, 8 November 2016

⁸⁰ Interview, Lukupa Lukupa, Chisokone Market (Kitwe, trader in *chisense*), 14 April 2017.

⁸¹ NAZ, LP/04/27/1 Fishing Industry, Luapula River, 1957-1990.

⁸² NAZ, LP/04/27/7, Fish Prices 1977-1985, p.5.

The *chisense* fishing business was extremely profitable with the catches of an estimated 50kg in a single evening compared with the 3 to 4kg average catch per 100 metres gill net fishery.⁸³ For instance, by the mid-1990s, the *chisense* fishery produced from 30,000 to 45,000 tonnes of fish annually (compared to only 4,500 tonnes of demersal fish in 1986), over three times the tonnage of the gill net fishery in Mweru-Luapula and over 50 per cent of Zambia's total annual catch.⁸⁴ The survey data collected near Chief Puta's area by Gordon in the early 1980s demonstrate that *chisense* brought in nearly 30 times more cash than gill net fishing.⁸⁵

The small sardines, marketed in a sundried form, were in great demand by employers particularly in the sisal industry in Tanzania.⁸⁶ It was estimated that 30% of the *chisense* just like *dagaa* was eaten as fresh fish and that the remaining 70% was dried in the sun and sold afterward.⁸⁷ Since the inception of the *chisense* fishery in the mid-1970s, the fishery made tremendous improvements and spread to other fisheries such as the Bangweulu fishery. Due to the economic potential of *chisense*, the Department of Fisheries in Samfya recommended to the Branch Manager of Lima Bank in 1989 to give loans to the fishermen for the purchase of the gear because of potential in the *chisense* fishery.⁸⁸ Based on the recommendation, fishermen started receiving loans which they invested in fishing gears. It is worth noting that the Lima Bank helped a number of fishermen along the Mweru-Luapula fishery. For instance,

⁸³ Gordon, 'Growth without Capital', p.505, see also Mulikelela and Mbulo, Fish Conservation in Zambia, p.3.

⁸⁴ Gordon, 'Growth without Capital', p.505, see also Mulikelela and Mbulo, Fish Conservation in Zambia, p.3.

⁸⁵ Gordon, 'Growth without Capital', p.505.

⁸⁶ NAZ, SEC 6/241, Fisheries Research, Usumbura, Lake Tanganyika 1956-57, G. J. Lockley, 'Dagaa Fisheries in Lake Tanganyika', *East Africa Agricultural Journal*, XIX, 4 (April 1954), p.251.

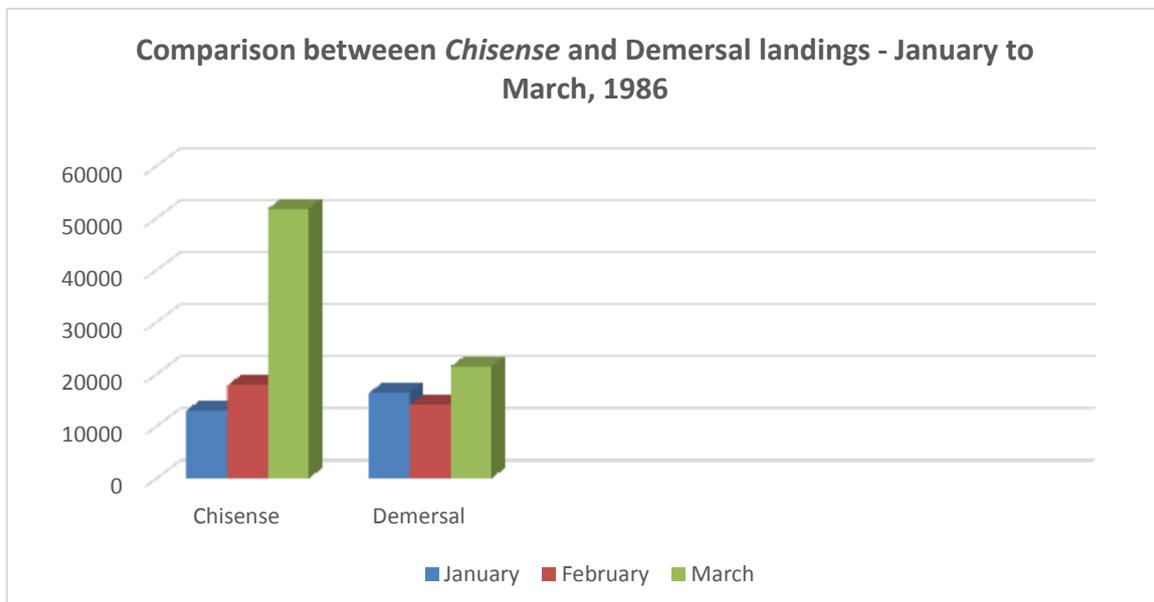
⁸⁷ NAZ, SEC 6/241, Fisheries Research, Usumbura, Lake Tanganyika 1956-57, A Collart, Note on Ndagaa, Fishing in Lake Tanganyika Reports, p.7.

⁸⁸ NAZ, LP/04/27/13, FSH.20/1, Fisheries Finance Company 1981-1990, Recommendation for the Chisense Fishing Equipment Loan – Bangweulu Fishery. Letter to the Branch Manager Lima Bank 22, June 1989.

earlier in 1987, the World Bank through the Lima Bank and the Department of Fisheries sponsored a seminar held at Kafulwe where fishermen were encouraged to appreciate the assistance rendered to them through the loans from the Lima Bank which aimed at improving their standard of living.⁸⁹ The issuance of loans was motivated by the high landings of *chisense* thus, loans could easily be settled within a shortest possible time.

Chart 2 below shows that *chisense* went alongside demersal fishing, but its overall landings were higher than demersal fishing. The fish landings were recorded in kilograms (kg).

Chart 2: Comparison between *Chisense* and Demersal Fish Landings

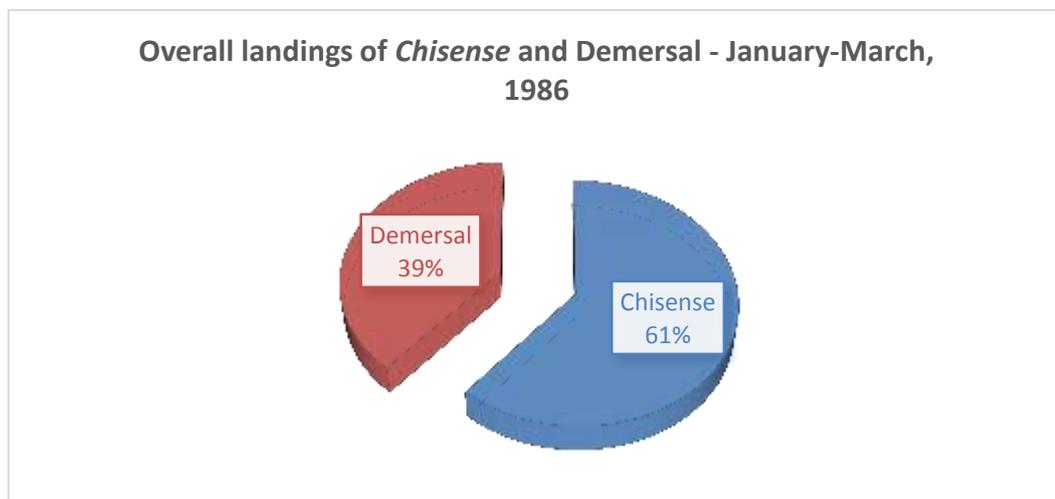


⁸⁹ NAZ, LP/04/27/17, World Bank Fisheries Project 1986-1993, closing remarks made by the District Executive Secretary T.M. Kafusha on the occasion of closing Fishermen’s Seminar sponsored by the World Bank through the Lima Bank and the Department of Fisheries on 26th June 1987 at Kafulwe Fishing Camp.

Source: DoF, Mweru-Luapula Sales Records Monthly Summary, 1986

The chart above shows the significance of the *chisense* fishery in that it yielded more compared to the demersal fishery within the first three months of 1986. It is important to re-echo the fact that since time immemorial, fishing was a whole year round activity until 1986 when the fish ban was introduced. High yields meant more money to all the players involved in the trade starting from the fishermen to the urban traders. The chart shows that from February to March, *chisense* landings kept on rising with maximum catch being experienced in March. Therefore, it can be noted that *chisense* landings were not static but varied overtime.

Chart 3: Overall Landings of *Chisense* and Demersal Fish Species



The chart above shows the overall landings of the *chisense* fish during the first three months of 1986. As shown in the chart, *chisense* represented 61 per cent of the total catch compared to 39 per cent for demersal fishing. This meant that *chisense* fishing was more stable than the demersal fishing. The chart demonstrates that *chisense* brought in more money to the people involved due to high yields experienced in daily landings and that it was easily accessed by the traders compared to the demersal species whose yields kept declining. However, it is important to note that the abundance of demersal species brought in more money than *chisense* in as much as its daily landings were high.

Chisense fishing greatly impacted the lives of people of Mweru-Luapula and Zambia at large since its inception. A gear owner who started his fishing trail in 2003 noted that, fishing had been a source of livelihood for most people in Mweru-Luapula fishery.⁹⁰ Most gear owners were also involved in the transportation of *chisense* from the Mweru-Luapula fishery to the urban markets within Zambia and the DRC. They usually worked with their wives and in most cases it was men who transported the product to the urban markets while women continued buying fresh *chisense* from the fishermen for the continuity of the business.

Chisense fishing was and still is the largest employer in the Mweru-Luapula fishery employing about 30,000 fishers and supporting about 250,000 people in fish trading on the Zambian side alone.⁹¹ This is because after the decline in demersal fishing starting from the 1960s through to the 1970s, many people turned to *chisense* fishing for sustenance since fishing is the main stay for the people of the Mweru-Luapula fishery. Therefore, *chisense* fishing was a viable rural industry which supported many lives of people along the Mweru-

⁹⁰ Interview, Lasky Mwaba, Kabuta, 9 November 2016.

⁹¹ Lusakatimes.Com Rural News, Mweru-Luapula Fishery in Luapula Province Major Employer – Chakaba, 28 April, 2015. <http://www.lusakatimes.com>

Luapula fishery and urban areas who were directly involved in various business activities connected to the *chisense* fishery.

The *Chisense* fishery became increasingly important in the Mweru-Luapula fishery because of its high reproductive turn-over in light of the decreasing Catch per Unit Effort of other traditional fish species (especially the breams). The fishery has continued to employ more fishers and traders (the majority of traders are women) compared to the traditional bream fishery. Fishers at Mweru-Luapula dispose of their catch by selling, bartering or consuming it. However, the most preferred disposal method was selling and home consumption which stood at 89.3%. This indicates that fishing was an important source of fish protein and income for many fishers at Mweru-Luapula. The least favoured disposal method was barter (0.03%).⁹²

It is important to note that the income of artisanal fishermen varied between different fisheries, but was estimated on average to be equivalent to that of people in formal employment particularly public workers. Many fishermen did not own the gear and boats they used. They usually worked for an absentee owner. The cash made on a daily basis was divided between the gear owner on one hand and the fishing crew on the other in 50:50 ratios.⁹³ In instances where the crew members' sundried *chisense* on their own, it was transported and sold at various urban markets and whatever was raised was shared using the same ratios.

The Luapula Province, therefore, continued to be the dominant supplier of fish to the Copperbelt Province because of its close proximity to the province and also that the mining industry created a ready market for fish products. The export of fish from the province was

⁹² Mweru-Luapula Frame Survey Report, 2008, First Draft. p.18.

⁹³ Edward K.W. Chilimunda, SADC countries Report on the Inland Fisheries Sector in Zambia: Description, Analysis of Areas of Concern and Regional Opportunities. DOF, no date of publication, p.8.

estimated to be worth more than eight million Kwacha per year in the early 1980s.⁹⁴ Therefore, *chisense* fishing attracted many people due to the high catches compared to the demersal fish species. This made *chisense* fishery to be the main stay of the Mweru-Luapula fishery even though it went alongside demersal fishery. The *chisense* fishery was especially important on the Zambian side of the lake where about 1,400 boats were targeting it in 1992 with estimated landings of about 15,000 plus tonnes per annum.⁹⁵ It is also worth noting that *chisense* fishing in the Mweru-Luapula fishery eventually led to the creation of a strong rural economy. This was one of the exact expectations of the Third National Development Plan (TNDP) of 1979-1983 whose aim was to give the highest priority to rural development in order to create a strong economy.⁹⁶ Therefore, the *chisense* fishery was important in that almost all of the business activities in the Mweru-Luapula fishery greatly hinge on the daily *chisense* landings thereby creating a strong rural economy.

Conclusion

This chapter has examined the socio-economic impact of *chisense* fishing on the people of the fishery and the urban dwellers. *Chisense* fishing came with a number of positive and negative impacts in the Mweru-Luapula fishery. The chapter observed that *chisense* fishing contributed greatly to the thriving of the fishing industry in Mweru-Luapula fishery since the decline of the demersal fish species. *Chisense* fishing was able to absorb and sustain many fishers who had abandoned demersal fishing as well as the fish processors who were mostly women. Unlike demersal fishing which only involved a few men, *chisense* fishing was labour

⁹⁴ NAZ, LP/04/27/7, Fish Prices 1977-1985, Pricing and Marketing for Fish, 29th September 1981.

⁹⁵ D. Greboval, M. Bellemans and M. Fryd, Fisheries Characteristics of the Shared Lakes of the East African Rift (Rome: FAO, 1994), p.45.

⁹⁶ CSO, Selected Socio-Economic Indicators, April 1984, p.1.

intensive and thus employed many people. Many people joined *chisense* fishing in Mweru-Luapula as gear owners, processors while others joined as traders to transport the *chisense* to various urban centres. The Mweru-Luapula fishery has continued to support the lives of many people through employment and supplying them with their daily needs.

CHAPTER FIVE

CONCLUSION

In tracing the origins, development and growth of the *chisense* fishing industry in the Mweru-Luapula fishery from its subsistence stage to a more commercialised one, a number of conclusions can be drawn. *Chisense* fishing emerged in the mid-1970s and was initially done by women. This was because men were involved in demersal fishing thus, they never paid attention to *chisense* since they had not yet known its economic value. With the decline in the demersal fish landings, men turned to *chisense* fishing and eventually displaced women and

limited the latter's role to processing and trade. Therefore, the *chisense* fishing industry complemented the declining levels of the demersal fish species since it could stand extensive human predation. The *chisense* fishery became popular and widely used in the early 1980s in the Mweru-Luapula fishery after fishermen discovered that its landings were worth exploiting.

The study demonstrated that *chisense* fishing came to supplement demersal fishing, though the latter type of fishing has continued on a much diminished (small) scale. The decline in the commercially important demersal fish species ushered in the exploitation of *chisense*. Therefore, a rapid increase in human population has been a major reason causing the exploitation of formerly unexploited pelagic fish species of African lakes such as *chisense*.

The study has argued that the *chisense* fishery became increasingly important in the Mweru-Luapula fishery because of its high reproductive turn-over in light of the decreasing Catch per Unit Effort of other traditional fish species (especially the breams). The fishery has continued to employ more fishers and traders compared to the traditional bream fishery. The sardines became ideal to supplement the declining levels of the demersal fish species such as bream, tilapia and many others.

The study has also demonstrated that since 1975, *chisense* fishing has remained an important source of protein for both the local and urban inhabitants as well as an important avenue for a continuous flow of money into the Mweru-Luapula fishery. The income realized from *chisense* fishing has greatly contributed to improved living standards in local communities and in particular, among the fishermen and members of their families.

The study has also observed that *chisense* fishing had the viability and strength to respond to the demands of the people of the fishery and the urban areas. Since its inception, the *chisense* fishery had been a major source of food, a provider of employment and other economic

benefits for many people especially those from along the Mweru-Luapula fishery and also the ones from urban areas.

The study has identified the sun drying method as the most commonly used method of processing fresh *chisense*. The way *chisense* was processed determined its value (price) on the market either locally or in urban places. Sun drying was the preservation method mostly used for pelagic fish species unlike the demersal which required either salting or smoking. Therefore, *chisense* which was poorly sundried was highly detested on the market. The absence of sun shine especially during the rainy season greatly disturbed the processing phase and this usually affected the quality of *chisense*.

Another conclusion is that *chisense* fishing involved the use of light in order to attract the fish. Fishing by the lamp was the method employed in *chisense* fishing. It entailed the use of light from a lamp to act as a bait to attract the fish. The significance of light regarding attracting *chisense* made people to adopt devices such as tilley lamps without which it was difficult to catch *chisense*. Therefore, fishing by the lamp was identified as one of the most advanced and successful means to catch and increase landings of *chisense*.

The study observes that fishermen ensured a steady supply of fresh *chisense* to the local traders who were initially predominantly women. Most of the fishermen involved in *chisense* fishing were the ones who had earlier been in the gill net demersal fishing. Unlike the demersal fishing, *chisense* fishing assured the fishermen of good landings each time they went fishing. This in turn improved the standard of living of the people in the fishery. Therefore, to the fishermen, the catch per effort assumed economic importance as it determined how much money one earned.

The study demonstrated that women played an important role in the development of *chisense* fishing which was not the case with demersal fishing. The role of women in the development

of the fishing industry in Zambia from the 1920s was not known in that very few women were involved in the fishing activities since they were just limited to carrying fish from boats to their homes. With the development of the *chisense* fishery in the Mweru-Luapula fishery, the role of women changed significantly and became the centre of *chisense* fishing. Some women eventually emerged as traders transporting *chisense* to various urban markets on the Copperbelt and Lusaka provinces. Women were more involved in the processing and trade in *chisense*. Women's involvement in *chisense* fishing as processors and traders empowered them economically and some ended up being gear owners. Therefore, through participation in *chisense* related activities, women were able to sustain their families and improve their livelihood.

The study also observes that the presence of *chisense* urban traders determined all manner of business activities along the Mweru-Luapula fishery. Their absence greatly affected all the fishing activities along the fishery. The study established that there was a strong link among the fishermen, women and traders because the thriving of the *chisense* fishery greatly depended on the interplay of them all. Through such interactions, there was the exchange of cultural-values between the fishery and urban areas. The continuous interaction between the people of the fishery and urban places led to the spread of various cultural values along the fishery.

The study also shows that the *chisense* fishery greatly flourished due to the ready market from within the fishery, in urban areas and also dependable roads for easy transportation of processed *chisense*. This helped to transform the fishery from a neglected to a more developed area. Thus, *chisense* fishing was the more viable machine for rural development along the Mweru-Luapula fishery than demersal fishing. Whoever participated in the *chisense* related activities as a fisher or processor, were assured of making a profit. The money earned

gave the fishing communities and traders opportunity to develop the desire to save, invest in retail business, build better brick houses, buy good clothes and other luxurious but necessary items such as bicycles. These socio-economic developments coupled with a developed infrastructure, plank boats, shops and lorries were to the people of the fishery a manifestation of economic development. Therefore, *chisense* fishing helped to develop what was a remote area into being one of the most developed rural areas in Zambia.

Apart from feeding the urban and local people, the *chisense* fishery attracted a continuous flow of money to the fishery which found its way in the hands of traders and fishermen. Unlike the agricultural industry whose yields were seasonal, *chisense* fishing assured people of money on a daily basis due to high landings except during the full moon, windy periods or when there was the fish ban. The income realised from *chisense* fishing was greatly spent on clothing and other family obligations or invested in the gear.

To the people of the fishery, *chisense* fishing was likened to the copper mining industry of the Zambian Copperbelt and the Katanga region. To them, the river and the lake were the mines and the processing of *chisense* was likened to the copper smelting. This was simply because the *chisense* fishery supplied the daily needs of the people of the fishery thus they depended on it for sustenance just like the way people from the Copperbelt depended on mining.

Chisense fishing contributed greatly to the thriving of the fishing industry in Mweru-Luapula fishery since the decline of the demersal fish species. *Chisense* fishing was able to sustain and absorb many fishers who had abandoned demersal fishing and also the fish processors who were mostly women. Unlike demersal fishing which only involved a few men, *chisense* fishing was labour intensive and employed a number of people. Many people joined *chisense* fishing in Mweru-Luapula as gear owners, processors while others as traders to transport the

chisense to various urban centres. The fishing industry in Mweru-Luapula has continued to support the lives of many people through employment and supplying the people involved with their daily needs. Although fishing has been ignored by development economists, the activity was and, with proper planning, could be a viable engine for rural development in Zambia.

Therefore, the study has demonstrated that the *chisense* fishing played an important role in providing the local people with employment. It is important to note that employment is a key indicator of a nation's economic development and efficiency in allocation of resources. The fishing industry was and still remains one of the major employers in Zambia just like agriculture and mining sectors. Many people benefitted from *chisense* fishing because of its capacity to absorb many people unlike the demersal fishing which only involved a few people

Chisense fishing was seen as a solution to the problems that the people of the fishery faced. Therefore, it can be concluded that fishing was a dependable regular source of income for the people of the fishery as well as urban trader. Abundant catches of *chisense* led to improved wellbeing of people in the fishery since it could be purchased in smaller quantities especially for poor consumers. It is for this reason that *chisense* was found in almost all the urban markets since it was affordable especially for the low income families.

The study also observed that high *chisense* landings facilitated all manner of business activities in the Mweru-Luapula fishery. *Chisense* provided income and was an important source of food for most poor families. *Chisense* is cheaper than meat, hence more accessible to poor households and contributed significantly towards the provision of nutrients. *Chisense* was sold by Marketeers using various measures such that even the poorest could manage to buy for a meal which was not the case in the demersal species. Therefore, *chisense* became

ideal because most low income families could not manage to buy meat or other bigger fish species such as bream due to the high cost involved.

Chisense fishing in the Mweru-Luapula fishery came with a good number of social impacts especially during migratory fishing. The study established that the *chisense* fishery exposed fishermen and traders to various diseases such as cholera and dysentery since most fishing camps were overcrowded, yet faced by poor sanitary conditions. Migratory *chisense* fishermen ended up in polygamous marriages while others had multiple sexual partners thereby making them susceptible to sexually transmitted diseases and HIV/AIDS. The other negative effect of migratory fishing in the *chisense* fishery was that it made some fishermen to abandon their families.

Chisense fishing also negatively impacted the lives of the children because most parents were actively involved in the *chisense* related activities either as fishers or processors. Children lacked parental guidance in that they did not spend quality time with their parents as the latter were always busy. Parents were only available during windy periods and the full moon when *chisense* fishing was impossible to conduct. *Chisense* fishing also had a negative impact on school-going children in that it contributed to an increase in the number of school dropouts especially for pupils in primary schools along the Mweru-Luapula fishery. It is important to note that this was not the case in most secondary schools in that most of them were boarding schools.

The study also observes that many school-going children were involved in the *chisense* fishery because of the money that was made on the daily basis. Children saw no need of education provided they had a skill in *chisense* fishing. *Chisense* fishing intensified early marriages along the Mweru-Luapula fishery because money was easily made available.

On the positive side, the study has demonstrated that when the area recorded a high catch in the *chisense* landings, parents easily raised money for their school going children. Through active participation in *chisense* fishing during holidays, some young men in secondary schools were able to raise money for their tuition fees especially between 2000 and 2010 when the *chisense* landings kept increasing.

Fish transporters especially those with lorries benefited greatly out of the *chisense* trade because they were the ones who transported *chisense* to the Copperbelt and Congo. Each bag of *chisense* paid a certain amount of money for transportation. Through *chisense* transportation from the fishery to various urban centres, the owners of lorries and trucks attained some level of affluence along the fishery. Additionally, young men were also employed to work of the lorries to load and offload *chisense* from within the fishery and urban markets.

The study also observes that the Mweru-Luapula fishery made a remarkable contribution to food security and livelihood of local people since ancient times. The increase in the number of participants in the fishing related activities eventually led to the creation of permanent fishing settlements along the fishery and connected all the villages between Kashikishi and Lupiya.

Chisense fishing came with a well-established division of labour, while men were actively engaged in fishing and production, women increasingly participated in the processing and marketing, thus getting engaged in business which raised their awareness in the fish price and overall profitability of fishing. Through active participation in *chisense* related activities, women's social status, independence and equity within the community was enhanced.

Therefore, through the *chisense* fishery women were engaged in money-based commercial economy.

Finally, it can be noted that the *chisense* fishing industry was a major backbone of the economic activities in the Mweru-Luapula fishery supporting lives of thousands of people who depended on it for sustenance since its inception in 1975. Therefore, between 1975 and 2010, the *chisense* fishing industry was at the centre of the survival of most families along the Mweru-Luapula fishery without which it could have been difficult for people to improve their wellbeing especially after the decline in the demersal fish stocks.

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