

Directorate of Quality and Processing
Ministry of Marine Affairs and Fisheries

Summary Report

INDONESIA

Verification Survey with the Private Sector for
Disseminating Japanese Technologies for Processing
and Sanitation Control for Octopus Products

July, 2017

Japan International Cooperation Agency

Ajirushi Co., Ltd.

1. BACKGROUND

Nominal GDP per capita in Indonesia exceeded 3,500 US dollar in 2015, and the economic scale has expanded slowly but steadily. On the other hand, the benefits of the expansion concentrate in Jakarta and surrounding urban areas in Java Island, not spreading to other provinces and rural areas. As a result, the income disparity between regions, and that between agricultural and non-agricultural sectors have been expanding gradually. Correction of the disparity is a big challenge of the country.

Fishing industry is one of the major industries in rural area, and the rural development through the fishing industry is expected to have a big impact for the correction of regional disparity.

Although the production volume of the fishery / aquaculture industry in the country is more than other ASEAN countries (Thailand, Vietnam, Philippines etc.), it is still unable to escape from the role as a raw material supplier. Actually the share of fresh fish, live fish, and refrigerated products in fishery exports is as high as about 70% in 2009, due to low level of processing technology. The Ministry of Marine Affairs and Fisheries (hereinafter referred to as "MMAF") intends to expand export of high value-added fishery products, but the exportable species are still confined to shrimp, tuna and bonito. The country has yet to diversify processed fishery export products.

President Joko Widodo, who took office in October 2014, has a policy concept of "maritime nation" as the pillar of economic and diplomatic relations of the administration.

2. OUTLINE OF THE PILOT SURVEY FOR DISSEMINATING SME'S TECHNOLOGIES

(1) Purpose

To overcome the delay in diversification of fishery processing technology and products in Indonesia and to aim for the improvement of income of local fishermen, through verification and demonstration activities to increase the local adaptability of octopus production and processing technology and products.

(2) Activities

① Development of Octopus Fishing Grounds

The development of octopus fishing grounds is operated with careful attention to the sustainability of octopus resource in nearby Sulawesi Sea in the light of the lessons learned from the decrease of octopus in the fishing ground of Western African, following the compliance of regulations and collecting information about revision and implementation of laws related to Indonesian fishery processing industry.

② Strengthening production system of processed fishery products

Strengthening of fishery processing production system is to be conducted in compliance with laws and regulations concerning food processing and sales. It is implemented through the construction of local production system of fishery processed products, and with various manuals and technical guidance programs, and product development aimed at business development.

③ Expansion of domestic and export market outlets for fishery processed products

In order to expand the domestic and export market of fishery processed products, this project conducts sales promotion targeting food processing companies and food distributors in Japan and Indonesia as a first step.

(3) Product Information / Proposed Technology

① Proposed equipment

Originally developed octopus processing equipment by AJIRUSHI. It can process octopus from other country that is difficult to process because of its hard skin, etc., into Japan-quality processed octopus products with soft and good appearance.

② Processing and sanitation control technology

Originally developed steam processing technology for fishery products (octopus) and sanitation control method that complies with Hazard Analysis and Critical Control Point (HACCP)

③ Processed products

Knowledge and know-how for producing various processing octopus products (steamed, sliced, cut, pre-cooked steamed octopus, etc.)

(4) Counterpart organization

Directorate of Fisheries Product Diversification and Quality Control, MMAF,

(5) Target area and beneficiaries

① Target area: South Sulawesi State (centering on Makassar city) and Jakarta

② Target beneficiaries: Fishermen and related workers in South Sulawesi, fisheries processing industry, consumers

(6) Duration

December 2015 – August 2017

(7) Progress Schedule

- ①Transportation and installation work of equipment: Completed in November 2016
- ②Development of octopus fishing grounds: Completed in March 2017
- ③Strengthening of production system for fishery processed products: Completed in May 2017
- ④Expansion of domestic and export market outlets for fishery processed products: Completed in June 2017
- ⑤Formulation of Business Plan: Completed in July 2017

(8) Manning Schedule

Company	Name	Total Days	Total Visits
Ajirushi Co., Ltd.	Kenji Kuzunuki	141 days	13 times
Ajirushi Co., Ltd.	Katsuhisa Koinuma	24 days	3 times
Ajirushi Co., Ltd.	Hiroyuki Koinuma	21 days	3 times
KRI International Corp.	Munenori Tada	61 days	5 times
Tokyo University of Marine Science and Technology	Osamu Baba	31 days	3 times
Kenndo Management Co., Ltd.	Kotaro Takahashi	14 days	2 times
Kenndo Management Co., Ltd.	Hideki Kino	149 days	12 times
Ajirushi Co., Ltd.	Yasushi Watanabe	7 days	1 times
Ajirushi Co., Ltd.	Hiroshi Katsumura	9 days	1 times
Ajirushi Co., Ltd.	Keiichi Kurusu	9 days	1 times
Kenndo Management Co., Ltd.	Misato Ota	21 days	2 times

(9) Implementation System

	Equipment	Serial No.	Unit	Installed date	Installed place
1	Automatic Steamer	Haraya Steamer	1 unit	November 2016	Perikanan Makassar Factory
2	Rotary barrel for washing and rubbing raw octopus	Haraya Rotary Barrel	4 unit		
3	Cooling installations with tanks of 500 L capacity	Haraya 500l tank	5 unit		
4	Truck with caster	Haraya track with caster	10unit		
5	Ishida Metal detector	IND-4518-WP-E	1 unit		
6	Ishida Electronic weighing	IWB-150-AISIA	1 unit		

	Instrument				
7	Miura Gas Boiler	EX-500GH	1 unit		
8	Gas boiler reducing valve	High to Medium	1 unit		
	Gas boiler reducing valve	Medium to Low	1 unit		
9	PT. HOSHIZAKI INDONESIA /	FM-600AKE	2 unit		
	Ice making machine				
	Stocker for storage of ice				

3. ACHIEVEMENT OF THE SURVEY

(1) Outputs and Outcomes of the Survey

① Transportation and installation work of equipment

Renovation of PT. Perikanan Nusantara Makassar factory (hereinafter referred to as “Perikanan Makassar”) to install the equipment had been delayed around 6 months but had started on September 8th 2016 under the supervision of AJIRUSHI. The principal equipment was installed on October 29th and installation of other equipment, test run and training of operation finished on November 26th.

② Development of Octopus Fishing Grounds

a) Development of Octopus Fishing Grounds

▪ Identification of Octopus catches

Galesong (Takalar) and Sankaran archipelago (Spermonde archipelago) were confirmed as promising octopus fishing grounds around the sea of Makassar. Sankaran archipelago was identified as the first octopus fishing grounds for business, and the method of collecting octopus from the fishing grounds was formulated with Perikanan Makassar.

▪ Understanding of Octopus catch situation

Regarding the octopus catches of the three islands in Sankaran archipelago, the dependence of the fishermen on the octopus operation varies according to island, but there didn't seem to be big difference between them in terms of the octopus catch. It is said that the octopus catch season in this area is between October and March, but there was no statistic to know the accurate information.

It turns out that, based on the hearing survey from fishery workers, the seasonal difference in terms of the octopus catchment is as follows:

High season: November to February (possible catch is 2 – 3 tons/day)

Low season: April (possible catch is 1 ton/day)

May to October (possible catch is 0.5 ton/day)

During summer (low season), Indonesian octopus may move to deeper areas from coral areas because of high temperature of sea water. It is presumed that catch may decrease

because Indonesian octopuses do not live in places where fishermen can catch by skin diving. In addition, the octopus becomes smaller and the price soars during summer season.

b) Identification of octopus catch grounds in Southern part of Sulawesi coastal area, understanding of actual octopus catch, and estimation of possible octopus catch

- Estimation of possible octopus catch

It is estimated that the Sankaran archipelago (Spermonde archipelago) is the most effective octopus catch ground in implementing this project, and the possible catch amount could be around 1,360 tons per year.

- Protection of Octopus resource

The traditional octopus fishery method in Indonesia is fishing one by one using artificial bait, and it is appropriate for resource protection. According to the research of Okinawa Prefectural Fisheries Research and Extension Center, the actual resource situation may improve if catch of small octopus (less than 1 kg) is restricted. Because the octopus have short life-span of 1 or 2 years and lay eggs in large amount only once in life, it is important to protect octopus resource by not catching the small ones, controlling catch season by catching and keeping in freezer during high season, and not catching during low season. It is presumed that disseminating octopus trap in the future is also an effective for the protection of the octopus resources.

c) Verification on the establishment of a value chain structure, including fishing of octopus, storage after landing, and transportation to processing factory

- Verification of logistics from octopus catch grounds to Perikanan Makassar.

The current fishing logistics method on Wakatobi archipelago in Southeast Sulawesi state, Selayar Island in South Sulawesi state, Taral prefecture near Makassar, and the Sankaran archipelago (Spermonde archipelago) had been studied and verified. Based on the findings, the logistics from Sankaran archipelago (Spermonde archipelago) to Perikanan Makassar for maintaining the freshness of the caught octopus was established in this project. Future logistics from various places in South Sulawesi was also considered.

- Steam processing test and sensory inspection of octopus in AJIRUAHI

Steam processing test and sensory inspection of Indonesian octopus was conducted at AJIRUSHI in Japan.

- Logistics from Perikanan Makassar to Indonesian domestic market

It turned out that there are various challenges in domestic logistics, such as high logistic cost.

- Establishment of domestic and international logistics routes including Japan

The logistics of frozen raw octopus through the establishment of logistics route was verified in this project, after the examination of actual issues to export from Indonesia to global market including Japan, and to utilize Hitachinaka port in Ibaraki prefecture.

d) The improvement of the fishery income, the cluster effect, and the monitoring function of governmental organization to manage octopus catch grounds

- Stable purchase of octopus

For fishermen living in small islands near Makassar, octopus fishing work is only a part of their fishery income as they are seasonally harvestable resources. However, if logistics from the Sankaran archipelago to Perikanan Makassar factory could be implemented continuously, the fishermen will not be tied up with unilateral purchase prices from collectors or purchasers, contributing to rising and stable income for the fishermen.

- Purchase price of octopus

To stabilize fishery revenues in this project, a new logistics method was demonstrated in "Demonstration on the establishment of a structure of value chains such as fishing of octopus and storage after landing and transportation to a processing factory". Consequently the purchase price from Perikanan Nusantara headquarters is assumed as follows:

A : 2kg up / 65,000IDR (Perikanan Makassar factory FOB price)

B : 1.5kg ~ 1.9kg / 59,000IDR (Perikanan Makassar factory FOB price)

C : 1kg ~ 1.4kg / 50,000IDR (Perikanan Makassar factory FOB price)

- Maintenance of octopus quality and freshness

Maintenance of quality and freshness of octopus was verified by the logistics verification from the Sankaran archipelago to Perikanan Makassar factory

- Logistics cost

The logistics cost up to primary processing were formulated by inversely calculating the assumed price of high value added products.

- Cluster effect

With the aim of stabilizing fishery revenue, Perikanan Makassar purchases octopus from fishermen through collectors, under conditions of providing fresh and quality octopus. The purchase cost (35,000IDR/kg) and collecting cost were set in this project in the way that contributes to the improvement of fishermen's income.

- the improvement of monitoring function of governmental organization to manage octopus catch grounds

In the South Sulawesi State Office of MMAF, they had fishery catch data in state level, but did not have catch data in prefectural level or by landing location. So we cooperated for the improvement of octopus resource management by recording and discussing estimated

data on the cost of processing at the Perikanan Makassar factory and the appropriate profit.

③ Strengthen production system for fishery processing products

a) Understanding food processing and related sales laws and ordinances in Indonesia,

Preparation for various registrations necessary for food sales, and understanding and consideration on how to obtain halal certification.

▪ Permit of the fishery processing factory

Hygiene standards and business licenses pursuant to Japan's Food Sanitation Law was not confirmed in Indonesia, and it turned out that the permit for the trial octopus processing in this project is not necessary because Perikanan Makassar factory already has produced fishery processed products.

▪ Permission to sell foods and pharmaceuticals

It was found that trial octopus products in this project are not final products directly purchased by consumers but raw materials for final products, so the current law does not require registration of MD number. In addition, it is possible to distribute them by the distribution license when selling in Indonesian market.

▪ Halal certification and method for its acquisition

Halal certification and method for its acquisition were studied through the hearings from Bogor University, MUI halal Center, and PT.SBCS Indonesia.

b) Creation of management manual related to the production of octopus processed products including octopus processing and sanitary control

A technical instruction curriculum was created based on 15 kinds of management manuals, 5 kinds of washing manuals, 29 kinds of records, 17 kinds of procedure manuals and their management manual.

c) Implementation of technical guidance for nurturing technical leaders for Perikanan Makassar staff and fishery workers using the installed equipment

The technical guidance of equipment operation was conducted for 4 staff of Perikanan Makassar. The technical guidance related to octopus processing production such as sanitary control and octopus processing was executed 10 times in total, and the basic technology transfer was completed.

d) Implementation of technical guidance for Perikanan Makassar staff by already trained technical leaders

Technical guidance was given to about 40 staff (including temporary staff of Perikanan Makassar factory) in 7 times by trained technical leaders, and the basic technology

transfer was completed.

e) Training in Japan for Counterpart staff

Training in Japan for Counterpart staff was conducted. 1 staff was from Perikanan and 2 staff were from MMAF. In the training program, they experienced quality fishery processing products, learned cases of voluntary resource preservation efforts by fishermen, conducted field experience of fish distribution, and on-site training at AJIRUSHI factory which acquired HACCP.

f) Verification of production of steamed octopus, sliced octopus, cut octopus (Basic Product)

Production of prototype was conducted 3 times in total, and it was reported to the quarantine station. Every time the production was implemented, the quality of product improved. Not only Perikanan Makassar staff but also fishery workers participated in production of steamed octopus for tasting and trial sale.

g) Development of cooked octopus product using basic product

The developed cooked octopus product was well received by Indonesian who do not eat octopus so far. At the exhibition “Food & Hotel Indonesia 2017”, the tasting of cooked octopus was conducted in cooperation with a Japanese food manufacturer. At the festival “Ennichisai” which was held in Block M Jakarta, “Tako Kushiyaki (octopus skewers)” was sold as trial and achieved record sales. The development of cooked octopus product for Japanese convenience stores in Japan was also conducted.

h) Formulation of Business plan after the project

Business plan through the collaboration with Perikanan Makassar was formulated after the discussions with the Counterpart Organization. The sales contract of 30 tons octopus which is necessary for the high-volume test and trial production in AJIRUSHI was also concluded. In addition, preparation for establishment of AJIRUSHI’s local subsidiary in Indonesia was initiated.

④Expansion of domestic market and export market of fishery processed products

a) Domestic Market of fishery processed product

Hearing survey to food industry participants in Indonesia was conducted to narrow down sales targets. Reflecting the result of the survey, steamed octopus (basic product) and cooked octopus processed products which are shown at exhibitions or test sales were produced and received great responses.

b) Export market of fishery processed product

The tendency of octopus exports to Japan and the EU (27 countries) was studied. For both domestic and export market, the most important thing is to set standards of good quality and freshness of octopus and procure them accordingly. Preparing for the business development after completion of the project, AJIRUSHI standard for Indonesian octopus was established.

c) Tasting event

Tasting events for local food distributors and Japanese food chains companies were held twice and received favorable reviews.

d) Exhibitions for developing new business partners in Indonesia

• FOOD & HOTEL INDONESIA 2017 (April 5th - 8th 2017)

Cooked octopus product developed in collaboration with a Japanese food manufacturer, including such basic products as sliced and cut octopus, was offered for visitors of the exhibition as the tasting for the promotion of octopus. It received great responses from the visitors and it was verified that the possibility of disseminating the octopus processed products in Indonesian market are very high.

• Festival “Ennichi-sai” in Block M Jakarta (May 13th – 14th 2017)

“FOOD & HOTEL INDONESIA 2017” targeted at those working in the food and drinks industry and offered the tasting for free, whereas this event was for trial sales to general consumers. As a result, our octopus received great responses mainly from young people. It was verified that octopus processing product can be accepted by general consumers. In addition, we received interview from the “Metro TV” at the event.

e) Exhibitions for developing new business partners in Japan

• FOODEX JAPAN 2017 (March 7th – 10th 2017)

Approximately 350 existing business partners and new potential business partners of AJIRUSHI tasted the Indonesian steamed octopus and highly evaluated its quality.

f) Formulation of partnership strategies with local partners at various stages of logistics, from material supply, local production, local and international distributions, local sales, for constructing value chain

The partnership strategy for constructing value chain was formulated.

⑤ Formulation of Business plan

Based on the value chain strategy, the business development plan after completion of this project was formulated.

(2) Self-Reliant and Continual Activities to be Conducted by Counterpart Organization

①MMAF

We have kept close communications with the Counterpart Organization, Directorate of Fisheries Product Diversification and Quality Control, MMAF, through meetings with the directors and deputy directors every time we visited Indonesia. In addition, the Ministry participated in the training program in Japan by JICA budget, and showed positive attitudes to continue activities even after completion of the project.

②The South Sulawesi of Marine and Fisheries Service

From the South Sulawesi of Marine and Fisheries Service, the following requests and the commitment for cooperation were presented for the implementation of continuous activities by AJIRUSHI:

- a) The South Sulawesi of Marine and Fisheries Service expects investment and technical support from AJIRUSHI even after the completion of this project, is committed to full support to AJIRUSHI.
- b) The South Sulawesi of Marine and Fisheries Service will strengthen the cooperation system with the Perikanan Makassar and aim at improving efficiency of management work for octopus fishing, quarantine and evaluation of octopus processed products, and exports, etc.
- c) As the ocean around Makassar is a treasure trove of marine resources (fish species), the Bureau would like to collaborate with Japanese companies in utilizing various marine resources including octopus, based on this project as a model case.

③Perikanan Makassar

Under the supervision of MMAF, the following activities were carried out towards the independent operation of Perikanan Makassar.

- a) In parallel with installation of the equipment and for continued activities in this project, Perikanan Makassar worked out its own budget from its headquarters and conducted factory renovation under the technical guidance of AJIRUSHI.
- b) Air Blast Freezer (ABF) was also installed at Perikanan Makassar by its own budget about 5 million yen.
- c) One of the achievements of this project is a change in consciousness of fishery workers in Makassar. For Perikanan Nusantara as a state enterprise, it is also an important work to improve the lives of fishermen. At present, small-scale fishermen are not able to improve their lives due to unstable fishery income etc. One of the reasons is that there is no

organization like a Japanese fishery cooperative in Indonesia, and it is difficult for them to receive bank financing. Therefore, Perikanan Nusantara began to seek out financing for small business owners in collaboration with Bank Negara Indonesia (BNI Bank). They realized through that efforts that it is necessary to organize Japanese style fishery cooperative in order to realize the loan system for small fishery, and requested AJIRUSHI to offer ideas and continuous support.

4. FUTURE PROSPECTS

Even after the completion of this project, AJIRUSHI continues to cooperate with MMAF and provide technical guidance to the Perikanan Makassar, and is supposed to establish a local subsidiary in December 2017. In addition, this project was highly appreciated by MMAF and South Sulawesi State, so that they strongly requested similar support continuously for other fish species. Meanwhile, due to AJIRUSHI's efforts, such as execution of training in Japan for MMAF staff and arrangement of courtesy call on Hitachinaka municipal government and chamber of commerce, interest of not only Hitachinaka City but also the local fisheries industry in Makassar city has been raised. Based on the background, Hitachinaka City decided to consider proposing to "JICA Partnership Program Special category for Regional Development and Regional Economy Vitalization (Local Government Type)" to JICA Tsukuba.

(1) Impact and Effect on the Concerned Development Issues through Business Development of the Product/ Technology in the Surveyed Country

① Management of Fishery resource

The fishery resource management has been undertaken in South Sulawesi state under the USAID project, and a certain contribution has been made to resource management of fish type, data construction, data management of South Sulawesi Provincial Bureau of MMAF. However, it is not known how the fish species subject to data management are processed and consumed. By tracking the processing flow of octopus from the fishing grounds in this project, information of fishermen, landing sites, brokers etc., were added to the raw material data, contributing to the management of fishery resources related to the logistics and resource usage.

② Domestic and International marine logistics

Domestic maritime logistics is monopolized by traders in Indonesia, and international maritime logistics is also not smooth. This is a major challenge for Japanese food companies trying to enter Indonesian market. In this project, we examined various countermeasures by highlighting issues through the verification of domestic and international distributions.

Even though the distribution system cannot be changed by one SME, AJIRUSHI has decided to accumulate achievements step by step in cooperation with Japanese logistics enterprises. By accumulating the results, we think we will be able to contribute to the improvement of the issues.

③Production base

There are few production bases in the outer area. Government actions related to the value chain and issues of human resource development are not independent but are related each other. In the concept of supply chain from raw material procurement to sales channel, and human resource development program to realize them, the outcome of this project has received high evaluation from MMAF as model case. In addition, the Ministry requested continuous cooperation strongly even after complementation of the project.

(2) Lessons Learned and Recommendation through the Survey

①Signatories of the Minutes of Meetings

Signatories of the Minute of Meetings for this project were representatives from JICA Indonesia office, Directorate of Fisheries Product Diversification and Quality Control of MMAF, and AJIRUSHI and Perikanan Nusantara headquarters, who executed octopus procurement and processing with the equipment installed at its Makassar factory, was not a signatory. This was pointed out as a problem by the Customs Department of the Ministry of Finance when applying for customs duty exemption and customs clearance. We ended up being able to import equipment with tax exemption due to the efforts of MMAF as a result, but needed long lasting consultation with the Custom Bureau of the Ministry of Finance. As a lesson to learn, the Minutes should have been signed also by Perikanan Nusantara headquarters that actually has been implementing this project on the ground.

②Indonesian holidays

There are many holidays in Indonesia besides special holidays such as Ramadan Eid Holidays and Festival of sacrifice, and they vary depending on the regions. As neither government agencies nor private companies operate on public holidays, it is necessary to check those holidays in advance before traveling to Indonesia. However, as the holidays may be changed, it is necessary to keep close communication with local contacts.

③Communication tool with governmental organizations and private companies in Indonesia

Email does not work well as a tool to communicate with local contacts. Quick and effective ways for communication are telephone and communication application "WhatsApp

Messenger".

④Frequent changes in laws and regulations

Even though related laws and regulations were frequently changed during this project, the problem is that governmental organizations may not be able to answer clearly and accurately on the contents and countermeasures for the changes.

ATTACHMENT: OUTLINE OF THE SURVEY

Concerned Development Issues in Indonesia

- **Regional Disparity:** Increasing urban and rural gap
- **Low fishery processing technology:** Settle for a supplier of raw material
- **Limited high value-added fishery processing products:** Undiversified processed fishery products

Implemented Activities in the Survey

- **R&D of octopus fishery grounds**
Verification of stable octopus supply chain, collect information on laws & regulation concerning the fishery sector
- **Strengthening of production system for the processed fishery products**
Preparation of manuals for octopus processing and sanitation control, training of trainers/trainees, etc.
- **Expansion of processed fishery products market**
Product development, sales strategy and establishment of value chain based on the strength of stripe octopus in Indonesia

Proposed Products/Technologies



- Unique processing equipment developed by the company that makes octopus from abroad with tough meat tender and eye pleasing
- Sanitation control technology for Hazard Analysis and Critical Control Point (HACCP)

Survey Overview

Name of the Counterpart:
Directorate General of Products Competitiveness, Ministry of Marine Affairs and Fisheries
Duration: October 2015 ~ April 2017
Area: Jakarta and Sulawesi

Impact on the Concerned Development Issues in Indonesia

- **Development of octopus fishery grounds in Sulawesi:**
Income generation for local coastal fishermen
- **Technology transfer for fishery processing and sanitary control:**
Strengthening of the production system of processed marine products
- **Development of high value added fishery products:** Expansion of local/export markets

Outputs and Outcomes of the Survey

Current situation

- **Global shortage & rising price of octopus**
Decreasing volume of octopus landings, increasing consumption in Europe and Asia
- **Shrinking domestic market**
Drop in sales because of Low birthrate and longevity, declining population, changes in food culture, etc.

Prospect

- **Overseas expansion**
New market expansion by the development of "Home Meal replacement (HMR)" not affected by the raw material market
- **Activation of local economy**
Activation of domestic market by the ripple effect