Provincial People's Committee of Binh Dinh Province
Binh Dinh Department of Agriculture and Rural Development (DARD)

Verification Survey with the Private Sector for Disseminating Japanese Technologies for Fishing Method and Tools to Modernize Tuna Fishing in Viet Nam

Summary Report

Socialist Republic of Viet Nam

November 2017

Japan International Cooperation Agency (JICA)

Joint Venture of Kato Hitoshi General Office and Yamada Jitsugyo Co., Ltd

Contents

1. BACKGROUND

In Viet Nam, fishery is one of the main industries of the country and processed marine products are also one of the important export products supporting the Viet Nam economy. The Viet Nam Ministry of Agriculture and Rural Development declared a policy assuming the tuna fishery as one of its main export marine products.

As of 2013, the total sum of marine products export of Viet Nam was 506 million USD. The share of tuna products reach 6.3% of the total export sum, which is next to prawns, cuttlefish, octopus and other fish. As of 2012, it is said that only 24% - 30% of the 20,000 tons/year of tune catch is exported.

Particularly, the tuna export to Japan from Binh Dinh province, which is known as Viet Nam's main tuna unloading area, was scarce in 2015. The reason for this is assumed to be that the operation method to catch tuna is not developed enough. In addition, issues such as physical damage to the fish during the process of capturing, shortage of preservation time, and insufficient processing technology are observed.

Therefore, the quality level of the freshness, taste, appearance required in order to export towards Japanese markets are not satisfied.

2. OUTLINE OF THE VERIFICATION PILOT SURVEY

1) Outline

(1) Title

Verification Survey with the Private Sector for Disseminating Japanese Technologies for Fishing Methods and Tools to Modernize Tuna Fishing in Viet Nam

(2) Purpose

Fishery equipment which is popular in Japan including the Tuna electric shocker system (referred to as TSS) will be installed in local fishing boats. The technique for using the equipment, and the know-how on fresh fish processing and preservation technology will also be transferred.

Through these measures, the project aims to achieve the modernization and advancement of the tuna fishery techniques, and the increase of export to the Japanese market, thereby contributing to the fishery industry in Viet Nam.

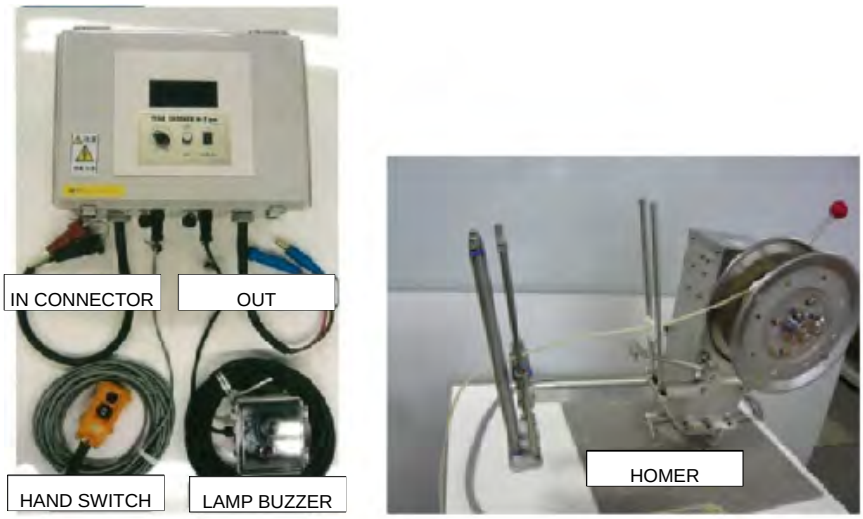


Figure 2-1 Tuna shocker system (TSS) and Homer

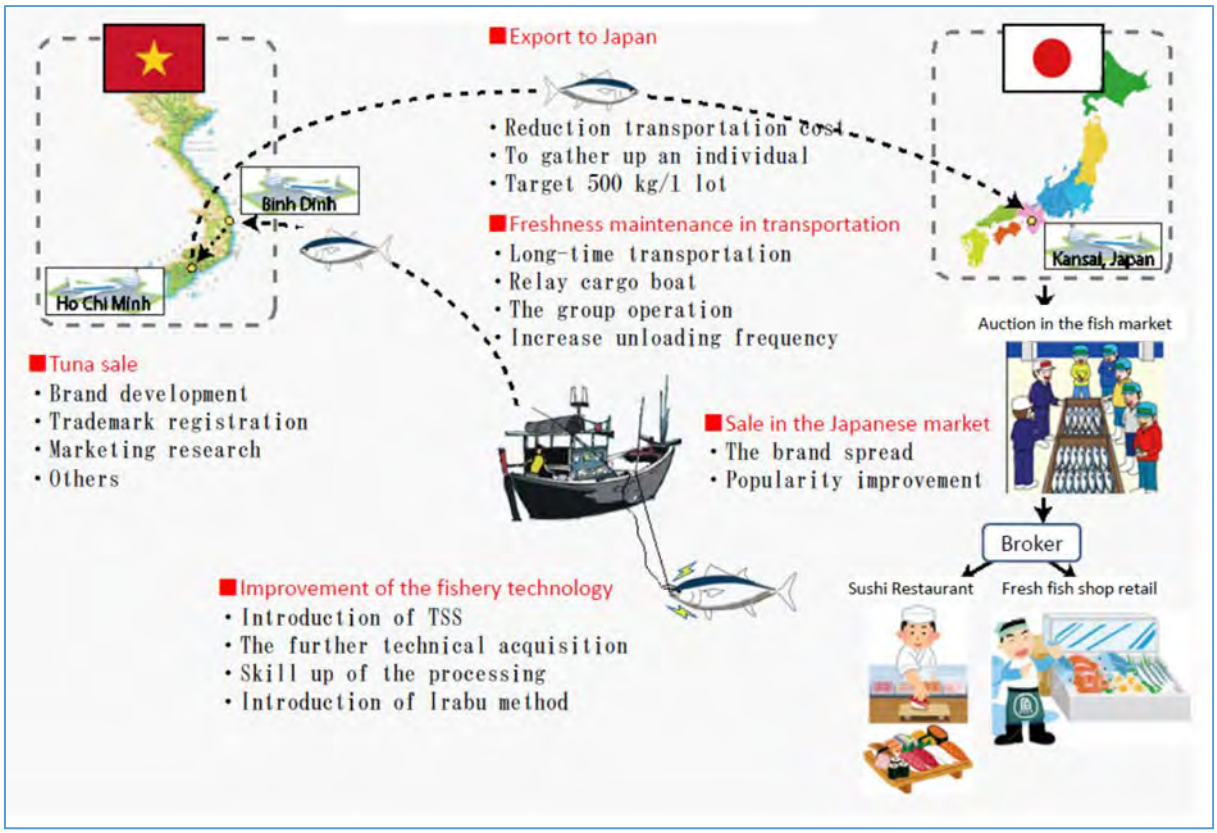


Figure 2-2 Food value chain

This project has been performed based on the following principles.

- It is intended to raise quality not to raise the quantity of tuna fish catches.
- The actual situation of the local tuna fishery and fishery sales will be respected.
- It is planned that a certain extent of technology transfer will be achieved by performing study and training activities in Japan.

2) Preparation stage

(1) Basic Implementation Scheme

The products and tools provided to the counterpart has been changed to be applicable to "Fishing with rod and line" based on the request by the Viet Nam side, instead of "Trolling fishery" which was the initial proposal from the Japanese side.

Fishing with rod and line	Trolling fishery
	
Many sailors board on one ship. To attract fish with ground bait and catch it with a pole.	To catch the fish by fishing line and hook attached bait spread from a fishing boat.

a. Time Duration

From June 2015 to December 2017

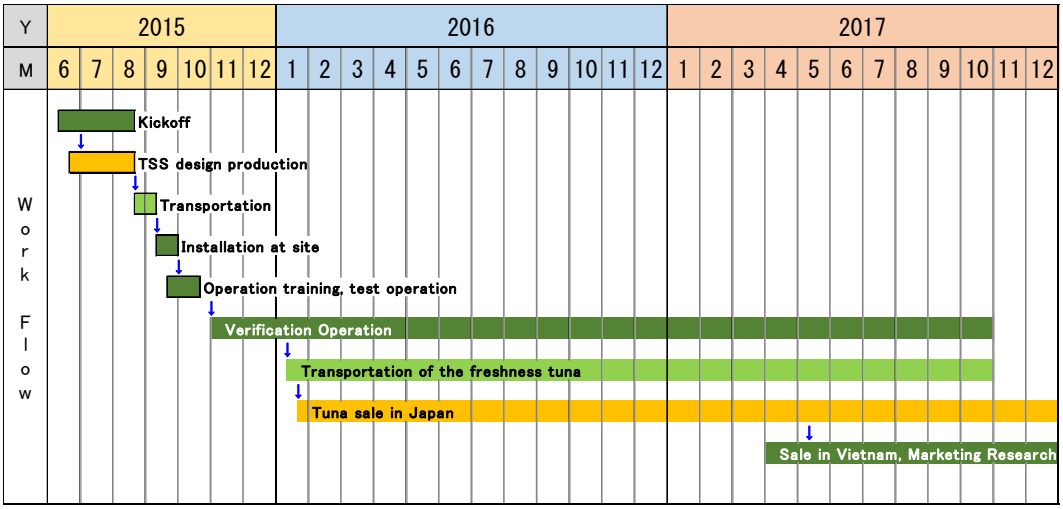


Figure 2-4 Survey Time Schedule

b. Project Location

Socialist Republic of Viet Nam

c. Counterpart government agencies

Provincial People's Committee of Binh Dinh Province

Department of Agriculture and Rural Development（DARD）

d. Implementing Organization

Joint Venture of Kato Hitoshi General Office and Yamada Jitsugyo Co., Ltd

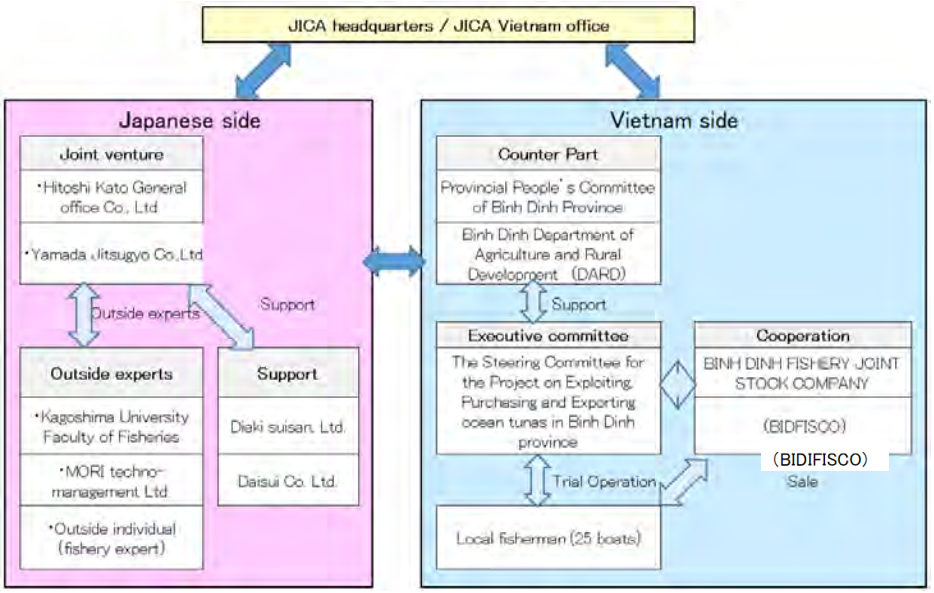


Figure 2-5 Implementing Organization

Table 2-1 List of Japanese Expertise Members

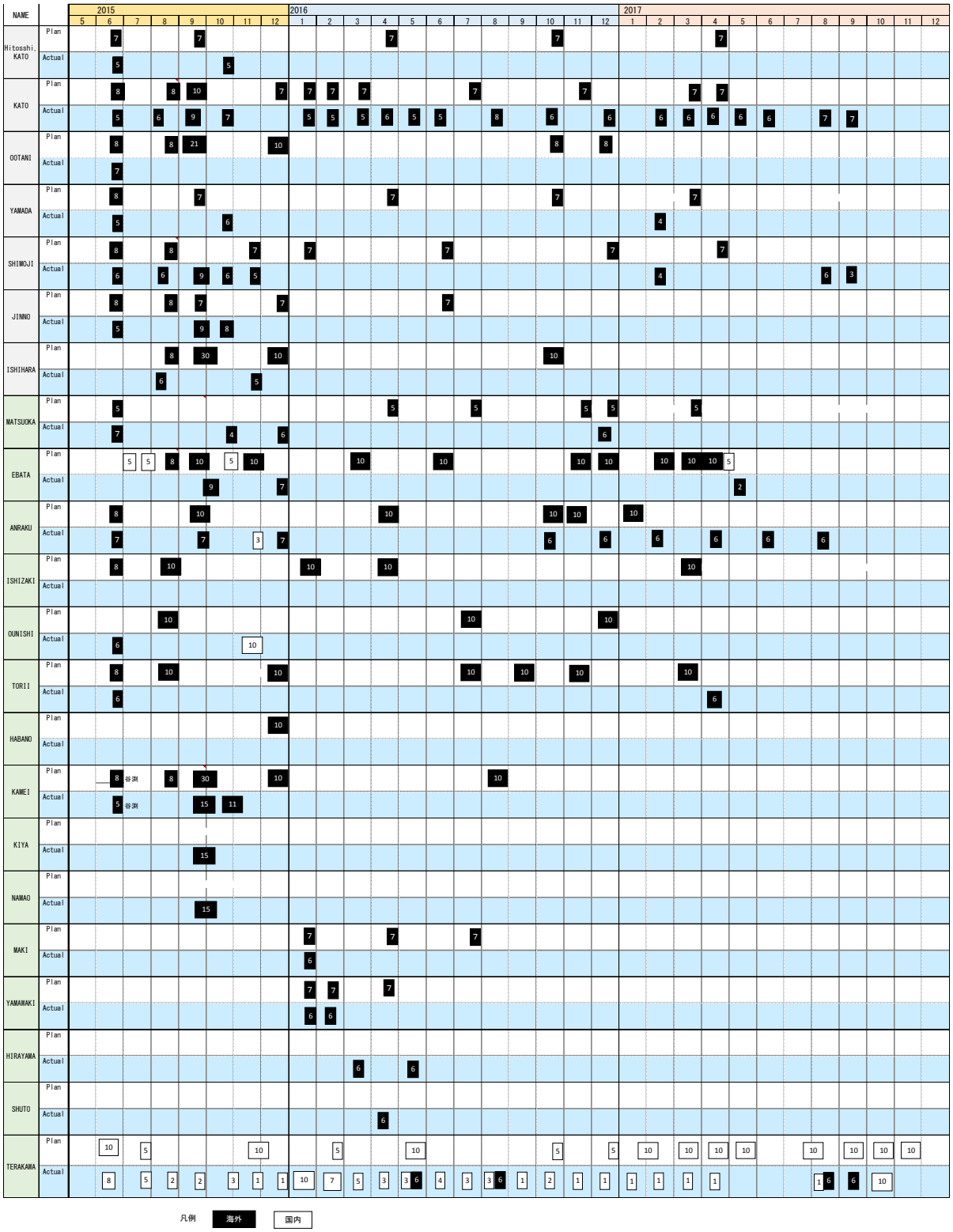
1	Hitoshi KATO	General supervision	Kato Hitoshi General Office Ltd
2	Hirosuke KATO	Overall management (Chief Administrator)	Kato Hitoshi General Office Ltd
3	Yasuo OTANI	Overall assistant	Kato Hitoshi General Office Ltd
4	Yasumasa YAMADA	Total of fishing machine and tools	Yamada Jitsugyo Ltd
5	Toshihiro SHIMOJI	Fishing machine	Yamada Jitsugyo Ltd
6	Koji JINNO	Fishing tools	Yamada Jitsugyo Ltd
7	Takahiro KURODA	Fishing tools	Yamada Jitsugyo Ltd
8	Shunsuke ISHIHARA	Fishing tools	Yamada Jitsugyo Ltd
9	Tatsoro MATSUOKA	International fishery exploitation	Shigakukan University
10	Keigo EBATA	Fishing technology	Kagoshima University
11	Kazuhiko ANRAKU	Fishing technology(tools)	Kagoshima University
12	Munekane ISHIZAKI	Fishery technology (tools)	Kagoshima University
13	You UENISHI	Fishery food expertise	Kagoshima University
14	Kyoji TORII	Fishery logistics	Kagoshima University
15	Akimasa HABANO	Fishing vessel expertise	Kagoshima University
16	Takashi TANIBUTI	Fishery processing	Outside individual
17	Keiji KAMEI	Fishery processing	Outside individual
18	Tetsuo KIYA	Fishery processing	Outside individual
19	Shuji NAKANO	Fishery processing	Outside individual
20	Katsutoshi MAKI	Tuna processing sale	Diaki suisan, Ltd.
21	Yasufumi YAMAWAKI	Tuna quality control	Daisui Co. Ltd.
22	Kensaku HIRAYAMA	Tuna quality check	Diaki suisan, Ltd.
23	Matuhiro SYUTO	Tuna quality check	Diaki suisan, Ltd.
24	Hiroya TERAKAWA	Contract control and document	MORI Techno-management

Members of The Steering Committee for the Project on Exploiting, Purchasing and Exporting ocean tunas in Binh Dinh province are shown in Table 2-2.

Table 2-2 Lit of Member of Steering Committee in Binh Dinh Province

1	Chief	Mr. Tran Chau	Vice – Chairman of Binh Dinh People Committee (Taking the place of Mrs. Tran Thi Thu Ha retired)
2	Permanent Chief	Mr. Phan Trong Ho	Director of Department of Agriculture and Rural Development
3	Vice – Chief	Mr. Tran Van Phuc	Vice – Director of Department of Agriculture and Rural Development
4	Vice – Chief	Ms. Huynh Thi Thu Thuy	Deputy Director of Department of Investment and Planning
5	Vice – Chief	Mr. Nguyen Duc Hoang	Deputy Director of Department of Foreign Affairs
6	Team Leader	Mr. Vo Dinh Tam	Director Binh Dinh Sub- Deartment of Fisheries
7	Members	Mr. Nguyen Duy Lam	Head of Science and Technology
8	Members	Mr. Tran Van Vinh	Vice Director Binh Dinh Sub- Deartment of Fisheries

Table 2-3 Members Operation Schedule



(2) Information gathering, Kickoff meeting

In order to collect the necessary information, meetings were carried out with the fishermen of tuna fishing boats of Qui Nhon Port. From the information, differences between the fishery in Japan and Viet Nam and more were identified. A kickoff meeting was held with members concerning this project, involving people of various affiliations.

Figure 2-6 Kickoff meeting

3) Design, manufacturing and transportation of TSS

(1) Design of TSS

TSS (Multi type) for culture fishery was modified and newly designed as P-type to suit the fishing boats of Viet Nam.

(2) Procurement, production of TSS

It took one month to design the TSS (P type) and another one month to produce TSS for 25 boats. Results of the domestic test showed no defects for the performance of the newly developed TSS (P type).

Figure 2-7 Production of TSS

4) Installation of TSS

(1) Installation works

Japanese members confirmed jointly with the DARD staff that the total amount of the equipment and tools were duly transported from Japan and distributed to 25 boats. At first Japanese engineers installed three of the equipment as specimens. After, the DARD staff installed the equipment to the remaining 22 boats.

Figure 2-4 Installation of TSS

(2) Selection of fishermen participating the project

As for the fishing boats participating this project, DARD selected 25 fishing boats in accordance with the conditions and criteria that the Japanese side requested as follows.

－Career of the captain
－Education of the crew
－Whether TSS installation is possible or not
－Whether the fish tank on the boat meets the criteria or not
－The fishermen's motivation

After having confirmed the above conditions carefully, DARD selected 25 fishing boats.

No	Original List		Second List		Final List	
	Name	No.	Name	No.	Name	No.
1	Nguyễn Công Định	96587	Nguyễn Công Định	96587	Nguyễn Công Định	96587
2	Nguyễn Công Định	97420	Nguyễn Công Định	97420	Nguyễn Công Định	97420
3	Nguyễn Công Định	97421	Nguyễn Công Định	97421	Lê văn Hội	97417
4	Huỳnh Văn Thu	96692	Huỳnh Văn Thu	96692	Huỳnh Văn Thu	96692
5	La Thị Nữ	95686	La Thị Nữ	95686	La Thị Nữ	95686
6	Nguyễn Văn Mịch	96684	Nguyễn Văn Mịch	96684	Nguyễn Văn Mịch	96684
7	Nguyễn Minh Danh	97399	Nguyễn Minh Danh	97399	Nguyễn Minh Danh	97399
8	Lê Minh Huân	97475	Lê Minh Huân	97475	Lê Minh Huân	97475
9	Trương Thanh Quang	97483	Trương Thanh Quang	97483	Trương Thanh Quang	97483
10	Võ Văn Sành	95802	Võ Văn Sành	95802	~~Tàu đã rút~~	
11	Võ Văn Sành	96715	Võ Văn Sành	96715	~~Tàu đã rút~~	
12	La Văn Minh	95891	Bùi Văn Xếp	97738	Bùi Văn Xếp	97738
13	Ngô Tuấn	95103	Ngô Tuấn	95103	Ngô Tuấn	95103
14	Nguyễn Văn Việt	97244	Nguyễn Văn Việt	97244	Nguyễn Văn Việt	97244
15	Lê Văn Minh	91039	Nguyễn Thành Dự	97755	Hồ Tuấn Tú	98679
16	Văn Công Việt	91189	Văn Công Việt	91189	Văn Công Việt	91189
17	Cao Văn Đông	91234	Cao Văn Đông	91234	~~tàu đã chìm~~	
18	Nguyễn Đậu	91356	Nguyễn Đậu	91356	Nguyễn Đậu	91356
19	Hồ Lời	97292	Hồ Lời	97292	Lê Văn Được	96532
20	Hồ Lời	95287	Hồ Lời	95287	Nguyễn Văn Quốc	96848
21	Nguyễn Đình Trung	97474	Nguyễn Đình Trung	97474	Nguyễn Đình Trung	97474
22	Nguyễn Minh Toàn	97418	Nguyễn Minh Toàn	97418	Nguyễn Minh Toàn	97418
23	Đào Duy Mênh	95433	Đào Duy Mênh	95433	Đào Duy Mênh	95433
24	Bùi Lót	96034	Bùi Lót	96034	Bùi Lót	96034
25	Nguyễn Quê	96776	Nguyễn Quê	96776	Nguyễn Quê	96776

Figure 2-9 List of Participating boats

Figure 2-10 Qui Nhon Port

(3) Transfer of technology and know-how

"TSS user manuals" (Vietnamese) were prepared for this project and provided to the fishermen. Based on the manual, the fishermen were instructed on the operation method of TSS, the method of processing and preservation of the tuna on the boat. Based on the requests by the Viet Nam side, the manuals were modified accordingly.

5) Test operation

Following the explanation on the manuals and offshore training, the actual test operation was carried out. The test operation was performed for 4-days between 6th to 9th October, 2015. Japanese fishermen and the DARD staffs also boarded on three fishing boats.


Figure-2-11 Test operation

One dorado was caught in a state of apparent death, showing the effect of the TSS. As a result of the test operation, some useful opinions were obtained from the fishermen who used the TSS, such as opinions regarding improvements for thread, lure, homer or fishing implements. There were opinions from the fishermen mentioning that the TSS itself was indeed effective.

Figure 2-12 Review after test operation

6) Training in Japan

The first training for the DARD member in charge of fisheries quality check was carried out in Japan. The training to learn the techniques of fish processing, safekeeping and sorting was performed in Osaka and Kagoshima prefecture.

As for the second training, 4 trainees (of which 2 are DARD staffs and 2 are fishermen participating the project) were invited to Mie prefecture, Osaka prefecture, and Kobe city for training on a series of work about fishery methods, circulation (auction), and tuna processing methods (dismantling).

As for the third training, Mr. Tu, who was the president of the candidate agency of TSS, Mr. Tam, who is the Team Leader of this project of DARD and Mr. Kau who is a staff of DARD, were the three participants. Training to gain knowledge on repair and maintenance of TSS was carried out in Fukuoka and Osaka prefecture.

Figure 2-13 Training in Japan

7) Verification operation

In the verification operation, 25 fishermen operated fishing using TSS. The Japanese team performed observation and instruction on improvements of the utilization of the TSS and the fresh fish tuna quality accordingly. The tuna fishery in Viet Nam is usually performed monthly except during the rainy season (from June to September). The verification operation was carried out as follows.

Table 2-2 Verification operation schedule

年	月	回	日本側渡航日	渡航者
2015	Nov.	1	2015/11/22-26	2 nos.(SHIMOJI、ISHIHARA)
	Dec.	2	2015/12/26-27	3 nos.(MATSUOKA、ANRAKU、EBATA)
2016	Jan	3	2016/01/18-20	4 nos.(KATO、MAKI、YAMAWAKI、SHIMOJI)
	Feb	4	2016/02/18-20	2 nos.(KATO、YAMAWAKI)
	Mar	5	2016/03/18-22	4 nos.(KATO、HIRAYAMA、MAKI、YAMAWAKI)
	Apr	6	2016/04/16-19	5 nos.(KATO、SHUTO、ANRAKU、SHIMOJI、ISHIHARA)
	May	7	2016/05/17-20	4 nos.(KATO、TERAKAWA、HIRAYAMA、ISHIHARA)
	Jun	8	2016/06/14-20	2 nos.(KATO、ISHIHARA)
	Jul	No Mission		
	Aug	9	2016/08/26-31	6 nos.(MATSUOKA、ANRAKU、EBATA、TORII、ISHIHARA、TERAKAWA)
	Sep	No Mission		
	Oct	10	2016/10/09-14	5 nos.(KATO、ANRAKU、HIRAYAMA、ISHIHARA、WATANABE)
	Nov	No Mission		
	Dec	11	2016/12/24-29	5 nos.(KATO、ANRAKU、MATSUOKA、ISHIHARA、WATANABE)
2017	Jan	No Mission		
	Feb	12	2017/02/09-14	3 nos.(KATO、ANRAKU、SHIMOJI)
	Mar	13	2017/03/05-10	2 nos.(KATO、YAMAWAKI)
	Apr	14	2017/04/09-14	5 nos.(KATO、ANRAKU、TORII、EBATA、WATANABE)
	May	15	2017/05/06-11	2 nos.(KATO、WATANABE)
	Jun	16	2017/06/07-11	3 nos.(KATO、ANRAKU、WATANABE)
	Jul	No Mission		
	Aug	17	2017/08/06-12	6 nos.(KATO、SHIMOJI、SHIRAI、TERAKAWA、ANRAKU、WATANABE)
	Sep	18	2017/09/28-10/4	7 nos.(KATO、HIRAYAMA、SHIRAI、TERAKAWA、WATANABE、SHIMOJI)
	Oct	19	2017/10/29-11/2	6 nos.(KATO、HIRAYAMA、SHIMOJI、ANRAKU、WATANABE)
	Nov			
	Dec			

3. ACHIEVEMENTS OF THE SURVEY

1) Availability of TSS based on verification operation

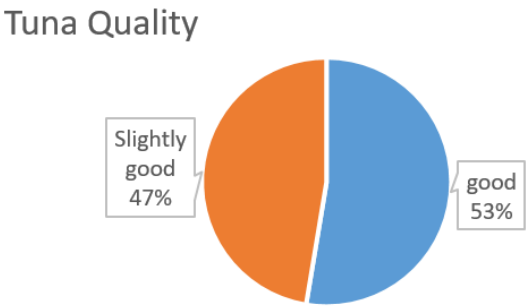
The usage rate of TSS increased at the time of fishing and gained good reputation from the fishermen. The causes of trouble such as output drops of the TSS are assumed to be by the deficiency of battery and maintenance of the TSS, depending on the local condition. As for the Homer, it was observed that it is difficult to use it in Vietnamese style fishing, since there are times when several tunas are caught by the same pole at the same time. Therefore, the usage rate of the Homer did not increase much.

2) Quality improvement of Tuna

The verification operation was carried out 19 times until the end of October, 2017 with interval of each month. 28 fresh tunas were exported to Japan so far. Bidding prices reached as high as 1,600 yen/kg at the auction in Japan on January 22, 2017, and good evaluations were given to Binh Dinh Tuna.

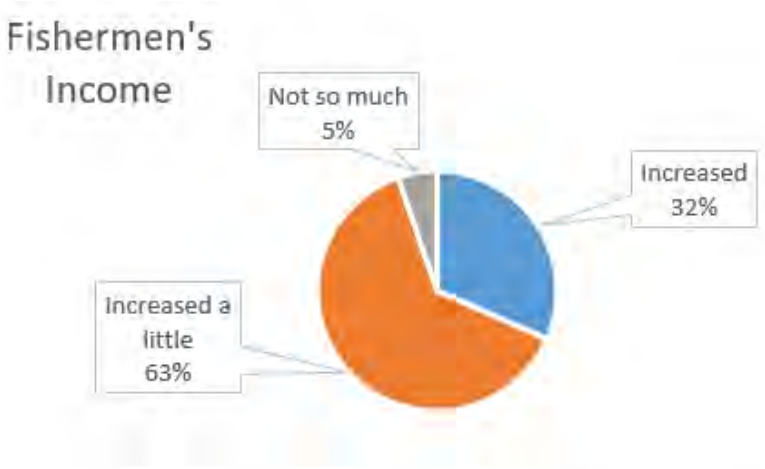
Figure 2-14 Auction of Tuna in Japan

In addition, the production of tunas receiving rank B status increased, suggesting that improvement in the quality of Binh Dinh Tuna was confirmed. According to the questionnaire that Japanese side collected at the final stage of the project, 100% of those who answered have thought that the quality of the tuna has been improved by this project.



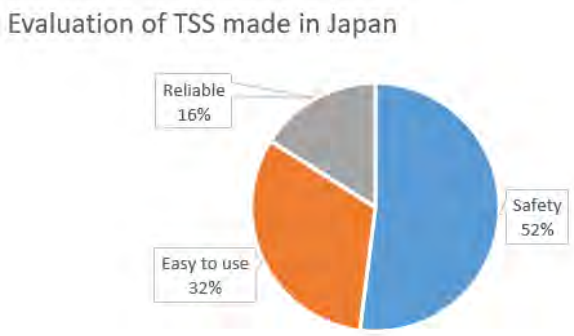
3) Reputation from the fishermen participating the project

95% of the fishermen replied that their incomes increased to an extent.



4) Reputation of TSS

According to the verification operation, there were opinions that the quality of the tuna has improved, and TSS received good evaluation. At present, there are also inquiries from fishermen who did not participate in the project that they want to purchase the Tuna shocker system. However, the current price setting of TSS made in Japan is expensive for the local fishermen to readily afford. The evaluations of TSS made by Yamada Jitsugyo Co., Ltd. are “High Safety”, “Easy to use” and “Reliable”.



The following opinions were seen, in the comment column of the questionnaires.

* After I participated in this project, I have acquired much knowledge about the work of the tuna fishery.

*After I participated in this project, I have acquired useful knowledge.

* If this project continues, I want to participate again. It was useful for fishermen.

* If the project continues, I want to understand the reason why I did not achieve the quality standard.

* If the project continues, I want to participate again.

* After I participated in the project, both the tuna quality and the fishing results improved.

* After I participated in the project, I gained profit through income increase, quality improvement, and labor reduction

and more.

4. FUTURE PROSPECTS

1) Remaining Issues

(1) Improvement of the fishery technology

By introducing TSS and transferring techniques of tuna fishery in Japan to the fishermen in Viet Nam, it is clearly verified that the tuna quality has been improved. However, the result is still not enough compared to the fishery results in Japan. The local fishermen have to continue to polish the technique of usage of TSS and the Japanese style tuna processing method.

(2) Maintaining freshness during transportation

The biggest problem is the long transportation time from the fishing port to the fishery spot. As a countermeasure, ideas such as a junction cargo boat or group operations are suggested, but they have not yet been realized. If the improvement of this transportation issue is realized, a system which enables fishermen to unload the tuna at least within 10 days must be established. Unless they can shorten the transportation period, the production quantity of A rank tuna cannot be increased.

(3) Sales of tuna

It is necessary to scale up the production quantity of fresh tuna to enable commercial merchandising. The highest price is given for raw tuna (sashimi). Demand for such raw tuna is currently increasing in Viet Nam. By pushing forward the brand development of Binh Dinh tuna, it should result to high price purchase of the tuna with the added value of the tuna.

Figure 3-1 Raw tuna (sashimi)

(4) Export of tuna to Japan

It is good news that the possibility of B rank tuna export to Japan was confirmed. If the weight of one lot of export exceeds 500 kg, air cargo fare can be reduced. Therefore, the production of high quality tuna is required.

Figure 3-2 Production of Loin for Japanese Market (at BIDFISCO)

(5) Sales of tuna in the Japanese market

In the Japanese market, it will be necessary to build up the reputation for Binh Dinh tuna. It is necessary to make an effort to raise the popularity of Binh Dinh tuna by effective brand development.

2) Business development

(1) Development of a local version of TSS

For Vietnamese fishermen, the TSS made in Japan is too expensive to afford. It is necessary to develop a local version of TSS that insures safety, reliability, operability, while largely lowering the price.

(2) Brand development of Binh Dinh tuna.

The brand development of the Binh Dinh tuna will be continued together with DARD. Sales in Japan and Viet Nam is expected to increase along with the popularization of the brand.

Figure 4-1 Logo of Binh Dinh tuna

(3) After the project

Kato Hitoshi General Office is preparing the establishment of a local corporation in Qui Nhon. Based on this local corporation, tuna export to Japan from Binh Dinh and intermediation to Viet Nam market will be carried out.

Viet Nam

Verification Survey with the Private Sector for Disseminating Japanese Technologies for Fishing Methods and Tools to Modernize Tuna Fishing in Viet Nam

Kato-Yamada JV, OSAKA, Japan

Concerned Development Issues in Viet Nam

- Desire to export Tuna captured in Viet Nam to Japanese fresh Tuna market meeting quality demand in Japan
- Needs to improve quality of Tuna by provision of suitable fishing tools with necessary technology transfer

Implemented Activities in the Survey

- By deployment of hardware "Tuna-shocker system" with Japanese software of capturing and processing of Tuna, export of Tuna to Japanese fresh tuna market becomes feasible and simultaneously "Tuna-shocker system " is disseminated in Viet Nam and neighboring countries.

Proposed Products/Technologies

"Tuna-shocker system"

1. **Tuna-shocker Type P**
2. **Electrode line with needles**
3. **Electrode snap ring**
4. **Homer**
5. **Lance pole**
6. **Killing tools**
7. **Software and know-how from Japanese fishing industry**

Impact on the Concerned Development Issues in Viet Nam

- Export of fresh tuna from Binh Dinh Province to Japan increases .
- Development of fishing industry in Viet Nam and increase of income of fishing people in Viet Nam is achieved.

Expected Outputs and Outcomes of the Survey

- Current Situation: Almost no export of Tuna to Japanese market from Viet Nam
- Prospects in future: High quality Tuna is imported from Viet Nam
- "Tuna-shocker system" is expected to be deployed in Viet Nam and neighboring countries.