

GHANA/NETHERLANDS ARTISANAL
FISH PROCESSING PROJECT

RESEARCH PROJECT #3

SOCIO-ECONOMIC STUDIES ON
PILOT TRAINING VILLAGES

PHASE TWO REPORT

BASELINE SOCIO-ECONOMIC STUDIES ON 1990 PILOT
VILLAGES: TEMA U-COMPOUND AND NUNGUA

By

PHOEBE LOKKO
Food Research Institute, Box M.20, Accra

Sept. 1990

A C K N O W L E D G E M E N T

This project was funded by the Dutch and Ghana Government.

I thank Mrs. Nerquaye-Tetteh, the Project Manager for her encouragement and support.

My thanks also go to Mrs. Salome Anson for her help and support in all the peculiar problems encountered before making contact with the women fish smokers.

In addition, I will like to express my gratitude to Mrs. Florence Dake who worked so hard with me in the villages to collect the required data and to the Research Coordinator, Dr. Plahar for editing the report.

Finally my thanks also go to Mrs. Faustina Kersi who typed this report.

S U M M A R Y

Tema U Compound and Nungua Faashi were two typical fishing areas of Tema and Nungua respectively. These areas were chosen for the 1990 Artisanal Fish Processing Training Course.

Baseline socio-economic studies were carried out on these areas before the commencement of the Training course.

The study examined the area characteristics, basic amenities and the fishing industry in these two areas.

Poor sanitary conditions were the most outstanding features. Overcrowding was also a problem at Nungua.

The women were however found to be hard working and their main occupation was fish smoking. They also play a major role in fish distribution and marketing.

It is believed that simple intervention programmes namely credit facilities, literacy classes, health and nutrition education and ~~the~~ like would have profound on their way of life.

C O N T E N T S

Page

SUMMARY	..	..
1.	BACKGROUND INFORMATION	..	1
1.1	Introduction	..	1
1.2	Purpose of Study	..	2
1.3	Explanation of Terms	..	2
1.3.1	Household	..	2
1.3.2	Community	..	2
1.3.3	Head of Household	..	3
1.4	Selection and Training of Field Worker	..	3
1.5	Sampling of households within the Community		3
1.6	Preliminary Visits	..	4
1.7	Date Collection	..	4
1.8	Choice of Communities	..	5
2.0	TEMA (New Town and U-Compound	..	6
2.1	Area Characteristics	..	6
2.2	History	..	6
2.3	Housing	..	8
2.4	Fuel and Lighting	..	9
2.5	Health and Santation	..	9
2.6	Education	..	9
2.7	Occupation	..	10
3.0	NUNGUA	..	11
3.1	Area Characteristics	..	11
3.2	Housing	..	11
3.3	Health and Sanitation	..	12
3.4	Education	..	12
3.5	Occupation	..	13
3.6	Community and Social Activities	..	13

4.0	IN DEPTH STUDIES OF HOUSEHOLDS	..	14
4.1	Organization of Household	..	14
4.2	Sleeping Rooms	..	15
4.3	Sex and Age Distribution	..	15
4.4	Marital Status	..	16
4.5	Tribe and Religion	..	17
4.6	Education	..	18
4.7	Occupation	..	19
4.8	Health and Sanitation	..	19
5.0	THE FISHING INDUSTRY	..	22
5.1	Introduction	..	22
5.2	Fish Processing	..	22
5.2.1	Smoking Ovens	..	22
5.2.2	Fuel	..	25
5.2.3	Fishing Smoking	..	25
5.2.3.1	Hot smoking	..	25
5.2.3.2	Smoke drying	..	26
5.2.3.3	Fish smoking at Tema and Nungua	..	26
5.3	Storage and Marketing	..	28
5.3.1	Storage	..	28
5.3.2	Marketing	..	28
5.3.3	Transportation	..	29
5.3.4	Income from Fish Smoking	..	30
5.3.5	Fish Spoilage	..	31
6.0	THE ROLE OF WOMEN	..	31
6.1	Fish Sales	..	31
6.2	Social Activities	..	32
7.0	SPECIAL PROBLEMS	..	33
8.0	PROBLEMS ENCOUNTERED DURING THE STUDY	..	34

9.0	DISCUSSION AND CONCLUSION	..	..	35
9.1	Discussion	..	..	35
9.2	Conclusion	..	..	36
9.3	Recommendations	..	..	37
10.0	REFERENCES	..	..	38
11.0	APPENDIX	..	..	39
11.1	Fish Types Mentioned in Report			
11.2	Pictures on Fish Processing, Storage and Marketing			
11.3	Questionnaires			

LIST OF TABLES

	<u>Page</u>
TABLE 1: Household Size in Relationship to No. of Sleeping Rooms Occupied at Tema U-Compound and Nungua Faashi	14
TABLE 2: Classification of Male and Female by age ground - Tema U-Compound	15
TABLE 3: Classification of Male and Female by age group - Nungua Faashi	16
TABLE 4: Marital Females of U-Compound and Nungua Faashi	17
TABLE 5: Educational Status of Households Members U-Compound	18
TABLE 6: Educational Status of Households Members of Nungua Faashi	19

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

BASELINE SOCIO-ECONOMIC STUDIES OF TWO FISHING
COMMUNITIES AT TEMA AND NUNGUA

1. BACKGROUND INFORMATION

Tema and Nungua are two large coastal towns in the Greater Accra Region of Ghana. These two towns were chosen as study areas for the 3rd Training course in Artisanal Fish Processing for West Africa 1990. This report is on the second phase of the research project. The first phase was conducted at Mangostonya and Ayetepa, which are 2 small fishing villages also in the Greater Accra Region of Ghana (Lokko, 1990).

1.1 Introduction

One of the oldest indigenous industries in Ghana is sea fishing. It accounts for over 80% of the home supply of fish consumed every year in this country. Some important fishing towns along the coast are Tema, Keta, Nungua, Accra, Prampram and Winneba. Fishing trawlers were introduced leaving behind traditional unproductive methods. Emphasis was placed on mechanisation. The trawlers, fishing vessels and canoes were all fitted with motors. These measures greatly improved (increased) the fish output. Facilities for cold storage and icing of fish were also established. Fish processing activities increased in order to improve the keeping qualities of the fish and to store the processed fish against lean season demands. Fish smoking was one of the different ways in which the fish was processed. Fish smoking has become more efficient in recent years, producing better quality fish with longer shelf life. With the depletion of our forest smoking ovens that do not consume a lot of fuel have also become a factor in improvement of fish smoking activities. One such oven is the Chorkor Smoker. (Kagan, 1970). This oven has been introduced to several fishing communities along the coast of Ghana and has been very well received and in use.

Women fish smokers at Tema have not yet adopted the use of Chorkor smoker. Those at Nungua have also not fully adopted the smoker as it has not been officially introduced to them.

The training course for 1990, will among other things introduce the smoker to Nungua and Tema. The baseline studies of these communities now will be the basis that would be used to compare and evaluate the impact and effect of the new technology on the lifestyle of the community in the near future.

1.2 Purpose of the 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 promote, assess, 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 objectives outlined below which seek to support the purpose of the project.

The specific objectives are:

1. To obtain background information on Tema and Nungua
2. To gather baseline information on the existing indigenous traditional ovens
3. To determine the role of women in the fish smoking industry
4. To determine the profitability of the fish smoking activities.

1.3 Explanation of Terms Used

3.1.1 Household

All those persons who share in the domestic arrangements for cooking, eating and working in the compound or home.

1.3.2 Community

The community here is used to represent the fisherfolk in the areas under study.

1.3.3 Head of Household

We define the Head of household as the one responsible for the total running of the household including food management and financial responsibilities. In the study, the heads are all women fish smokers.

1.4 Selection and Training of Field Workers

Twenty four households were involved in the study with twelve at Tema and 12 at Nungua. Two field workers were involved in the survey. They were the Project leader herself and a Principal Technical Officer of the Food Research Institute. Both could speak Ga and Ewe languages, the dialects spoken at Nungua and Tema respectively. The questionnaires were studied together and the objectives of the study carefully outlined and discussed before going to the field.

1.5 Sampling of Households within the Community

At Tema, the president of the 31st December Women's movement, a political organisation, was contacted. She was also a large scale fish smoker. She undertook to contact her other colleagues, who were fish smokers and then choose 12 people from among themselves to participate in the project. Twelve names were submitted to the survey team and each of the twelve was visited in her home to prepare her for the impending survey and the practical training for the participants, taking part in the training course.

At Nungua the choice of 12 women to participate in the project was quite different because there were two opposing groups of women. There was only one womens' Association - with very few members not representative of the fishing community. The association

was contacted and the president gave 5 names of member of the group who were large scale fish smokers. A large scale fish smoker who did not belong to the group was contacted for the remainder of the names. She promised to organise the other women and produce the rest of the names for the project. After about the 4th visit to the community, the 7 other names of large scale fish smokers were added to the original five to make 12 in all

Again each woman was visited in her home and the project explained to them. They were made aware of the impending study and the introduction of the chorkor smokers to their communities.

1.6 Preliminary Visits and Contacts

Four visits each were made to both Tema and Nungua before the names of the women fish smokers were obtained.

During these visits, we had meetings with groups of the women together at the beach or in their homes. At these meetings the women were briefed on the aims of the project and what the project is supposed to achieve.

On these visits, prominent people contacted to inform them about the project include the Chief Fisherman and the Assemblyman and there was even a meeting with all the representative of the community with the Chief Fisherman as Chairman.

1.7 Data Collection

Like on previous occasions, the bulk of the information was collected from the household but supporting data was collected from other residents in the community, the Tema Development Corporation, the Nungua District Council, and from literature surveys. Some information was also obtained by observation.

1.8 Choice of Communities

The criteria from the choice of communities were already specified in the master programme.

- a. The communities must not be far from Accra
- b. There should be large scale women fishsmokers
- c. The Chorkor Smoker not been introduced to the community
- d. The community is a fishing community
- e. They need improvements on their ovens and other help and facilities.

2. TEMA (New Town and 'U' Compound)

2.1 Area Characteristics

Tema used to be an old Ga fishing village, located about 30 km. east of Accra. It is in the Greater Accra Region and bounded on the East by the Chemu Lagoon and on the West by the Sakumo Lagoon. The village has been in existence as far back as the 15th century.

Tema is situated exactly on the Greenwich meridian and is 5' 33" north of the Equator. It is situated on the Accra coastal plains of gently undulating grassland dotted with thorn shrubs and isolated trees. The major rainy season is from May to July and the minor rains fall in September and October. The months of December to March are hot and dry.

2.2 History

'Tema is a corruption of the Ga name "Tor Man". 'Tor' means calabash and originally, the site was the centre of calabash growing area. "Tor Man" meaning the town of Tor - an area where gourds thrive. (Ghana Year book, 1969,.

Prior to 1952, Ghana had only one harbour situated at Takoradi in the Western Region of Ghana. In 1952, the Government of Ghana decided that the country needed another harbour in addition to Takoradi harbour. This was necessary, because the Akosombo dam, in the Eastern Region of Ghana was being constructed to provide power for rapid industrialisation.

The Ghana Government decided in 1952, to build the modern harbour at Tema and develop the area into an industrial area and the centre of the fishing industry in Ghana. The Tema stool released all the land for the new Township and the Harbour.

The indigenous inhabitants were then living around the present harbour area. They had to leave this area before the

harbour project could take off. They refused to move away, even though resettlement houses have been built for them and all the other displaced people in the area. They refused to leave their ancestral homes because of sentimental, cultural and religious reasons. When negotiations and pleadings, failed to convince them to leave, demolition equipments were brought in. The pulling down of their houses and the destruction of their properties forced them to leave their village for the new settlement. This settlement area is called Tema New Town.

The indigenous people were not happy with the area. They were not used to modern town planning and modern amenities like W.C and electricity and the presence of a police station and a clinic in the community created more confusion. They were not used to orderliness and they preferred traditional healing methods.

As well as the main harbour, a fishing harbour was constructed about 2 km, east of the harbour. The harbour, industries, construction and fishing attracted different types of people to Tema. The influx to the area caused the population to grow faster and larger than housing and other social amenities could contain. This resulted in people, putting up their own unauthorised structures on any available land in the New Town area. Some fishermen, coming from the Volta Region of Ghana, specifically, Keta constructed wooden houses on a stretch of land about 1km. east of the fishing harbour, became squatters and lived there with their families. It was supposed to be a temporal abode at the onset but has now become a permanent settlement called the U-Compound.

The population of Tema was 100,000 from the 1984 population census. This figure is being queried by the Tema District Council because the population of the people of the U-Compound alone is estimated to be 20,000.

2.3 Housing

The main Tema township was planned and built into communities, each community with its own social amenities like schools, clinics, etc. The buildings are of cement blocks and the buildings range from executive to one roomed semi detached apartments. The settlement of the Tema new town was also planned and built. The dwellings are based on the traditional tribal system. They were built in compounds and each of the compounds consists of group of houses which surround a large open space. A number of compounds form a larger group, the families of which are headed by elders who have been allocated houses at the new site. The group shares common latrine blocks, constructed at regular intervals.

The U-Compound area can be best described as a shanty town. The buildings at the U-Compound are situated on a stretch of land next to the beach. They are wooden structures. The wooden boards used to build the houses have been treated with a black insecticide (solignum) to prevent attacks by termites and other wood eating insects. The floors are cemented. Roofing is of either wood, felt or slate. Some houses have corrugated iron, aluminium or asbestos roofing sheets. Stones, pieces of metals, wood or other heavy items have been placed on the roofs to keep the roofing material in place. Kitchens and bathrooms have also been constructed out of wood.

The ground is firm but becomes very slippery when it rains because the soil is clayey. The houses have big compounds which are used for spreading the fresh fish on the metal trays or for drying the fish in the sun.

Very little furniture could be seen around the U-Compound. There are wooden chairs, forms, stools, and tables. They preferred to keep their prized possessions in their home towns so they keep the minimum of their furniture at the U-Compound.

2.4 Fuel and Lighting

Clay stoves have been modelled in most kitchens at the U-Compound area. Wood is the fuel used in these stoves. The wood is also used for fish smoking. The few people who use coal pots use charcoal as fuel. The area is served with electricity and it is mainly used for lighting.

2.5 Health and Sanitation

Tema New Town was well planned with latrine blocks constructed at regular intervals to serve the compound houses. They have been provided with water and electricity as well.

The U-Compound is served with pipe borne/treated water and electricity but there are no toilet facilities and the inhabitants make use of the beach.

There are no properly constructed drains at the U-Compound, but there are deep earthen drains probably caused by erosion which carry waste water and other rubbish from the community into the sea. Wooden planks have been placed at intervals along the deep drains so that people and animals can get across. Rubbish from the houses are dumped on the sea shore. Domestic animals are also not penned. Goats, ducks and chickens roam around freely in the community.

The Tema Township is served by a General Hospital as well as several clinics and private hospitals. There are several pharmacy shops as well and all residents make use of their services. In addition, there are traditional herbalists who treat their patients with herbs. So health services are available to all in the township.

2.6 Education

There are several schools serving all the different communities at Tema. There are primary and Junior Secondary School, right by the U-Compound area to cater for those who want to send their children to school. There are

secondary and technical schools also serving the needs of all the Tema residents.

2.7 Occupation

All types of workers can be found at Tema because of the harbour, industries, offices and fishing. The traditional occupation of the indigenous people is fishing and farming. The farming activities include cultivation of crops like rice, pepper, okro, tomatoes and garden eggs. Cattle also thrive in the area.

At the U-Compound the women are mainly fish smokers and the men, fishermen.

3. NUNGUA
(Faashi)

3.1 Area Characteristics

Nungua is a coastal town in the Greater Accra Region of Ghana. It is located about 15km. east of Accra on the Accra-Tema beach road. It is a town which is still expanding northwards. It is bounded on the west by the Mokwe stream and on the east by a 7km. arterial road adapted from a master plan for Accra Tema Metropolitan Area. The land is relatively flat but slopes towards the east and south. This flatness is however broken by the Mokwe stream which runs east-south-east towards the sea.

The main rainy season is between May and July every year and the minor rains appear in October and November. These times are not strictly fixed. They might change from year to year. The hot and dry season is from December to March. The vegetation is savannah grassland with coastal thickets. The soil is poor and there is problem with erosion and soil exhaustion. The population of Nungua is 29,149 made up of 14,136 males and 15,015 females from the 1984 population census. The fishing community lives near the beach and the area under study is called Nungua Faashi.

3.2 Housing

All types of houses can be found at Nungua as in any large town. There are estate houses put up by the State Housing Corporation, and there are private and individual houses also.

At Nungua Faashi the people live mainly in compound houses. Most houses have been built very close together with paths in between them. There are cement block houses as well as mud brick houses with a plaster finish. The roofs are mainly of corrugated iron sheets which are rusty in several places causing leakages and collapse of the mud walls. Several houses

are in a state of disrepair. Rain water has also eroded the ground cutting out gutters between the houses. The inhabitants also use these gutters as outlets for waste water from the kitchens and bathrooms. Stones and sticks have been used in a few places to check erosion.

Over the years, population of the area has increased in size with no corresponding increase in number of houses available. The result is severe overcrowding with inadequate toilet facilities.

Many houses are equipped with modern gadgets such as electric irons and wireless sets.

3.3 Health and Sanitation

There is no Government Hospital or Health Post at Nungua. The whole township is served by 3 private clinics and pharmacy shops. Traditional herbalists are available for consultation. The people make use of the available health facilities or go to Labadi, where there is a polyclinic.

Sanitary conditions are poor at Nungua Faashi. Although there are 3 rehabilitated public latrines in the community, there are too few to serve all the inhabitants so most people use the bush along the beaches. Domestic animals like goats, ducks and chickens also roam about freely. The area is served with pipeborne water as well as electricity.

3.4 Education

Educational institutions constitute a major part of the existing development at Nungua. There are nurseries, primary schools, junior secondary schools, senior secondary schools, commercial and technical schools. The Ghana Commercial Bank has its training school situated at Nungua. These educational facilities are at the disposal of all the inhabitants of the township.

3.5 Occupation

The main industries existing for the indigenous population are fishing, farming and cattle rearing, goldsmithing and distilling. There is also a large work force that commute daily between Accra, Tema or surrounding areas to work. For those living at Nungua Faashi, fishing and fish smoking is the main occupation.

3.6 Community and Social Activities

Ga social customs prevail in the area. Nungua has a chief called Nii Osabu Adzing I. He is a traditional ruler and performs his duties with the help of the Mankralo and the elders. The Chief fisherman looks after the affairs of the community. The main tribe is the Ga tribe and there are christians as well as pagans. There are also political organs at Nungua. They are Committees for the Defence of the Revolution (CDR), The June 4th Movement, the 31st December Women's Movement, the Militia men and also, Assemblymen. These groups help with political education of the people and mobilise them for self help projects.

Once every year in the month of July, the Nungua people celebrate their annual festival which is the 'Kpledzoo' festival. It is a week long celebrations with traditional rites being performed by the chief priests, who ask for the blessings of the ancestors on the people of Nungua. There is a lot of drumming and dancing. The traditional dish of kpokpoi and palm soup is prepared for consumption by the indigenous people and their friends or invitees.

The fish smoking community formed an association but not all the women fish smokers belong to it. The association is working towards building a strong association with all women fish smokers as members of the group.

4. IN DEPTH STUDIES OF HOUSEHOLDS AT TEMA AND NUNGUA

4.1 Organisation of Households at Tema U-Compound and Nungua Faashi

Twelve households were studied in each of the two fishing communities at Tema and Nungua townships. Table 1 below shows the household sizes and the number of sleeping rooms per household.

TABLE 1
Household Size in Relationship to Number of Sleeping Rooms Occupied at Tema U-Compound and Nungua Faashi

TEMA U-COMPOUND			NUNGUA FAASHI		
Household No.	Household Size	Household Sleeping rooms	Household No.	Household Size	Household Sleeping rooms
T 01	8	4	N 01	20	4
T 02	2	2	N 02	14	7
T 03	4	2	N 03	19	6
T 04	2	2	N 04	19	4
T 05	3	2	N 05	18	2
T 06	7	3	N 06	15	2
T 07	5	1	N 07	25	7
T 08	7	4	N 08	7	2
T 09	5	2	N 09	9	1
T 10	4	3	N 10	16	6
T 11	6	2	N 11	10	6
T 12	7	1	N 12	15	4
Total	60	28	Total	187	51

3
0
0
0.0
100.0

There is large difference in the sizes of households in Tema U-Compound and Nungua Faashi. The sizes of households at Faashi are larger than those of the U-Compound. The average number of people per household at Faashi is 15.6 while that of U-Compound is 5.0. The highest household sizes recorded are 25 at Nungua and 8 at the U-Compound.

4.2 Sleeping Rooms

The ratio of number of sleeping rooms to household size is 1:2 at the U-Compound and 1:4 at Nungua-Faashi. There is therefore a higher population density at Nungua-Faashi than at the U-Compound.

The reason is simply because the extended family system is practiced at Nungua-Faashi. Members of the extended family live in the same compound house. This is not so at the U-Compound. Members of the extended family of the U-Compound settlers live in the Volta Region.

4.3 Sex and Age Distribution

The sex and age distribution of the 24 households are shown below in tables 2 and 3.

Table 2

Classification of Male and Female by Age Group
U-Compound

Age Group (Years)	Males	%	Females	%	Total Male + Female	%
0 - 5	1	3.6	4	12.5	5	8.3
6 - 10	4	14.3	5	15.6	9	15.0
11 - 15	4	14.3	3	9.4	7	11.6
16 - 20	6	21.4	4	12.5	10	16.7
21 - 25	4	14.3	2	6.3	6	10.0
26 - 30	4	14.3	3	9.4	7	11.6
31 - 35	1	3.6	1	3.1	2	3.3
36 - 40	3	10.7	2	6.2	5	8.3
41 - 45	0	0	3	9.4	3	5.0
46 - 50	0	0	0	0	0	0
50+	1	3.6	5	15.6	6	10.0
Total	28	100.1	32	100.0	60	100.0

Table 3

Classification of Male and Female by Age Group
Nungua-Faashi

Age Group (Years)	Males	%	Females	%	Total Male + Female	%
0 - 5	21	28.4	18	15.9	39	20.9
6 - 10	16	21.6	18	15.9	34	18.2
11 - 13	9	12.2	14	12.4	23	12.3
16 - 20	8	10.8	17	15.0	25	13.4
21 - 25	4	5.4	10	8.8	14	7.5
26 - 30	4	5.4	11	9.7	15	8.0
31 - 35	1	1.4	8	7.0	9	4.8
36 - 40	2	2.7	3	2.7	5	2.7
41 - 45	2	2.7	3	2.7	5	2.7
46 - 50	0	0	4	3.5	4	2.1
50+	7	9.5	7	6.2	14	7.5
Total	74	100.0	113	100.0	187	100.0

From Tables 2 and 3, the 0-20 year group form 51% of the population under study at U-Compound while this same year group form over 60% of the population at Faashi. The male and female population are about the same at the U-Compound while there are 1½ times as many females as males at Faashi. There are also fewer children in the 0-5 year group at the U-Compound than at Faashi.

4.4 Marital Status

Once a woman has had a child, she is considered to be married. Table 4 below shows the status of females of marriageable age at the U-Compound and at Faashi. At the U-Compound, all the married women were over 20 years of age. At Nungua Faashi however, 8 of the married women were between 16 and 20 years of age.

Table 4

Marital Status of Females at U-Compound
and Nungua-Faashi

Marital Status	U-Compound	%	Nungua Faashi	%
Single	4	20.0	11	17.5
Married	13	65.0	47	74.6
Divorced	2	10.0	3	4.8
Widowed	1	5.0	2	3.2
Total	20	100.0	63	100.0

Polygamous relationships are socially acceptable in both communities. The average number of wives per husband at Nungua is around 3 or 4. The men and their wives do not live together in the same house. The women and children live together and the men also stay elsewhere. So the upbringing of the children falls squarely on the shoulders of the wives. The family is very strong at Nungua and there are inter-marriages between members of the extended family. A typical example is marriages between first cousins. At the U-Compound the men stay in the same house as the wife but the 2nd or 3rd wife lives elsewhere and the man visits them in their homes.

4.5 Tribe and Religion

All the 12 household members of the U-Compound are of Ewe extraction, from the Volta Region of Ghana. They all claimed to be Christians. At Nungua Faashi all the household members were Gas, from the Greater Accra Region, except two of them, who were Adas, from Mingo also in the Greater Accra Region of Ghana. Six members of the households were pagans while the rest were christians. There are many gods in Nungua areas and there is idol worship.

4.6 Education

None of the 24 fish smokers from the U-Compound and Nungua Faashi has been to school. They have however managed to send most of their children and dependants to school. During a discussion with the women at Nungua, on education, it came out clearly that the children were not encouraged to go to school. The choice rested on the children. They stopped going to school when they wanted to. The boys usually go fishing with the men after dropping out of school and the girls help their women in their fish smoking activities.

Tables 5 and 6 below show clearly the education pattern of those household members in school going age at U-Compound and Nungua-Faashi.

Table 5

Education Status of Household Members U-Compound

Level of Education	Males	%	Females	%	Total	%
None	1	3.6	19	59.4	20	33.3
Primary	11	39.3	9	28.1	20	33.3
Secondary	11	39.3	4	12.5	15	25.0
Technical	5	17.8	-	-	5	8.3
Total	28	100.0	32	100.0	60	100.0

Out of the 60 household member of the U-Compound 20 have not been to school. Nineteen out of their 20 people are females and 1 male. The results clearly show that there are more illiterate women than men and females are not encouraged to go to school. Primary education is the highest type of education that most females get at the U-Compound. A few of the girls attend the Junior Secondary School (JSS). Over all, the males are better educated than the females and this is the general trend all over the country. Culture, ignorance and teenage

pregnancy are the main reasons why most girls in school are limited in their education.

Table 6

Educational Status of Household Members at
Nungua-Faashi (Over 5 years of age)

Level of Education	Males	%	Females	%	Total	%
None	12	22.6	30	31.6	42	28.4
Primary	22	41.5	50	52.6	72	48.6
Secondary	15	28.3	10	10.5	25	16.9
Technical	4	7.6	5	5.3	9	6.1
Total	53	100.0	95	100.0	148	100.0

Sufficient emphasis is not placed on education at Nungua-Faashi. From Table 6, 28% of the members of households have not been to school, while about 50% are either in primary school or had only primary school education. Only about 22% go beyond the primary school into secondary or technical schools.

4.7 OCCUPATION

Main and Supplementary Occupation

The main and only occupation of the 24 women chosen for the survey is fish smoking. At the U-Compound, one woman sold local gin in addition. The remaining 11 women did not do any work during the lean fishing season. The other females in the household either attend school or help with fish smoking activities of the households. Not one person from the U-Compound households owned any property like boats, nets, land, etc. but the wooden shacks belong to them. Their men folk were mainly artisans and fishermen. There were welders, radio mechanics, carpenters, drivers, fitters and apprentices in various trades.

At Nungua-Faashi, apart, from the 12 original women, whose occupation was large scale fish smoking, other female members of the households indulge in petty trading, cooked food vendoring as well as local gin sellers. Those women who attend school, help in the fish smoking activities when they get home from school. The men were mainly fishermen, goldsmiths, carpenters and students. Of the 12 large scale fish smokers, one woman owned a piece of land, while 2 women owned canoes and nets. In both places, some of the men and women go out to work in offices and factories. Overall occupation is mainly fishing and activities connected with fishing.

4.8 Health and Sanitation

Health and sanitation standards of the households have already been discussed.

In both communities, ie. the U-Compound and Nungua Faashi the inhabitants make use of the land before the beach to ease themselves as there are no toilet facilities.

There are bathrooms in most houses but those who have no bathrooms are allowed to use the bathrooms of other households or neighbours. Waste water from these bathrooms are directed into drains where these bathrooms are near the drains otherwise the water forms standing pools just behind the bathrooms, breeding mosquitoes, and therefore making the people prone to malaria. Although both communities are served with pipeborne water, not all households have taps in their houses. Those who do not have purchase water from those who have.

Water is usually fetched in plastic or aluminium buckets and stored in containers like metal drums, plastic drums, wooden barrels and aluminium bowls.

Rubbish heaps can be observed in both communities at the sea shore. Sanitary condition in both areas are very poor but both the adults and children looked happy and well fed.

Domestic animals are not penned in both Nungua-Faashie and the U-Compound. The droppings of the goats, ducks and chickens litter the compounds. This is not very hygienic as fish smoking is processed for consumption in such surroundings.

People appeared not to be concerned with the environment at Nungua. Lanes or places one would normally call 'no mans' land are very dirty and people walk along them unconcerned.

The people need to be mobilised and taught how to keep their environment clean.

The household members complained of headaches, smoke in the eyes, eye diseases, fever and waist pains as the main diseases that affect them. Although there is a General Hospital and many private clinics at Tema, the people of Nungua Faashi have to go to Labadi polyclinic, about 5 km. away to be treated.

5. THE FISHING INDUSTRY

5.1 Introduction

The Fishing Industry is one of the oldest indigenous industries in Ghana. Sea fishing is the most important and it accounts for over 80% of the home supply of fish consumed every year in this. Along the coast, such centres as Keta, Senya Bereku, Prampram, Labadi and Tema and others are important in the fishing industry. Species caught include mackerel, barracuda, drum, tuna, sea bream, thread fish, grey mullet, burrow, croaker, herrings and anchovies are the commonest.

Implements used for fishing include various types of nets, such as seine east drift and bottom nets. Basket traps and hooks are also used.

Tema is still the centre of the fishing industry in Ghana. Fish canning and smoking are undertaken by industries and individuals. There are several fishing companies and cold storage facilities helping the industry to grow. There are several fish trawlers, fishing vessels and canoes, all with motors to aid the industry.

5.2 Fish Processing

5.2.1 Smoking Ovens (see Appendix)

Only metal smoking ovens can be found in the U-Compound area. There are rectangular metal ovens of various sizes as well as round metal ovens.

Wire nets used as trays for smoking but these are not framed. These trays are separated from each other by sticks. These ovens are built from metal drums. Some of the women have constructed their rectangular ovens with either galvanised iron sheets or asbestos slates. The women of the U-Compound claim that their rectangular ovens are very efficient and each can smoke over 20 crates of fish at a time. They were very satisfied with what they had.

None of the ovens at the U-Compound was under any shed or canopy although a few people have placed plywood or plastic sheets on their ovens to protect them. Several of the ovens seen were rusty and unkept and some have been patched with metal plates or wood.

Another feature of the U-Compound is high piles of firewood as one comes across as one moves through the area. These are for sale and mainly used for fish smoking.

Two main types of smoking ovens can be found at Nungua Faashi. The round metal ovens and the rectangular mud ovens. A few people have used cement blocks for constructing their rectangular ovens. Their rectangular ovens are a bit like the chorkor smoking ovens being introduced. It is clear that they tried to copy the chorkor oven but did not quite succeed. Their rectangular ovens were too low and the stoke holes too large. Each smoker had tried to produce her own version of the chorkor smoker to suit her purposes. The wire trays were framed but not to a uniform or specific standard measurement, resulting in the loss of heat and smoke during smoking. Two types of trays are constructed. There are the ordinary trays for smoking and large ones for fish storage. Some smokers have built their ovens under sheds while others have theirs in the open. Those under the sheds complained of smoke entering their eyes while the worry of those in the open was the rains and weather.

The large metal rectangular ovens used at Tema U-Compound can take 3 trays at the base and 8 more trays can be stacked on each one, making 24 trays during smoking. Although the trays are not framed, they are separated by long sticks. Each oven can smoke 20 crates of small fish at a time.

Fish smoking at Tema U-Compound appeared expensive because a lot of firewood is used. The stoke holes are so large that heat and smoke are, lost to the atmosphere. The women said that they were satisfied with the ovens and they did not have problems

with them but from observation, it was seen that the fish needed constant attention while smoking was in progress to prevent burning or spoilage. Since the trays are not framed, they are lifted with the fingers. The fingers get burnt not only from the direct heat but also from the hot wire of the trays, if they were not very careful. They also get sores in between their fingers caused by the wire trays.

Some ovens have been built and used at the U-Compound for the past 6 years, the original cost being only ₦700.00. As many as 6 drums can be used to build one oven, wood and nails have to be purchased as well. Three ovens can be built in a day and it takes about 3 hours to build one oven.

Some women could not tell the ages of their ovens because they have kept on patching them up and replacing parts for so long that they have forgotten exactly when the oven was built.

The women also noticed that if the ovens are idle and they are not fired or used for fish smoking they deteriorate faster than when in constant use.

None of the ovens are under any shed in the U-Compound. They explained that because they are near the sea, the sea breeze is always corroding the ovens. Not only that, strong winds from the sea blow away their covers, even the fish in the ovens at times. So they were not keen on covering the ovens which are very rusty.

At Nungua, cement blocks or mud is used to construct their rectangular ovens. The raw materials used are cement blocks, cement, sand or mud. It takes about 4 hours to finish building one oven. The labour cost is around ₦600. They claimed that the ovens have long life spans - about 6 years but the wire trays last for only a year and so they have to be replacing the trays constantly. They claimed that their ovens are good for smoking and very quickly too. They are able to smoke 10 crates of fish at a time.

The round metal ovens at Nungua are used mainly for slow smoking of the fish with sugar cane to give a desirable brown colour. In this case, only a few sticks of firewood are needed. This type of smoking could not be carried out with their rectangular mud ovens.

When there is no smoking going on, the ovens are not covered but covered only when it is raining and might affect the fish and the trays but not the ovens.

5.2.2 Fuel

A wide range of wood is used for fuel for fish smoking and the wood from nim trees are used for slow smoking. A lorry load of 3 tons of firewood is purchased at ¢16,000 at both U-Compound and Nungua Faashi and a head load of firewood sells at ¢300 at both places.

The women purchase about 3 lorry loads of 5 tons each per year for their smoking activities. Sugar cane is sometimes used as fuel to impart a nice orange brown colour to the smoked fish.

5.2.3 Fish smoking

Two types of fish smoking are practised. Hot smoking and smoke-drying. Of these methods, smoke drying is the most widely used at the U-Compound and Nungua Faashi.

5.2.3.1 Hot smoking

Large pieces of fish are normally not smoked. The cleaned fish, either whole or in chunks are arranged on the grills fitted to the ovens. About 1 to 4 layers of fish are put on the grill and sticks are used to separate the layers. Most processors pre-dry the fish for a few minutes in the sun to remove surface moisture before smoking. The fish are arranged on the grill, head to head,

head to tail or they are just put without a definite arrangement. Fire is then set under the fish using firewood, and the fish smoked for periods ranging from 3 to 12 hours depending on the species or size of fish. The fish is turned once to 3 times during the smoking period. The fish is deemed ready by feel and colour as determined by the processor.

5.2.3.3 Smoke drying

Small and medium sized fish are normally smoke dried and the fish is smoked to a very dry state. Fish for smoke drying are usually not scaled or gutted except when the guts are known to impart bitterness or unacceptable odour to the finished product. The fish are arranged in the oven just as in hot smoking. Fire is set under the fish using firewood and the fish are processed for periods ranging from 1 to 3 days. During the first hour, the fish are processed over moderately low heat. The heat is then raised and more dripping falls into the fire while they cook. At this stage, the fish are turned by transferring from one oven to another so that the top layers go down and the bottom layers go up, sometimes the fish are turned one at a time on the wire tray and put back on the same oven. Smoking is continued for another 24 hours or more depending on the quality and sizes of fish being smoked. The fire for this second stage is low with a lot of smoke. The readiness of the fish is determined by feel and colour.

5.2.3.3 Fish smoking at the U-Compound and Nungua

Hot smoking and smoke-drying are both carried out at Tema U-Compound and Nungua Faashi. At Tema U-Compound they hot smoke only if they have customers that will purchase the fish immediately it is ready or the next day. Herrings are fish that are hot smoked. Anchovies are dry smoked and could be kept for up to six months before selling. They are sold during the lean season for maximum profit. Sometimes they dry smoke the herrings but these keep for only two months even then provided that are not fatty.

The Tema women have a rather complicated way of smoking fish.

On the first day of smoking, the fish usually anchovies are arranged on the trays and placed in the sun, to dry. The firewood is prepared and lit in the ovens. The fish is then smoked in the ovens. Usually the very large ovens are used on the 1st day of smoking.

On the second day of smoking, firewood and some sugarcane are used as fuel. The fish is transferred to smaller rectangular metal ovens and the round ovens to complete the smoking.

On the third day, the fire is drastically reduced to give very little heat and sugarcane is also added for colour and flavour. Therefore it takes three days to completely dry smoke anchovies at the U-Compound. Only fresh fish is smoked at the U-Compound. It is only when the fish is landed late at night that the fish is put in the cold store.

During smoking, the fire should burn all the time but it should be regulated so that it does not burn the fish.

The households smoke the fish together but where there is bumper catch, young girls and women are employed to help with the carrying of the fresh fish, the spreading out of the fish on nets and the actual smoking.

At Nungua Faashi, fresh fish is the only type of fish that is smoked. They have no refrigeration facilities and so anytime fish is landed, they have to be ready to smoke. At times, they smoke throughout night. They also purchase fresh fish from Tema to smoke when sufficient fish is not landed at Nungua. Anchovies are only dried when there is so much that there is not time to smoke them all.

Hot smoking at Nungua Faashi takes about up to 3 hours and dry smoking takes a day or two. Nungua therefore dry smokes in a shorter time than the U-Compound smokers.

The women are helped by other family members at Nungua Faashi.

At Nungua, those who smoke fish under trees are more comfortable than those under sheds because the heat is unbearable if one

is under a shed and the smoke also enters the eyes. Since the round metal ovens at Nungua are mainly used for slow smoking of fish only a few sticks of firewood are needed and they claim that the way they want it could not be obtained with the chorkor smoker.

5.3 Storage and Marketing

5.3.1 Storage

Both the U-Compound and Nungua Faashi have access to small lorry parks and markets but the women do not sell their smoked fish at these markets because there are very few customers to purchase the fish.

At the U-Compound, the dry smoked fish is stored in ovens. The inside of the ovens are lined with fresh brown paper and plastic sheets made firm with long sticks, and these are filled with the smoked fish (see appendix). Some of the storage ovens can take as much as 300 crates of dry smoked fish. The fish is carefully sealed with the brown paper and the plastic sheets. In this state, the fish can be kept up to six months. The storage is done at the smoking site.

At Nungua Faashi, fish is stored in the trays. Larger trays which are framed have been constructed and these trays are stacked high and filled with the smoked fish. The whole pile is then covered with brown paper and plastic sheetings to keep away moisture and insects.

5.3.2 Marketing

Both the U-Compound and Faashi fishsmokers sell their hot smoked fish quickly because there are plenty of flies around and the fish will get spoilt if it is not sold quickly. By the 3rd day after smoking all the hot smoked fish should have been sold at Nungua Faashi. The U-Compound area smokers sell their hot smoked fish within 24 hours.

The women preferred to smoke the fish and store, then sell in the lean season than to hot smoke, because the fresh fish per crate is far cheaper in the bumper season than in the lean season. They watch the market carefully when prices of fresh fish start going down, they quickly get rid of the stored products and prepare to purchase the cheaper ones for smoking and storage towards the next lean season. The quantity of fish smoked and stored depends on the amount caught and so if a few people get fish to smoke, they make a lot of money.

Tema and Nungua do not have special market days. The smokers take the smoked fish and travel to special market centres all over the country to sell the fish. Some of the centres are Makola Market, in Accra, Mamprobi Tuesday Market, also in Accra. Every fifth day is a market day in a few centres like Ho (Volta Region) and Koforidua (Eastern Region), Denu (Volta Region) and Mankessim (Central Region) also have their market days twice a week.

5.3.3 Transportation

The fish are packed in baskets for transportation. Sometimes aluminium bowls are used. In all cases the baskets or bowls are lined with brown paper, and the fish arranged neatly in the paper. Some of the paper is used to cover the fish. The paper and baskets are made firm with nets or ropes to prevent breakages of fish during transportation.

The women of the U-Compound travel in a group to the market centres. They hire two trucks, one for the fish and the other for passengers. The two trucks containing fish and passengers get to the marketing centres at the same time. The women themselves, their maids or the children can go and sell the fish. They all have their customers at these marketing centres and they also have their own special marks on their baskets or bowls for proper identification.

The women at Nungua sell their fish in Accra, Ho and Koforidua. The drivers can charge as high as ₵1000 per a large basket of smoked fish and ₵600 for the next size of basket. The transport charges are lower, when the trucks are travelling within the Greater Accra Region. They charge between ₵50 and ₵100 per basket. The transport charges are added to the price of fish and absorbed by the customer.

The fish can be retailed singly or in bulk. The anchovies are retailed by the basket. (see appendix). Some customers also purchase the fish from the women at the processing sites.

5.3.4 Income from fish smoking

The women were unwilling to talk about their earnings and profit margins. The energy and vim with which they go about their smoking activities portray it is profitable although a few appeared poor. They were however willing to give information on the amount of money spent in purchasing the fresh fish.

Only two types of fish are smoked at Nungua and Tema. Amoni or Anchovies are smoked at Tema while herrings are smoked at Nungua.

The herrings sell for ₵6000 in the lean season and ₵2000 during the bumper season. Anchovies sell for ₵2000 per crate during the lean season and ₵800 per crate during the bumper season.

Their profit margins could not be calculated from market prices because once the fresh fish was smoked, the smoked fish is retailed in baskets or bowls and investigations have to be made on the number of crates of fresh fish that will fill a number of baskets when after smoking. If the price of the basket of fish is known, the profit can be calculated taking into account the season, labour and fuel.

5.3.5 Fish spoilage

Fish spoilage was discussed with the women in both areas. They believed that spoilage is mainly by moulds and insects. They do not throw away spoilt fish. They are purchased by poultry farmers to mix with their feed.

The smoked fish, they claim, sweat sometimes and this happens because the fish is not very dry and it will get spoilt quicker. It is difficult to keep when the smoked fish is very fatty. It gets rancid, so at Nungua, instead of storing the smoked fish for 6 months, it is stored for only 3 months. Fish spoilage by burning is rare because the smokers are very careful and attentive when smoking their fish.

6. THE ROLE OF WOMEN

The position of women in the fishing industry in Ghana, cannot be ignored. They are so important that without them, no smoked, salted and sundried fish would be available to non-fishing communities in the country. The women purchase the fresh fish and either sell the fresh or processed. Their principal role however is in fish smoking. They also store, transport and market the processed fish. All these roles require a lot of skill and expertise, organising ability and also money.

Majority of women, working with fish come from fishing families. Some women own boats, outboard motors, fishing nets and other fishing gears and equipment.

6.1 Fish Sales

The fish is generally sold to female relatives of the fishermen, the wives, sisters, mothers and friends. In cases whereby any of them does not process fish she in turn sells to the fish processor for a small profit. The fish to be processed is then carried to the processing site by the women.

At Tema, although the husbands may be fishermen, the women do not benefit in anyway because the husbands work on fishing trawlers and they are paid monthly salaries. The fresh fish is sold in wooden crates when there is a lot of fish to process, the women do not rest. They smoke or sundry all the fish available before they rest because they process only fresh fish, not frozen fish. Smoked fish is packed and stored before marketing at markets for it but normal marketing is done on regular market days.

The lives of the women revolve around fish smoking. It is an area which requires concentration, alertness and skill. Fish smoking takes over 50% of their working time. All other tasks are fish related activities. All together, fish purchase washing, arranging on grills, smoking, packaging, storage and marketing form about 80-90% of their working time when fish is in season.

Very little time is spent on cooking, which is sometimes done by other members of the household. It is significant to note that such busy women purchase already cooked food because of the lack of time.

During the lean season, majority of the women do not do any work except smoke very little fish. They also market some of their stored fish. A few indulge in petty trading but no strenous activity like farming and the like are carried on.

6.2 Social Activities

At the U-Compound, the women attend tribal meetings once every month. This is understandable because they are settlers and they have to get together with others from their home towns to plan activities for their areas. They also meet with other relatives and friends at get together to catch up on news of their families and friends back home.

They organise themselves to attend funerals of members, where they console the affected members. Presents are given in

in the form of donations and contributions. These groups are well organised with leaders and executive members. Fixed contributions are levied on each of the members and discussion centre around their welfare.

The young people at the U-Compound attend video-shows. They have cultural groups that perform mostly at funerals. The elderly people and girls stay at home because the elderly look after the homes and the young girls are protected from troublesome boys.

The women travel home during Easter or in the lean season to be with the extended family for some time. There is no self-help project at the U-Compound.

At Nungua however, the organs of the revolution, namely the 31st December Movement, the June 4th movement and the CDR's organise clean up campaigns. Apart from these, there are video-houses where films can be watched. There are no cultural groups at Nungua Faashi but Christmas and Easter are celebrated. They also take part in the celebration of the week long Kpledzoo festivals.

7. Special Problems

The women encounter several problems during the course of their work and these problems contribute to the retardation of their work. The most pressing and the most complained about is the lack of money to purchase fish for smoking. At the U-Compound, they borrow money from 6 months to 1 year with interest rate of over 20% from money lenders.

Sometimes relatives or close friends lend them the money, which they pay back after selling the processed fish. The more money they have, the more fish they can purchase for processing.

They also wanted to have good wire nets for producing their trays, at controlled prices because they are purchasing a bundle of the wire nets at ₦17,000 when it should be sold at ₦12,000.00.

In some cases, some women pre-finance the boats and so they take charge of the fish distribution when the fish is landed.

All the women at both Tema and Nungua complained that their husbands do not look after them and their children and so they have to work very hard in order to get money to look after the households. Very few of the men stay in the same house with their wives.

The training of the children is another problem since the women are busy, they are not able to keep their eyes on the children all the time and the children suffer from lack of proper parental care and character training.

The most priced possessions are dwelling houses and everybody is eager to be able to build a house in the near future.

8. Problems Encountered During the Study

We had a lot of problems with the women at the U-Compound. They are a very closed society and thought that we were in the area because we wanted to investigate them and their activities.

- 1) They thought they were going to be interviewed for tax purposes.
- 2) Others thought we were going to force them to smoke fish for the Government.
- 3) They did not believe that there could be any oven better than what they had. They were not even ready to listen to us. They thought they have been smoking for years and so they know everything about fish smoking, and do not need anybody to help them in any way.
- 4) It was a tug of war encouraging some of them to cooperate in the study. They were asking for incentives in the form of money or wire trays before giving their consent. Some were also intimidating those who agreed to take part in study discouraging them more.

- 5) Some were bold enough to tell us that they needed money and not new ovens because they were not ready to give up the ovens they were using.

A different kind of problem was encountered at Nungua. There were two factions of fish smokers and they did not want to work together. It took some coaxing and a meeting of all those concerned at the Chief fisherman's house to solve the problem.

9. DISCUSSION AND CONCLUSION

9.1 Discussion

A lot of factors contribute directly or indirectly to the sorry state of affairs in these two hard working communities of Tema U-Compound and Nungua Faashi. Some are overcrowding, in the case of Nungua and poor sanitary conditions in both Tema and Nungua. Both areas have good drinking water but no public toilets. Illiteracy is common in the two communities. Health services are also better organised at Tema than Nungua. Tema has the benefit of a good General Hospital and several clinics. At Nungua, the nearest clinic is 5 km away from Nungua - Labadi Polyclinic.

The women are very busy, especially during the bumper fish harvest seasons. Coupled to this overwork is the responsibility of looking after the household and caring for the children. This heavy load of work leaves the women with very little time for themselves. If the husbands lived in the same house as the wife, they can at least share some of the work load and the responsibilities of the woman but this is not the case.

The women should be commended for their hard work, their organisational activity in the processing, storage, distribution and marketing of fish.

Although it was planned to calculate the income of these women from fish sales and their expenditure, this was not possible because there was no cooperation from them, especially those of the Tema U-Compound. The women from Nungua Faashi were very nice although they did not cooperate with us on the calculation of their profit margins.

9.2 Conclusion

In conclusion, the study has exposed the state of fish processing at the Tema U-Compound and Nungua Faashi. The women in both areas are eager to accept the chorkor smoker and to try it out. The present ovens they are using are expensive and inefficient because a lot of heat is lost during processing to the fish due to bad oven construction and the use of too much firewood.

✕ The use of unframed nets at the U-Compound apart from causing cuts between their fingers, makes the smoking very tedious.

For hardworking women as found at the U-Compound and Nungua Faashi one would expect them to have an environment that would relax them after their work. This is not the case. Accommodation and sanitation were found to be grossly inadequate. Very little emphasis was laid on education. The husbands were found to be irresponsible, leaving the running of the households to the wives.

The lack of capital or credit facilities has made their occupation quite difficult to manage because more money made available to them gives them more profit from their work. The women are also not well organised and so cannot take advantage of loan facilities and the like.

The women are hardworking and the introduction of the chorkor smoker is expected to increase their income make them more relaxed and comfortable in their work and produce good quality products.

9.3 Recommendations

- 1) The importance of the following should be emphasised in the two areas - education, sanitation, literacy and family planning.
- 2) The women should be organised into a strong womens group that will be able to negotiate with other organisations like the banks, the Government and non-Governmental organisations for help - either in cash or in kind help them in their fish smoking activities. They can also learn some crafts in their leisure time.
- 3) The U-Compound area and Nungua Faashi should be visited often to encourage the women in their use of the chorkor smoker and to solve other problems that may arise.
- 4) A detailed study should be designed to investigate the profit and loss in the fish processing, industry in some fish processing areas in the country in order to have an idea on the profit margin of the processors throughout the year.

10. R E F E R E N C E S

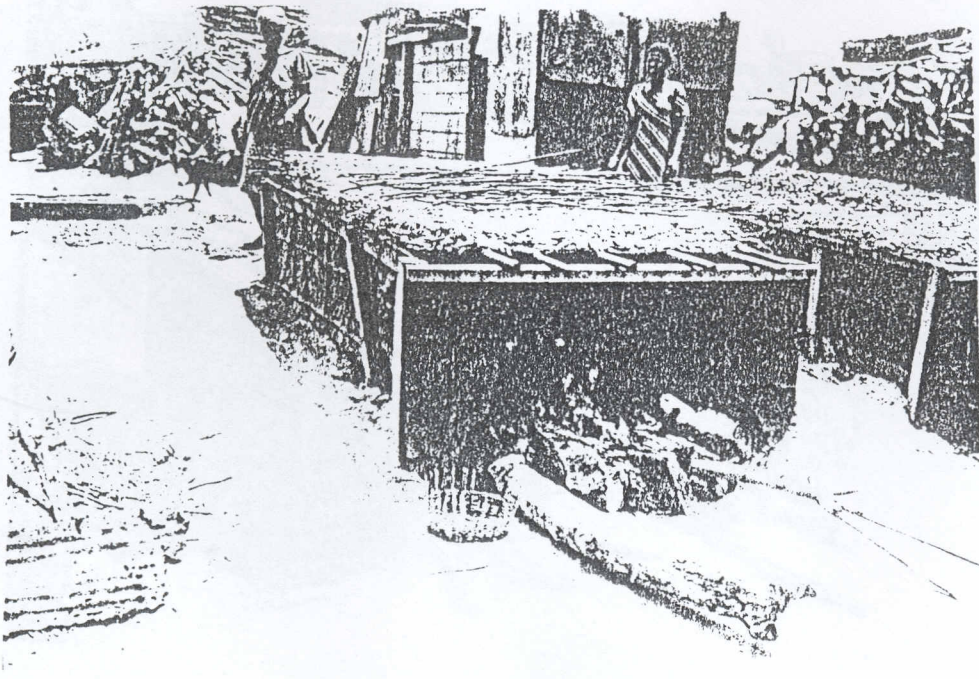
1. Ghana Year Book 1968
2. Kagan, B. (1970)
"Report on the framed wirenets project
at Chorkor Beach (Fis Smoking Area).
Food Research Institute Project.
3. Lokko, P. (1990)
"Baseline Socio-economic studies on two pilot
fishing villages: Mangotsonya and Ayetepa".
Regional Training and Applied Research Projects
for Artisanal Fish Processing in West Africa.

11. APPENDIX

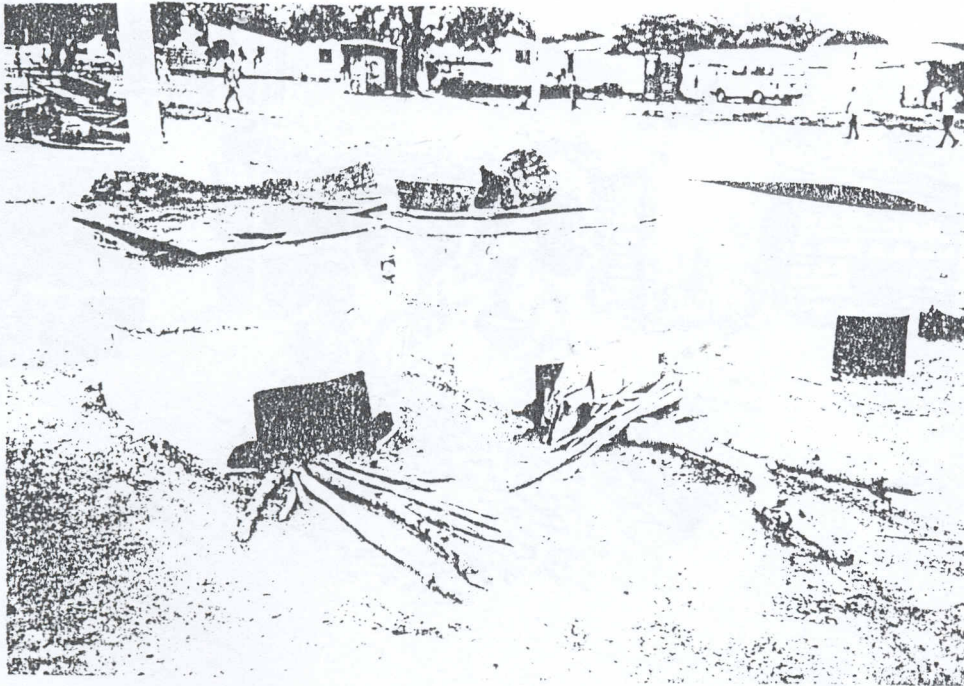
FISH TYPES MENTIONED IN THE REPORT

Horse Macherel	-	Trachurus spp. Tracurus treceae
Barracuda	-	Sphyrae spp.
Frigate Mackerel Tuna	-	Auxis thazard
Sea bream	-	Pagellus spp.
Thread fin	-	Galeoides decadactylus
Grey mullet	-	Mugil spp.
Burrow	-	Plectorhync macrolepsis
Croaker, Cassava fish	-	Pseudotholithus spp.
Conger	-	Cynoponticus ferox
Herrings	-	Sardinella aurita/eba
Anchovies	-	Engrauli guineensis

RECTANGULAR METAL OVENS IN USE
(TEMA U-COMPOUND)

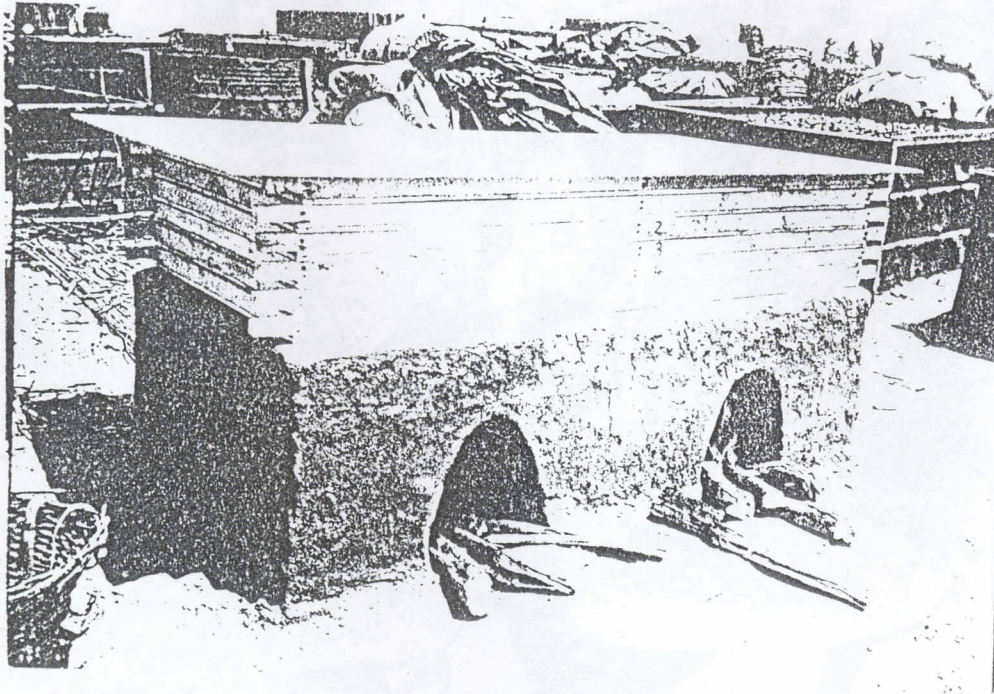


RECTANGULAR METAL OVEN IN USE



ROUND METAL IN USE - TEMA

CHORKOR SMOKER IN USE



FISH SMOKERS PREPARING BAGASS FOR SMOKING TO IMPART BROWN COLOUR TO THE FISH



MARKET SCENE - SMOKE/FISH SALES

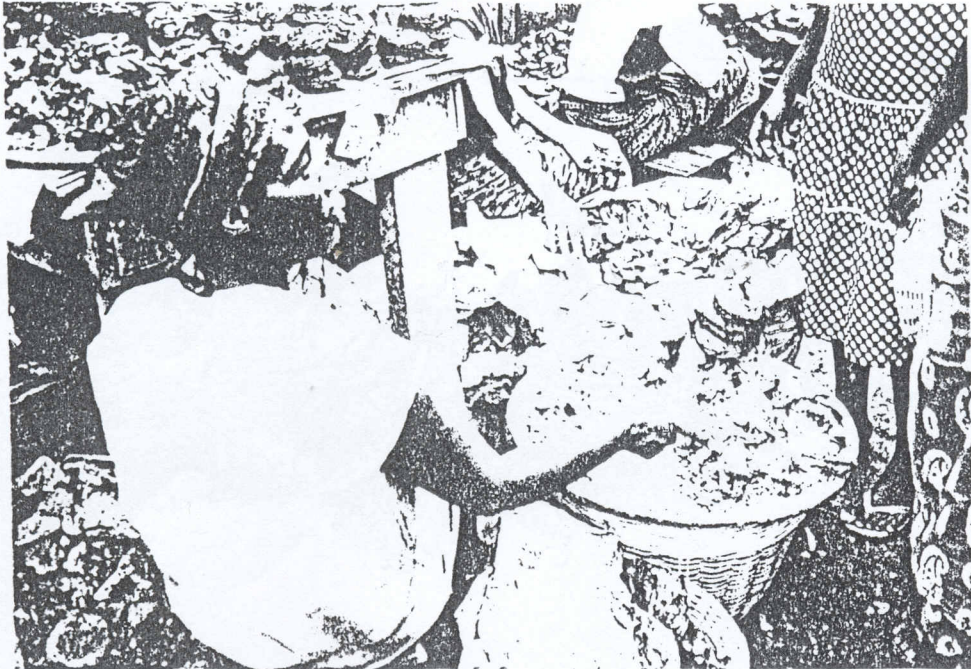


11 a



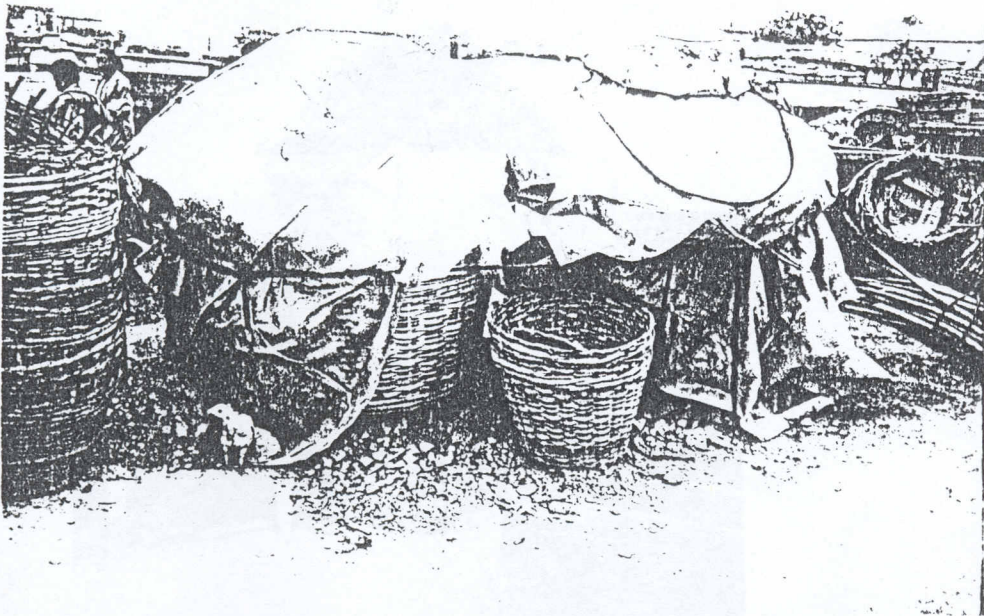
MARKET SCENES

11 b





PACKING SMOKED FISH FOR MARKETING

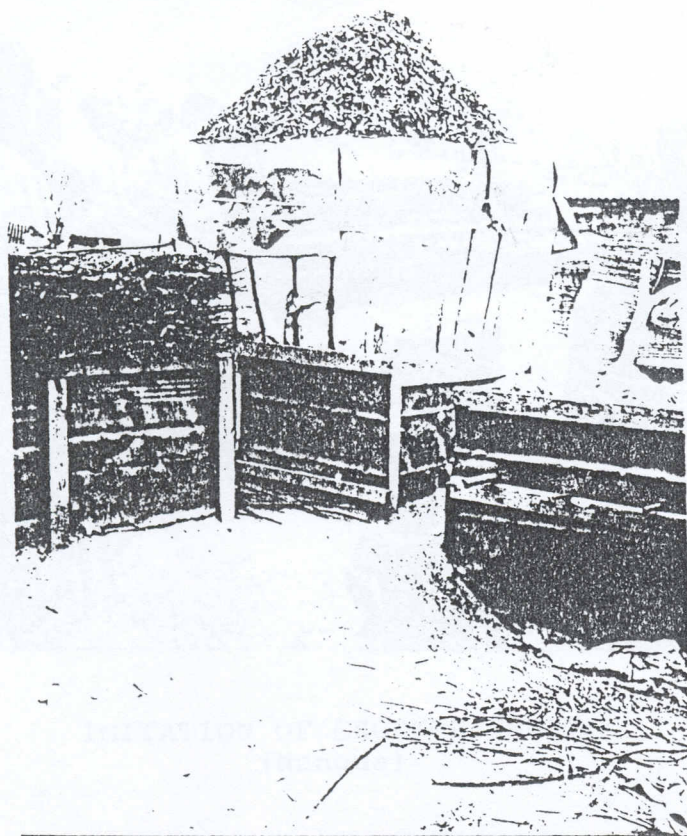


STORAGE OF FISH

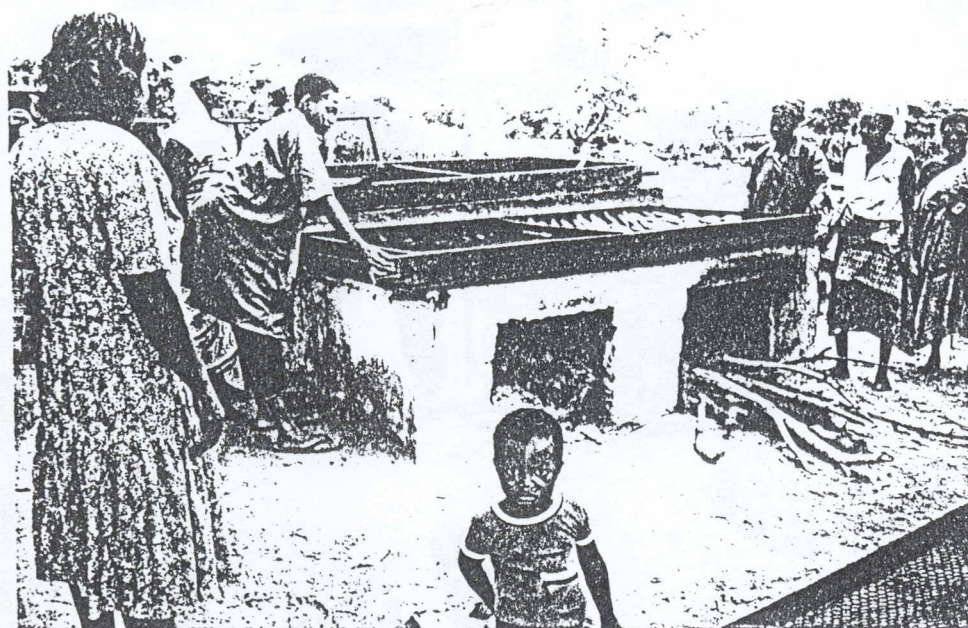
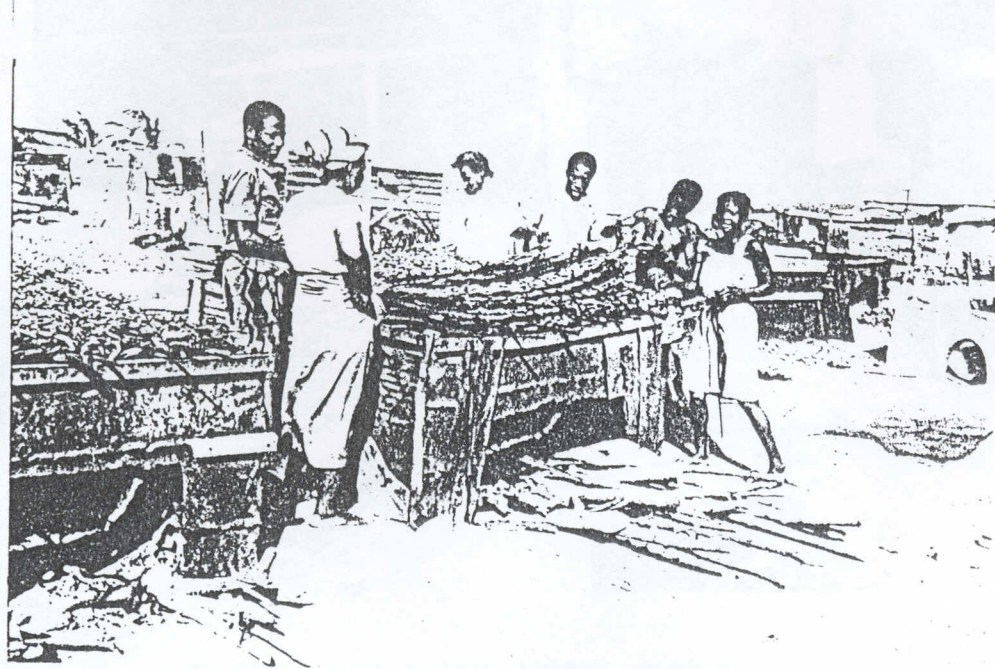
TRADITIONAL WAYS OF STORING SMOKED FISH
AT VILLAGE LEVEL
(Round Mud Ovens with Thatch Roofs)



THE STORAGE PROCESS
(Tema U-Compound)

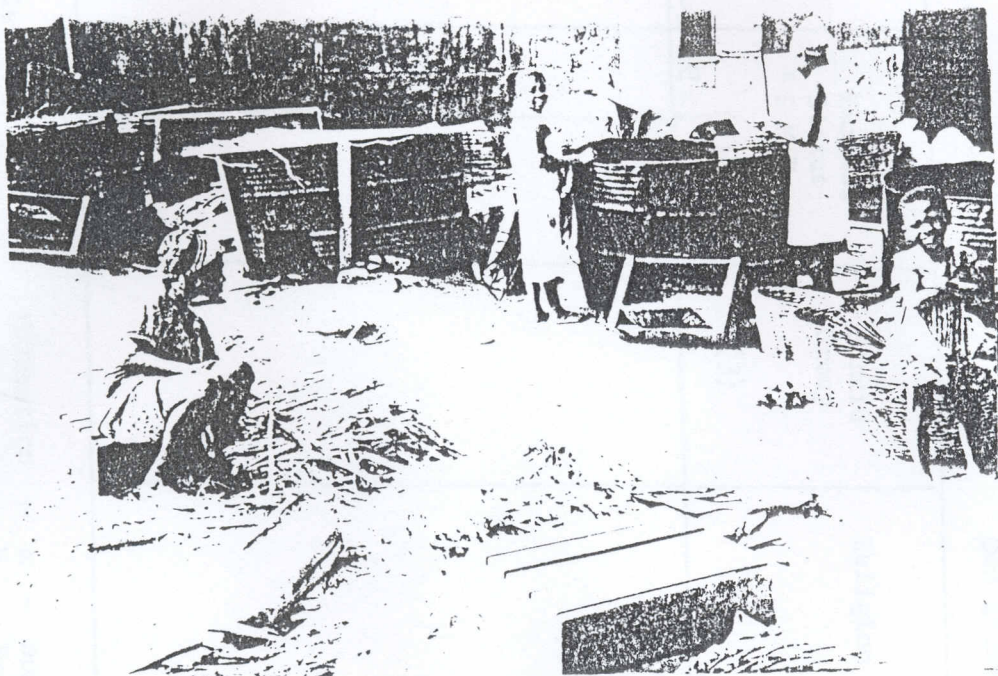


RECTANGULAR METALLIC OVEN IN USE
(Tema U-Compound)



IMITATION OF CHORKOR SMOKER
(Nungua)

Handwritten signature or initials.



BAGASS AND ROUND METAL OVENS



BACKGROUND SHOWS A HIGH PILE OF FIREWOOD FOR SALE
USED IN SMOKING (TEMA)

HOUSEHOLD MEMBERS INVENTORY

SM 1

Socio - Economic

Village Household No. Enumerator
 No. of Sleeping rooms Own House Rented Date

Name	Marital Status * S M D	Ethnic Group	Religion	Education a, b, c, d, e, f, g, h.	Main Occupation	Other Occupation	Owernship or access to equipment of produce or property (Land, boe Car etc.
	(2)	(3)	(4)	(5)	(6)	(7)	(8)

*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
- 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 W C None(public)
- 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 Eearth 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 fire wood 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 a 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?
.....

FAMILY HEALTH

1. Village..... (2) Household No..... (3) Enumerator.....

4. Respondent..... (5) Date:.....

6. WATER

6.1 What are the types of water resources in the Community at different seasons of the year?

6.2 What types of containers do you use to store water?

6.3 What types of containers do you use to carry water?

6.4. How far is your course of water?

6.5 Source of water supply -(a) ponds, (b) rivers, (c) pipe borne (d) wells (d) wells, others.....

6.6 Do you treat the water at home?..... How?.....

6.6.1 Do you know of any water borne disease?

6.7 What factors affect water availability?.....

6.8 How frequently do you bath in a day?

6.9 Is water available through out the year?

6.10 What other things do you use water for?

6.11 How do you get rid of your waste water?

7. Are you happy with your state of health? Yes/No

7.2 Do you have sickness that keep you from working? Yes/No

7.3 If yes, What are they?

7.4 Do you get sick at particular times of the year? Yes/No

7.5 Do you get sick when you do particular activities? Yes/No

7.6 Do you think any of the work you do causes diseases?

7.7 If so, what?

7.8 If so, why?

8.1 Is your husband/wife satisfied with his state of health?

8.2 Does he often have sicknesses that keep him from working?

8.3 If so, what are they?

8.4 Does he think any of the work that he does causes disease?

8.5 Do you think likewise?

8.6 If so, what?

8.7 Why?

9.1 Are any of the children sick? Yes/No

9.2 What is wrong with them?.....

10.1 Is there a toilet in the house? Yes/No

10.2 If yes, what type? a) KVIP b) Pit c) Pan d) W.C
e) Others, specify

10.3 If No, What happens?

11.1 What type of bathroom is available in the house?
a) own, b) communal, c) none d) Others, specify.....

12.1 How do you dispose of your refuse?

FOOD INVENTORY

Food	Mode of acquisition		Form of storage	Seasonal availability	Seasonal valuation in price
	Usual	Alternate			

2