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GHANA/NETHERLANDS ARTISANAL  
FISH PROCESSING PROJECT

RESEARCH PROJECT #3

SOCIO-ECONOMIC STUDIES ON  
PILOT TRAINING VILLAGES

PHASE ONE REPORT

BASELINE SOCIO-ECONOMIC STUDIES ON 1989 PILOT  
VILLAGES: MANGOTSONYA AND AYETEPA



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## SUMMARY

Background socio-economic studies were conducted on two typical coastal fishing villages, Mangotsonya and Ayetepa, the 2 pilot villages chosen for the 1989 Artisanal Fish Processing Training Course.

The study examined the area characteristics, basic amenities and fish smoking in these villages. In general the standard of living was found to be low in both villages. Poor village planning, poor sanitary conditions, lack of basic amenities and poverty have contributed to this state of affairs.

The women were however found to be hard working, with their main occupation being fish smoking, while farming is taken up during the lean fishing season. They also play a major role in fish distribution and marketing. It is believed that simple intervention programmes namely family planning, credit facilities, education and the like would have profound positive effect on their standard of living.

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

BASELINE SOCIO-ECONOMIC STUDIES ON TWO FISHING  
VILLAGES: MANGOTSONYA AND AYETEPAH

1. GENERAL INFORMATION

1.1 Mangotsonya and Ayetepa are two fishing villages in the Greater Accra Region of Ghana. They are situated in the southern savanna zone of the country. These two villages were chosen as study areas during training in Artisanal Fish Processing for West Africa in 1989.

Since it is the aim of the training programme to assess, promote, upgrade and disseminate a new technology, a baseline study on these villages has become very necessary. It will identify what existed before the new technology was introduced and thus be able to compare and evaluate the impact and effect of the new technology on the life style of the community. Similar work was performed when the 'Chorkor Smoker' was introduced to Akplabanya, another fishing village in the Ada area of the Greater Accra Region. (Lokko, 1984).

1.2 Introduction

In several studies of fishing villages, the combined importance of co-operation between spouses has been reported (Tripp 1982). The men fish and their catches are usually given to their spouses who process and market them. These co-operative arrangements form the back bone of the family.

Although women in fish smoking possess a considerable expertise, the importance of their economic role at the community and national levels is very seldom recognised. Furthermore, though these communities regularly produce fish most of them remain poor. They are also among the socially disadvantaged groups in the country.

The identified reasons are many and sometimes complex. One reason is the high perishable nature of the fish which they produce and that calls into question inadequate storage facilities for both fresh and processed fish. The price of the fish is determined by its quality. Another reason is the seasonal fluctuations in the availability of fish.

Apart from being involved in these economic activities, the women make valuable contributions to nutritional and health standards of the home. It is therefore a good thing to study this group of fish processors, with the object of raising their standard of living.

### 1.3 Purpose of Study

The purpose of the project is to improve the living conditions 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, storage, packaging and marketing of fish in coastal Ghana.

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

The specific objectives are:

- 1) To obtain background information on Ayetepa and Mangotsonya for the 1989 training course and to use the information obtained for future evaluation purposes.
- 2) To gather baseline information on the existing traditional ovens for the training course and for research purposes.
- 3) To determine the role of women in the fish smoking industry.
- 4) To try and calculate the income from fish smoking activities.

### 1.4 Explanation of Terms Used

#### 1.4.1 Household

All those persons who share in domestic arrangements for cooking and eating in the home. There is normally a head of Household who is responsible for all the people in the household.

1.4.2 Community: - Community here is used to represent the fisherfolk.

#### 1.4.3 Head of household

We define the head of household as the one responsible for the total running of the household namely food management and financial responsibilities.



### 3.1 Area Characteristics

#### 1.5 Selection and Training of Field Workers

It was planned that extension workers of the Food Research Institute would carry out the survey in the villages but because of language difficulties, the services of the teachers in the villages were utilised instead. They belong to the community, are respected and have a lot of influence. They were briefed on what information to obtain and how to obtain them. Before going to the field, the objectives of the study were carefully outlined and discussed with them. The questionnaires were studied together and all terms were agreed upon.

#### 1.6 Sampling of Households within the Community

The women were invited to a meeting and the training course concept explained to them. After accepting to co-operate with the project team, the women were asked to choose about 12 of their numbers to help with the project. They met on their own and selected themselves on the scale of their work as fish smokers. Twelve women were therefore presented from Mangotsonya and seventeen from Ayetepa to participate in the baseline studies.

#### 1.7 Preliminary Visits and Contacts

Since the studies are in support of the broader project of introducing the improved smoking technique to the fishing community, the women were made aware of the impending survey (to follow by informing them as a group). They were, also persuaded to cooperate with the field team.

#### 1.8 Data Collection

This study should have commenced before September 1989. This could not be done as planned because of unforeseen circumstances. The survey was therefore conducted, in some cases on recall basis. On what existed before September 1989. It took two enumerators about 10 - 12 weeks to interview the women, starting in January and ending in April. They did not work in December because they were on holidays. The women were available mainly on Tuesday and a few other days. The enumerators also being teachers, had to close from work before continuing with the interviews. Family problems also caused some delays. The research team went down to the field several times and met the women together. Valuable information was obtained on their smoking activities and life styles.



## 2. Mangotsonya and Ayetepa

### 2.1 Area Characteristics

These two fishing villages are being considered together because they are similar in several respects as they happen to be located next to one another.

Mangotsonya was founded by some fishermen from Ningo who came to settle on the land a long time ago. When they arrived at the present site, there were a lot of mango trees and so they named the place Mangotsonya, meaning 'The Land of Mango Trees'.

The first person to settle at Ayetepa was one Duamor. He was a fisherman. The name Ayetepa was given to the village because a man called Ayete, from Anehor in Togo, came and settled in the village. He dug a well which never went dry. So whenever water was scarce, people from the village and other surrounding villages came for water from Ayete's well, or water hole. So the village was called Ayetepa. "Ayete's" water hole. This old community called 'Dzumapor' still exists but a new community has been built alongside it called 'Sanlao'.

From the last population census, in 1984, the population of Mangotsonya is 871 made up of 381 males and 490 females. The total population of Ayetepa from the same source is 1,063, made up of 485 males and 578 females.

### 2.2 Housing

There were 109 houses in Mangotsonya and 166 houses in Ayetepa. Over half of these houses are built from cement blocks. The rest are built from mud and sticks. The old community in Ayetepa (Dzumapor) has only mud houses.

The roofs are made of thatch, corrugated iron or asbestos roofing sheets. Outside walls are not plastered but the rooms are. The rooms are without ceiling. The cement block buildings have wooden windows and so do some of the mud houses. In the rest of the mud houses, square or triangular holes are to serve as windows. The bigger holes have either iron rod pieces in them of firm sticks for security reasons. There are several packed cement blocks to be seen in both villages as well as several uncompleted buildings.

The soil is sandy and although one can see large shade giving trees at Mangotsonya, Ayetepa is relatively bare.

Furniture in the houses are made of red wood or white wood. Wooden beds and kapok mattresses are used by most people. The houses are also furnished with a few arm chairs and cupboards. A few tables can be seen on the verandas of the houses.

All the houses have separate kitchens built of clay, with doors and locks to keep away domestic animals which are abundant in the villages. These domestic animals, made up of pigs, sheep, goats, ducks and chickens roam freely. Food items remain safe as long as the kitchen doors are closed firmly. Small stools are used in the kitchen.

### 2.3 Fuel and Lighting

Clay stoves and coal pots are used in the kitchens. The sources of fuel are kerosine, wood and charcoal. Wood for cooking is obtained from thickets near the village whereas charcoal and kerosine or wood for fish smoking are purchased.

There is no electricity in these communities and so lanterns and candles are used. A few use locally made lamps which produce a smoking naked flame.

### 2.4 Tribe and Religion

The predominant ethnic group is Dangme. Traditional religious practices are common. However there are christian pentecostal churches that are well patronised in both communities.

### 2.5 Education

About 70% of the adult population are illiterate. Education is not a priority subject in Mangotsonya. It has only a primary school sited in a large school compound. Those who are able to continue finish their school elsewhere. The average number of children per class is 20.

Ayetepa has a primary school as well as a Junior Secondary School (JSS).

Table 1

Number on Roll in Primary School and JSS at Ayetepa

Pupils	PRIMARY CLASS						J. S. S.			
	1	2	3	4	5	6	Pupils	1	2	3
Girls	8	10	7	7	6	8	Girls	6	6	6
Boys	13	12	10	8	9	22	Boys	16	18	16
Total	21	20	17	15	15	30	Total	22	24	22



## 2.6 Occupation

The main means of existence at Mangotsonya and Ayetepa are fishing by men and fish processing by women. Apart from these, both men and women farm during the 3 - 4 months long lean fishing season. A few indulge in petty trading. Some men are engaged in carpentry and weaving of thatch roofing. Others are masons or drivers. Crops like cassava, pepper, tomatoes, garden eggs and okroes are grown for sale and for home consumption. Cooked food vendors also prepare traditional food items for sale in the communities.

## 2.7 Sanitation

Sanitary conditions in the villages are poor. There are no properly constructed drains. Refuse is thrown directly into the bush. Only 2 people have constructed pit latrines in their homes. There are no public toilets and everybody, in both Mangotsonya and Ayetepa makes use of the bush.

All the houses have their own bathrooms, either made of cement blocks or palm fronds. The water from the bathrooms collect outside and eventually dry in the sun.

Roaming domestic animals also contribute to the unsanitary conditions. They are not penned and so their droppings litter the compounds.

## 2.8 Water Supply

Both villages have stand pipes but water does not flow. At Mangotsonya, water is obtained from a stream called 'Wono' meaning 'our own'. At Ayetepah, well water is used. The surface of the water looks muddy. Pipe borne water could however be purchased at ₵10.00 per bucket and ₵15.00 per standard aluminium bowl. Water used in the homes are stored in earthen pots, metal tanks, plastic drums and metal drums.

## 2.9 Health

There are no clinics in both villages. There are a few birth attendants and many traditional healers. The traditional healers attend to those who prefer herbal or psychic treatment to orthodox medical care. Complicated or grave cases are taken to hospitals in either Ningo in the Greater Accra Region or Bator in the Volta Region. Guinea worm is a scourge in Mangotsonya. This is definitely due to the water they drink. The main causes of illness and deaths in infants and toddlers are malaria, measles, diarrhoea and fever. School children also suffer from the above ailments and in addition, suffer from skin diseases and stomachaches. The complaints from the adult population are waistspains, diarrhoea, fever, malaria and fatigue.

The lack of toilet facilities and absence of good drinking water might be the reasons for the diarrhoea.

## 2.10 Markets and Market Days

There are no markets in both villages. The smoked fish is taken to various towns and Accra on their market days. The fish is sold in Suhum and Koforidua (Eastern region) and Ada Junction. Some traders also come to the village to purchase the fish and then sell it elsewhere.

There are 5 lorries that transport the women and their goods to and from the village. Sometimes the women have to wait for 1 hour or more intervals for lorries to arrive at the village and load passengers and goods. Basic food items such as cassava dough, kokonte, roasted corn meal and fresh vegetables are sold in the houses. Fruits and cooked foods are sold along the roads and paths in the village.

Sheep, goats, poultry and pigs are reared but these are not sold. They are slaughtered on special occasions like births, deaths, funerals and weddings. Even at those times, the meat is shared and not sold.

The animals are also slaughtered for home consumption when fish is not available. An average of 800 cedis is spent daily on food for a household of about 10 children and grown ups, inspite of the presence of some food items, mainly staples in the house.

## 2.11 Community Activities

There is no chief at Mangotsonya. The head of the village is the Asafo Atse. He, together with his elders and chief fisherman are considered as leaders in the village. Apart from the above, there are other political bodies, all organs of the revolution, who help in the running of the community. They are the Committees for the Defence of the Revolution (CDR), the Assemblyman, and the leaders of the 31st December Women's movement and others. Ayetepa has a Chief who rules together with his elders. He is also a fisherman. There are no self help projects in both villages and no entertainment either. Funeral gatherings and festivals are the only means of social get togethers and relaxations.

## 2.12 Food Processing

Various food items are processed for better storage. Apart from the smoking of fish, maize or corn is processed into corn dough by first steeping the corn in water for 3 days, milling, fermenting and then storing. The fermented maize meal is used in preparing traditional foods like kenkey, banku and porridge.



Cassava dough is also processed. The cassava is peeled, steeped in water and then washed. The washed cassava is grated or milled. The milled product is left in sacks to ferment while weights are placed on the sacks to drive out water. This product is sometimes mixed with maize meal to prepare banku or akple. It is also used to prepare fufu, yakayaka, agbeli kakro and other products.

Gari is also processed. In gari production cassava is peeled, washed and grated. The grated cassava is left for a short period of time to ferment and then water is squeezed out of the fermented cassava meal. The meal is roasted in open pans with constant stirring. The product obtained is crisp and granular and has good swelling properties when water is added. It can keep for a very long time, up to eight months or more.

Kokonte is another cassava product. Cassava is peeled, cut into pieces and dried in the sun. The dried chips are finely milled into powder and then stored. To prepare, some of the meal is cooked in boiling water. A paddle is used for stirring the mixture as well as breaking up lumps. The resultant kokonte balls are eaten with soups.

Ablemamu or roasted corn meal is also prepared by first roasting the corn until it browns, and then milled. The powder obtained is used to prepare Akplidzi, koko, banku and many other traditional dishes.

Of the vegetables, pepper is the only commodity that is sun-dried and stored. Other processing activities are on a small-scale.

On the whole, the inhabitants of the two villages appear to be hard working and industrious.

### 3. In Depth Studies of Households

#### 3.1 Description of Households at Mangotsonya and Ayetepah

Twelve households were studied at Mangotsonya and seventeen at Ayetepa. The number of sleeping rooms and the sizes of households are presented in Table 2.

Table 2

Household Size in Relationship to Number of Sleeping Rooms Occupied at Mangotsonya and Ayetepa

MANGOTSONYA			AYETEPA		
Household No.	Household Size	Household Rooms	Household No.	Household Size	Household Rooms
M 01	14	5	A 01	4	1
M 02	12	2	A 02	13	6
M 03	10	3	A 03	9	7
M 04	8	2	A 04	9	4
M 05	11	4	A 05	4	3
M 06	10	8	A 06	9	3
M 07	10	4	A 07	9	5
M 08	14	8	A 08	7	6
M 09	17	13	A 09	4	3
M 10	10	7	A 10	6	3
M 11	10	4	A 11	7	5
M 12	10	8	A 12	6	4
Total	136	68	A 13	4	5
			A 14	9	3
			A 15	4	5
			A 16	10	6
			A 17	10	5
			Total	124	74

The highest household size recorded at Mangotsonya was seventeen and the lowest, eight. At Ayetepa the highest was thirteen and the lowest four. The average household size at Mangotsonya was 11.3 while that of Ayetepa was 7.6. The average number of sleeping rooms for Mangotsonya was 5.6 while that for Ayetepa was 4.3. In both cases, the ratio of household size to number of sleeping rooms is 2:1.



### 3.2 Sex and Age Distribution

The sex and age distribution of this sample study is of great interest because it shows clearly that there are more females than males.

Table 3

Classification of Male and Female by Age Group at Mangotsonya

Age Group (Years)	Male	%	Female	%	Total Male + Female	%
0 - 5	8	14.8	8	9.8	16	11.8
6 - 10	9	16.7	21	25.6	30	22.1
11 - 15	8	14.8	8	9.8	16	11.8
16 - 20	11	20.4	11	13.4	22	16.2
21 - 25	4	7.4	9	11.0	13	9.6
26 - 30	2	3.7	8	9.0	10	7.3
31 - 35	1	1.9	2	2.4	3	2.2
36 - 40	4	7.4	6	7.3	10	7.3
41 - 45	2	3.7	5	6.1	7	5.1
46 - 50	3	5.5	1	1.2	4	2.9
50+	2	3.7	3	3.6	5	3.7
<b>Total</b>	<b>54</b>	<b>100.0</b>	<b>82</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>

The 0-20 years old form about 60% of the group under study. The rest is made up of adult men and women with twice as many women as men.

Table 4

Classification of Male and Female by Age Group  
at Ayetepa

Age Group (Years)	Male	%	Female	%	Total Male + Female	%
0 - 5	12	27.3	16	20.0	28	22.6
6 - 10	7	15.9	14	17.5	21	16.9
11 - 15	5	11.4	12	15.0	17	13.7
16 - 20	6	13.6	6	7.5	12	9.7
21 - 25	2	4.5	4	5.0	6	4.8
26 - 30	1	2.3	4	5.0	5	4.0
31 - 35	2	4.5	2	2.5	4	3.2
36 - 40	3	6.8	5	6.2	8	6.5
41 - 45	1	2.3	6	7.5	7	5.7
46 - 50	1	2.3	3	3.8	4	3.2
50+	4	9.1	8	10.0	12	9.7
Total	44	100.1	80	100.0	124	100.0

The results from Ayetepa are similar to those of Mangotsonya. The age group of 0-20 from the bulk of the size of the households and there are 3 times more females than males.

The total picture presented could reflect either the higher mortality rate of children and adolescents or the rate of departure of young men and women from the households. The situation at Mangotsonya and Ayetepa favours the second alternative because we were told that the young fishermen have migrated to settlements along the Volta River to fish. Others leave the households to get married or because of over crowding.

### 3.3 Marital Status

Table 5 gives an idea of the marital status of the female members of marriageable age at Mangotsonya.

Table 5

Marital Status of Females in Mangotsonya

Age Group	Single	%	Married	%
16 - 19	4	80.0	6	15.0
20 - 29	1	20.0	15	37.0
30 - 39	-	-	8	20.0
40 - 49	-	-	8	20.0
50 - 59	-	-	2	5.0
60+	-	-	1	2.5
Total	5	100	40	100

Out of the 45 women of marriageable age, 40 are married and 5 not married. Table 6 shows what occurs at Ayetepa. Out of the 38 women of marriageable age, 34 are married and 4 single. Polygamous relationships are socially acceptable in both villages. The men can marry two or more wives but most men already have two wives. The men believed that a man can have more than one wife as long as he can look after them.



Table 6

Marital Status of Females at Ayetepa

Age Group	Single	%	Married	%
Below 20	2	50.0	2	5.9
20 - 29	1	25.0	8	23.5
30 - 39	-		4	11.8
40 - 49	-		12	35.3
50 - 59	1	25.0	6	17.6
60+	-		2	5.9
Total	4	100	34	100

They also command more respect if they have more than one wife. The women on the other hand are unhappy with these polygamous relationships but dare not oppose the men or there would be a fight. The men in reality do not look after the women and the children. The women have to do it alone or at best with very little help from the men. The men normally stayed in the home with the first wife. The others stay elsewhere. The average number of children brought forth is six. A lot of children can be seen playing in these communities.

3.4 Tribe and Religion

All the household members of both Mangotsonya and Ayetepa are Dangmes. At Mangotsonya 39 out of a total of 136 people are pagans and the rest christians. At Ayetepa, there are 41 pagans and 83 christians from the seventeen households under study. Apart from education, it does not appear as if religion has any effect on their life styles. Most christians send their childred to school.

### 3.5 Education

Sufficient emphasis is not placed on schooling in the two villages, Mangotsonya and Ayetepa. Tables 7 and 8 below show clearly the education levels of those of school going age in the villages.

Table 7  
Educational Status of Household Members  
at Mangotsonya (6 years and above)

Level of Education	Males	%	Females	%	Total	%
None	22	47.8	62	83.8	84	70.0
Primary	11	23.9	10	13.5	21	17.5
Middle	8	17.4	1	1.3	9	7.5
Secondary	5	10.9	1	1.4	6	5.0
Total	46	100.0	74	100.0	120	100.0

Table 8  
Educational Status of Household Members at  
Ayetepa ( 6 years and above)

Level of Education	Males	%	Females	%	Total	%
None	13	40.6	42	65.6	55	27.3
Primary	9	28.1	14	21.9	23	24.0
Middle	10	31.3	8	12.5	18	18.7
Secondary	-	-	-	-	-	-
Total	32	100.0	64	100.0	96	100.0

From Table 7, 70% of those sampled or interviewed have had no form of schooling. Over 80% of this number are females while the rest are males. It was also noted that, the younger ones, between 6 years and 10 years are those who have had some schooling.

The picture is almost the same at Ayetepa. Over 50% of those of school going age have had no education. There are twice as many females as male illiterates.

The women explained that they do not send their children to school because of financial problems. The husbands refuse to contribute to the childrens' education and so the women do what they can by sending some of the children to school and leaving the others. Most of the time, the boys get the privilege.

### 3.6 Occupation

Fish smoking is the main occupation of the women heads interviewed at Mangotsonya. The same applied to the 17 women at Ayetepa. During the lean fishing season the women take up other occupation. This is mainly farming. The land is cleared for the women with a tractor and the women pay for the tractor service. At Mangotsonya, one woman produces and sells kenkey during the lean season, while the rest farm. At Ayetepa, ten out of the seventeen women farm during the lean season. The remaining 7 hawk their wares. Other people in the villages also take up occupations like bread baking, vendoring of cooked food and other jobs during the lean season. Some women do not do any work. They wait for the main fishing season to start smoking again.

## 1. FISH PROCESSING

Traditional processing methods of fresh fish in Mangotsonya and Ayetepa include smoking, drying, salting and fermentation. A little of the fish is either freied for sale or for home consumption.

Fish smoking is the main processing method used in Mangotsonya and Ayetepa.

### 4.1 Ovens

The ovens found in these villages are the round or cylindrical mud ovens and the steel drum cylindrical ovens. The steel drum ovens are used more than the mud ovens.



#### 4.1.1 Steel drum ovens

To make steel drum ones, the steel drums are purchased from Accra or from local gin distillers. The top and the bottom are removed from the drum. The drums are cut along the length. Two or more of these can be joined together to form ovens of bigger diameters. A stoke hole is cut at the base of this oven. Small holes are then punched at the mid rim and thick metal rods or sticks are stuck across in order to form grills to support the wire nets on which the fish is placed and smoked.

To construct an oven using 2 steel drums, one needs to purchase the drums at between ₵1000 - ₵2000 per drum. The labour cost is ₵1000, so the total cost for a medium size steel oven would be up to about ₵5000.

Metal ovens are expensive because of the prices of the drums. The drums are also scarce. They are difficult to maintain because they are easily dented. They also rust or wear out easily because of the salt in the air near the beaches. Holes which appear in them are patched with wood or pieces of metal plates. When they start deteriorating, stones or wood are used to balance them. They can easily fall over when the base is not embedded in concrete or cement. When the oven is being used for fish smoking, constant attention is needed for good results. It is however cumbersome to operate and has limited capacity. Most of the heat and smoke escape during its operation. The wire nets used are without frames and they are separated from each other by sticks. It is difficult to handle these wire nets during smoking and the sticks sometimes get burnt. The oven is used for between 1-2 years before being discarded. Some do not cover their ovens either in good or bad weather. Others use rubber or plastic sheets to cover theirs. The ovens are placed outside or in the kitchen. The quality of the fish is medium although there is the tendency to burn fish in the centre of oven. Temperature distribution is variable and there is poor insulation. It can however be transported from one place to another and capacity is moderate.

#### 4.1.2 The mud cylindrical oven

The traditional Ghanaian mud oven is cylindrical with thatched roof cover. This is the other type of oven found in Mangotsonya and Ayetepa.

About 30 head pans of clay are needed for the construction of this round oven. The clay is kneaded to the right consistency. To construct the oven, the base is marked and the thickness of the wall, outlined (about 10 cm thick). Layers of clay or mud, are made up to about 1½ metres high. Grill bars are installed at about midway off the ground. The stoke hole is then cut out at the base of the wall. The cost of labour involved is between ₵400-₵600.



The mud ovens are therefore a lot cheaper than the metal ovens. They can also be used as storage ovens. They however have limited capacity for smoking large volumes of fish.

The oven is used for one or two years before being discarded but if it is maintained and covered to protect it from rain it keeps longer.

The fuel use is poor and the ease of operation is also poor. A lot of smoke goes into the eyes of the women. The smoking process becomes even more cumbersome when it comes to turning the smoked fish, because the fish have to be taken out of the oven, turned and rearranged. The quality of product obtained is however very good with a good colouring. Temperature distribution is poor and this type of oven cannot be transported.

#### 4.2 Fuel

Firewood is the fuel used for smoking fish. The burning wood imparts heat as well as aroma and smoke to the fish. Sugar-cane is burnt to give the fish a nice brown colour. Firewood can be purchased in the villages. Vehicles and tractors from Dawa (Greater Accra Region) supply the women with all their fuel requirements. A tractor load of firewood is sold to the women for ₵16,000. They can purchase a bundle or a head load of firewood for ₵500.00. These prices are not fixed. They can change any time.

The women in both villages found it difficult to give the amount of fuel needed to smoke a specific quantity of fish because the amount varies with the types of sizes of fish. Firewood is purchased in bulk and used when needed. The stocks are replenished when they are low. They therefore do not know and cannot estimate the quantity of fuel that will smoke a known quantity of fish.

#### 4.3 Fish smoking

Hot smoking is the type of smoking mostly carried out in the two villages. This is because it is faster to hot smoke the fish than to dry smoke and also it maintains its weight, thus fetching a high price in the market. The total time involved in hot smoking of any kind of fish is up to 4 hours. The types of fish smoked include Tuna, Flying fish, Mackerel, Herrings, anchovies, and barracuda (see Appendix).

The smaller fish like sardines and anchovies are just washed and placed on the grills, they are normally dry smoked. The bigger fish are degutted and washed. Sometimes they are cut into required sizes before smoking. On the whole, negligible quantities of fish are lost during smoking. Some fish get burnt and other small fish sometimes slip into the fire through the holes in the wire nets.

5. STORAGE AND MARKETING

Some of the women store their smoked fish in baskets and others store them in the mud ovens. The fish stored are the dry smoked ones. The hot smoked fish are taken to the market within 24 hours after smoking to prevent spoilage. The fish are packed in baskets lined with paper and covered also with paper and plastic for storage. During the bumper harvest when a lot of fish is smoked, especially the small fish, these are dried and stored, sometimes for even six months and then sold during the lean season when prices go up. The baskets are placed in the kitchens. The smoked fish are also packed in baskets or aluminium basins for sale. They are taken to the markets in Accra, Koforidua, Suhum (Eastern Region), Kassei (Central Region), Ningo (Greater Accra Region) and other places for sale. These fish are taken to the markets on vehicles which charge the women very high fares. They pay between C1000, and C2000 to travel with their products to Accra and back. Some even quoted C3000.00 to Suhum, Koforidua and Kasseh. They add all these charges to the price of the fish making the fish rather expensive. The transport vehicles are quite regular.

The women were not willing to discuss the money they received for a given quantity of fish or their profits. They however explained that they vary from time to time. The table below shows the amount of money paid for the fresh fish during the lean and bumper seasons last year. The price depends on the size and weight of the fish and so the information given below gives just a rough estimation of lean and bumper harvest prices.

Table 9

Prices of Some Fish During the Lean and Bumper Seasons - 1989

Fish Type	Quantity	Price (Cedis)	
		Lean	Bumper
Opoku	1 piece	250-400	100-200
Gbaa	1 piece	600	300
Yayi	1 piece	200	150
Ekafio	1 piece	300	200
Anchovies	1 crate	600	400-200
Odoi	1 piece	100	50
Flying fish	1 piece	60	50



The prices of fresh fish change daily and so they have to adjust the price of their smoked fish daily in order to make their profits.

The marketing of smoked fish is done solely by women. They have their customers who either come to purchase at the market or at the village. Smoked fish is taken to the market collectively by those who have fish to sell. Wholesaling and retailing both take place at the same market at the same time. Women retail the smoked fish in baskets, in hundreds, or have containers of various sizes which they use. Big fish are retailed singly. Poultry farmers and animal feed millers are some of their regular customers.

## 6. THE ROLE OF WOMEN

### 6.1 Fish Sales

The work of the women begins when the fish is landed by the fishermen. Distribution of the fish varies from boat to boat and from one fisherman to the other.

The bulk of the fish is sold to the wives of the fishermen for processing or retailing. Others who benefit are sisters, mothers, relatives and neighbours of the fishermen. The fish are sold in crates or singly depending on their sizes. The fishermen give the women only a couple of days credit. If fish is not landed in Mangotsonya or Ayetepa, they have to go Ahwiam or Ningo to hustle for fish to smoke. Those whose husbands are not fishermen, find it very difficult to get fresh fish.

The fish is carried home by the women themselves or their children. When there is a lot of fish, labourers are hired to carry the fish home. The women spend over 50% of their time on processing of fish.

### 6.2 Social Activities

There are no social groups at the two villages neither are there any recreational activities. It is only during festive occasions like festival days and funerals that they relax and enjoy themselves. Self help projects are non existent. There are no dance groups that would even entertain the people. In spite of all these, they are very hard working and industrious.

### 6.3 Domestic Problems

The men do not help the women or cooperate with them. Most of the women look after their own children and feed the family as well from their fish processing activities. The women normally pay the school fees of their children. At best, the men will pay half the amount and the women the rest. Therefore, the women find it difficult to send all their children to school. When they can afford it, they send some of the children to school. School fees are not the only fees the men refuse to pay. They do not pay hospital bills for the wife and children. The women have to add this also to their already heavy economic load. The only food items provided by the men in the houses are staple foods.

The women on the whole admit that their business is profitable but would not disclose the amount of money they make because they are afraid that they would be taxed. They however stated that most of their money goes into food for the family.

### 7. ITEMS MOST VALUED AT AYETEPA AND MANGOTSONYA

The items most valued are building made of cement blocks. The aim of every young man who travels out of these villages to go and work at Akosombo or any other place is to come back to the village and build a cement block house and they build also to rent to others. All the well to do also live in cement block houses.

Transport vehicles are the next most valued item. The villages are somewhat removed from the big towns, and their products have to be sold and so they depend heavily on the vehicle owners to take them to and from the markets. Those who have such vehicles therefore made a lot of money in these two villages.

Ownership of boats, nets and outboard motors for fishing is also very important in the villages. Those who own them control all the fish landed at the beaches. Apart from the above big items, the women were eager to own simple items like aluminium bowls, buckets and pans which they need for their fish processing activities.

### 8. DISCUSSION AND CONCLUSION

Mangotsonya and Ayetepa, were found to be typical fishing villages in Ghana.



## Life style

The standard of living of the people is low. The people are mostly illiterate fisherfolk, who together with others play a vital role in fish production in Ghana by supplying most of the fish used for direct human consumption and providing a large number of people with relatively low cost and nutritious foods.

The planning of the villages is poor and the houses have not been erected according to a laid out plan. Sanitary conditions are poor. There is lack of basic amenities like potable water, electricity, clinics and schools. There is lack of proper drainage and refuse disposal. Roaming domestic animals are all over these villages. There are no toilets in these villages.

The villagers are mostly illiterate and the birth rate is very high. Polygamous relationships are accepted and the average number of children per mother is six. The people are poor in spite of the fact that they are very hard working and industrious. There are no markets in both villages and there are no refrigeration facilities as well.

## Occupation

With no ice or refrigeration facilities available, the fresh fish has to be sold quickly before it gets spoiled and distribution is limited to markets within easy access. For distant markets, the fish is processed by salting, drying, fermenting or smoking. Fish smoking however is the most widely used method of fish processing.

Traditional processing methods have many advantages. They provide desirable products to local markets and have low cost operations (FAMEM 1988). The traditional processors have many problems that they face in the course of their work. The amount of locally exploitable fish change due to seasonal fluctuations in fish movement and availability. These interfere with fishing activity. Most processors in Mangotsonya and Ayetepa have to take up farming or petty trading to generate some income during the lean fishing season.

Traditional smoking techniques vary widely. This is because there are different smoking ovens used by different processors. At Mangotsonya and Ayetepa, the round mud and the steel drum ovens are used. There are many disadvantages in the use of these ovens. The women confirmed that constant attention is required to control the fire and turn the fish. There is the possibility of health or fire hazard because of this process. The women complained of severe waist pains, dizziness and headaches. These ovens are also inefficient in their use of fuel. There is little control or no control over the temperature of the fire and the density of smoke. Construction materials used limit their durability (UNIFEM 1988). The durability can be improved if the fish processors would be encouraged to build sheds over their ovens. The shed would then protect the oven from the ravages of the weather.



Small and medium fish may be smoked whole or cut into portions. This smoking process yields a product with 10-15% moisture content and may require from 2 hours to 2 days. Fish dry smoked can be stored up to 6 months in the tropics if the mud ovens are tightly covered with plastic or brown paper and thatch. The fish should be resmoked every 2 months to eliminate mold, bacteria and insect larvae (FTDC 1988).

### Income and expenditure

The women at both Mangotsonya and Ayetepa were not willing to divulge their profit margin from their fish smoking activities but they confirmed that it is a good business when there is fish.

The money they get however is spent on the household providing food for the family, looking after the family and bearing all expenses so there is nothing left to save. Sometimes they have to borrow money from others.

They complained that if the spouses or fishermen will give them the fish on credit for sometime, they will be relieved a little bit but at most they are given 2 days to pay for the fish. This state of affairs is not peculiar to Mangotsonya or Ayetepa - similar conditions are experienced in other fishing villages like Nyanyano, another village, about 20 miles from Accra (UNIFEM 1988).

The women need financial assistance. The type of assistance needed are just small changes which are within their financial capabilities. Clean water, good education, training facilities, simple equipment or basic materials will be enough to satisfy them. It also came out clearly from the study that it is not easy getting accurate weights and quantities of items like fish, fuel and clay. The figures can only be estimated. It is suggested that a detailed study is done to get these figures recorded.

In conclusion, it can be said that this study has brought up the background information about the two villages Mangotsonya and Ayetepa. The people are poor but hard working and the introduction of this new Chorkor Smoker to them is expected to increase their income, make their products more desirable and reduce post harvest losses.

## 9. RECOMMENDATIONS

### Life style

- 1) The parents should be encouraged to send their children to school and the adults, to take part in literacy classes.
- 2) The women and their husbands should be introduced to family planning methods. The women and some of the men requested for guidance at one of the meetings.

- 3) All animals should be penned and education on health and sanitation should be given.
- 4) They should be encouraged to form social groups where they can learn some crafts or needle work so that they have something to do during their leisure time.
- 5) Cultural groups could be formed to entertain the people now and again.
- 6) They should be encouraged to take their money to the bank in order to avail themselves of loan facilities.

#### Miscellaneous

- 7) The villages should be visited often to encourage the women to go on using the Chorkor Smoker and to solve problems that may arise.
- 8) A detailed study should be conducted to find
  - a) The actual weight of clay that can build one oven.
  - b) The weight or quantity of firewood that can hot smoke/dry smoke a quantity of a particular type of fish, within a particular time.
  - c) The volumes of bowls, buckets and basis used in processing of fish.

#### 10. REFERENCES

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11. A P P E N D I X

FISH TYPES MENTIONED IN THE REPORT

<u>LOCAL NAME</u>	<u>ENGLISH NAME</u>	<u>SCIENTIFIC NAME</u>
Opoku (Tuna)	Frigate Mackerel Flying Fish	Auxis thazard Fodiator akutus
Mie/Nkani	Burro	Plectorhynchus macrolepis
Gbaa	Horse/Jack Mackerel	Trachurus treceae
Odoe	Barracuda	Sphyreaena gua chanco
Yayi	-	-
Ekofio	-	-
Man	Herrings	Sardinella aurita/eba
Amoni	Anchovies	Anchoa guineensis
Saman	Spanish Mackerel	Scomber japonicus.



HOUSEHOLD MEMBERS INVENTORY

SM 1

Socio-Economic

Village:.....

Household No:.....

Enumerator:.....

No. of Sleeping Rooms:.....

Own House:.....

Rented..... Date:.....

Name & Age (1)	Sex M/F	Marital Status *S M D (2)	Ethnic Group (3)	Religion (4)	Education a, b, c, d, e, f, g, h (5)	Main Occupation (6)	Other Occupation (7)	Ownership or access to or equipment of products or property (Land Car, etc. (8)
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\*S - Single  
#M - Married  
\*D - Divorced

\*Education

- a none  
b Primary  
c Middle

d Secondary  
e Technical  
f Polytechnic

g - read or write vernacular  
h - others specify

HOUSEHOLD CHARACTERISTICS

- 1. Village
- 2. Household No.
- 3. Date
- 4. Respondent
- 5. Enumerator
- 6. Name of Respondent.....
- 7. Size of family (include whole household)
- 8. No. of rooms occupied.....
- 9. Own House/Rented 

O	R
---	---

SANITARY FACILITIES IN THE HOUSE

- 10. Toilet: Pit  Pan  Public  None
- 11. Bath: Own  Communal  None
- 12. Water Supply: In house  Public Stand Pipe   
Other, specify
- 13. In what do you fetch water?.....
- 14. In what do you store water?.....
- 15. Disposal of waste water: Concrete drain  Earth drain   
Soggy ground  Pools   
Others, specify
- 16. Disposal of Refuse:  
Dust pan covered  Dust pan open   
No Dust pan  How specify

Village

House No.

Date:

Enumerator

Respondent

FISH SMOKING

1. How long does it take to build one oven?.....
2. What are the raw materials used?.....
3. What is the cost of materials?.....
4. What is the labour cost?.....
5. What quantity of firewood do you normally buy at a time to be used for smoking?.....
6. How much firewood (specify quantity) do you use to smoke a given quantity of fish (specify type)?.....  
.....
7. What is the total time involved for complete smoking to be done?  
.....
8. How many women must work for how long on a given type and quantity of fish and actual smoking?.....  
.....
9. Where do you obtain the fish for smoking?.....
10. How much by weight can be smoked at a time?.....
11. How long do you use the oven before constructing a new one?  
.....
12. Do you cover your oven when it is raining?.....
13. With What?.....
14. What prices did you pay for fish last year both in the lean and bumper seasons?.....



FISH TYPE	QUANTITY	PRICE	CEDIS
		LEAN	BUMPER
a.			
b.			
c.			
d.			
e.			

15. In what do you store the smoked fish?.....
16. How do you package the fish for transportation?.....  
.....
17. How long can the fish keep in the packaged condition for a specified type of fish?.....
18. How do you transport the fish to your markets?.....  
.....
19. Where is your fish retailed?.....  
.....
20. How much do you pay for transportation?.....
21. What is the price received for a given quantity of fish?  
.....
22. What is your monthly income?.....
23. What is the approximate monthly expenditure on food?  
.....

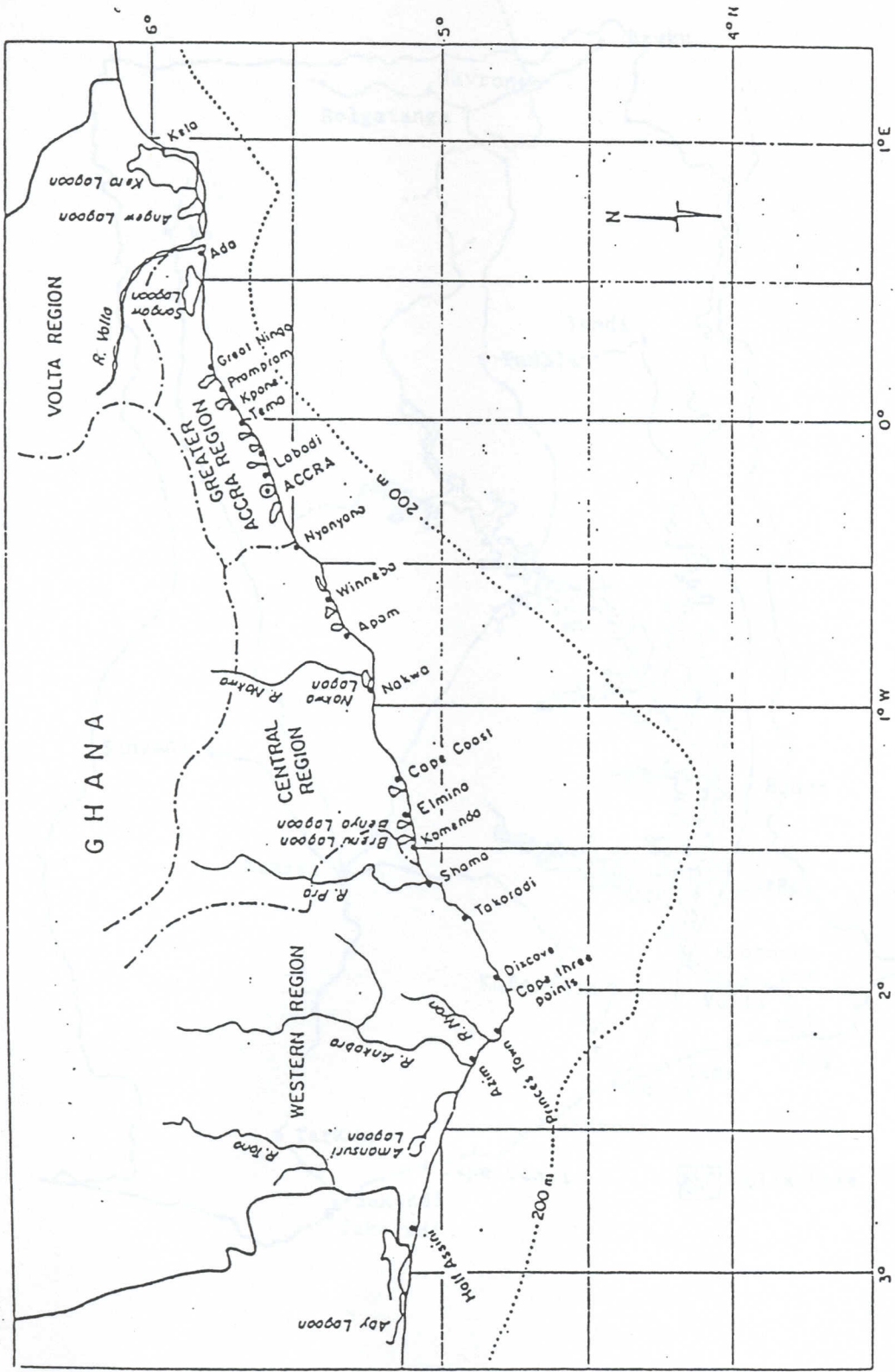


Fig. 2.1 Coastal map of Ghana, showing the 200 m contour line and the most important lagoons and rivers



Fig. 2.2. Map of Ghana, showing the regional capitals and a few towns.



U P P E R V O L T A

I V O R Y C O A S T

T O G O

GHANA

Scale 1:2,000,000

