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GHANA/NETHERLANDS ARTISANAL
FISH PROCESSING PROJECT

RESEARCH PROJECT #3

SOCIO-ECONOMIC STUDIES ON
PILOT TRAINING VILLAGES



PHASE THREE REPORT

BASELINE SOCIO-ECONOMIC STUDIES ON 1991 PILOT
VILLAGES: NEW GALILEA AND AMANFRO

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REGIONAL TRAINING AND APPLIED RESEARCH PROJECT
IN ARTISANAL FISH PROCESSING FOR WEST AFRICA

Baseline Studies of Two Fishing Villages
New Galilea and Amanfro

A B S T R A C T

Background information of the two pilot villages, New Galilea and Amanfro, chosen for the 1992 Artisanal Fish Processing Course for West Africa was obtained.

Poor sanitary conditions, low standards of living and lack of basic amenities were observed.

Baseline information was gathered on the indigenous traditional fish processing methods especially, smoking ovens. The study found out that rectangular mud ovens are used for smoking the fish. It was found to have a very small capacity and only one tray of fish could be smoked at a time. The ovens were found to be inefficient.

Women were found to be the processors of the fish harvested from the Weiya lake. They smoke the fish or salt them and dry them. They market the fish in surrounding or distant markets. Profits made on fish sales were found to be 100% or more.

REGIONAL TRAINING AND APPLIED RESEARCH PROJECT
IN ARTISANAL FISH PROCESSING FOR WEST AFRICA

PURPOSE OF STUDY

To improve the living condition of fishing communities through

Baseline Studies of Two Fishing Villages
New Galilea and Amanfro

broadly, the project seeks to assist, promote, upgrade and disseminate a very successful and indigenous system for drying and marketing of fish in coastal Ghana.

1. BACKGROUND INFORMATION

New Galilea and Amanfro are two fishing villages chosen as study areas for the 4th Training Course in Artisanal Fish Processing for West Africa, 1991. The previous study areas were Lekpongunor, Ahwiam, Mangotsonya, Ayetepah, Tem U-Compound and Nungua all in the Greater Accra Region of Ghana. Before the commencement of each training course, a baseline study is carried out in the chosen village or community for the information of the participants, the planning of the field studies and for future evaluation of the project.

2. INTRODUCTION

Until 1991, all the previous study areas have been marine fishing villages. Amanfro and New Galilea are fresh water fishing villages.

In the early 1970s, the Government of Ghana, through the Ghana Water and Sewerage Corporation and the Irrigation Development Authority of the Ministry of Agriculture constructed a dam on the Densu River. This was meant to provide drinking water to Accra and irrigate surrounding parcels of land for farming purposes. With the construction of the dam, the flood waters overflowed their banks, resulting in the formation of the Weiija Lake.

3. THE PURPOSE OF STUDY

To improve the living condition of fishing communities through improved income generating technologies.

Broadly, the project seeks to assess, promote, upgrade and disseminate a very successful and indigenous system for food production focusing on the smoking packaging, storage and marketing of fish in coastal Ghana.

There are specific research objectives outlined below which seek to support the purpose of the project:

- (1) To obtain background information on the pilot villages chosen for the training course.
- (2) To gather baseline information on the existing indigenous traditional fish processing eg. ovens.
- (3) To study the role of women in the processing of fish.
- (4) To try and access their income from fish smoking activities.

4. NEW GALILEA

4.1 Area Characteristics

New Galilea is a new fishing village located about 15 kilometres west of Accra and situated at the banks of the Weiija Lake. The village is visible from the Accra-Takoradi Highway. It is situated on the Accra plains of grassland dotted with isolated trees. The major rainy season is from May to July and the minor rains from September to October. The months of December to March are hot and dry.

4.2 History

With the formation of the lake, a lot of fish grew in it. Fishermen from all over the country came to fish in this lake. They built, shacks and huts around the pump house and along the main Accra-Takoradi highway. The Hausas were the first group of people to settle there and named this mushroom settlement Machingeni Zongo. From 1976 onwards, other ethnic groups joined them. They were the Gas, Adas, Fantis, and Ewes.

They started polluting the water and their environment with human and domestic waste materials. They were using all sorts of chemicals to increase their catch depleting the fish stocks in the process. Their shacks, dugout canoes, garbage and smoking ovens etc. spoilt the view for people and travellers. Complaints from the general public and the irrigation authority resulted in a quit order to the settlers in 1984. They refused to leave the place. They only left after their settlements were erased to the ground with fire by the government authorities.

In 1986 a few of these people came together, five men and five women and they agreed that they should have a place to settle. They therefore sent a delegation comprising both sexes to the Chief of Amanfro to request for a piece of land on which to settle. They were asked to present drinks and money to the Amanfro stool as custom demanded. They presented the drinks and the money and they were allotted their present site next to Galilea village.

They named the village 'Aplenahe' meaning "Turn yourself and see". But the name did not catch on. It was easier for people to call the new village "New Galilea".

The village appears to be full of people during the day, especially young healthy men. The children also look healthy, strong and cheeful all the time.

The population is about 1,500. However, during the peak fishing season there are visitors and relatives who come to help the fishermen and, so the population can increase to 2,000. Children outnumber adults in the village.

4.3 Housing

The houses are of mud or clay with thatch roofs. They number about 200. The floors are uncemented and the doors and windows are made of wood. Some of the people cook under small sheds as well as kitchens built out of mud with thatch roofs. Bathrooms are constructed out of timber as well as palm fronds. The ground is firm and clayey. Some parts become slippery when it rains.

The little furniture that could be seen around were in the form of wooden chairs, stools, tables and forms.

4.4 Education

There is no school in the village. The children walk to Amanfro, another village about 1½ km. away for schooling.

4.5 Health and Sanitation

They have no clinics. They have to go to Kasoa about 2 km. clinic or Korle Bu Hospital for health care. There are traditional herbalists who are also consulted by ailing people.

Water is obtained from different sources. The river and the well water are used for laundry work while the pipe borne water is used for drinking and cooking. The drinking water is purchased from Galilea at ₵10 a bucket.

Sanitary conditions are poor. There are two pit latrines serving the village. One is out of use, the other one is still in use but it is grossly inadequate for the village population. They therefore make use of the bush. Domestic animals roam about freely. Garbage is dumped into pits created by digging clay for construction of houses and ovens. These pits are very close to the houses.

4.6 Electricity and Fuel

There is no electricity in the village. Candles and kerosine lanterns are used at night. Wood is the fuel used for cooking as well as for smoking fish.

4.7 Occupation

The men are mainly fishermen and the women fish processors. Some farming activities are carried on during the rainy season. Petty trading in various items are pursued by the people. Some raise domestic animals.

4.8 Composition of the Village

The village is inhabited by fishermen and fish mongers from the Ewe, Ga, Fanti and Ada communities.

There are no recreational facilities, they remain in their houses when there is no fishing activities and the leisure hours are used for mending nets.

4.9 Village Council

In order to present a common front when need arises they have formed a village council. The council is headed by the chief fisherman who is assisted by elders from various ethnic and religious groups. They are charged with the responsibility of settling disputes and if they are not able to solve some problems, the case is taken before the chief of Amanfro.

4.10 Taboos

There is no farming on Fridays and no fishing on Sundays. It was being observed before they settled in the village.

The Densu festival is held. This is celebrated in April in honour of the River Densu. The festival lasts for one week there is no fishing during that period.

Their main food supply is from the Kasoa market but small scale farmers also contribute some food items to the family pot.

The people are very friendly, eager to learn to improve upon their lifestyle.

5. AMANFRO

5.1 Area Characteristics

Amanfro is a fishing settlement about 16-17 km. west of Accra, is situated about 2 to 3 km. from the banks of the Weiija lake. It is 2 kilometres from the main Accra-Takoradi highway and it is on the Accra plains of grassland, dotted with isolated trees and thickets. The major rainy season is from May to July and the minor rains in September to October. The months of December to March are hot and dry.

5.2 History

In the early 1970s a dam was constructed over the Densu river to provide water for drinking and for irrigation. The construction of the dam resulted in the formation of the Weiija lake, which spread over a large land area. There were fishing villages situated along the banks of the river. These were all flooded as a result of the damming. The displaced people were resettled by the Ghana Government in 1978, a few kilometers from the banks of the Weiija lake. The community was named Amanfro. There are three district ethnic groups and each group has its own quarters. They are the Ewe Community, the Ga-Adagme community and the Northern Community.

5.3 Housing

The houses are of sandcrete blocks whose outside walls are not plastered. There are three rooms in each house. The houses are roofed with slates and the windows and doors are made of wood. Some people have built bathhouses out of palm fronds or kitchens from mud, near their houses.

5.4 Health and Sanitation

The people of Amanfro have no hospital or clinic. All health services are obtained at Kasoa or in Accra, there is however a resident trained traditional birth attendant who assists pregnant women in delivery.

The community is served by two pit latrines however those living at some distance from the latrines prefer making use of some weedy patches nearer their houses.

- x Garbage is thrown on a rubbish heap some distance away from the households.

Domestic animals are not penned and they roam about freely. The community is provided with both water and electricity. Those few houses without electricity use kerosine lamps.

5.5 Education

There is a school in the village that educates the pupils up to Junior Secondary School (JSS) level. Children from surrounding villages attend school at Amanfro.

5.6 Occupation

The men are mainly fishermen, and the women fish processors. Some farming activities are carried out during the rainy season. Petty trading in various items and goods are undertaken by the women.

5. IN DEPTH STUDIES OF HOUSEHOLDS

5.1 Description of Households at New Galilea and Amanfro

Twelve and twenty households were studied in New Galilea and Amanfro respectively. The number of sleeping rooms and the sizes of the households are presented in Table 1.

TABLE I

Household Size in Relationship to Number of Rooms

AMANFRO			NEW GALILEA		
Household No.	Household size	Rooms per Household	Household No.	Household size	Rooms per Household
A 01	4	3	NG 01	5	3
A 02	11	1	NG 2	8	6
A 03	4	1	NG 03	6	1
A 04	10	1	NG 04	5	5
A 05	7	1	NG 05	12	2
A 06	17	4	NG 06	10	3
A 07	7	3	NG 07	5	4
A 08	11	5	NG 08	7	4
A 09	15	4	NG 09	9	3
A 10	7	3	NG 10	6	1
A 11	15	3	NG 11	11	3
A 12	15	4	NG 12	6	1
A 13	13	5	Total	90	36
A 14	7	3			
A 15	17	4			
A 16	10	1			
A 17	7	1			
A 18	11	3			
A 19	4	1			
A 20	8	2			
Total	200	53			

From table 1, there is a difference in the sizes of households in New Galilea and Amanfro. The highest household size at New Galilea is 12 and the lowest 5. At Amanfro, the highest is 17 and the lowest 4.

The ratio of sleeping rooms to household size on the average was 2:5 at New Galilea and 1:4 at Amanfro. The high concentration of people at Amanfro may be due to the fact that there are better housing units and some amenities like water, electricity and schools up to J.S.S. level. The owners of the houses have therefore rented out rooms to needy families.

6.2 Age Distribution

The ages of the women fish smokers at New Galilea range from 22 to 60 years the average age being 37 years. At Amanfro, the range is from 21 years to 60 years with the average of 46 years. There are therefore younger women in the fish smoking business in New Galilea than in Amanfro.

6.3 Marital Status

Out of the 12 women at New Galilea, 8 are married, 3 divorced and 1 widowed.

At Amanfro, 18 are married and 2 widowed. In both places no single woman is an established fish smoker. The men are considered to be heads of the households and polygamous associations are accepted.

6.4 Tribe and Religion

The women at New Galilea are predominantly Adas while at Amanfro all the women are Ewes. The survey at Amanfro was conducted among the Ewe community. Around 50% of the respondents in both villages are christians. The remaining 50% are a mixture of other religions including Muslèms and traditional religious practioners.

6.5 Education

At Amanfro, 8 women out of 20 have had primary school education and only 2 at New Galilea. The rest are all illiterates. It is therefore very important to introduce functional Literacy Classes in these two villages.

6.6 Occupation

All the women are fish processors. They trade or vendor food item on the side and sometimes farm as well. A few keep domestic animals for sale. Only two women claimed ownership of a boat and a net.

6.7 Sanitation

The general level of sanitation and health in the two villages have already been discussed. It was however, realised from close observation of the households that most homes have bathrooms and those who do not have are allowed to use them. It was also observed that water from these bath houses form stagnant pools enhancing the breeding of mosquitoes which cause malaria.

6.8 Water

Water was found to be a very important commodity in both villages and in all the households. Although the respondents of Amanfro have access to pipeborne water, not every household has got a tap. These people are therefore forced to purchase the water from those who have.

River and well water are available to the people all year. Drums are used in the households for storing water. Buckets and plastic bowls are used for fetching and carrying water. Waste water is either thrown on the compound or taken to the back of the house.

The water is used for washing, cooking and bathing which is done at least 2 times each day. The most rampant water borne disease is Bilharzia.

6.9 Health

The women respondents had several complaints about their health and that of their families. The diseases which affect them most are Fever, Malaria, waist pains, anaemia and dizziness. Occasionally there is cholera epidemic. They also suffer from eye diseases and heart troubles.

Their menfolk suffer from hernia, headaches and malaria.

The children suffer from diarrheal diseases, bilhazia, malaria and convulsions.

They were advised to visit the hospital more often instead of practicing self medication

6.10 Recreational Activities

There are radio sets in some households from which they receive radio programmes from the National Broadcasting network. Occasionally, entertainment programmes like drumming and dancing are organised for the peoples enjoyment since the women are people of different ethnic groupings they participate in indigenous festivals in their home towns.

7. The Fishing Industry

Fish is a major source of protein in the diets of Ghanaians. The people of New Galilea and Amanfro provide the city of Accra with fresh fish as well as processed fish from the Weiija lake. There is constant supply of fish all year round.

7.1 Fish Processing Methods

Traditional processing methods of fresh fish at New Galilea and Amanfro are smoking and salting, done by women.

Fishing activities were disrupted this year 1991, because of heavy rains during which some smoking ovens were washed away or damaged.

There are two types of fish processors, the large scale and small scale processors. The small scale processors depend only on local fishermen operating on the Weiija lake. The large scale processors in addition to the fish they purchase

from the fishermen at the Weiya lake, travel to other fish landing banks and beaches for bulk purchase of fresh fish for processing as well as already processed fish for sale. They also get supplies of fish from middlemen.

7.2 Smoking Ovens at Amanfro and New Galilea

The ovens found at New Galilea and Amanfro have small capacities compared with those found in coastal villages or communities. They can smoke only one layer of fish at a time while those in coastal villages can smoke up to 8 layers of fish at a time.

The ovens are rectangular in shape measuring 1m by 0.6m by 0.7m. Iron rods are used for support of the fish being smoked. All the ovens have stoke holes which are too large and therefore, cause wastage of fuel and heat.

The ovens are built from clay obtained from the compounds. It always takes more than 3 days to build an oven, and some people can take as long as one month to complete a smoking oven. This is because during the building process, each layer of clay used should dry very well before another layer is put on it.

About 40% of the women have their ovens built free of charge by husbands, relatives or community help. Those who have to pay for the construction of their ovens spend between ¢1,000 and ¢3,000. Most of the ovens found in the villages have been used for between 1-3 years. There are others that have been washed away by rain. Those found to be in good conditions are covered when it is raining. Aluminium sheets, plywood, waterproof sheets and wooden sheds are some of the articles used to protect the smoking ovens. The design of the oven, the size of the stoke holes and the fact that only one layer of fish can be smoked at a time contribute greatly to heat loss.

7.3 Fuel for Smoking Ovens

Firewood is used for fish smoking. The nim tree is the main type of wood used as fuel. It is purchased from the other side of the lake. Between ¢1,000 to ¢4,000 worth of firewood is purchased at a time but ¢400 worth of firewood is sufficient

to completely smoke a crate or a bowl of fish that can fill the oven to capacity. Sometimes dried sugarcane fibre and bits of other woods are added to the nim branches to impart colour and flavour to the smoked fish.

7.4 Fish Smoking

The fish is landed early in the morning or late in the afternoon. The women choose very fresh fish for smoking. Fish that is not fresh is salted or fermented. The fish is scaled, gutted and washed in most cases. Especially if the entrails are known to be bitter or if they easily develop foul odour that might affect the flesh.

The washed fish is then arranged on mats or rags to dry before being placed on the oven for smoking. As stated already, only one layer of fish is smoked at a time. The fish is turned constantly until it is evenly cooked and an acceptable colour has developed.

Different women gave different times for complete cooking of a crate of fish. The time ranged from 3 hours to 6 hours depending on the heat from the fire.

In order for the smoked fish to dry properly, smoking is continued, using low heat for 3 days.

Normally, one person can manage the smoking of the fish but people around during the time of smoking help as well, by turning the fish or tending the fire.

Some types of fish are also threaded with sticks, because of their size, before they are smoked. The ovens can smoke 200 of these threaded fish at a time.

Types of fish that are smoked include silver fish, mudfish, snakehead and Tilapia.

For medium sized fish, 20 pieces can be smoked at a time, more fish is smoked for storage during the main fishing season because marine fish is then very cheap.

7.5 Fish Salting and Drying

Tilapia is salted and dried more than smoked and it is popularly known as 'koobi'.

After gutting the fish, it is placed in enamel bowls and salt is sprinkled on the fish, in the head and into the gut cavity. It is left overnight. The fish is then removed from the brine solution, washed and dried in the sun. Complete drying can take up to two weeks of constant sunshine. Sometimes, the fish is left in the brine for 3 to 4 days allowing fermentation of the fish. This is also removed, washed and dried but the flesh is soft and the fish is used only for flavouring soups and stews.

8. PACKAGING, STORAGE AND MARKETING OF PROCESSED FISH

8.1 Packaging and Storage

Processed fish are packed in baskets at New Galilea and Amanfro villages. There are three sizes of baskets used. The large baskets are for storage purposes, the medium sized baskets are used for wholesaling and the small baskets are for wholesaling and retailing of processed fish. The prices of these baskets ranged from ₦50.00 for the smallest to as much as ₦2000.00 for very large baskets.

The baskets have short life spans due to poor or rough handling during transportation. Some baskets can last for about two months while others survive just one trip to the market.

The baskets are purchased from the Kasoa market on market days. Brown paper, polythene sheets, jute sacks and nets are other important items needed for good fish packaging.

The baskets are always lined with brown paper before the fish is arranged in the baskets. This reduces drastically damage that could be done to the fish by the woven baskets and attacks

by insects and rodents. It also protects the fish from direct contact with the ground or other dirty surfaces. Some more brown paper is used to cover the fish before it is taken to the market to sell. It protects the fish from flies. The fish can also be packed for storage, as more fish is processed for storage than for immediate sale.

Salting is resorted to mainly when the catch is large and all the fish cannot be smoked before they start going bad. Some types of fish like Tilapia is salted because of consumer preference.

There are two ways of storing processed fish in the villages. Continuous smoking is done to keep the fish hard and dry in order to preserve it. Salted fish are dried in baskets in the sun and they can keep up to 4 months if they are well dried.

A large basket is also lined first with jute sacks, followed by brown paper. The smoked fish is arranged on the brown paper. During the arrangement, some women add all sorts of things, pepper and salt being some of the items primarily to prevent attack by insects. When the basket is full, the fish is covered with the brown paper and the jute sack is then sewn tightly in order to prevent air from entering the basket. The whole basket is then covered with polythene sheets and raised above the ground level.

Packing of the fish is done in the evening when there are no flies around and when the fish is cold to prevent sweating and spoilage of the fish.

After two weeks, the pack is exposed to the sun's rays for 6-8 hours. This gets rid of crawling insects that may be on the baskets. The fish is then unpacked and resmoked before it is sent to the market for sale.

Due to the high fat content of river fish, the smoked fish is not able to keep for months after processing because of spoilage due to rancidity and mould growth.

9. MARKETING

River fish is either sold fresh or processed. Due to the high demand of fresh fish the prices at the landing sites are high compared to marine fish. Fresh fish is retailed at the lake side and consumers and fish mongers from Accra and surrounding areas purchase it.

Although there is no refridgeration facility in the villages, some business men and women retail blocks of ice in refridgerated vans at the landing sites.

Others have constructed cold boxes at the landing sites in which the women can temporary keep their fish for a fee or for chilling the fish before transporting them to other sites for sale.

Some women decide to hawk the fresh fish themselves instead of selling to middlemen or processing it, in order to make maximum profit and to avoid the additional cost and burden of fish processing.

Two types of markets can easily be identified in the village marketing set up. The nearby markets like Accra and surrounding areas and the distant markets like Mankesim and Assin Fosu - about 60 - 80 km. away from the village.

Sale of fish is always on ready cash basis. It takes between 10 days to retail fish at distant markets while it itakes only a day to do so in surrounding areas. Depending on the market situation the women either sell their fish wholesale or retail them in small baskets or singly.

Sometimes it takes two consecutive market days to finish the sale of a batch of processed fish. In such situations the fish is resmoked to keep it in good condition for the next market day.

Prices of fresh fish have doubled within the year. Prices now are double what they used to be at the same time last year.

Prices of fish

<u>1990</u>	<u>1991</u>
5 pieces of fish - Ø200	5 pieces of fish - Ø1,000
1 crate of fish - Ø4,000	1 crate of fish - Ø10,000
3 pieces of fish for Ø200	3 pieces of fish - Ø400

Financial support is the major item needed by all those spoken to at the villages.

Money is badly needed for the extension of the fish processing business. This state of affairs is worsened by the unpreparedness of the fishermen to sell fresh fish to the women on credit. As a result, most of the women are unable to take advantage of bulk purchases of fresh fish.

Fishing and fish processing activities have reduced because some Fishermen have used unauthorised nets and means (chemicals) to destroy fish stocks, therefore reducing the quantity of fish in the lake.

A recently instituted tax of Ø25,000 on fishermen operating on the lake has caused many fishermen to look for other jobs to do.

When the women take the processed fish to distant markets for sale they either have to rent a place to stay, stay with relatives or friends and sometimes they sleep in the market. These are all inconveniences that should be looked into because staying away from the home itself creates problems for the immediate family, especially the children. There are also complaints to the effect that when the fish is processed, there is weight or size reduction and as processed fish is more expensive, the customers do not understand why they should spend money on processed fish so many people buy the fresh fish.

Most markets are not able to provide toilet facilities and shelter for the women.

10. INCOME

The profits are approximately the same whether the women sell their processed fish in distant markets or nearby markets. From the interviews conducted, about 100% profit is made on whatever they sell.

The profit made could be reduced by payment of market tolls which range from ¢100 to ¢300 per basket of fish. Apart from transportation charges, packing and handling charges in respect of loading and off loading of fish are incurred by the women. There is also a flat sales tax which varies from market to market that the women have to pay in order to sell their fish.

Those selling at the roadside and those who have their special customers are not affected by these tolls and taxes.

Income generated from fish sales depend on the quality and quantity of fish sold as well as the abundance of fish at the market. Smoked fish also has better price than salted fish all year round.

A large scale processor therefore would make more profit than a small a small-scale processor about ¢7,000 per week and ¢600 per week respectively.

Although there are no banks where they can keep their money, the women have registered with credit unions. They contribute daily to this union and after some time get a lump sum of money in return to plough back into their fish business.

Monthly expenditure on food ranged from ¢3,000 to ¢5,000 but it was explained to us that this is taken care of before the profit is declared. Therefore using the above information from Amanfro, one can safely say that the fish processing business could be a lucrative one provided the business is expanded.

11. DISCUSSION

Six marine fishing communities in the Greater Accra Region of Ghana have so far been used as pilot areas for the introduction of the Chorkor Smoker.

These communities have also been used as study areas for the participants of the Artisanal Fish Processing Training Course which has been held yearly for the past 4 years. In 1988, Ahwiam and Lekpongunor were chosen as pilot villages for the training programme. In 1989, Ayetepa and Mangotsonya were the 2 pilot villages. Tema U-Compound and Nungua Faashi were the study areas for the 1990 course. In 1991, New Galilea and Amanfro were chosen.

11.1 Life Style

There are several similarities between these study areas. The standard of living is low. Housing is of mud, wood or sandcrete with felt, corrugated iron, thatch or slate roofing.

Sanitary conditions are very poor with lack of proper drainage or refuse disposal. There are roaming domestic animals and inadequate places of convenience. Only 3 of the eight communities have pipeborne water and electricity. There are no clinics in all the communities but they have access to medical care in the district capitals.

The women large scale fish processors that took part in the studies were all illiterates. Almost all of them were married. Polygamous relationships were accepted in all the communities and the average number of children per mother was 6.

Although fish processing was the main occupation of the women, farming and petty trading are indulged in in addition to bring in more money into the household, because they have to look after the children as well as themselves and sometimes the husbands.

The women in all the communities lacked recreational facilities. Apart from funerals and festive occasions there is no facility for relaxation.

11.2 The Fishing Processing Industry

Tema U-Compound out of the lot was the only community that had access to refrigeration facilities. New Galilea and Amanfro also sometimes use ice blocks to keep the fish fresh. With the little refrigeration facilities available, the fresh fish have to be sold very quickly by the women or processed immediately to prevent fish spoilage. Distribution of fresh fish is therefore limited to markets within easy access of the communities. For distant markets, the fish is processed by smoking, salting and fermenting. Fish smoking is the most widely used method of processing.

The smoking techniques were found to vary widely within the eight communities studied. This is due to the smoking ovens and the women who use them.

At Ahwiam, Lekpongunor, Mangostonya and Ayetepa, the round mud and the round steel drum ovens were used.

At Tema U-Compound the rectangular and round steel ovens were used.

New Galilea, Amanfro and Nungua were using the rectangular mud ovens. However, the rectangular ovens in Nungua were 2 to 3 times bigger than those found at New Galilea and Amanfro.

The common features about all these ovens were the large stoke holes which result in excessive loss of heat. The ovens were also not covered during smoking, and so could not conserve most of the heat in the ovens. Those with metallic ovens also had the same problem because steel is a good conductor of heat.

The quantity of fish landed at the banks of the Weiija lake is small compared to those landed by marine fishermen. So just a layer of fish is smoked in the oven at a time. At the other communities as many as eight layers of fish arranged on nets and separated by sticks could be smoked in one oven at a time. The wireš nets however are not framed and the women sometimes got burnt or scratched by these nets during the course of their duty.

Most of the ovens observed had no sheds over them and so were exposed to the weather causing deterioration and sometimes complete destruction of the ovens by rain and erosion.

After smoking, the river fish could not be stored for a long time. The women in Amanfro and New Galilea make sure the fish is sold within two weeks of processing. Salted and dried fish can however be kept for up to 12 weeks.

In the marine fishing communities the fish can be smoked dried and stored up to 24 weeks and disposed of during the lean season.

11.3 Income

All the women from the different communities were not willing to divulge their profits made from fish smoking. The women of Amanfro were very honest and gave the information that, profit, after the sale of fish and purchase of food items from the Kasoa market was 100%. This would depend on the quantity of fish sold at a time. Since New Galilea is also a fresh water fish smoking village. It can be safely assumed that the income would be about the same as for those at Amanfro.

In view of the high cost of fresh water fish and the women's reliance on fish processing as their main source of income. Marine fish is processed by some women in addition to the fresh water fish, especially during bumper harvest of marine fish. The marine fish is purchased from Nyanyano, Winneba, Lamgba and other fishing villages near Amanfro and New Galilea.

12. COMPLAINTS

The women complained that they spend almost all their money on the household and sometimes they even have to go and borrow money to add to what they have in order to make ends meet.

They also said that the fishermen do not give them the fish on credit, even if the fishermen happen to be husbands and so they need financial help to be able to expand their business.

The women of New Galilea wanted to have tap water urgently because they were tired of purchasing water or having to go to other villages to fetch water.

The women in New Galilea and Amanfro wanted clinics in their villages to take care of their ailments. They complained of Bilharzia, Waist pains, Headaches, Eye diseases, Fever and Malaria.

13. CONCLUSION

The background information on Amanfro and New Galilea has been obtained from personal interviews, and the use of questionnaires.

The baseline information has also been gathered on existing traditional fish processing ovens, used in the two villages.

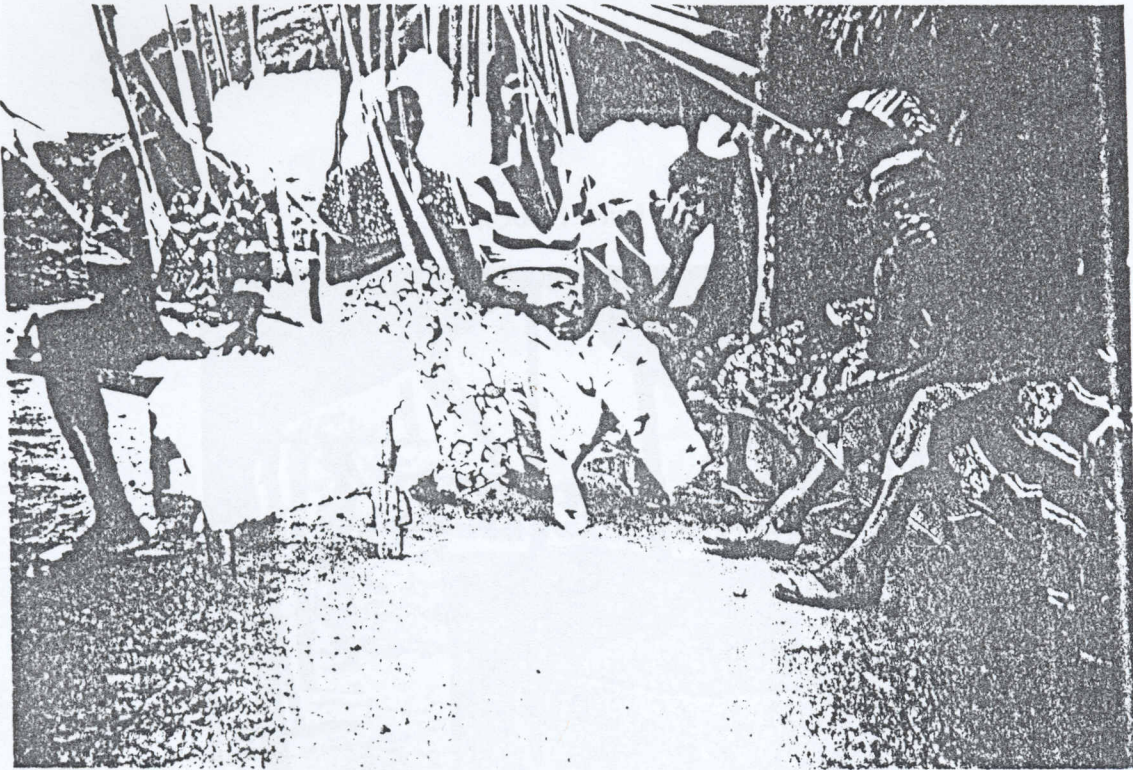
The role of women fish processors in the villages has also been studied and their problems noted. Some idea of their income from fish smoking activities was also obtained from the study.

14. RECOMMENDATIONS

The women of Amanfro and New Galilea are hardworking. The introduction of the Chorkor Smoker is expected to increase their income and make their products more desirable.

- 1) There should be education on sanitation and health, family planning methods and literacy classes for the women of Amanfro and New Galilea.
- 2) The women should be encouraged to form social groups where simple crafts and needlework could be taught in their spare time.
- 3) X A study should be conducted on the storage of smoked river fish so that it can be stored for more than two weeks.

New Galilea



A section of the women fish smokers

New Galilea



A section of the women fish smokers

Round Mud Oven



Two Round Ovens, under a shed used for smoking fish
in New Galilea

Chorkor Smoker



Chorkor Smoker, under construction. This is the oven being introduced to the villagers

Framed Wire Trays



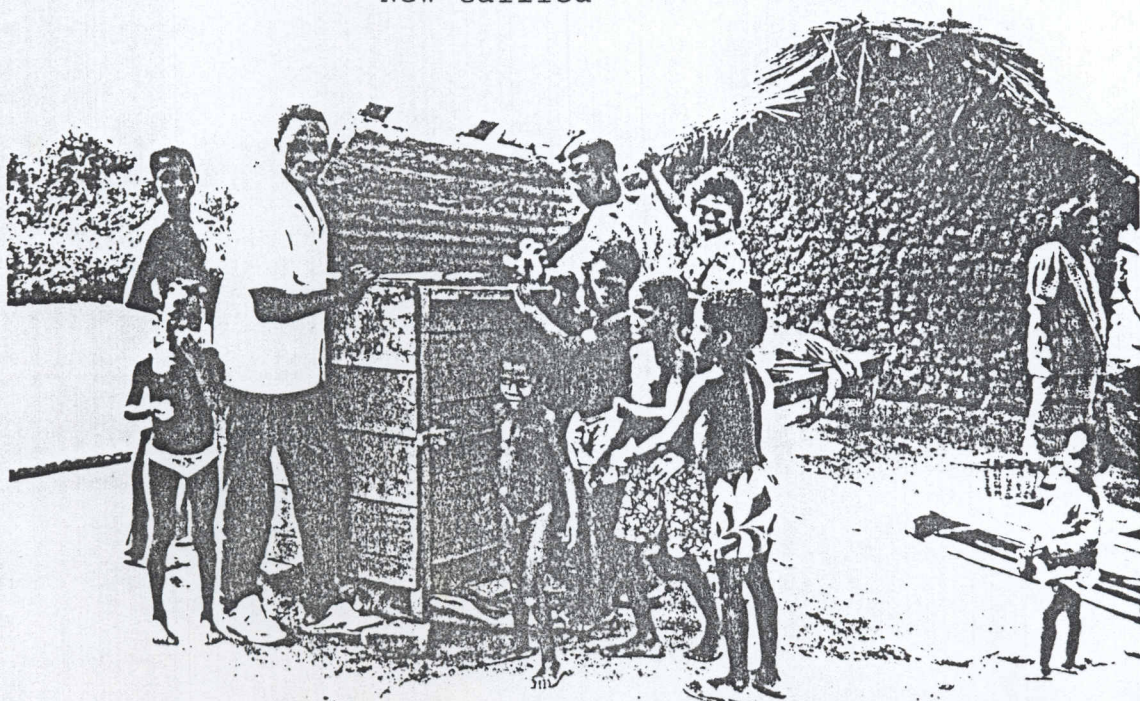
Some of the women examining framed wire trays to be used on the Chorkor Smoker

Chorkor Smoker



Chorkor Smoker in use. The tray loaded with fish is being placed on the oven.

New Galilea



An insulation box for selling Ice Blocks near the banks of the Weiya lake