

Project Completion Report

on

New Product and Market Development for dry fish business



Submitted by

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Submitted to

**Feed the Future Bangladesh Aquaculture and Nutrition Activity
WorldFish Bangladesh**

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Project Brief

Project Title	New Product and Market Development for Dry fish Business	
Agreement Period	Start Date: 01-04-2022	End Date: 31-08-2023
	Extension Date: 01-10-2022	
Duration	17 Months [in months]	
Total Agreement Amount	US Dollar: USD 87,758	
Feed the Future 2 Page Bangladesh Aquaculture Activity Contribution	US Dollar: USD 39,637	Percentage: 45 %
Sub-grantee Contribution	US Dollar: USD 48,121	Percentage: 55 %
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Abbreviation

FtF	Feed the Future
BANA	Bangladesh Aquaculture and Nutrition Activity
SAT	Ms. Shah Amanath Traders
DF	Dry Fish
ZOR	Zone of Resilience
BDO	Business Development Officer
MF	Market Facilitator
DoF	Department of Fisheries
Kg	Kilogram
Fig	Figure

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1.0 Executive Summary

Ms. Shah Amanath Traders (SAT) had been implementing a project called “Dry fish business development through marketing and branding” in Cox’s Bazar since 1 March 2021- February, 2022. SAT had completed the all activities and provided deliverables on time. Ms. Shah Amanath Traders (SAT) is a renowned privately owned company which produces safe dry fish and does marketing the products. ‘New product and market development for a dry fish business’ project has been implementing by SAT since April 1, 2022 and will be ended August 31, 2023. SAT become a market leader of safe and healthy dry fish producer in dry fish industry. The activities are expected to achieve the goal of Feed the Future Bangladesh Aquaculture and Nutrition Activity to strengthen aquaculture market system with different value chain actors .Currently, market actors are getting the results or outputs from the project activities and they are made good progress in their respective business than the past. Some dry fish processors are established BMPs (Better Management Practices) partially, some are also develop sales center and started online marketing, etc. Dried fish marketing are saturated with products, decreased economies of scale and high competition. Lack of proper marketing plans has further complicated the situation for dried fish entrepreneurs. To address the issue a new project has been signed with SAT on April 1, 2022 and extended the activity to work on Process, preserve and marketing of safe dry fish products to August 31 2023. SAT developed new products like ready to cook (RTC) dry fish products of various fish species. Also RTE (Ready to Eat) dry fish powder from small fishes has been introduced and market tested. SAT popularized safe and healthy dry fish through advertising and promotions using social media like Facebook, YouTube, web application, bill board and website. A sales promotion event with different target markets was organized. SAT established an outlet in Dhaka to reached more customers and improve sales of safe dry fish products including new product lines. SAT conducted a research on effects of improved fish dryers on the quality and economics of dried fish products of Bombay duck, Ribbon fish and Pomfret in SAT factory premises with assistance of WorldFish. The project capacitated 80 dry fish entrepreneurs by providing training on business and market development and BMPs for the copying of safe dry fish business. SAT provided training to 59 dry fish stakeholders on RTC and RTE products for dry fish business men and also provided training to 20 fishermen on fish post-harvest handling for fishermen/boatmen. SAT capacitated 360 (men 314, women 46) dry fish producers on safe dry fish production technology and business development. SAT also conducted a training course on sorting, grading and cleaning for 374 women and 26 men dry fish workers. SAT organized 18 batches of awareness programs on safe dry fish production technology using organic chili and turmeric powder solutions where 540 (men-340, women-200) dry fish processors, workers and fishermen attended. SAT established 11 better management practice (BMP) facility for a dry fish processor and improved SAT’s BMP facilities for producing safe dry fish production. SAT conducted a training on quality fishmeal production for 20 men fishmeal producers at Naziarateak, Sadar, Cox’s Bazar. SAT also three demonstrated program on effects of improved fish dryers on the quality and economics of dried fish products of Ribbon fish in SAT factory premises with assistance of WorldFish where 60 dry fish producers (men 49 and women11) attended. During project period (April, 2022- August, 2023) SAT produced 88,598 kg dried fish and sold 79,498 kg which worth BDT 28,317,045. (At most 92% higher than last year that time) through online, offline and their distributors. By employing different strategies like advertisements through social media platforms such as Facebook boosting, webpage hosting, billboards, smart packaging and better management practices, SAT has increased its sales volume by 92% compared to last year. SAT observed the different days such as National fish week, Nutrition week and Youth day, 2022 and 2023. SAT also distributed leaflets containing nutrition message and dry fish recipes video.

2.0 Introduction

2.1 Background of the Project

In Bangladesh about 7.3 million people live in the coastal fishing villages whose livelihood in some way depend on coastal and marine fishing; processing and marketing. It is estimated that about 20% of the total marine catch has been dried round the year with the substantial production during October to April and, marketed both in domestic and international markets. (Ahmed et.al, 2007). Fish drying is the biggest fish processing activity in both value and volume in coastal region especially in Cox's Bazar. The market of dry fish is about 300 crore where 85% is marine fish species and the rest is freshwater fishes while about 15% of marine species were using as fishmeal (Belton et. al., 2014).

Current dry fish marketing are saturated with products, decreased economies of scale and high competition. Lack of appropriate marketing strategies, skills and knowledge in marketing have further complicated the situation leaving many dry fish entrepreneurs struggling to grow market share. Moreover dry fish business like any other commercial businesses requires adequate finances but are limited by poor sale of dry fish since mid-March 2019 as the movement of people and transportation of goods and incoming of tourists (tourists are one of the big markets of dry fish) in Cox's Bazar are restricted due to global pandemic COVID-19. The current situation in most of these dry fish is characterized by haphazard marketing strategies, lack of coherence, short- terms and lack of focus on dry fish marketing and branding strategy. Interestingly, there is no concerted effort for initiating and sustaining a strategic marketing culture and empowerment for the same. Reports and empirical research have also not highlighted the set of strategies in use and how they have influenced the performance of the dry fish business. This has made most dry fish producers in Cox's Bazar to be dormant as they lack proper and coherent marketing strategies.

The distribution networks of inputs and output markets; and the linkages among dry fish market actors yet to be improved/strengthened. The knowledge and skills of dry fish entrepreneurs yet to be improved on business and market development, packaging & labeling, marketing and branding of dried fish. Moreover, the knowledge and skills of labors especially women who are working in dry fish sub-sector have to be improved on handling, sorting, grading, cleaning, washing, processing and drying as the quality of finished dry fish largely depends on how the activities are done in every steps of dry fish production systems.

SAT has made significant progress in achieving project deliverables as per SGA, especially established a cold storage, adopted Best Management Practices, using organic solutions and smart packaging to protect dry fish from insect infestation; capacitated staffs on sorting, grading, gutting, cleaning and health hygiene which improved the quality of dry fish products of SAT. Currently, SAT become a market leader of safe and healthy dry fish producer in dry fish industry. The activities are expected to achieve the goal of Feed the Future Bangladesh Aquaculture and Nutrition Activity to strengthen aquaculture market system with different value chain actors.

2.2 Proposed Solution

The business ideas of the project is given below.

1. New product lines development and testing: New products like ready to cook (RTC) particularly dust and silt free (clean and washed), dressed and chopped dry fish products of various fish species. Also RTE (Ready to Eat) dry fish powder from small fishes will be development and market tested.
2. Promotion and Branding: SAT will popularize safe and healthy dry fish through advertising and promotions using social media like Facebook, YouTube, web application, bill board and website. A sales promotion event with different target markets will be organized.
3. Marketing and selling: SAT will establish an outlet in Dhaka or other suitable places to reach more customers and improve sales of safe dry fish products including new product lines. SAT will also sell their products to super shop in Dhaka or other potential city
4. Market linkages event: A market linkage events will be conducted along with dry fish producers, super shop, input retailers, distributors, trader and dealer, government organizations.
5. Research for profit analysis: SAT will be conduct a research on effects of improved fish dryers on the quality and economics of dried fish products of Bombay duck, Ribbon fish and Pomfret in SAT factory premises with assistance of WorldFish. SAT will also analyze BCR of different dry fish products.
6. Capacity building of dry fish entrepreneurs: The project will capacitated other the dry fish entrepreneurs by providing training on business and market development and BMPs for the copying of safe dry fish business. SAT will provide training on RTC and RTE products for dry fish business men and also provide training on fish post-harvest handling for fishermen/boatmen.

7. Communication materials development and distribution: SAT will publish communication materials such as video clips on various dry fish recipes prepared by chefs, Festoons, sticker, leaflet, etc. for wider dissemination of information on safe dry fish products.
8. SAT will be observe the different days such as National fish week, Nutrition week and Youth day, 2022. SAT will also distribute leaflets containing nutrition message and dry fish recipes.
9. SAT build capacity to dry fish processors on safe dry fish production using organic solution made of chili, turmeric powder and salt.
10. SAT to disseminate smart packaging and storage techniques among dry fish processors.
11. SAT will develop cold storage facility for fresh and raw fish by SAT
11. SAT provide training to dry fish workers on sorting, grading, cleaning and BMP.
13. SAT to aware dry fish processors and other stakeholders on safe dry fish production without using chemicals and pesticide.
14. SAT will capacitate to fish meal producers on quality fish meal production and marketing
15. SAT will demonstrate on effects of improved fish dryers on the quality and economics of dried fish products and modern storage facilities

2.3 Objectives of the Partnership

- To develop the new product dry fish powder and ready to cook (RTC)
- To establish an outlet in Dhaka or other suitable places to reach more customers and improve sales of safe dry fish products including new product lines
- To conduct a research on effects of improved fish dryers on the quality and economics of dried fish products of Bombay duck, Ribbon fish and Pomfret in SAT factory premises with assistance of WorldFish
- To promote safe and hygiene dry fish production, processing, preservation, storage, packaging and marketing of dry fish products.

2.4 Geographic Coverage

Dry Fish:

The project will be implemented in Cox's Bazar Sadar, Moheshkhali and Teknaf Upzilla of Cox's Bazar District and will sell products all over Bangladesh.

2.5 Project KPI and Budget Summary

The beneficiaries of dry fish processors will be 80 on safe and healthy dry fish business development and BMPs and provide training on fish harvesting handling for 20 fishermen. Also provide training on RTC and RTE product development for 60 dry fish entrepreneurs. Also provide training on safe dry fish production technology and business development for 360 dry fish processors, provide training on sorting, grading and cleaning for 400 dry fish workers and provide awareness program on safe dry fish production for 540 dry fish processors/fishermen. Provide training on fish meal production as fish feed ingredients for 20 fish meal producer. At least 20% will be women and 20% will be youth of the total dry fish beneficiaries.

Overall Key Performance Indicator (KPI) of this project has shared below:

Table-1:

Activity	KPI	Unit / Frequency	Targets	When	MOV
Recipes and video content development on dry fish products	# of video	Number	3	June, 22, August, 22	Video copy
Web application development for market promotion	# of application	Number	1	April'22	Web details Report
Advertising through Social media (Per Month-	# of Advertise	Number	6	April'22- Sep22	

10000)					
Training on Business & market development and BMP for dry fish processors/ entrepreneurs	# of training	Number	4	April'22- July'22	Training attendance sheet
	# of participants (UHC)	Number	80		
Training on new products (dry fish powder, RTC) for dry fish entrepreneurs/ processor	# of training	Number	2	July'22- Aug'22	Training attendance sheet
	# of participants (UHC)	Number	40		
Sales Promotion event (health-conscious people, various professionals)	# of event	Number	1	Aug'22	Training attendance sheet
Workshop on market linkage safe dry fish business development at Sadar Cox's Bazar	# of workshop	Number	1	May'22	Training attendance sheet
Training on fish post-harvest Management	# of training	Number	1	May'22	Training attendance sheet
	# of participants (UHC)	Number	20		
Training on safe dry fish production technology and business development	# of training	Number	18	November'22 – July'23	Attendance sheet
	# of participants (UHC)	Number	360		
Training on sorting, grading and cleaning for workers	# of training	Number	20	November'22 – July'23	Attendance sheet
	# of participants (UHC)	Number	400		
Awareness program for safe dry fish production	# of training	Number	18	October'22 – August'23	Attendance sheet
	# of participants (UHC)	Number	540		
Training on fish meal production as fish feed ingredients for fish meal producer	# of training	Number	1	August'23	Attendance sheet
	# of participants (UHC)	Number	20		

Sales promotion event	# of event	Number	1	March'23	
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Table-2: Budget Summary

Proposed budget for this activity

Summary Budget		Budget Ration		Budget (BDT)				
SL#	Activity	% of WF	% of SAT	Total cost	WF		Grantee	
					Cash	In kind	Cash	In kind
1	Direct Labor (Personnel)	42%	58%	1873745	1332055		1873745	
2	Staff Benefit	42%	58%	267,150	111004		156146	
3	Supplies, Furniture & Equipment's	28%	72%	420900	116650		304250	
4	Travel and Per diem	84%	16%	111800	93960		17840	
5	Activity/Program Costs - Services, training, workshops, products	50%	50%	4631880	2297930		2333950	
6								
Grand Total (BDT)				8637530	3951599		4685931	
Grand Total (USD Ex. Rate 84.3893)				87758	39637		48121	
Budget Ration					45%		55%	

Included herewith is an amount of investment by **Ms. Shah Amanath Traders** Partner will report to WorldFish as part of the regular financial reports, the actual amount of co-funding contribution for that period.

3.0 Project Performance

3.1 Outreach Summary

The project capacitated 80 dry fish entrepreneurs by providing training on business and market development and BMPs for the copying of safe dry fish business. SAT provided 39 to training on RTC and RTE products for dry fish business men and also provided 20 to training on fish post-harvest handling for fishermen/boatmen. The project has launched sales promotions of dry fish namely advertising, publicity, direct marketing, online marketing, establishment of distribution channel like distributor and retailers at different market places. Advertising has been done through 1 billboards which established at Kobita Moncha Beach Road, Baharchara, Cox's Bazar. A webpage namely www.organicdryfish.com has been web application developed for marketing of dry fish products displaying different dry fish products and prices and purchase order is taking through online. Moreover, advertising has been done on Facebook to increase sales of dry fish as these media are widely using by customers. SAT has reached 256437 people through social media and message sharing with 6740 people regarding products price, quality and service. The project has strengthened distribution networks of dry fish products all over the country by appointing 8 distributors and retailers or commission agents. The project organized a market linkage workshop where 28 (male-24 and female-4) participants attended the workshop and also organized a sales promotion event (health-conscious people, various professional) where 31 (male-24 & female-7) participant attended the event. The project support low cost fish dryer/elevated macha for producing safe dried fish. A total of 10,000 nos. small packets developed for promoting, marketing and branding safe dry fish to the consumers. SAT capacitated 360 (men 314, women 46) dry fish producers on safe dry fish production technology and business development. SAT also conducted a training course on sorting, grading and cleaning for 374 women and 26 men dry fish workers. SAT organized 18 batches of awareness programs on safe dry fish production technology using organic chili and turmeric powder solutions where 540 (men-340, women-200) dry fish processors, workers and fishermen attended. SAT established 11 better management practice (BMP) facility for a dry fish processor and improved SAT's BMP facilities for producing safe dry fish production. SAT conducted a training on quality fishmeal production for 20 men fishmeal producers at Naziarateak, Sadar, Cox's Bazar. SAT also three demonstrated program on effects of improved fish dryers on the quality and economics of dried fish products of Ribbon fish in SAT factory premises with assistance of WorldFish where 60 dry fish producers (men 49 and women11) attended. The project has developed some information, education and communication materials like 3 safe dry fish recipes video, 200 sticker, 2000 leaflets, 3000 label sticker etc. Ms. Shah Amanath Traders (SAT) observed the different days such as National fish week, Nutrition week and Youth day, 2022 and 2023. During project period (April, 2022- August, 2023) SAT produced 88,598 kg dried fish and sold 79,498 kg which worth BDT 28,317,045. (Al most 92% higher than last year that time).

3.2 Key Performance Indicators

Table-3: Project activity wise plan and achievement

Sl no	Program/Activity	Target	Achievement	Achievement (%)	Remarks
1	Staff recruitment and paper advertisement cost	1	1	100%	
2	Bi-monthly coordination meeting (3 Meeting)	8	8	100%	
3	Quarterly program progress review	5	5	100%	

	meeting (2 Meeting)				
4	Leaflet Printing and design	4000	4000	100%	
5	Sticker Printing and design	200	200	100%	
6	Label (encored sticker) printing for RTE product jar & packet	3000	3000	100%	
7	Recipes and video content development on dry fish products	3	3	100%	
8	Advertising through bill board to customers promote about dry fish products	1	1	100%	
9	Banner X stand to promote the safe dry fish products at Hotel in Cox's Bazar	10	10	100%	
19	Web application development for market promotion	1	1	100%	
11	Advertising through Social media (Per Month- 10000)	17	17	100%	
12	Web page hosting and domain charge	17	17	100%	
13	Training on Business & market development and BMP for dry fish processors/ entrepreneurs (80 processors in 4 batches, 20 persons in each batch)	4	4	100%	
14	Training on post-harvest management of fishermen/boat man	1	1	100%	
15	Low cost fish dryer/elevated Macha Development	1	1	100%	
16	Training on new products (dry fish powder, RTC) for dry fish entrepreneurs/ processors (40 Entrepreneurs in 2 batches, 20 person in each batch)	2	2	100%	
16	Sales Promotion event (health-conscious people, various professionals)	1	1	100%	
19	Workshop on market linkage safe dry fish business development at Sadar Cox's Bazar	1	1	100%	
20	Day Observation (National Fish Week)	1	1	100%	
	Effects of improved fish dryers on the quality and economics of dried fish products				
21	Loitya (Bombay duck) cost (450KG) (Experiment)	1	1	100%	
22	Churi (ribbon fish) Experiment	1	1	100%	
23	Rupchanda (Pomfret) (150KG) Experiment	1	1	100%	
24	Labor, research materials such salt, chilly, Turmeric powder etc.	3	3	100%	
26	Sample test (proximate composition and bacterial load) and courier	8	8	100%	

27	Machine purchase for safe dry fish powder making for ready to eat	1	1	100%	
28	Safe dry fish sales center rent in Dhaka/ Coxs Bazar	5	5	100%	
29	Small Packaging	10000	10000	100%	
30	Day Observation (Nutrition week and Youth day)	2	2	100%	
31	Training on safe dry fish production technology and business development	18	18	100%	
32	Training on sorting, grading and cleaning for dry fish workers	20	20	100%	
33	Awareness program on safe dry fish production (for dry fish processors and fishermen)	18	18	100%	
34	Training on new products (RTC-Balachao) for dry fish entrepreneurs	1	1	100%	
35	Demonstrate BMP facilities (For dry fish processors)	11	11	100%	
36	Demonstrate RTC facilities (For Balachao entrepreneurs)	5	5	100%	
37	Improvement of BMP for SAT	1	1	100%	
38	Establish Cold storage	1	1	100%	
39	Promote smart packaging using vacuum machine	2	2	100%	
40	Vacuum packet	5000	5000	100%	
41	Fish drier maintenance	3	3	100%	
42	Solar system maintenance for fish drier	1	1	100%	
43	Sales promotion event	1	1	100%	
44	Exhibition in fair	1	1	100%	
45	Day Observation (Nutrition week, International women's day and National fish week)	4	4	100%	
46	Facilitate safe dry fish testing	10	10	100%	
47	Demonstration on effects of improved fish dryers on the quality and economics of dried fish products and modern	1	1	100%	
48	Training on fish meal production as fish feed ingredients for fish meal producer	1	1	100%	
49	Submit advance events calendar and training plan (as applicable)	17	17	100%	
50	MEL data collection, processing and submission (as applicable)	440	440	100%	
51	Submit progress report (Target, Achievement and Deviation notes)	17	17	100%	
52	Success story collection and dissemination	3	3	100%	
53	Final Project Closeout report	2	2	100%	

3.3 Activity Performance

3.3.1 Staff recruitment

According to agreement SAT published advertisement in selected local newspaper for a staff recruitment and conducted an interview with the assistance of worldFish and appointed Marketing Executive.

3.3.2 Bi-Monthly Coordination Meeting

SAT organized 8 monthly coordination meetings at SAT office, Naziarateak, Sadar, Cox's Bazar. BD prepared a meeting schedule. The meeting agenda discussed the accomplished activities of the last two months and detailed planning for next two months. WorldFish respective personnel participated in such meetings periodically. A total of 61 participants (male 55, female 6 & youth 17) attended the meetings. Project focal person, Business development officer, Market facilitator, Marketing Executive, sales man and Technical Assistances attended the meeting.



Fig-1: Bi-Monthly Coordination meeting (P.C. Nisadul Islam, Manager SAT)

3.3.3 Quarterly Program Progress Review Meeting

SAT organized 5 quarterly meetings at SAT office within the project period to oversee the progress of the field activity and chalk out the next 3 months plan. A meeting agenda/schedule prepared before meeting. WorldFish respective personnel participate in the quarterly meeting. Total participants 40 (male 35, Female 5 & Youth 14) attended the meetings. In consultation with WorldFish, necessary modification made based on field progress and challenges. Activity wise target and achievement that all are prepared a plan of next quarter. Besides, a financial budget review presented by Business Development Officer for better achievement of the project burn



Fig-2: Quarterly Program Progress Review meeting (P.C. kaychar Hossein, TA, SAT)

3.3.4 Information Dissemination and awareness building

3.3.4.1 Leaflet Printing and design:

SAT has printed 3000 leaflet on safe dried fish business promotional. SAT also developed 2500 leaflets information, education and communication materials like leaflet. The IEC materials developed in dry fish production technology, dry fish business development/ management aspects. These materials used during different trainings, publicity event, national fish week, meetings and workshops.



3.3.4.2 Sticker Printing and Design:

SAT has printed 200 Sticker on safe dried fish business promotion.



Fig-4: Sticker (P.C. Mahub Alam, BDO)

3.3.4.3 Label (encored sticker) printing for RTE product jar & packet:

SAT has printed 3000 Label (encored sticker) printing for RTE product jar & packet.



Fig-5: Label (encored sticker) (P.C. Mahub Alam, BDO)

3.3.4.4 Recipes and video content development on dry fish products:

SAT has taken 3 video on recipes video content development on safe dry fish product which link here <https://drive.google.com/file/d/163z9BpDWUC6LFIzTtL4bV9aaKRFadUhr/view?usp=sharing>

3.3.5.1 Advertising through bill board to customers promote about dry fish products:

SAT a bill board for advertising to customers promote about dry fish product. SAT this bill board setup location in Kobita Moncha Beach Road, Baharchara, Cox's Bazar.



Fig-6: Advertising through bill board

3.3.5.2 Banner X stand to promote the safe dry fish products at Hotel in Cox's Bazar

SAT has printed 10 banner with x stand to promote the safe dry fish product at hotel and super shop in Cox's Bazar.



Fig-7: Banner X stand (P.C. Mahub Alam, BDO)

3.3.5.3 Web application development for market promotion
 SAT has a web application development for market promotion. The following services are performed in the web application – Created a PHP language based application, which will create a chain network between our company and seller, reseller, commission agent and other stakeholder. Mainly create a solution for stock maintenance and point of sale (POS). It provide easy access stock report, sales report and customer information. Every authorized person can login on this application with their unique ID and Password.

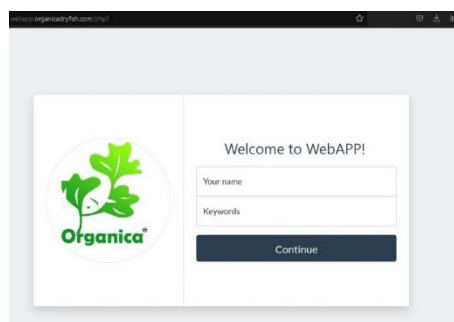


Fig-8: Web application development (P.C. Mahbub Alam, BDO)

3.3.5.4 Advertising through Social media
 Advertising has been done on Facebook to increase sales of dry fish as these media are widely using by customers. SAT has reached 526710 people through social media and message sharing with 12928 people regarding products price, quality and service.

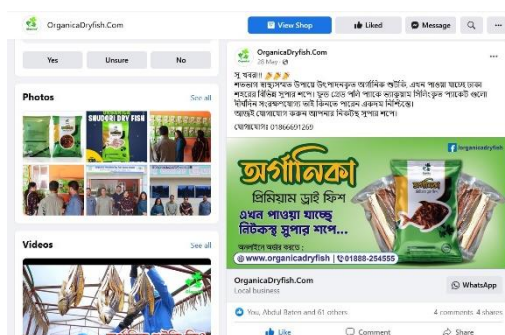


Fig-9: Advertising through social media

3.3.5.5 Upgradation of website and Web page hosting
 SAT has upgraded their existing website where their organizational profile, products quality, product diversification and price etc. information's are uploaded. The website domain name is Shootlibazar.com has been changed new web address which name www.organicadryfish.com.

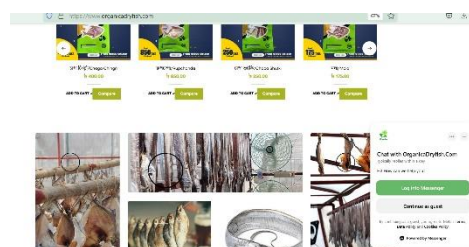


Fig-10: Web page hosting & domain charge

3.3.6 Training on Business & market development and BMP f
 processors in 4 batches, 20 persons in each batch)

SAT organized 4 batches training on business and market development and BMP for dry fish processors/ entrepreneurs in Sadar, Cox's Bazar. The major topics are business definition, importance of business planning and elements of a business like Production, marketing, branding, management etc. where a total of 80 participants (male-48 & Female-32) attended the training.

table – 3

Date	Place	Male	Female	Total	Age Group			
					Male		Female	
					15-29 years	30+ years	15-29 years	30+ years
28.04.2022	NMSS Hall Room	20	0	20	6	14	0	0
16.05.2022	NMSS Hall Room	05	15	20	0	5	6	9
30.06.2022	NMSS Hall Room	13	07	20	5	8	3	4

28.07.2022	NMSS Hall Room	10	10	20	3	7	2	8
Total		48	32	80	14	34	11	21

The major topics include safe dry fish production technology and dry fish business, packaging, marketing and also demonstrated how to produce safe dry fishes using different fish drying technologies such as organic method, improved fish drier and net macha technique to the participants.



Fig-11: Training on Business and market Development and BMP for dry fish entrepreneurs (P.C. Nisadul Islam, Manager SAT)

3.3.7 Training on Post-harvest management of fishermen/boat man

SAT organized 1 batch training on post-harvest management of fishermen/boat man in Sadar, Cox’s Bazar. The major topics are Post-harvest wastage of fish: In reducing the post-harvest wastage of fish, the following 3 issues should be specially taken care of. Namely- time, temperature and care method. Good hygiene practice for fishing boats- Personal Hygiene Requirements and Fishing Boats Hygiene Requirement is discussed. Total of 20 participants (male-20, Female-0 & Youth 3) attended the training. This training resource parson Mr. Md. Tofiqul Islam, Regional Fishers Officer.



Fig-12: Training on Post-harvest management. P.C. Mahub Alam (BDO)

Tabel-4

Date	Place	Male	Female	Total	Age Group			
					Male		Female	
					15-29 years	30+ years	15-29 years	30+ years
22.06.2022	NMSS Hall Room	20	0	20	3	17	0	0
Total		20	0	20	3	17	0	0

3.3.8 Low cost fish dryer/elevated Macha Development

SAT has established low cost elevated macha development which are using for producing safe dried fish. SAT has produced 1250 kg dried fish through using the elevated macha.



Fig-13: Low cost elevated macha.
P.C. Mahbub Alam (BDO)

3.3.9 Training on new products (dry fish powder, RTC) for dry fish entrepreneurs/processors

SAT organized 2 batches training on new products (dry fish powder, RTC) for dry fish entrepreneurs/processors in Sadar, Cox’s Bazar. The major topics are new products such as dried fish powder, ready to cook (RTC) are discussed in detail. Why they are needed, why they should be done, who will eat them, how business development will happen if they are done, etc. are discussed. The hygiene to be followed in making dried fish powder and ready to cook (RTC) and in the practical session all the trainees are shown how to dry fish powder through the machine. Total of 39 participants (male-31, Female-8 & Youth 12) attended the training.



Fig-14: Training on new product (dry fish powder, RTC) for dry fish entrepreneurs. P.C. Mahbub Alam (BDO)

Tabel-4

Date	Place	Male	Female	Total	Age Group			
					Male		Female	
					15-29 years	30+ years	15-29 years	30+ years
30.07.2022	NMSS Hall Room	17	3	20	2	15	3	0
23.08.2022	NMSS Hall Room	14	5	19	3	11	2	3
Total		31	8	39	5	26	5	3

3.3.10 Sales Promotion Event (health-conscious people, various professional)

SAT has organized a sales promotion event in Sadar, Cox’s Bazar on September 10, 2022. A total of 31 (male-24 and female-7) participants attended the event. Recommendations are new products in the market, Arrange for improved packaging, Promote safe and healthy dry fish, to create awareness about the nutritional value of dry fish, conduct activities to prevent the use of pesticides, increase the use of advanced technology, Reduce dependence on nature, to make arrangements for obtaining safe dry fish at the consumer level, Online platform to arrange safe dry fish sales, Arranging exhibition recipes and All dried fish producers must produce safe and poison free dried fish. All dried fish producers and traders have to undergo a registration process. SAT that’s product distribute sales center in Cox’s Bazar and Dhaka, Online distribute Facebook page organicdryfish.com



Fig-15: Sales Promotion Event
(P.C. Zihadul Islam, MF)

and web page www.organicdryfish.com .

3.3.11 Workshop on market linkage safe dry fish business development at sadar Cox's Bazar

SAT has organized a business development workshop in Sadar, Cox's Bazar. A total of 28 (male-24 and female-4) participants attended the workshop. Recommendations are quality of raw fish, Processing of raw fish in unclean places, Lack of adequate knowledge of the staff involved in the production of dried fish, Dependence on nature, Lack of storage facilities at specified temperatures, not knowing the difference between good and bad dry fish, lack of direct connection between producer and buyer, there is no fixed price for dried fish, Lack of market management, Customers come to buy fish and find out which fish is cheaper, they do not want to buy good fish with price. To create awareness about the nutritional value of dry fish, establish safe and healthy dry fish outlets, Increase the use of advanced technology.



Fig-17: Workshop on Market Linkage
(P.C. Zihadul Islam, MF)

3.3.12 Day Observation (National Fish Week)

The 'National Fisheries Week-2022' celebrated across the Cox's bazar district today (24 July 2022) aiming to make the people aware to increase production of safe fish. The week observed till with the theme of 'Nirapad Machhea Varbo Desh, Bangabandhurer Bangladesh'. On the second day of the week, on July 24 at 10:00 am, Presided by Deputy Commissioner Md. Mamunur Rasid and District Fisheries Officer Md. Bodruzzaman a rally held with banner, festoon on the day at DC office to Lal Digir par. Then release fish fry in the Lal digi pond at 10:30 am. In addition to the Department of Fisheries, the fish week was attended by WorldFish, M/s Shah Amanat Traders, Cox's Bazarshop.com, Mukti Cox's Bazar, Coast Foundation and others. The ZOR team and the partners participated in the celebration of the National Fish Week 2022 with DoF, BFRI, local administration, fisher's cooperatives, fish



Fig-19: Day Observation (National Fish Week 2022)
(P.C. Mahubul Alam, BDO)

farmers and other national and international organizations in Cox's Bazar district.

SAT campaigned with festoons at various places like DoF, DC office, fish fry release sites and attended the all programs

3.3.13 Effects of improved fish dryers on the quality and economics of dry fish products

3.3.13.1 Loittya (Bombay duck) cost (450 kg) Experiment

Three separate experiments will be carried out with three different fish species such as Ribbon fish, Bombay duck and Pomfret. These fishes will be dried in improved fish dryer with solar panel fan, in improved fish dryer with electric fan and in traditional method i.e. in the open air using bamboo rack/bars to determine moisture levels in fish and its gradual changes over time in different treatments which ultimately focus in respect to identify the best dried fish production systems including efficiency of these fish dryers. Three different dried fish production systems will be tested at Najirartek by Shah Amanath Traders (SAT). One control (C_1) and two treatments viz. T_1 and T_2 will be in the experiment. Three treatments of improved fish dryer with solar panel fan, improved fish dryer with electric fan and traditional method of drying in the open air using bamboo racks will be in the experiments. In all the experiments, each treatment and control will have a replication due to budgetary constraints. The experiments will be repeated more two times which will be considered as replications R_2 and R_3 for statistical analysis.

Experimental 1

C_1 = Loittya (Bombay duck) drying in traditional method (bamboo bar/rack in open air)

T_1 = Loittya sun drying with solar panel fan in improved dryer

T_2 = Loittya sun drying with electric fan in improved dryer

SAT conducted an experiment of Bombay duck fish on May

21-26, 2022. The production cost of 1 Kg dried fish for improved fish drier with solar panel, improved fish drier with electric fan and traditional method is 812 BDT, 770 BDT and 854 BDT respectively.



Fig-20: Experiment on Bombay duck (Loitta)
(P.C. Mahbub Alam, BDO)

3.3.13.2 Churi (Ribbon fish) cost Experiment

Experiment 2

C_2 = Churi (Ribbon fish) drying in traditional method (bamboo bar/rack in open air)

T_3 = Churi sun drying with solar panel fan in improved dryer

T_4 = Churi sun drying with electric fan in improved dryer

SAT conducted an experiment of Ribbon Fish on September 06-16, 2022. The production cost of 1 Kg dried fish for improved fish drier with solar panel, improved fish drier with electric fan and traditional method is 998 BDT, 1000 BDT and 1046 BDT respectively.



Fig-21: Experiment on Ribbon fish (Churi)
(P.C. Mahbub Alam, BDO)

3.3.13.3 Rupchanda (Pomfret) cost Experiment

Experiment 3

C₃= Rupchanda (Pomfret) drying in traditional method (bamboo bar/rack in open air)

T₅ = Rupchanda sun drying with solar fan in improved dryer

T₆ = Rupchanda sun drying with electric fan in improved dryer

SAT conducted an experiment of Pomfret on April 4-10, 2022. The production cost of 1 Kg dried fish for improved fish drier with solar panel, improved fish drier with electric fan and traditional method is 3120 BDT, 3086 BDT and 3075 BDT respectively.



Fig-22: Experiment on Pomfret (Rupchanda)
(P.C. Mahbub Alam, BDO)

3.3.14 Machine Purchase for safe dry fish powder making for Ready to Eat

SAT purchased 1 machine and facilities for safe dry fish powder making for ready to eat to maintain products quality and continue safe dry fish powder making.



Fig-23: Safe dry fish powder making machine
(P.C. Mahbub Alam, BDO)

3.3.15 Safe Dry fish sales center rent in Dhaka/Cox's Bazar

SAT has rented a sales and distribution center rent in Dhaka. Address:107/1-A khilgaon, 16no Godown Bazar Road, Dhaka-1219. Which effective form May 2022. This sales center rent is fixed at BDT 10,000 per month. This sales center helpful to sell the product more and reached more customers.



Fig-24: Sales Center Decoration
(P.C. Zihadul Islam, MF)

3.3.16 Small Packaging

SAT printed a total of 10000 nos. packets has been developed for promoting safe dry fish to the consumers. The packets are used for smart packaging through vacuum machine.



Fig-25: Packaging

3.3.17 Day Observation (Nutrition week and Youth day)

SAT has observation National Nutrition Week 2022 on April 23-29, 2022 and International Youth Day 2022 on August 12, 2022 association with the govt. department. SAT is celebrating National Nutrition Week 2022 in coordination with the District Civil Surgeon office. On the first day of the celebration, food items were distributed among the needy families. In addition, on the occasion of National Nutrition Week 2022, a discussion meeting on nutrition was organized with adolescents. Cox's Bazar District Civil Surgeon, District Education Officer, District Family Planning Officer, Headmistress of Cox's Bazar Government Girls High School, UNICEF, World Fish and SAT representatives and teenagers from various schools and colleges were present on the occasion.

M/s Shah Amanat Traders International Youth Day 2022 has been celebrated with young boys and girls at Nazirartek in Cox's Bazar district. On the day SAT organized a rally and discussion program. This program total participant 41 (man 24, female 17 and Youth 37).



Fig-26: Day Observation (Nutrition week & Youth Day) (P.C. Mahbub Alam, BDO)

3.3.18 Training on safe dry fish production technology and business development

SAT has organized 18 batches of training sessions on safe dry fish production technology and business development. SAT selected 360 processors from Naziarartek, Kutubdia para, Nuniarchara, Khuruskul, Chofoldondi in Cox's Bazar sadar upazila, Moheshkhali Upzilla and Teknaf Upzilla in Cox's Bazar. A total of 360 participants (Male 314 & Female 46) attended the training. The major topics include safe dry fish production technology and dry fish business, packaging, marketing and also demonstrated how to produce safe dry



technology and business development (P.C. Yeasin Arafat, ME)

fishes using different fish drying technologies such as organic method, improved fish drier and net macha technique to the participants.

3.3.19 Training on sorting, grading and cleaning for dry fish workers

SAT has organized 20 batches of training sessions on sorting, grading and cleaning for workers. A total of 400 participants 400 (Male 26 & Female 374) attended the training.



Fig-28: Training on sorting, grading and cleaning for workers (P.C. Yeasin Arafat, ME)

3.3.20 Awareness program for safe dry fish production (For dry fish Processors and fishermen)

SAT organized 18 batches awareness program on safe dry fish production for dry fish processors and fishermen in Sadar, Cox's Bazar. A total of 540 (men- 340, women-200) participants attended the meeting.



Fig-29: Awareness program on safe dry fish production (P.C. Ehasanul Haque, ME)

3.3.21 Training on new products (RTC- Balachao) for dry fish entrepreneurs

SAT conducted a day long training on new products of Ready to Cook(RTC) Balachao for dry fish entrepreneurs at Naziarateak Matshajibi Samity Office. A total of 20 women participants attended the training. The trainer demonstrated the whole Balachao cooking process for participants.



Fig-30: Training on new products (RTC-Balachao) (P.C. Mahub Alam, BDO)

3.3.22 Demonstrate BMP facilities and RTC

As usually dry fish processors are doing cleaning, washing, sorting in the unhygienic floor which consist bamboo mat. So this project has planned to establish better management practices such as cemented floor for sorting, grading, washing and cleaning. These steps are the most important for best management practices (BMP). Project has established a better management practices (BMP) facilities for dry fish processors. Other dry fish processors will be copying the BMP facilities. The BMP area is 20x10 feet. The dry fish processors details is given below-



Fig-31: Demonstrate of BMP facilities
(P.C. Mahbub Alam, BDO)

Tabel-5

Sl no	Name	Address	Mobile no	Remarks
1	Humayun Kabir	Najirartek	01891154220	
2	Jamal Uddin	West Kutubdiapara	01826142382	
3	Md. Sarwar Alam	Middle Kutubdiapara	01832246966	
4	Lutfur Rahaman	Middle Kutubdiapara	01814111477	
5	Md. Faruk	Middle Kutubdiapara	01704614765	
6	Hasnat Md. Younus	Middle Kutubdiapara	01834844095	
7	Abdul Jabbar	Middle Kutubdiapara	01819971137	
8	Mohammad Jaker	North Kutubdiapara	01812959336	
9	Sayed Nur	Middle Kutubdiapara	01814429050	
10	Roji Ullah	Middle Kutubdiapara	01815597952	
11	Jomir Uddin	Middle Kutubdiapara	01866462895	

RTC report:

Balachao is a type of ready to eat food. Many people call it Bharta. This is basically a mixture of prawns, onions, garlic, dry chilies and spices. It is loved by everyone from young to old. There is no cooking hassle in it. Fried made with Shrimp dry fish is great served with hot rice. You can add chopped coriander leaves, chopped mint leaves, chopped green chilies, pure mustard oil to increase the taste. Balachao is a popular food of Chittagong and Cox's Bazar. But it is more prevalent outside our country. Therefore SAT planned to support some dry fish entrepreneurs to produce RTC products particularly



Fig-32: Demonstrate of RTC facilities
(P.C. Yeasin Arafat, ME)

Balachao. As per planned M/S Shah Amanat Traders provided some instruments to 5 trained women dry fish stakeholders for producing Balachao The instruments are- gas stove, gas cylinder, korai, sieve, plate, khanti, chakni, cutting board, pot etc. The recipients details are given below –

Tabel-6

Sl no	Name	Address	Mobile no	Remarks
1	Kulsuma Begum	Mostakpara	01887656412	
2	Ajufa Akter	North Kutubdiapara	01890665890	
3	Hosneara Akter	West Kutubdiapara	01878327337	
4	Towhid Akter	North Kutubdiapara	01328968045	
5	Kahinur Akter	Middle Kutubdiapara	01834668395	

3.3.23 Facilitate preservation and smart packaging: Cold storage, smart packaging, fish drier maintenance, solar system maintenance

Cold storage:

Major problems associated with dry fish products is the loss of dry fish due to infestation of the products by the blow fly and beetle larvae and the indiscriminate use of various pesticides during production and storage of dry fish products to avoid insect infestation. The dry fish processors in Cox’s Bazar are suffering due to lack of storage facilities for fresh and dry fish to avoid spoilage and to maintain the quality as safe and healthy for human consumption. Therefore, it is an opportunity to promote safe and hygiene dry fish production, processing, preservation, storage, packaging and marketing of dry fish products. Ms. Shah Amanath Traders (SAT) is working with many dried fish processors and market actors in Cox’s Bazar to develop safe dried fish products on food safety issues and value-added products suggesting proper safe dry fish production technology, marketing and branding strategies, finally improved access to diverse and nutritious foods. Therefore, SAT has planned to established a cold storage by the new product and market development of dry fish business project. As per planned SAT has purchased and established a cold storage (freezing container) at SAT factory premises , Nazirarteak, Sadar, Cox’s Bazar. The capacity of the freezer is 12-14 and 20-22 MT of dried fish and raw fish respectively. SAT has stored their 7.3 MT dried fish and 12.8 MT raw fish while 12.8 MT dry fish products of other dry fish processors stored in the freezer for the last seven months. SAT was able to earn BDT 947,435 equivalent to USD 8,797 selling stored good quality dry fish products and renting storage facility to other dry fish processors



Fig-33: Cold storage
(P.C. Mahbub Alam, BDO)

Smart packaging:

As per planned , SAT has purchased two vacuum machine and distributed among two dry fish processors group, Namely Joynal Abedin, Naziaratek Motshajibi Somobay Somity Ltd., General Secretary, Sadar , Cox’s bazar and Abchar Kamal, Rastarpara, Khuruskul, Sadar, Cox’s Bazar. The two groups have been selected based below criteria-

1. The dry fish entrepreneurs/ processors should be permanent resident in the locality

2. Dry fish entrepreneurs must have owned or leased land for fish drying facilities
3. Having capable to sell minimum 7-10 MT dry fish /year
4. The entrepreneurs should be dependent on their livelihood through dry fish activities
5. The entrepreneurs must be follow WorldFish and SAT instruction/advice and commitment to produce and sell safe dry fish
6. Having capacity to sell safe dry fish among customers
7. Having facilities to install the vacuum machine with electricity
8. The dry fish processors/businessmen must be interested in WorldFish BANA approach and has willingness on cost sharing approach if necessary
9. The dry fish entrepreneurs should have experience minimum 2-3 years in safe dry fish business.
10. Having experience on safe dry fish production technology and storage system of dry fish.



Fig-34: Smart Packaging of vacuum machine
(P.C. Mahub Alam, BDO)

Solar Drier:

Solar dryer is an environment friendly technology operated by renewable energy where sufficient heat is generated from the sunlight to dry fishes. There are several designs of solar fish dryers. However, to construct solar dryer for large-scale drying of fish, 4-6 racks are covered by polythene. To expel out hot and moistured air from inside four or more fans run by solar cell are used. High heat and air flow help fish to dry quickly. Fish can be dried very quickly in the solar drier. The products are dust and sand free as fish drier is covered by polythene. Due to these benefits project has set up solar panel for drying the fishes at SAT fish drier since 2022. But due to Cyclonic Storm Sitrang has affected at Nazirartek shutki Polli since 2022 and also destroyed in solar system of SAT. Therefore, project has planned to repair the solar system. As per planned SAT has repaired the solar system and replaced IPS of Solar system for smooth dry fish production.



Fig-35: Solar Drier
(P.C. Mahub Alam, BDO)

3.3.24 Sales promotion event

As per planned, SAT organized a sales promotion event at Hotel Al Goni, Sadar Cox's Bazar on March 18, 2023. Dr. Sofiqur Rahaman, PSO, BFRI, Cox's



Fig-36: Sales promotion event
(P.C. Mahub Alam, BDO)

Bazar; Md. Tofiqul Islam, RFO, DoF, SM Nurun Nobi , ZOR Coordinator, WorldFish ; Dr. Abdul Baten Bhuiyan, Aquaculture Specialist, WorldFish; Masuda Morserda Eybi, Head Teacher, Cox’s Bazar Govt. Girls High School; Md. Shah Alam, Nutrition Specialist, UNICEF; Mahbub Alam, Business Development Officer; Mohammed Aman Ullah, Project Focal Person; Project staffs, NGO representatives, Advocates, Doctors, Teacher, local Journalist and dry fish entrepreneurs were attended the meeting. A total of 32 (male-29 and female-3) participants attended the event.

3.3.25 Exhibition in fair

An exhibition on safe dry fish production technology was organized by M/S Shah Amanat Traders at National Entrepreneurs Conference 2023, Product Exhibition Fair, Cox’s Bazar Cultural Center, Cox’s Bazar from 18th January 2023 to 20th January 2023. The Company implemented by New product and Market Development for Dry fish Business project with the Funded by USAID and technical supported by WorldFish.

The main objective of the exhibition was to show how safe dry fish production and introduce the latest technology of the dry fish to all. Dr. Abdul Baten Bhuiyan, Aquaculture Specialist, WorldFish, were present as guests at the exhibition.



Fig-37: Exhibition on safe dry fish production (P.C. Eahsanul Haque, ME)

SAT demonstrated Elevated macha and fish drier technology in the exhibition.

3.3.26 Day Observation (Nutrition Week, International Women’s Day and National Fish Week):

National Nutrition Week, 2023

National Nutritional Week, 2023 was observed on June 7- June 13, 2023. SAT observed the national nutrition week collaboration with Civil Surgeon Office, Cox’s Bazar. A discussion meeting was held at Civil Surgeon Office, Cox’s Bzar. Civil Surgeon Officer Dr. Mahbubur Rahman presided over the opening ceremony. He presented overall nutritional information of Cox's Bazar district. and other departments discuss what activities they can undertake this Nutrition Week. Besides, he thanked local NGOs, INGOs and organizations working on nutrition value for their hope in this work and suggested some more activities.



Fig-38: National Nutrition Week 2023

National Fish Week, 2023

National Fish Week was observed on July 24-30, 2023. SAT also celebrated the week with collaboration DOF, Cox’s Bazar. SAT participated rally and discussion meeting on July, 25, 2023.



Fig-39: National Nutrition Week 2023 (P.C. Ayasin Arafat, ME)

International Women's day

Department of Women Affairs celebrated International Women's day on March 8, 2023. SAT also observed the day with collaboration department of Women affairs, Cox's Bazar. SAT participated the rally with other organization.



Fig-40: National Nutrition Week 2023
(P.C. Ayasin Arafat, ME)

3.3.27 Testing dry fish quality (safety issue)

As per planned SAT sent 10 samples to Institute of Public Health, National Food safety Laboratory, Mohakahli, Dhaka. SAT sent 5 samples to the laboratory on April, 2023 for testing organochlorine pesticide such as Heptachlor and DDT. The dried fish samples are Ribbon fish big and small, Bombay duck, Gold spotted and Mola. SAT also another 5 dried fish samples submitted to IPH laboratory on August, 2023 and samples were Ribbon fish big and small, Bombay duck, small shrimp and Mola. No pesticides had been detected in the samples.



Fig-41: Sample Dry fish
(P.C. Mahub Alam, BDO)

3.3.28 Demonstration on effects of improved fish dryers on the quality and economics of dried fish products and modern storage facilities

Ms. Shah Amanth Traders organized three events on demonstration of effects of improved fish dryer on the quality and economics of dried fish products and modern storage facilities for dry fish processors on August 21, 23 and 24 at SAT factory premises. Before conduct the demonstration experiment WorldFish ZOR Coordinator and POC prepared experiment design and oriented to BDO, SAT for conducting the experiment. SAT prepared a schedule for conducting the experiment. As per plan, SAT had purchased 680 Kg Ribbon fish for the demonstration. A total of 60 dry fish processors



Fig-42: demonstration of effects of improved fish dryer on the quality and economics of dried fish products and modern storage facilities
(P.C. Mahub Alam, BDO)

participated the demonstration events. Aquaculture Specialist and BDO, SAT facilitated the demonstration the safe dry fish production technology and modern storage facilities to dry fish processors.

Objectives of the experiment and demonstration

The ultimate objective of this experiment was to develop a fish dryer using solar panel considering the high demands of the dried fish producers for a device by which they can produce safe dry fish products with minimal energy consumption. The present investigations are set out to (a) educate the dry fish processors about the effects of improved fish dryers on the quality and economics of dried fish products of Ribbon fish, *Trichiurus lepturus* at Najirartek, Cox's Bazar, Bangladesh. The specific objectives are as follows:

- 1) To educate the dry fish processors on the effect improved fish dryers using solar and electric fans.
- 2) To identify an improved fish dryer with minimal energy consumption and costs for dry fish processors.
- 3) To assess the quality of dried fish products that produced using improved dryers of solar and electric fans.
- 4) To recommend suitable improved fish dryers in sun drying with its efficiency, drying time of Ribbon fish.
- 5) To disseminate the safe dry fish production technology and modern storage facilities among other dry fish processors



Fig-43: demonstration of effects of improved fish dryer on the quality and economics of dried fish products and modern storage facilities (P.C. Mahub Alam, BDO)

3.3.29 Training on fish meal production and marketing as fish feed ingredients for fish meal producer

SAT organized a day long training on fishmeal production for fishmeal producers on August 14, 2023 at Naziarartek matsajibi Somity, Sadar, Cox's Bazar. A total of 20 male fishmeal producers attended the training. Before training Business development officer prepared schedule with consultation POC and ZOR coordinator. POC,SAT facilitated to prepare the training manual on fishmeal production technology and marketing. The major topics covered were basic concept of fishmeal. Fishmeal requirement for feed production, nutritional composition, raw materials requirement, merits of quality fish meal



Fig-44: Training on fish meal production and market as fish feed ingredients for fish meal producer (P.C. Mahub Alam, BDO)

production, storage of raw and dried fish meal technology, fish meal production technology, marketing and advertisement etc. The participants were shared their experience how to produce the fishmeal production. Dr. Baten, Aquaculture Specialist and ZOR Coordinator facilitated the training.

4.1 Key Lessons Learnt

More boosting through social media, more sales

4.2 Challenges

In some cases of other dry fish producers very difficult to produce 100% safe dry fish by using fish driers and macha due to high production cost. Raw materials shortage especially fish ban period of the sea (May 20- July 23, 2022). Due to Govt. ban period, dry fish producers are not available in their locality. Due to rough weather, dry fish production has been hampered and fishes are not available. Due to storm Sittrang and Mokka, dry fish sector has been collapsed and damaged dry fishes during sittrang.

4.3 Key Innovation of the Project

This business model has brought innovation in the quality aspect of dry fish production in Cox's Bazar. Project has established better management practices section for producing safe dried fish and smart packaging through vacuum machine is a new innovation of the project. Capacity building of dried fish women workers on sorting, grading and cleaning is a new intervention and practicing for producing safe dried fish. The cold storage set up is great innovation for this project.

4.4 Impact and Sustainability of the Intervention/ Business Model

The business ideas of the project is given below.

1. New product lines development and testing: New products like ready to cook (RTC) particularly dust and silt free (clean and washed), dressed and chopped dry fish products of various fish species. Also RTE (Ready to Eat) dry fish powder from small fishes will be development and market tested.
2. Promotion and Branding: SAT will popularize safe and healthy dry fish through advertising and promotions using social media like Facebook, YouTube, web application, bill board and website. A sales promotion event with different target markets will be organized.
3. Marketing and selling: SAT will establish an outlet in Dhaka or other suitable places to reach more customers and improve sales of safe dry fish products including new product lines. SAT will also sell their products to super shop in Dhaka or other potential city
4. Market linkages event: A market linkage events will be conducted along with dry fish producers, super shop, input retailers, distributors, trader and dealer, government organizations.
5. Research for profit analysis: SAT will be conduct a research on effects of improved fish dryers on the quality and economics of dried fish products of Bombay duck, Ribbon fish and Pomfret in SAT factory premises with assistance of WorldFish. SAT will also analyze BCR of different dry fish products.
6. Capacity building of dry fish entrepreneurs: The project will capacitated other the dry fish entrepreneurs by providing training on business and market development and BMPs for the copying of

safe dry fish business. SAT will provide training on RTC and RTE products for dry fish business men and also provide training on fish post-harvest handling for fishermen/boatmen.

7. Communication materials development and distribution: SAT will publish communication materials such as video clips on various dry fish recipes prepared by chefs, Festoons, sticker, leaflet, etc. for wider dissemination of information on safe dry fish products.

8. SAT will be observe the different days such as National fish week, Nutrition week and Youth day, 2022. SAT will also distribute leaflets containing nutrition message and dry fish recipes.

9. SAT build capacity to dry fish processors on safe dry fish production using organic solution made of chili, turmeric powder and salt.

10. SAT to disseminate smart packaging and storage techniques among dry fish processors.

11. SAT will develop cold storage facility for fresh and raw fish by SAT

11. SAT provide training to dry fish workers on sorting, grading, cleaning and BMP.

13. SAT to aware dry fish processors and other stakeholders on safe dry fish production without using chemicals and pesticide.

14. SAT will capacitate to fish meal producers on quality fish meal production and marketing

15. SAT will demonstrate on effects of improved fish dryers on the quality and economics of dried fish products and modern storage facilities

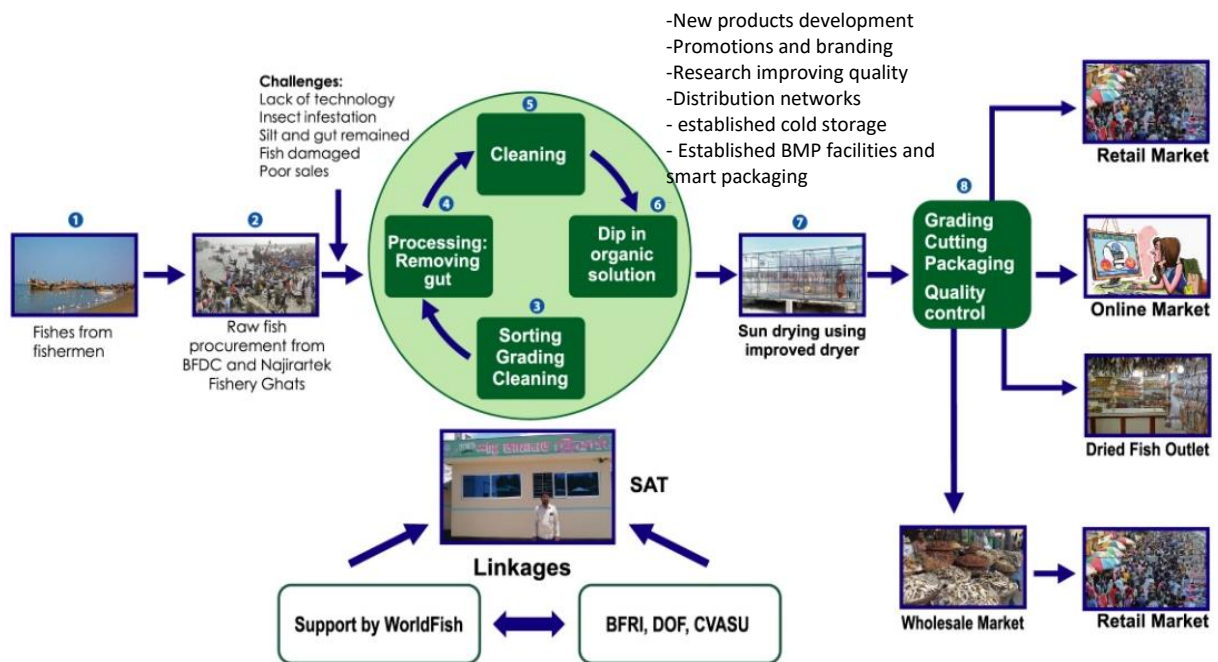


Fig 45: Business Model

4.5 Recommendations / Future Directions

- Should be more focus on safe dry fish production training through inclusive market approach to the dry fish producers
- Need to build a strong linkage and make easily accessible common online market platform.
- Need to facilitate to establish cold storage for dry fish entrepreneurs
- Need to facilitate to establish lab for testing pesticides and nutrients composition of dry fish and feeds

5 Project Budget and Financial Management

1 Financial Reporting

SAT submit the following reports to World Fish according to the timetable below:

Table-7: Reporting Schedule

Report Description	Period Covered	Due Date to World Fish
April – May, 2022 financial report	01 April to 31 May 2022	31 May 2022
June- July, 2022 financial report	01 June- 31July, 2022	31 July 2021
August - September, 2022 financial report	01 August to 30 September, 2022	30 September, 2022
October to December, 2023	01 October 2022 to 31 December 2022	20 January 2023
Jan – Feb, 2023	01 January 2023 to 28 February 2023	28 February 2023
March, 2023	01 March 2023 to 31 March 2023	31 March 2023
April- June, 2023	01 April 2023 to 30 June 2023	31 July 2023
July-August, 2023	01 July 2023 to 31 August 2023	15 September 2023

Financial reports include the following information:

- a. Budget versus actual expenses, with current reporting period data and grant to date data.
- b. Detailed list of expenses that include description, transaction date, amount, expense category, exchange rates used to convert to reporting currency.
- c. Cost Share or matching progress report for period. (If necessary)
- d. Supporting documentation, as necessary.
- e. Fund balance status

8.2 Budget Analysis

The total project cost is BDT 8,637,530 and total expenditure of the project during project period was BDT 8,668,961. The direct labor budget of the project is BDT 3,472,950 where expenditure was BDT 3,472,950. Supplies and equipment cost of the project is BDT 420,900 and expenditure of the cost is BDT 410,177. The program activity cost of the project is BDT 4,631,880 where expenditure was BDT 4,687,209. Travel and premium budget of the project is BDT 111,800 and expenditure of the travel and premium during the project period was BDT 98,625. Total burn rate of the project is 100.36% where BANA burn rate is 99.51% and SAT burn rate is 101%.

9.0 Monitoring and Reporting

With the support from Bangladesh Aquaculture Activity Monitoring, Evaluation and Learning (MEL) team, Coast Trust followed prescribed format in Monitoring Evaluation Reporting plan MERP. The MERP consist of:

- a) Brief activity description,
- b) Target setting,
- c) Data collection process,
- d) Data quality assurance, and
- e) Reporting plan with frequency.

Bangladesh Aquaculture Activity MEL team provided training on management information system and always assist to entry data and related activities.

The POC, MEL team, BAA always provided MEL/progress related data as needed. MEL team of this Activity have opportunity to review existing monitoring and reporting tools in a participatory manner and it is integrated in the existing MEL system of this Activity. The SAT team accomplish the following activities.

Dry fish producer selection and profiling data through Kobo collect apps

➤ Technical Reports

Table-8: Monthly Reporting

Report Description	Period Covered	Due Date to World Fish
Monthly Technical Report	01 April to 30 April 2022	02 May 2022
Monthly Technical Report	01 May to 31 May 2022	02 June 2022
Monthly Technical Report	01 June to 30 June 2022	03 July 2022
Monthly Technical Report	01 July to 31 July 2022	02 August 2022
Monthly Technical Report	01 August to 30 August 2022	03 September 2022
Monthly Technical Report	01 September to 30 September 2022	30 September 2022
Monthly Technical Report	01 October to 31 October 2022	02 November, 2022
Monthly Technical Report	01 November to 30 November 2022	2 December, 2022

Monthly Technical Report	01 December to 31 December 2022	2 January, 2023
Monthly Technical Report	01 January to 31 January 2023	2 February, 2023
Monthly Technical Report	01 February to 28 February 2023	2 March, 2023
Monthly Technical Report	01 March to 31 March 2023	2 April, 2023
Monthly Technical Report	01 April to 30 April 2023	2 May, 2023
Monthly Technical Report	01 May to 31 May 2023	2 June, 2023
Monthly Technical Report	01 June to 30 June 2023	2 July, 2023
Monthly Technical Report	01 July to 31 July 2023	2 August, 2023
Monthly Technical Report	01 August to 31 August 2023	31 August, 2023

Technical report template provided by the WorldFish.

6 Annexure

6.1 Annex 1: Impact of the intervention on core business

SAT provided training on business development for dry fish producers and sorting, grading and cleaning for dried fish women workers. Project also support to establish better management practice, smart packaging through vacuum machine, webpage hosting and Facebook boosting for aware safe dried fish and increase the sales. Currently, a significant number of dry fish entrepreneurs are producing good quality organic and safe dry fish products with the support of the project. Market actors are getting the results or outputs from the project activities and they are made good progress in their respective businesses than in the past. Some dry fish processors are established BMPs (Better Management Practices) partially, some are also developing sales centers and started online marketing etc. During project period (April, 2022- August, 2023) SAT produced 88,598 kg dried fish and sold 79,498 kg which worth BDT 28,317,045. (At most 92% higher than last year that time).

6.2 Annex 2: Case Story-1

Proper marketing strategies to drive sales of safe dried fish

Dry fish market challenges in Cox's Bazar are lack of trust of consumers on dry fish products, entrepreneurs/ producers are facing problems of selling their dry fish products, reduced profit margins due to higher production costs and high competition. Dry fish marketing are saturated with products, decreased economies of scale and high competition. Lack of proper marketing strategies, product diversification, skills and knowledge in marketing have made difficult situation for dry fish entrepreneurs to maintain, sustain and grow market share

To address the issue, FtF Bangladesh Aquaculture and Nutrition Activity (BANA) in partnership with Ms. Shah Amanath Traders (SAT) of Cox's Bazar has been working to increase sales of safe dried fish products through product diversification, marketing and branding. As a part of the



Fig 47: USAID team visit at SAT

initiative, SAT has provided training to 80 dried fish entrepreneurs on business development, BMP and management; 40 dry fish business men on RTE and RTC product development, 20 fishermen on post-harvest management, established facilities for better management practices of sorting grading, washing and cleaning; developed a new webpage namely www.organicdryfish.com, advertising through social media like Facebook, billboard, web application, cardboard counter display, market linkage, sales promotion event and hosting webpage to increase the sales of various dried fish products.

cleaning; developed a new

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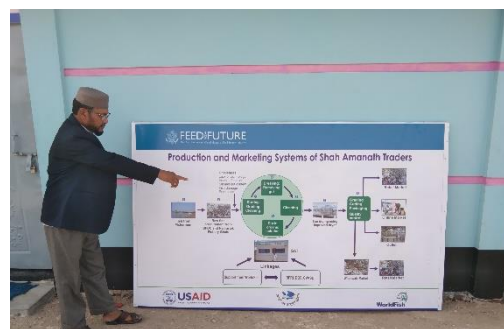


Fig 46: Business model of SAT

In the meantime, the dried fish entrepreneur is recovering his business with the increasing trends of sales even though COVID-19 situation. SAT has sold a total of 34.70 tons of dried fish worth of BDT 16.008995 million (USD 171,217) during March 2021 to June 2022 (almost 60% higher than last year that time). It is expected that the dried fish businesses at Cox's Bazar are able to grow and improve their market share soon.

4.1 Annex 3: Case Story-2

Role of sales center boost up dry fish business

Dried fish marketing are saturated with products, decreased economies of scale and high competition. Lack of proper marketing plans has further complicated the situation for dried fish entrepreneurs.

To address the issue, FtF Bangladesh Aquaculture Activity (BAA) in partnership with Ms. Shah Amanath Traders (SAT) of Cox's Bazar has been working to increase sales of safe dried fish products through product diversification, marketing and branding.

As a part of this initiative, SAT has trained 80 dried fish processors on business development, BMP and management. Md. Sofiul Alam lives in Najirartek village and he is one of them who has received the training. He has improved his business plan including marketing and branding of his dry fish products using knowledge and skills what he learned in the training session. He has developed better management practices of sorting, grading and cleaning of raw fishes and producing different safe dried fish products such as Bomby duck, Ribbon fish, Pomfret, small shrimp, Indian Salmon, Indian Maceral, etc. Moreover, he has established a sales center at Najirartek, Sadar Cox's Bazar to improve sales of his dry fish products. Previously, he has to sell his products to distributors in Chittagong in credit.

As a result of this initiative, he is selling his products to customers directly from newly established sales center in cash as well as through distributors. He is expecting that the sales from sales center in cash will gradually improve and will reduce sales through distributor in credit. He has sold 18.1 metric tons dried fish worth of BDT 9,860,000 during the current year after establishing the sales center in which about 60% through sales center and has been increased profit 90% than last year. He is now advertising his products Facebook. He has also planned to develop an online platform using Facebook and launch promotional activities in near future for marketing and branding of his products.

Safiul said, "I have learned safe dry fish production systems and improve dry fish business and practicing gained skills and getting benefit of it".



Fig 48: Sofiul in his sales center



Fig: 49 Sofiul is selling her his dry fish

Introduction of a portable freezer helps to improve the quality and profits of dry fish products

Scarcity of safe dry fish production technology, lack of storage facilities of both the raw and dry fish products especially during rainy season, have made difficult situation for dry fish entrepreneurs to maintain the quality of their dry fish products. To prevent insect infestation and spoilage of the dry fish products, some of the dry fish processors use chemicals and pesticides, which is harmful for human consumption.



Fig 50: Dried fish storage in freezer

To address the issue, Feed the Future Bangladesh Aquaculture and Nutrition Activity partnered with Ms. Shah Amanath Traders (SAT) of Cox’s Bazar has been working to Process, preserve and marketing of safe dry fish products. As a part of the intervention, SAT has established a freezer to preserve raw and dry fish products with the capacity of about 12 MT and 20 MT for dried and raw fish products respectively.

As a result of the intervention, SAT has stored their 7.3 MT dried fish and 12.8 MT raw fish while 12.8 MT dry fish products of other dry fish processors stored in the freezer for the last seven months. SAT was able to earn BDT 947,435 equivalent to USD 8,797 selling stored good quality dry fish products and renting storage facility to other dry fish processors. Observing the effective cold storage facility for raw and dry fish products of SAT, other dry fish processors are interested to copying this technology in their business



Fig 51: Cold storage (Freezer)

QUOTES FROM BENEFICIARIES

Aman, proprietor of SAT says, “I am earning more profit producing and selling better quality dry fish products establishing a freezer for storing dry fishes and raw fishes. I am grateful to

WorldFish and USAID for their support”.