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# SUSTAINABLE FISHERIES MANAGEMENT PROJECT (SFMP)

## Training on the Use and Maintenance Of New Improved Oven



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THE  
UNIVERSITY  
OF RHODE ISLAND  
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**Cover photo:** Group Photo of the participants at the training. (CEWEFIA)

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## ACRONYMS

CCM	Centre for Coastal Management
CEWEFIA	Central and Western Region Fishmongers Improvement Association
CRC	Coastal Resource Center
CSLP	Coastal Sustainable Landscape Project
DAA	Development Action Association
DFAS	Department of Fisheries and Aquatic Science
DMFS	Department of Marine Fisheries Sciences
DQF	Daasgift Quality Foundation
FtF	Feed the Future
GIFA	Ghana Inshore Fishermen's Association
GIS	Geographic Information System
GNCFC	Ghana National Canoe Fishermen's Council
HM	Hen Mpoano
ICFG	Integrated Coastal and Fisheries Governance
MESTI	Ministry of Environment Science and Technology
MOFAD	Ministry of Fisheries and Aquaculture Development
NDPC	National Development Planning Commission
NGOs	Non-Governmental Organizations
SFMP	Sustainable Fisheries Management Project
SMEs	Small and Medium Enterprises
SNV	Netherlands Development Organization
SSG	SSG Advisors
STWG	Scientific and Technical Working Group
UCC	University of Cape Coast
URI	University of Rhode Island
USAID	United States Agency for International Development
WARFP	West Africa Regional Fisheries Development Program
IUU	Illegal, Unregulated, Unreported
FC	Fisheries Commission
CSIR	Center for Scientific and Industrial Research
FDA	Food and Drug Authority
PAH	Polycyclic Aromatic Hydrocarbon

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## **EXECUTIVE SUMMARY**

To increase the interest on the use of the new improved Oven among fish processors and also raise the awareness level on the new improved oven (Ahotor Oven) in the coastal communities especially the project communities, CEWEFIA on 11<sup>th</sup>, 17<sup>th</sup> and 18<sup>th</sup> April, 2018 organized a Training for fish processors in all its target communities (Moree, Elmina, Secondi and Anlo-Beach and Axim, Asanta, Shama, Ankobra) on the use and maintenance of the Ahotor Oven. A total number of three hundred and fifty-five (355) participants partook in the Training. The Training aimed at building the interest of fish processors in the use of the new improved Oven for adoption. It was further aimed at improving their ability to maintain the oven for sustainable use. Training methodology such as discussions, demonstrations, questions and answers were used. Fish were smoked on the Ahotor oven as part of the demonstration in all the communities. Participants were given the platform to ask as many questions as possible which indicated their interest in adopting the oven. Answers were also given to clarify all issues. Those who had not yet seen how the Ahotor Oven operates now appreciated it. Some participants expressed strong interest to own the oven, but are currently facing financial and land difficulties while others promised to make savings to construct one. The training ended successfully with participants more appreciative of the stove than before.

## SECTION 1: BACKGROUND

Fish smoking remains the most prevalent method of preserving fish along the coast and the Volta Lake Ghana, with the Chorkor being the preferred smoker. The Chorkor smoker emits large amounts of smoke during processing which is hazardous to the processors and the consumer. While the smoke causes eye infections and respiratory diseases, the smoked also contain high levels of Polycyclic Aromatic Hydrocarbons (PAH) a known carcinogen.

USAID/SFMPs partner, SNV in collaboration with the Ministry of Fisheries and Aquaculture Development (MOFAD) and Fisheries Commission, Food and Research Institute (FRI) of Center for Scientific and Industrial Research (CSIR) and Ghana Standard Authority (GSA) designed and developed the ahotor oven. The ahotor oven is similar in design to the Chorkor, uses less fuel wood, and emits less smoke and produces healthier smoked fish.

As with any new technology, the oven should be demonstrated to the targeted users-fish processors. In the light of this, a one-day training was organized for fish processors in eight (8) communities (Moree, Elmina, Anlo-Beach, Sekondi, Shama, Asanta, Ankobra, and Axim) on the use and maintenance of the ahotor oven. The trainings were held on, 11<sup>th</sup>, 17<sup>th</sup> and 18<sup>th</sup> April, 2018 (Wednesday, Tuesday & Wednesday) and facilitated by the CEWEFIA Project Team.

### 1.1 Attendance

The Training was attended by three hundred and fifty-five fish (13 males, 342 females) processors from all the project communities.

The detailed attendance is in the table 1 below

**Table 1: Detailed Attendance of Participants**

Name of community	Attendance		Total
	Males	Females	
<b>Elmina</b>	0	39	39
<b>Moree</b>	2	40	42
<b>Sekondi</b>	13	56	69
<b>Anlo-Beach</b>	0	43	43
<b>Axim</b>	0	36	36
Asanta	0	34	34
<b>Ankobra</b>		41	49
<b>Shama</b>	1	50	51
<b>Total</b>	16	339	355

## **1.2 Training Objectives**

The objectives of the training are;

- To equip the fish processors to appreciate the Ahotor oven technology.
- To demonstrate the superior performance of the oven to facilitate its adoption
- To demonstrate how the ahotor oven can be maintained to last longer.

## **1.3 Expected outcomes**

Expected outcomes of the training are:

- It was expected that the participants would appreciate the performance of the oven and adopt it.
- Processors will devise plans to purchase the Ahotor oven.

## **SECTION 2: TRAINING CONTENT**

The training commenced at 9:00am in all the communities. The participants were led by facilitators in each community to share and recall some of the knowledge gained so far from previous trainings and programs with CEWEFIA. The experiences shared indicate that the participants are applying the knowledge gained from the trainings given to them across. Some of the lessons and experiences shared centered on;

- Hygienic fish handling
- Savings
- Conflict management
- Personal and environmental hygiene at workplace and others

### **2.1 Approach/ training methodology**

The following approaches were used to deliver the training to reinforce understanding and adoptions.

- Discussion
- Experiences sharing
- Demonstrations
- Questions and answers

#### **2.1.1 EQUIPMENTS/ MATERIALS USED FOR TRAINING**

The following equipment were used during the training;

Ahotor oven, fat collector, metal grate, smoking trays, brooms, brushes, fuel wood, hand-washing basins, liquid soap, knives, bowls, aprons and hats and fresh fish.

### **2.2 Discussions:**

#### **2.2.1 History of Fish Smoking Oven**

The participants were briefed on the history and the trend of fish smoking ovens in Ghana over the years. According to the facilitators, in the past, fish was smoked on a metal tank or barrel, then the round mud oven until the FAO developed the Chorker oven. The deficiencies in the use of these ovens necessitated the development of the ahotor oven. The facilitator explained the features of the ahotor oven and why it is a better smoker than all the others. In addition to the adoption of the oven, the facilitator also explained the Class 1 Recognition Scheme to the processors. The scheme is based on the adoption of basic food safety standards

in fish processing on the ahotor oven. The objective of the Class 1 Recognition scheme is to promote the production and trade of quality fish in Ghana and for export for increased income.

A fish processor from Moree, shared that though the ahotor is a good oven, it is rather expensive that is why she has not been able to buy one. Another also shared that ahotor oven cooks slower than the Chorkor.

### **2.2.2 Fishing practices and fish handling:**

Over the years, CEWEFIA has admonished fish mongers and fishermen to desist from any fishing activities that hinder the sustainable growth of the fishing sector. Women processors have also been also being entreated to patronize large sized fish, observe absolute hygiene at their processing sheds, washing of fish before processing and proper hand washing, appropriate packaging material for fish among other hygienic practices.

At Moree, the facilitator briefed the participants on the findings of a research carried out on the packaging of smoked fish. According to the facilitator, the findings from the research showed that well packaged fish did not attract any microbes unlike fish that is improperly packaged. This is indicative of the fact that good packaging improves quality and adds value to the fish and reduces post-harvest losses. Participants were also encouraged store fish under temperate conditions.

### **2.2.3 Financial scheme:**

The facilitators also explained to the participants the procedures that a fish processor has to go through prior to acquire the ahotor oven. Personal savings was also encouraged among participants.

### **2.2.4 Maintenance of the Ahotor Oven:**

Participants were encouraged to maintain the ovens properly to enhance its shelf life especially components such as fat collector, smoking trays should be well cleaned after each use and the ash in the lower chamber should be swept away. Again, the surroundings of the kitchen must be kept tidy at all times.



**Figure 1: A Cross-section of participants at the training at CEWEFIA fish Processing Center at Elmina with Mr. Nicholas Smith, the Project Officer (Standing) during the discussion**

### **SECTION 3: EXPERIENCES**

The participants who owned an ahotor oven and are using them shared their experiences.

In Elmina, a beneficiary of the Ahotor oven given to vulnerable households (Madam Adjoa Mansa) testified that the Ahotor oven has helped her fishing business and also eliminated the acrimony between her and her neighbors due to the large amounts of smoke emitted by the Chorkor she used before. According to her, her health has also improved significantly. Another processor also added that fish smoked on Ahotor oven looks better and attractive at market.

Madam Ekua Mansah, a fish processor at Moree also added that the high cost of the stove prevents her from purchasing it.

A participant suggested that CEWEFIA together with other donors should offer financial aid for fish processors to help improve their fishing business so they could apply all the knowledge and skills fully in their business. Some participants were of the view that the Ahotor was slow in smoking fish as compared to Chorkor and could not smoke large quantities of fresh fish.

The women asked questions on the financing arrangements to obtain the oven and these were explained by the facilitators.



**Figure 2: A participant (Ahotor oven beneficiary, arrowed) sharing her experiences on the Ahotor oven.**

#### **3.1 Demonstrations**

In Moree, six (6) participants were randomly selected to do the demonstration (smoke fish) on the Ahotor oven while 12 processors in Elmina were selected.

The rest of the community members who know how to smoke fish on Ahotor Oven were asked to demonstrate. Using a process flow approach, the processors were shown how to smoke fish with the Ahotor oven.

Some participants in Elmina were of the view that Ahotor oven could not smoke fresh fish from the landing site except frozen fish. This was because, in the previous demonstrations,

only frozen fish was used for the smoking. In response to this, fresh fish from the landing site was smoked instead of frozen and more than the usual two or three smoking trays were also used for the demonstration to correct the wrong perception they had.

During the demonstration, it was ensured that the fish processors observe all the hygienic practices including thorough washing of hands before processing to avoid contamination and washing of the fish before smoking. They were again asked to get rid of the following habits during fish processing; talking, chewing of gum, wearing of ear rings, use of bare hands to wipe their nose.



**Figure 3: The facilitator (Miss Josephine, in blue shirt) observing the participants in preparing fish for smoking during the training at Axim.**



**Figure 4: Participants making fish on the Ahotor oven at Elmina**



**Figure 5: Participants smoking fish at Moree**



**Figure 6: A fish processor cleaning the Wet Room at the CEWEFIA Fish Processing Facility at Elmina after curing and washing the fish for smoking.**

### 3.2 Challenges:

- Some of the participants were of the view that the Ahotor oven could not smoke more fish as compared to the Chorkor despite series of demonstrations.
- The cost of the oven also prevents the processors from adopting it.
- Some fish processors are asked for support with loans
- In Elmina, some of the participants who are migrants have no access to land to construct the ovens.
- Some of the fish processors entertained some fear for opening account with both the Private and Public Banking Institutions because of their lending rates.
- Some of the fish processors feel reluctant to buy proper packaging materials to package the finished products for the markets.

### 3.3 Recommendation

In Axim it was recommended that;

- More Artisans should be trained to build the stove in the various communities to help reduce construction cost.
- Burnt brick factories should be established in all the project communities.
- Fat collectors and grate should be developed by artisans for the women to buy.

### 3.4 Lessons learned:

- Smoking landed fresh fish for demonstration greatly changed the wrong perception of some participants that Ahotor oven could only smoke frozen fish.
- Smoking fresh fish on the Ahotor oven smokes better and faster than the frozen fish which takes time to thaw before real cooking begins.
- Change is a gradual process and as the project continues to build the capacities of these fish processors, some will automatically change their old ways of processing their fish.



Figure 7: Participants observing the Ahotor oven during the training, Elmina





**Figure 8: Participants observing the Ahotor oven at Shama**

## **SECTION 4: CONCLUSIONS**

The Training deepened the knowledge and interest of the participants in the oven. The participants asked several questions and made contributions to discussions on the performance of the oven.

Some of them indicated that, they are making efforts to acquire the oven by saving daily with some financial institutions. Finally, some of the participants have been convinced that the technology will help them to produce quality fish and maximize profit.

The participants attended the training as expected and cooperated fully. In all, the training was very successful.

## REFERENCES

- Ahotor Oven training manual

## APPENDIX 1



Figure 9: Cross session of participants in a discussion at Anlo-Beach



Figure 10: Participants at Ankobra observing the fish on Ahotor Oven.



**Figure 11: Cross session of participants at the meeting in Sekondi**