

Micro-enterprise Promotion: Smoked fish as an Enterprise – A Report

Exposure visit organized for
Partners of Meghalaya Institute of Entrepreneurship
(Sponsored by: Meghalaya Institute of Entrepreneurship, Govt. of Meghalaya)

August 03 - 07, 2015
Kakinada, Andhra Pradesh



Submitted to
Meghalaya Institute of Entrepreneurship (MIE)
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Shillong, Meghalaya, India

Submitted by
Basix Academy for Livelihoods and Micro-enterprise Promotion (B-A-LAMP)
(Division of ILRT - Institute of Livelihood Research and Training)
Hyderabad, India



Basix Academy for Livelihoods and Micro-enterprise Promotion (B-A-LAMP)

B-A-LAMP is a division of Institute of Livelihood Research and Training – ILRT (earlier The Livelihood School), an academic institute for practitioners promoted by the Basix Social Enterprise Group (Basix SEG) which is also reflected in the vision “Knowledge and practice build on each other, promoting dignified livelihoods for all”. The mandate of ILRT is to build up a scientific Knowledge Base on livelihoods and disseminate the same to livelihood practitioners for enhancing their understanding and implementation capabilities, who in turn will promote large number of livelihoods. Please visit www.ilrtindia.org for more information. B-A-LAMP believes that knowledge can be generated and shared by 'exchanging' lessons from within and outside the country and region rather than being a one-way 'training' approach.

Among other things, B-A-LAMP is engaged with customized study programs/exchange visits which are more popularly known as 'Knowledge Exchange Visits – KEV' both for national and international audience. In addition to the 'customized' demand-based exchange visits, it also facilitates 'open programs' that are need-based and follow a thorough needs assessment for module and content development.

In a span of seven years, it has conducted 116 such programs catering to over 2,700 professionals out of which 69 are international programs benefitting over 850 professionals from 130 organizations of 25 countries and over 1,600 professionals from various fields in India.



Handbook



Exposure visit on

Micro-enterprise Promotion: Smoked Fish as an Enterprise

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B-A-LAMP
Basix Academy for Livelihoods
and Micro-enterprise Promotion
(Division of Institute of Livelihood Research and Training)
A Knowledge Exchange Hub



Micro-enterprise Promotion: Smoked Fish as an Enterprise

Report prepared by: M Sainath and S S Tabrez Nasar

Under Integrated Basin Development and Livelihoods Promotion Program (IBDLP) , the Meghalaya Institute of Entrepreneurship (MIE) has been set up to facilitate rapid economic transformation, by imparting entrepreneurship education and promoting micro and small enterprises involving the youth, women and other critical target groups in the State. The Institute aims to be among the very best in the world in the area of entrepreneurship development and model entrepreneurial services, through creativity and innovation, application of skills and technological inputs for harnessing rich potential of sub sectors, with focus on agriculture, horticulture, floriculture, pisciculture, aromatic and medicinal plantations, animal husbandry and other locally viable, remunerative, and income generation activities.

Introduction

An estimated 115 million tons of fish are harvested as human food from the seas, oceans, lakes, and rivers every year globally; making it the largest extractive use of wildlife by humans on this planet. About 94% of all freshwater fisheries occur in developing countries where they provide food and a livelihood for millions of people and also contribute to the overall economic well-being by means of export commodity trade, tourism, and recreation. Because fish cannot be preserved for a long time, unless they are refrigerated, humans have developed innovative methods of fish processing to increase their shelf-life. Wind drying was the most ancient and basic way of preserving fish. After the discovery of fire, early humans found that fish hung up over a fire dried more quickly, and that, if the fire was smoky, fish would acquire a different flavor and keep better. Fish-smoking has subsequently become a very popular method for preserving fish and is now practised in all regions of the world. In India, fish smoking is widely practiced in Orissa, West Bengal, Assam, Arunachal Pradesh, Manipur, Madhya Pradesh, some pockets on the west coast, and the Godavari and Krishna deltas in Andhra Pradesh.

(A) What is fish smoking?

The preservative process of smoking combines the effects of drying, heating and smoking, coupled often with salting. The pre-treatment before smoking involves gutting, splitting, kench salting, brining and/or drying, depending on consumer preferences and the method of smoking. A combined heating/drying/smoking process entails application of smoke using suitable firewood, passing it over the fish in a closed chamber at temperatures of about 30-35°C for a cold smoked product, or alternatively, 70-80°C for a hot smoked product.

Cold smoking does not cook the flesh or coagulate the protein; refrigerated storage is necessary before consumption. Cold smoking is designed to impart the desired flavour to the product rather than a degree of preservation. It is not generally made in tropical

countries. Hot smoked products are adequately cooked. The preserving effect of smoking on fishery products is attributed to a combination of surface drying, salting and deposition of anti-oxidant (phenolic) and anti-microbial constituents on the fish.

(B) Historical purview of Smoked fish

In the beginning, our ancestors needed to find ways to preserve their food. Meat and especially fish was highly perishable and would last only a few days if not preserved. Populations that were fortunate enough to live by the sea discovered that they could make salt by the evaporation of seawater. Meat and fish were packed in salt and dried or in some instances stored in a salt solution or brine. Food would remain edible and safe for weeks. Thus, salt became not only a means of enhancing the taste of food, but also preserving it as well. Such salting method was man's first method for the preservation of food. The earliest recording of salting as preservation method is found in the writings of Marcus Porcius Cato the elder, a Roman statesman from about 200 BC. While bacteria and the concept of germs were not known until the Nineteenth Century, ancient cultures unwittingly were killing harmful bacteria when they salt cured their meat and fish and thus had developed one of the earliest disease-prevention strategies.

(C) Global scenario

In most developing countries, fish processed by traditional methods are a major source of dietary protein. Fisher-folk communities, with little or no ready access to markets and modern preservation facilities, have depended on processes developed over centuries - like salting, drying and smoking to enhance the shelf-life of the fish. Although icing is more common for high-value shrimp and larger fish, a major part of the catches continues to be processed by traditional methods. Fish-smoking is a very popular processing method in Europe, Africa and the Far East, where smoked fish and meat are relished as a delicacy. Nearer home, Sri Lanka has a high demand for smoked fish.

(D) Indian scenario

In India, the Laccadive Islands, some pockets on the west coast and on the east coast, the Godavari and the Krishna deltas in Andhra Pradesh are traditional fish smoking centres. It is not difficult to see why these areas, generally inaccessible, should have developed this particular method of preservation. The Godavari delta is crisscrossed by innumerable creeks that make immediate transport of fresh fish very difficult. The very fertile soil that results from siltation is used for cultivation, leaving little scope for fish drying. Smoking is an ideal option because it requires less space and less time than drying, at the same time improving the shelf life of the product up to a week or two. In due course, in spite of the growth of transport facilities, smoked fish developed a rich market in the area, the flavour, texture and taste of the smoke taking precedence over its preservative qualities with the consumers. There are some 50 villages in the Godavari area, where fish smoking is widely practiced.

Smoked and dried fishes are popular delicacies, not only in Meghalaya but in the northeast in general. However, there are not enough processing plants for smoked and dried fish here.

(E) Fish smoking in Meghalaya

The Meghalaya Government has proposed the establishment of 18 small scale units for smoked and dried fish in the state, besides upgrading the existing ones in Jaintia Hills and Garo Hills district, to encourage fish-based cottage industry. As per the fisheries department, the said cottage industry will consist of two components viz., construction of a smoking shed, including furnace, smoking grills, over-head water tank and drain canal, besides ponds for rearing catfish.

Smoked and dried fishes are popular delicacies, not only in Meghalaya but in the northeast in general. However, there are not enough processing plants for smoked and dried fish here. At present, there are two such units in the Jaintia Hills and Garo Hills districts. Fresh fishes are brought from the local markets to these processing units for preparation of products like 'kharang' and 'khyrwong', which are sold not only in the local markets, but also in distant markets in the state. As per the officials of fisheries department - the traditional method adopted by villagers is not hygienic since it is carried out in open furnaces under thatched houses, where there is no water supply and electricity. Besides smoked fish, dried fishes, including 'tungtap' in Khasi Hills and 'Nakam' in Garo Hills are extremely popular and fetch high prices. Fermentation helps in enhancing the flavour, increases digestibility and improves nutritional value. At present, there are six dry fish fermentation centres in Khasi Hills.

It is understood that the state government has proposed to establish 20 more fermentation centres in the state by extending financial assistance to small entrepreneurs. As per the fisheries department the success of this pro-poor strategy depends on the development of critical infrastructure as the beneficiaries are all marginal and small farmers. Further seed, feed, health care and market are the crucial items for development of the fishery sector in the state.

(F) Andhra Pradesh in the context of fish smoking

Reports on the technology adopted in smoking of fish in Andhra Pradesh say that there is a good improvement in the colour and smell of the smoked fish after adopting this method. The shelf life of the smoked fish was increased by about 3 - 4 months. As a result of these improvements, the



fisherwomen get

In AP, women in rural areas got additional employment opportunities due to the adoption of technologies and they have become economically empowered here.

increased price for their dried/ smoked fish. It was also found that women in rural areas got additional employment opportunities due to the adoption of technologies and they have become economically empowered. Most of the

technologies adopted are feasible at field level and the beneficiaries reported to earn regular income. The percolation of improved technology has brought about a change in their socio-economic status to a certain level. If the technology transfer efforts are made to spread out to most of the downtrodden coastal villages, it could serve as livelihood

opportunities for fisher-folk community and help them to derive supplementary income. The villagers could also witness technological revolution and the lives of the fishermen could be improved.

Rationale for the program

In view of the encouraging results in Andhra Pradesh as mentioned in the above paragraph, MIE has requested B-A-LAMP to organize the exposure visit.

Broad objective of the program

The broad objective of the program is to have farmers from Meghalaya visit and learn from percolation of technology in fish-smoking so that it serves as livelihood opportunity for them.

Specific objectives of the program are to enable the participants to understand –

- various steps followed in the fish-smoking process both at the conceptual and field levels in East Godavari District of Andhra Pradesh;
- detailed processes such as - smoking time and effort; varieties used, species, weight and price of procurement; different combinations of firewood materials used; duration of pre-drying and its effect on the process, yield ratios etc.,
- have a first-hand feel about the Community Fish Smoking Kilns (CoFiSKis); and
- consolidate the learning made to formulate the framework of an action plan.

Planning and designing of the Exposure Visit

On the request of MIE to organize this program, Dr. Tabrez Nasar, Director of B-A-LAMP advised Mr. Ramakrishna K (RK), Deputy Dean (Training and Entrepreneurship Development), ILRT to work on the training proposal. In the process of building and submission of the proposal, Mr. RK exchanged several mails and made telephonic contacts with National Fisheries Development Board (NFDB), Hyderabad, State Institute of Fisheries Technology (SIFT), Kakinada and Central Institute of Fisheries Technology (CIFT), Kochi and Visakhapatnam. Further, he visited SIFT, Kakinada during May 2015 and had a detailed discussion with Dr. Venkateswara Rao, Assistant Director of Fisheries about the programmatic and logistical arrangements made for the smooth execution of the visit. When MIE approved the proposal, the B-A-LAMP team in Hyderabad, Mr. RK, Mr. Venugopal, Manager, and Mr. Sainath, Faculty Associate worked in cohesion under the guidance of Dr. Tabrez, coordinated with SIFT and CIFT to schedule and execute the exposure visit in a smooth manner. Dr. Tabrez, Mr. Venugopal and Mr. Sainath accompanied the participants during the visit.

Program execution: Dr. Venkateswara Rao, AD, SIFT inaugurated the program on Monday, the 3rd of August 2015 which was followed by self-introduction of the trainees and faculty members at SIFT, Kakinada. With a view to orient the participants about the local culture



of the state, elaborate information was given to them during field visits. The program schedule was prepared in such a manner that the participants get the opportunity to have some recreational visits in between i.e., to beaches in Kakinada and Visakhapatnam, harbor and Hope Island in Kakinada. Considering the convenience of the large group during travel, two buses were hired during the entire visit.

Team ILRT – Meghalaya and Hyderabad

Concerted efforts were made by the teams of ILRT centers in Shillong and Hyderabad in the matter of collation of materials for the handbook and reference material, its layout, designing and printing, overall coordination, financials and logistical arrangements.

Team MIE

The team comprised of 27 participants that included MIE partners and six Officials from MIE and various agencies of Govt. of Meghalaya – Mr. Budsuk (BDO), Dr. Hampaya and Ms. Justina from MIE, Mr. Selan from Fisheries Dept., Ms. Memorial from MGNREGA and Mr. Kolmen, Master Trainer. The participants' quest for learning was very much evident at each step, thus making the program worthwhile.

Methodology

Orientation about the program: The participants were oriented about the program by Mr. Sainath in a classroom session. The study material, program schedule, contact details of ILRT team members and other important details pertaining to logistics were clearly explained in the orientation session.

Field visits: Field visits were organized for the participants where they interacted with the Fishery Development Officers in SIFT, Senior and Principal Scientists in CIFT. They also interacted with SHG members engaged in fishing related activities which included smoking fish by traditional and modern techniques (CoFiSKis).

Tools: Three tools namely *Daily Journal – learning tool*, *Evaluation tool* and *One-line feedback* were introduced to the participants on the very first day. Filling up of the daily journal, an exercise the participants practiced daily, helped them 'think aloud'. It consisted of simple questions that prompted the thought process and helped the visitors to systematically note down their understanding so as to make the most out of the learning process. Evaluation tool was used to evaluate the overall program quality in terms of achieving program objectives and logistical arrangements as well. One line feedback was to capture the impression of the participants in a very succinct manner.

Program Schedule

The five day program schedule (*Annexure-1*) was prepared precisely giving the overview of the program in terms of day-wise activities and their focus.

Summary of the Exposure Visit

Day 1: August 03, 2015 (Monday)

Classroom sessions and demonstration at SIFT, Kakinada

Mr. Ch. Srinivasa Rao, Ms. Sk. Dilshad and Ms. Azeezunnisa, resource persons from SIFT, enlightened the participants about the basic techniques in fish-processing with special emphasis on fish-smoking. The sessions also delved into post-harvest preservations technology i.e., 'Post-harvest care' of fish as well as fish-curing methods practised in Andhra Pradesh (salting, cleaning, smoking, drying etc.,). A demonstration given on how fish-curing is practised (i.e., *degutting, splitting, cleaning, salting, smoking*) followed by a "hands-on practice" session helped the participants get complete clarity on the subject.



Day 2: August 04, 2015 (Tuesday)

Visit to Godavari Maha Samakhya, C.B.V. Palem, Coringa, Tallarevu East Godavari District

To know more about the org. please visit: <http://www.gmseg.org/>

The participants visited the areas where traditional fish-curing methods are practiced i.e., at the Godavari Maha Samakhya, an exclusive confederation of coastal fisher women which is working for socio-economic development of 20,000 BPL coastal fisherwomen of C.B.V Palem, Tallarevu Mandal, East Godavari District. The interactions the fisherwomen had with the participants followed by the demonstration on 'modern smoking kiln' helped the latter to learn the techniques with attention and ease. The demo also covered the procedure to be followed in case of fresh prawns.



Day 3: August 05, 2015 (Wednesday)

Interaction with Women SHG members, C.B.V. Palem, Coringa, Tallarevu East Godavari District

The participants were engaged in a thorough interaction with the following Women SHG members viz.,

- a) Sairam Group SHGs – (SHG formed in 2003, 10 members)
- b) Sri Mahalakshmi Group – (SHG formed in 2000, 15 members)
- c) Sri Ayyappa Group – (SHG formed in 2003, 10 members)

d) Mahalakshmi Group – (SHG formed in 1996, 14 members)

These SHGs highlighted different aspects related to –

- Fish-smoking techniques
- Their marketing strategies
- Convergence with other agencies, and
- Linkages

During the interactive session with these SHGs participants were able to interact on –

- Formation of the groups
- History and activities of the group
- Problems and constraints
- Their success



On interacting with SHG members it was learnt that their families' financial condition was miserable prior to becoming the members of SHGs. After they became the members of respective SHGs, they saved money, received loans for their business activities and improved their financial condition. Now, these members are able to have good food, own-houses, boats, nets and provide good education to their children also.

Day 4: August 06, 2015 (Thursday)

Visit to Central Institute of Fisheries Technology (CIFT), Visakhapatnam

To know more about the org. please visit: <http://www.cift.res.in/innercontent.php?contentid=NDM=>

The team travelled 180 Km from Kakinada to CIFT. The visit helped the participants to gain good insights about the innovative technology (CoFiSKis) with the excellent support of the following Senior and Principal Scientists of CIFT.

- Dr. M.M Prasad
- Dr. G. Rajeswari
- Dr. U. Sridhar
- Dr. B. Madhusudana Rao

A training-cum-demonstration program was offered to the participants to enable them understand techniques related to the hygienic preparation of smoked fish with the help of Community Fish Smoking Kiln (CoFiSKi). The following are the advantages of using the smoking kiln as an alternative source during non-sunny days/seasons.

- Superior quality of fish product;
- Hygienic product (free from human pathogenic bacteria);



- Consumption of less fire wood resulting in reducing fuel cost, saving trees and protecting environment;
- Overcoming health issues associated with (women) exposure to smoke for prolonged hours in the traditional processing methods leading to several complications such as irritation to eyes, dry cough due to inhalation of smoke and exposure to toxic materials etc.

Description about this visit is available on: <http://www.cift.res.in/innercontent.php?contentid=Nzgy>

Day 5: August 07, 2015 (Friday)

On the last day of the program i.e., on 07-08-2015, the participants worked in groups, consolidated their learnings and made presentations of the same vis-à-vis sharing the “*Action Plans*” they wish to implement at their respective places in Meghalaya which in turn contributes at large to the growth of the said business activity in Meghalaya.

Most important differences noticed by the participants

- ✓ In Andhra Pradesh (AP) cut open fish is used for smoking;
- ✓ Small fish is also smoked in AP whereas, fish measuring 500 grams and above is used for smoking in Meghalaya;
- ✓ Fish is dried and salted prior to smoking in AP;
- ✓ In AP, fish-smoking is one of the important income-generating activities of SHGs;
- ✓ Smoked fish products have less shelf-life in Meghalaya (upto 20 days in summer and 4 days during winter) whereas it is higher in AP;
- ✓ In AP removal of fish scales is in practice;
- ✓ Polythene covers are used for packing the smoked fish in AP whereas newspapers are used for the same in Meghalaya.

Recommendations

- ✓ Always start with markets/consumers and come back to make any changes in smoking of fish.
- ✓ Even though the market preference in Meghalaya is that of large and uncut (but degutted) fish, they should either go for salt-cured, or frozen and smoked, and smaller fish which are partially sun-dried so that the shelf-life is longer (a matter of convincing the buyer as the shelf life is much more) and at the same time look for possible markets outside of Meghalaya for smaller and/or salt-cured fish so that more and more can be produced.

Action points

- ✓ Market appraisal – product to be demonstrated and sold;
- ✓ Fish smoking is to be adapted and localised as per the market demand and consumer mind-set;

- ✓ Institutionalization: SHG members, by being collective, can perform smoking and take up the marketing activity
- ✓ Take up a pilot project
- ✓ Three A's of Technology : A – Availability of technology
 A – Access/Affordability of technology
 A – Appropriateness of technology

Conclusions

Overall the program went off well (Course evaluation and participants' feedback - Annexure 2). This included good work done both in the classroom and field visits coupled with good entertainment and sightseeing.

CIFT, Visakhapatnam gave away tools and gears (*five* insulated fish bags, *two* foldable fish traps and *two* nylon monofilament nets on gratis) to partners for use in the field back home in Meghalaya. CIFT is also very keen to give away at least one Fish Smoking Kiln (CoFiSKi) via MIE office to Amlarem block. Participants were happy to share that they had picked up many lessons in a period of just four days. The same are mentioned below:



- ✓ *Launching Business Enterprises:* The participants felt that they will take forward the various learnings made from the exposure visit and convert them into successful business enterprises in their State;
- ✓ *Post-Harvest Fisheries:* various methods of fish-handling, preservation, conservation, and storage.
- ✓ *Fish processing and curing:* techniques like cleaning, de-gutting, salting, drying and smoking. The principle behind smoking, freezing, salting and drying is common – to minimize bacterial activity with the advantage of adding a smoke flavour to the fish in case of smoking.
- ✓ *Fish smoking:* advantages of smoking fish in a CoFiSKi when compared to traditional method.
- ✓ *Power of SHGs:* unity, sincerity and successful functioning of fisherwomen SHGs.
- ✓ *Women engagement in fish smoking* and men in fishing activities will earn an additional income to households;
- ✓ *CoFiSKi:* The traditional kiln, in addition to be a health hazard, also uses up enormous amount of fuel wood, hence environment-unfriendly as opposed to the modern kiln which has the advantages of - (1) *being portable;* (2) *consumes smaller amounts of fuel wood;* (3) *can accommodate much more unit weight of fish per unit area,* (4) *has even temperatures distributed inside the kiln and* (5) *many more smaller advantages.*

CIFT CoFiSKi – technically best

SIFT CoFiSKi – locally best

In Meghalaya, the preference is larger fish (700 g to 1 Kg body weight) whereas in AP people prefer smaller fishes. The participants are quick in observing that small-sized fish can be evenly smoked contrary to Meghalaya where larger fishes, subject to smoking, will not have deeper penetration of smoke inside the body tissues. As a result of this superficial smoking process, the fish is actually 'smoked' and 'cooked' on the upper layers but not in the inner layers, which in turn results in having a shelf-life of not more than 2 days as opposed to at least 30 days with smaller fish in AP.

Annexure 1: Program Schedule

Focus Area/s	Time slot	Description/Broad Areas
Day 1: Aug 3rd 2015 (Monday) State Institute of Fisheries Technology (SIFT), Kakinada		
Registration	0900 – 0915	B-A-LAMP
Program inauguration	0915 – 0930	SIFT
Overview of this Exposure visit	0930 – 0945	B-A-LAMP
General Introduction to Post Harvest Fisheries	0945 – 1045	<i>Fish processing, handling the catch, preservation, conservation and storage</i>
Tea break	1045 – 1100	
Fish Processing Methods	1100 – 1200	<i>Traditional Fish Processing Methods with special emphasis on Fish Smoking</i>
Fish Curing Methods	1200 – 1300	<i>Methods adopted in Andhra Pradesh</i>
Lunch	1300 – 1400	
Fish Cutting and salting Techniques	1400 – 1600	<i>Demonstration on how this is done</i>
Day 2: Aug 4th, 2015 (Tuesday) Field Visit to Godavari Maha Samakhya – C.B.V. Palem, Tallarevu, East Godavari Dsitrict		
Fish Drying, Salting and Smoking	1000 – 1100	<ul style="list-style-type: none"> • Classroom inputs
Fish Curing	1100 – 1300	<ul style="list-style-type: none"> • Visit areas where traditional fish curing is practiced
Lunch	1300 – 1400	
	1400 – 1630	<ul style="list-style-type: none"> • Demo on fish drying, salting and smoking (traditional and modern methods using CoFiSki's)
Day 3: Aug 5th, 2015 (Wednesday) Interactions with SHG members – C.B.V. Palem, Tallarevu, East Godavari Dsitrict		
Exposure and interactions with Fisher Groups	0900 – 1730	<ul style="list-style-type: none"> • Interaction with SHGs and MMGs on different aspects of <ul style="list-style-type: none"> - Fish Smoking - Marketing Strategies, - Convergence and - Linkages etc.
Day 4: Aug 6th, 2015 (Thursday) Central Institute of Fisheries Technology (CIFT), Visakhapatnam		
Travel from Kakinada to Visakhapatnam	0600 – 1000	<i>Distance: 180 Kms; Travel time 0400 hrs by road</i>
Community Fish Smoking Kilns (CoFiSKis)	1000 – 1330	<i>Training cum demonstration on "Hygienic preparation of smoke cured fish with COFISKI"</i>
Lunch	1330 – 1430	
	1430 – 1630	Sightseeing
Travel from Visakhapatnam to Kakinada	1630 – 2030	<i>Distance: 180 Kms; Travel time 0400 hrs by road</i>
Day 5: Aug 7th, 2015 (Friday) Program Closure, Kakinada		
Consolidation of Learnings & preparation of Action Plan	0900 – 1030	<i>Breakout working groups: Participants will prepare the consolidated Learnings of the program and present it to a plenary as an Action Plan;</i>
	1030 – 1230	<i>Presentation by participants on lessons learnt and evaluation</i>
	1230 – 1330	<i>Program Closure and feedback</i>

Annexure 2: Course Evaluation - Participant's Feedback

A. Course Objectives

A1. The broad objective is to learn from percolation of technology in fish smoking.

To what extent did the course achieve its **broad objectives**? Please check and explain briefly.

Broad Objective	Completely Successful	Generally Successful	Limited Success	No Answer
A1 Comment	[26%]	[74%]	[-]	[-]

- Learnt about post-harvest fish technologies
- Modern technique of fish smoking
- Enhanced our capability to cope with the new system

A2. The specific objectives are to:

1. understand various steps followed in the fish smoking process both at the conceptual and field levels in East Godavari District of Andhra Pradesh;
2. appreciate the detailed processes such as - smoking time and effort; varieties used, species, weight and price of procurement; different combinations of firewood materials used; duration of pre-drying and its effect on the process, yield ratios etc.,
3. have a first-hand feel about the Community Fish Smoking Kilns (CoFsSKis); and
4. consolidate the learning to formulate the framework of an action plan.

Specific Objective	Completely Successful	Generally Successful	Limited Success	No Answer
1	11%	89%	-	-
2	13%	67%	20%	-
3	13%	87%	-	-
4	22%	78%	-	-

- Understood salting, drying, smoking from the classroom and demos of SIFT/CIFT
- Had the "First-hand knowledge on CoFiSKi";
- Got the opportunity to examine the process and procedure of traditional and modern fish smoking and learnt from the hands-on practice as well;
- Had very useful insights with the detailed explanation given on smoking time and effort, combination of firewood used etc.
- Had good learning especially from the COFISKI at CIFT, Visakhapatnam.
- The program will help us to promote fish smoking activity in our state;

B. Program Content

What are the most important experiences/learnings that you have gained from this visit and why are these important to you? Please state reasons for each experience/learning that you list.

Most important experiences/ learning gained	Reasons why important
Preservation of fresh fish – chilling, freezing, salting, drying, smoking, pickling, canning etc.,	<ul style="list-style-type: none"> • Increases the shelf- life of fish; • The program, which offered many insights, was perfectly tailored to our needs;
Chilling of Fish	<ul style="list-style-type: none"> • We never practice it in our state, as a result most of the fish get spoiled;
Cleaning, degutting, salting	<ul style="list-style-type: none"> • The hands-on experience we had will enable us to perform these activities in a proper manner;
Selection of small fish	<ul style="list-style-type: none"> • Fish can be dried properly and preserved for long time;
Smoking of fish	<ul style="list-style-type: none"> • Clean and hygienic process; • Smoking in a kiln is faster and economical;
Interaction with the women SHG members	<ul style="list-style-type: none"> • Came to know about their unity, sincerity and success of their SHG and the group’s support to run fish smoking activity • Formation of SHGs to improve our livelihoods and market our products
Structure and linkages between SHGs, village organizations, Mandal Samithis, Zilla Samithis and Society for Elimination of Rural Poverty (SERP)	<ul style="list-style-type: none"> • These organizations have strength to eliminate rural poverty and play an important role for socio-economic and rural development
Working of CoFiSKi at CIFT	<ul style="list-style-type: none"> • Hygienic preparation of smoked fish, less consumption of fuel wood, overcoming health problems; • Using the modern CoFiSKi helps us to upgrade our businesses in future; • Interactions with scientists and their inputs will help us in a long way;
Types of wood to be used	<ul style="list-style-type: none"> • Hard wood to be used for smoking as it produces less smoke and gives good taste and flavour to the fish;

C. Encircle the number corresponding to your rating (10 is the highest score)

(All the ratings are on a scale of 1 to 10 and 10 is the highest scoring)

Classroom Sessions and Field Visits (FV)	How did you like the visit? (Scale of 1 to 10)
1. Session on Traditional Fish Processing Methods with special emphasis on Fish Smoking	44% rated on scale of 8 to 10 and balance 56% rated on a scale of 5 to 7.
2. Session on Fish Curing Methods adopted in Andhra Pradesh	56% rated on scale of 8 to 10 and balance 44% rated on a scale of 6 to 7.
3. Session on Fish Drying, Salting and Smoking	48% each rated on scale of 8 to 10 and 5 to 7 and balance 4% rated on a scale of 1 to 4.
4. Session on Fish Cutting Techniques and Salting- Demonstration on how this is done	69% rated on scale of 8 to 10 and balance 31% rated on a scale of 6 to 7.
5. Visit to areas where traditional fish curing is practiced: (i) Fish Smoking (Modern)	48% each rated on scale of 8 to 10 and 5 to 7 and balance 4% rated on a scale of 1 to 4.
(ii) Fish Smoking (Traditional)	54% rated on scale of 8 to 10 and 42% rated on a scale of 5 to 7 and balance 4% rated on 1 to 4.
6. Demo on fish drying, salting and smoking	48% rated on a scale of 8 to 10 and balance 52% rated on scale of 6 to 7.
7. Exposure and interaction with SHGs and MMGs on different aspects of: <ul style="list-style-type: none"> - Fish Smoking - Marketing Strategies, - Convergence and - Linkages etc. 	55% rated on scale of 8 to 10 and 30% rated on a scale of 5 to 7 and balance 15% rated on 1 to 4.
8. Training cum demonstration on "Hygienic preparation of smoke cured fish with COFISKI" - Visakhapatnam	89% rated on a scale of 8 to 10 and balance 11% rated on scale of 6 to 7.

D. Facilities

Facilities	Excellent	Very Good	Good	Moderate	Comments
Place of stay	56%	44%	-	-	Very comfortable
Food etc.,	11%	70%	19%	-	Tasty
Travel / transport	4%	74%	44%	-	Comfortable
Facilitators	15%	66%	19%	-	Friendly, knowledgeable

E. Additional over-all comments

- Group activity for *Action Plan*: Splitting up the participants into three groups and working on the *action plan* is a good idea. This helped the participants to play their roles in a group, strengthen and build up unity among the group members.
- The participants suggested to organize training programs to the farmers on topics related to fisheries (smoked fish, fresh water fish and fish rearing techniques), so that knowledge gained here can be implemented in their sub-divisions/state. The participants expressed that they are willing to undergo this kind of training programs to build or hone their skills.
- The participants expressed that they are carrying back the learning made and the best practices of fish-smoking process observed in the State (AP).
- The participants stated that though it is not possible for them to follow all these practices immediately due to various reasons (technical and financial), they will initiate suitable measures soon step-by-step to make their business ventures successful and sustainable.

Annexure 3: Consolidation of one line feedback

In addition to the detailed evaluation report that has been consolidated and discussed above, the participants were asked for a one-line feedback. Here is a gist of what participants had to say. We have only picked up some of the 27 responses to make it crisp. Feedback has been edited for the sake of brevity and clarity. Here are some excerpts:

"Many learnings... This training is a great opportunity for me."

Ms. Justina Shylla
Program Associate, MBDA

"Helpful for upliftment of our would be enterprises!"

Mr. Hiah Potham
Entrepreneur

"Very excited to have this great opportunity to learn the process of pre and post-harvest technology of fish processing, especially CoFiSKI at CIFT."

Mr. Budsuk Sungoh
Block Development Officer
Amlarem block, Meghalaya

"Learnt a lot about fish smoking in a kiln. Am ready to try out what I have learnt"

Ms. Alma Mulat
Entrepreneur

"Will develop a plan to implement these techniques in my sub-division to improve the people socio-economic status."

Mr. Phod Kassar
MIE Partner

"Encourages us to expand fish smoking to a greater extent."

Mr. Kolmen Pohshna
MIE Partner

"Highly productive and useful program for us."

Mr. Pari Suiting
Entrepreneur

"Gathered very useful information from Andhra to develop fish smoking activity in our state."

Mr. Selan
Fishery officer,
Amlaram Sub-division

Annexure 4: List of participants

MIE Partners				
S. No.	Name of the Participant	Village	Block	Contact No.
1	Ms. Alma Mulat	Umladkhur	Amlarem C & RD	9856993490
2	Ms. Yit Lamurong	Umladkhur	Amlarem C & RD	9856706696
3	Ms. Chillina Surong	Umladkhur	Amlarem C & RD	9856706696
4	Ms. Em Pohleng	Umladkhur	Amlarem C & RD	9856189512
5	Ms. Kongka Khyriem	Umladkhur	Amlarem C & RD	9856442016
6	Ms. Mulat Lamurong	Umladkhur	Amlarem C & RD	8416070640
7	Mr. Meyo Surong	Umladkhur	Amlarem C & RD	8131964227
8	Mr. Charles Sumer	Umladkhur	Amlarem C & RD	8731025938
9	Mr. Bimen Pohleng	Umladkhur	Amlarem C & RD	8729973219
10	Mr. Tol Mulat	Umladkhur	Amlarem C & RD	9856189512
11	Mr. Syiem Pohleng	Thangbuli	Amlarem C & RD	8974623588
12	Mr. Bui Tariang	Thangbuli	Amlarem C & RD	8014216758
13	Mr. Meyo Tariang	Thangbuli	Amlarem C & RD	8014211561
14	Mr. Henry Tariang	Thangbuli	Amlarem C & RD	8575426471
15	Mr. Chesterford Khyriem	Thangbuli	Amlarem C & RD	9402390006
16	Mr. Pari Suting	Moosakhia	Amlarem C & RD	8575464172
17	Mr. Shyllong Pohtam	Kudengrim	Amlarem C & RD	9862213299
18	Mr. Hiah Pohtam	Kudengrim	Amlarem C & RD	9862213299
19	Mr. Dapmon Syngkor	Syndai Mission	Amlarem C & RD	8014972880
20	Mr. Phot Kassar	Mupyut	Amlarem C & RD	9856042155
21	Mr. Ther Pohsiej	Mupyut	Amlarem C & RD	9863516517
Meghalaya Institute of Entrepreneurship (MIE) and Government Officials				
S. No.	Name of the Participant	Designation	Organization	Contact No.
1	Mr. Budsuk Sungoh	Block Development Officer	C&RD Block Amlarem, West Jaintia Hills, Meghalaya	9863012124
2	Dr. Hampaya Dune Manner	Programme Associate - MIE	Shillong, Meghalaya	9615731741
3	Mr. Selan Challam	Fishery Officer	Office of Fishery Officer Amlarem, Amlarem Sub-Division	9436300961
4	Ms. Justina Shylla	Programme Associate - MIE	Amlarem EFC, West Jaintia Hills, Meghalaya	9856103900
5	Ms. Memorial Bamon	APO	MGNREGA, Jowai, West Jaintia Hills, Meghalaya	9416086690
6	Mr. Kolmen Pohshna	Master Trainer	Pdengkarong, Amlarem, West Jaintia Hills, Meghalaya	-
