



Coastal Community Empowerment Management of Anchovy (*Stolephorus Spp*) Fishery in Saramaake, North Moluccas Province, Indonesia: Need Assessment, Program and Evaluation

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Received: 25 October 2017; Accepted: 12 March 2018

Abstract

Anchovy (*Stolephorus spp*) is one of the better-known marine fishery commodities in Indonesia. The fish species is commonly caught in the Saamaake coastal waters, East Halmahera Regency, in the North Moluccas Province of Indonesia. The present study was conducted for 7 months from June 2016 to January 2017, aiming to evaluate the management of community empowerment through improving the quality of anchovy product and initiation of market development. The methods utilized in this study were survey, training and mentoring. The targets of the study were the fishermen (15 fisherman-groups being 60 persons in total). The program implementation was conducted based on a needs assessment result which was evaluated at the end of the program. Some activities have been performed to improve the product quality, to produce product packaging and labelling, and to initiate market development. As a result of the study, the community has gained adequate knowledge and technology related to fish product handling and processing. The dried anchovy can be packaged into small sizes (100 g, 200 g, 500 g, and 1000 g) and labelled, and it can also be marketed to broader areas e.g. PT Antam Ltd. office (in Ternate), PT Antam Cooperation (in Buli), and airport (in Ternate). In accordance with the data analysis, it is revealed that the program is suitable for the community target (100%), including skill development (92%). The program is also considered to be suitable for the fisherman (92%). Through this program the community gain the capacity to run their businesses independently.

Keywords: Community Empowerment, Anchovy, Market, Saramaake, North Moluccas

Introduction

As an archipelagic nation, Indonesia has the longest coastline in the world covered by marine waters. The marine waters are filled with a vast potential of biological resources which are utilized and developed in ensuring the welfare of the society and the state. One of the biological resources which can be developed in the region is anchovy (*Stolephorus Spp*). The fish is relatively abundant, and commonly caught for local market consumption.

In general, anchovies are caught by using a water surface trawl, Danish seine, purse seine, fixed gill net, three layered net, stationary lift net, boat lift net and other fishing gear. The fish distribution area in Indonesia is



located in the region between 95° – 140° E and 10° N– 10° S, covers almost the entire Indonesian territory. Anchovies are commonly marketed in almost all regions in Indonesia and, in fact, they are commodities exported to several countries including Singapore, Malaysia, China, Taiwan, USA, and Japan. According to Directorate General of Capture Fisheries, Ministry of Marine Affairs and Fisheries (2011), the production volume of anchovy caught in Indonesia in 2010 was 175,726 tons (with a production value of 2,160 billion IDR).

Saramake Village, East Halmahera Regency, North Moluccas Province is an area with high potential for anchovy fishing. This village has a considerable amount of fishery production in the province. This fish product (in dried form) is quite prevalent in the Buli and Ternate markets and presumably has spread to some areas in Indonesia including Manado, Makassar, Surabaya, etc. The problem at this location is the abundance of fish catches (especially in the rainy season), but it is less dry conditions. However, due to the condition, their quality decreases and they become unsold.

Community empowerment can be interpreted as an attempt to encourage people to participate both actively and independently in all aspects of development of their industry. Empowerment activities through CSR (Community Social Responsibility) are not philanthropic; nonetheless, efforts are created to seek out solutions and overcome social, economic and environmental challenges in order to ensure sustainable development (Vasilescu, Barna, Epure, & Baicu, 2010). In addition, proactively promoting public interest is necessary to increase the community's economic growth and development (Pop, Dina, & Martin, 2011). Sumodiningrat, *in* Kurniawati (2013), argued that community empowerment needs to be performed through three (3) channels *i.e.* (1) Creating a climate allowing the community potential to develop (Enablement); (2) Strengthening the community potential its power (Empowerment); and (3) Providing protection (Protection).

The information regarding community empowerment in Indonesia has been published in some areas. Study conducted in Tobelo Sub-District (North Halmahera Regency of North Moluccas Province) reported the empowerment of fishermen communities in the area. The activity aimed to evaluate the coastal community economic Empowerment (PEMP-Indonesian) activity developed nationally and to see how far this program can answer the problems of the coastal communities. The results show that the PEMP Program has triggered the socio-cultural, technological, economic and institutional changes of the coastal (fishermen) communities of North Halmahera Regency. An important change in the socio-cultural aspect is to revive the local values of honesty, openness and mutual cooperation which are manifested in the form of community of beneficiaries (KMP), joint business group (KUB) and cooperation. The institutional establishment is directed to increase community participation in organizing, planning, implementing, supervising and conserving their business development and managing fishery resources on an ongoing basis (Sipahelut, 2010). Community empowerment conducted in Lekok Sub-District (Pasuruan Regency of East Java Province) by Nugroho (2015) reported the empowerment of fisherman through the efforts of traditional processing of presto fish, fish balls, fish noodles, fish abon (dried meat) and fish sauce. From the results of observation, these activities have significant influences in improving the welfare of the fishermen families in Lekok Sub-District, Pasuruan Regency. Yanti & Permata (2016), reported that the community empowerment program in Rao Sub-District (Pesaman Regency of West Sumatera Province) can increase the communities understood the method of processing and packing processed fish products, and the partner group has succeeded in making processed fish products in ready-to-market packaging. Darmansah, Sulistiono, Nugroho, & Supriyono (2016a), stated the empowerment of coastal communities in implementing the catfish culture program in the coastal village of Indramayu Regency of West



Java Province. The fish harvest can be sold in the market and profitable. Community empowerment in Indramayu (West Java Province) was conducted relating to development of milkfish and shrimp policultures at Karangsong Village, Indramayu, West Java (Darmansah, Sulistiono, Nugroho, & Supriyono, 2016b). Ma'arif, Zulkarnaen, Nugroho, & Sulistiono (2016) reported the community empowerment in general fishing activities through training and mentoring, in Indramayu Regency of West Java Province. Community empowerment through fisheries, livestock–animal husbandry, agriculture, food processing, institutions, and marketing in Gebe Island, North Moluccas Province was conducted (Sulistiono, Priyanto, Saharudin, Adiwirman, Syah, Setiono, & Zulkarnaen, 2012; Sulistiono, Priyanto, Sunarminato, Sumarti, Syah, Priyambodo, Zulkarnaen, & Herawati, 2015). Insani, Kadir, Utomo, Afandi, Sulistiono, Nugroho, Murhum, & Manan (2017) reported the community empowerment through grouper fish farming activity in Gebe Island, North Moluccas. The results of the review on community empowerments are not the same as those conducted in Saramaake; however, the experience of implementing methods in community empowerment that had been done before is the same. The methods included needs assessment, training and mentoring, especially those already published in Darmansah et al. (2016a, b); Ma'arif et al. (2016); Sulistiono et al. (2012); Sulistiono et al. (2015); and Insani et al. (2017). Nonetheless, there has been no study to gather information on the community empowerment activities conducted in East Halmahera of North Moluccas Province.

The objective of this study is to evaluate the management of community empowerment through product quality improvement of dried anchovy and the initiation of an anchovy market for fish caught by the fisherman in Saramaake. In reference to the results of these activities, it is expected that an information of community empowerment management will follow leading to through better quality catches and broader marketing; hereby improving the commodity's welfare.

Methods

Time and Location

The implementation of community empowerment program was conducted for 7 months, from June 24th 2016 to January 31st 2017 at Saramaake Village, South Wasile Sub District, East Halmahera Regency of North Moluccas Province, Indonesia. (Figure 1).

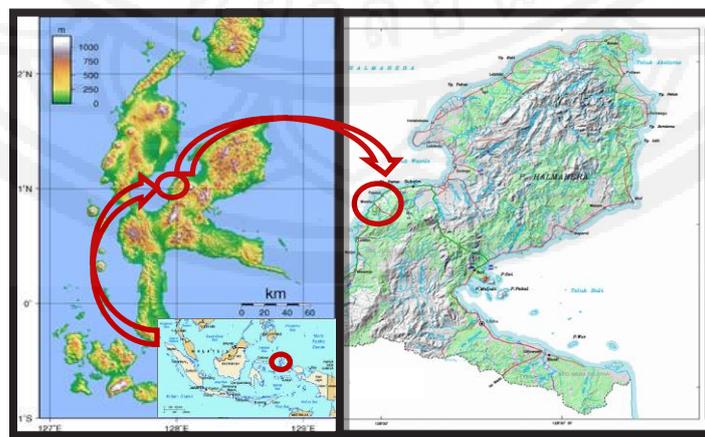


Figure 1 Location of the Community Empowerment Management in Saramaake, East Halmahera Regency (North Moluccas Province of Indonesia)



Materials and Equipment

The primary materials were anchovies and plastic packaging and labelling in this activity. The required equipment was sourced from various stationeries (required during the training activity) and the equipment for catching, drying (at the beach), storage and warehousing, draining (spinner), and packaging (sealer) (required during the practice and mentoring activities).

Implementation Methods and Data Analysis

In general, the implementation methods consisted of survey of needs assessment, training and mentoring. Survey of needs assessment was conducted through purposive sampling (by interviewing activities with some fishermen) at the location of activities (10 fishermen and fishermen's wives). From the results of interviews, it was commonly known that the fishermen had problems in the quality of unsold caught fish products, especially in the rainy season. In addition, the product market is conducted only by one skipper/seller, and this greatly affects the selling price. The survey was conducted to establish the problems and the community needs. In relation to the results of the needs assessment survey, efforts were made to improve the quality of products through training activities *i.e.* improving the quality of catch (product processing, drying, packaging, labelling), and market expansion. The training was done for selected person (20–25 Persons).

The training activities were conducted by conveying teaching materials and practical discussions in relation to the handling and initiation of fishery-products-marketing. The results of training were measured through the visual observations and the pre-test and post-test by filling the questionnaires. Because the training activities (especially processing) were new for them, the fishermen and fishermen's wives were generally not aware of them and just found out the information after the training. Mentoring was performed through a series of program discussions and practices conveyed during the training activities. In addition, the monitoring and evaluation were also conducted throughout the survey, discussions, and questionnaires whose target audience was the program recipients. Observations on the results of the mentoring were also conducted visually, and the participants filled in the questionnaires at the time of monitoring (just before finishing of the program). The observations on skills of the training outcomes were also performed by counselors/mentor who worked on a daily basis with their participants. The population target was commonly homogenous, and there were 12 samples (monitored participants). Monitoring and evaluation were conducted in order to know the skill levels of the trained community. The activity was carried out through questionnaires and interviews. The results of activities and observations in the field for implementation of the program (monitoring and evaluation) are presented descriptively in forms of figures. Meanwhile, the results of questionnaires were calculated on average (in percentages) to assess the success rate of the community empowerment activities.

Results

Field Survey (Need Assesment) and Program Planning

Anchovy (*Stolephorus Spp*) is one of important fishery commodities in Saramaake, East Halmahera Regency of North Moluccas Province. The fish is a main target of capture fishries in this area. Fishing gear required to conduct the fisheries activities are boat lift nets. There is a variation in sizes of the fishing gears in this village *i.e.* small, medium, and large sizes (length x width: 14–25 m x 14–25 m).

In this village, the monthly period for catching of the anchovy varies from 14 to 21 days per month. The length of the fishing operation was 14 days (Islamic month, dark moon condition for anchovies) and the catch



was mostly anchovies, while the 21-day-fishing operation also covers catching squid (7 days of bright moon). Boat-lift-net catch was various, ranging between 50–150 kg of dried anchovies per night. If the operation period was 14 days, the production yield for each operation is 14 days x 100 kg = 1.4 tones. Thus, the catch on July 25th resulted in 8 baskets (80 kg wet net), or around 60 kg net (dry net). Meanwhile, on July 26th, 2016, the catches obtained were about 4 baskets, or 30 kg dry net. In addition, the basket unit is also varied, commonly ranging up to 20 carts, or around 180 kg. Dried anchovies collected by the traders from January to December 2016 were various (Table 1). The following table shows that the amount of anchovy caught were relatively high in January, yet declined in June but rose again in October.

Table 1 Anchovy production at local trader during January–December 2016

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Production (kg)	30	25	25	20	20	10	16	18	23	24	39	27

Source: interviews and data record in the field

Handling activity of the anchovies caught by using boat-lift-net was done immediately, so that the anchovies remained fresh, clean, and produced good quality when dry. Therefore, the anchovies have longer storage span and better taste when cooked. The handling covers the transportation, washing, drying, and storage and/or packaging. The catches (anchovies) are moved from the boat-lift-net to the transporter boat and taken to the beach or mainland. Anchovies are placed in the center of the boat coated with clean and dry plastic sheeting. The trip from the boat-lift-net to the beach takes around 15–30 minutes.

In the beach, the catches are sorted into anchovy and non-anchovy and then washed using clean sea water. Anchovies are taken to the drying facilities by using a plastic basket full of holes, so that the water can drain. The anchovies are then dried in a special drying space with pedestal nets as the basis, and equipped with a plastic cover on the top to anticipate rain. Plastic cover is taken off when it is sunny and hot, so that drying process occurs. Plastic cover is installed when it is rainy or late night in order to protect the anchovies that have not been dried. The drying process lasts for 1–1.5 days when it is a hot day, and if there is less heat, the process can reach up to 3 days.

Dried anchovies after the sun-drying for 2–3 days have a good in quality, bright in color, and have a shiny skin. Dried anchovies are stored in a storage room first and not directly packed in order to avoid lusterlessness. Anchovies can also be re-dried at a location near the storage or elsewhere. If the dried anchovies have reached a certain amount (about 50–70 kg), sack packaging is carried out. Dried anchovies that have been packaged in sacks are sent to the local collector storage.

Marketing of anchovy caught from Saramake village was conducted in local and inter-island areas. The village is situated between Buli and Sofifi channels (the capital of North Mollucas Province). This village is one of the important villages in anchovy trading. Observations on the anchovy market were conducted to examine the marketing conditions in the Saramake village from 25 July to 26 July 2016 and in January 2017. The anchovies from Saramake village (fisherman and or boat-lift-net owner) are marketed through four primary avenues. 1. They are directly sold to big collector/traders, 2. They are sold to local collectors/traders, then sold to big collector/traders, 3. They are sold to inter-island collectors, 4. Or they are sold directly by fishermen to the community around Saramake, and then they are sold to small traders visiting Saramake (Figure 2). Big trades are conducted only by traders, while the small ones are done in the community.

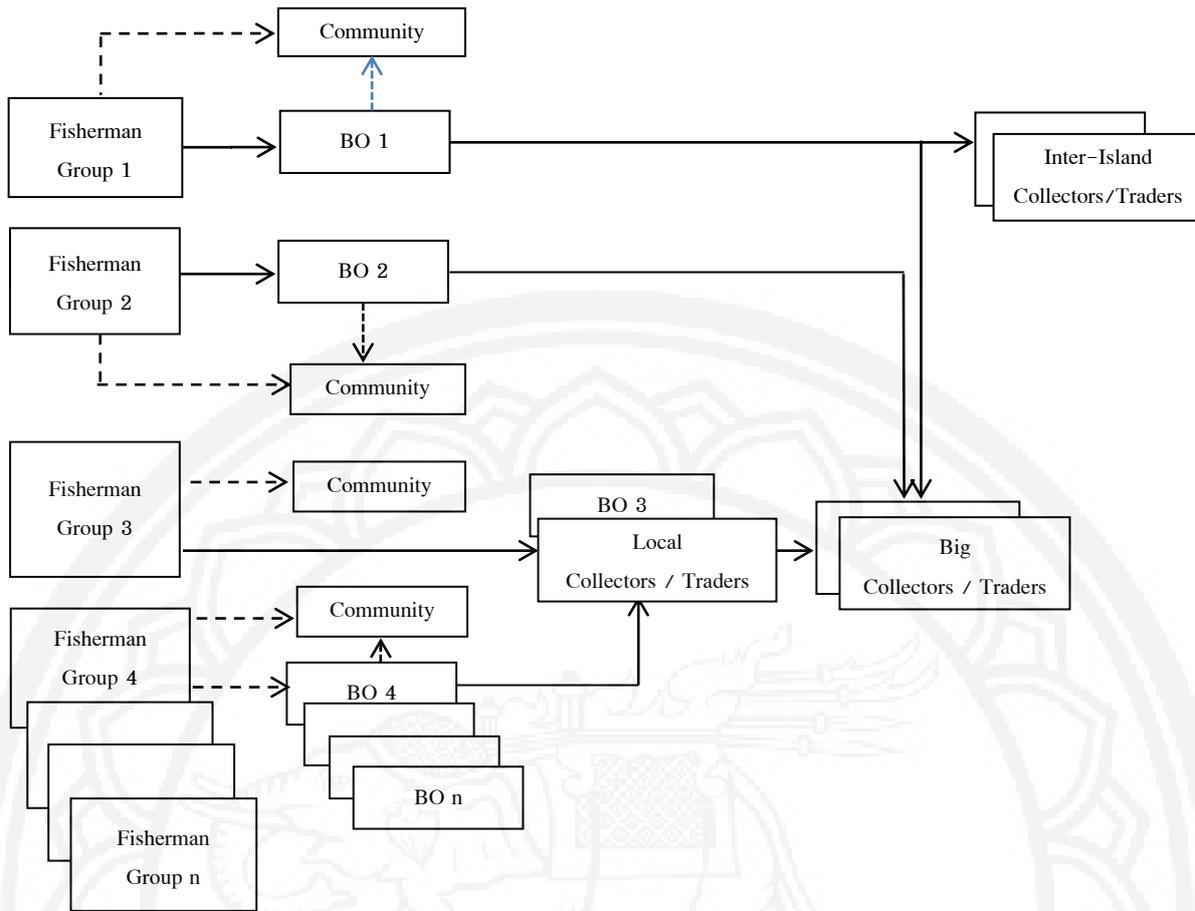


Figure 2 Anchovy marketing path in Saramaake Village
(Modified from Sehabudin, Budi, Herawati, Purnomo and Sulistiono, 2017)

Note: —> Sold in large amount, - - -> sold in small amount

BO = boat lift net owner: 1 to n

The catches of anchovies are collected to the local collectors (Local Middlemen) from around 20 boat lift net owners and fisherman. The prevailing prices among the local collectors in July 2016 were IDR 25.000/kg (large size; 7 cm total body length), IDR 30.000/kg (medium size; 5-6 cm total body length), and IDR 40.000-50.000/kg (small size anchovy; 4 cm total body length). Since January 2017, the prices have changed into IDR 28,000/kg for large sized anchovies, IDR 35.000/kg- 50.000/kg for medium-size (5-6 cm), and IDR 50.000-55.000/kg for small or *delicate* anchovy (Figure 3). Local collectors distribute dried anchovies to Ternate by trucks with a capacity of 6 tons per each delivery. In a period of one month, the shipping is conducted in 3-6 times costing IDR 3.5 million/trip. Thus, 80% of the dried anchovy production is sold to local middlemen as an agent of inter-island wholesalers whose storage is located in Ternate.

There are also anchovies originated from Saramake Village in Buli market. Most small fishermen directly sell their anchovies to areas around Saramaake, or to small traders visiting the village. The anchovies are sold in Buli market, East Halmahera. In Buli market, the prices of large/medium anchovies are IDR 5.000/ounce (IDR 50.000/kg), while the small or delicate anchovies are IDR 8.000/ounce (IDR 80.000/kg), or twice more expensive than the price at the collector rate in July 2016. Meanwhile, in the survey conducted in January 22 2017, the prices of large anchovies were IDR 50.000/kg, and medium sized of IDR 80.000/kg, and small sized of IDR 100.000/kg (Figure 3).



Anchovies originated from Saramaake can also be found in Ternate market as one of the largest markets in North Mollucas Province. Observations on this market were conducted on July 21, 2016 and January 24, 2017 to explore anchovy marketing paths which are likely to come from Saramake. In Ternate market, most anchovies found are also originated from Saramake (East Halmahera). The number of anchovy traders is over 15 people. The anchovies from Saramaake are packed in plastic sacks and sold at various prices depending on the type and size. Anchovy prices in Ternate market in July 2016 and January 2017 are presented in Figure 3.

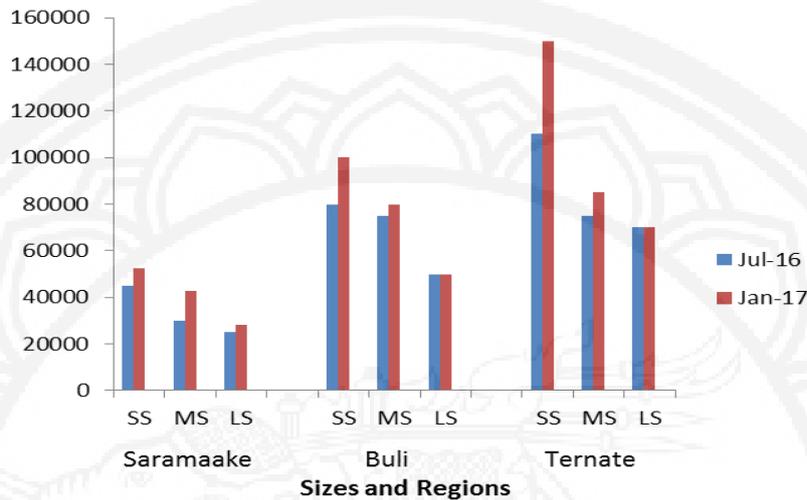


Figure 3 Anchovy Prices (IDR) in Saramaake, Buli and Ternate markets observed in July 2016 and January 2017

Note: SS = Small Size, MS = Medium Size, LS = Large Size

Based on the survey on the fishery needs assessment and conditions in Saramaake Village, program activities can be planned as follows:

1. Quality improvement of anchovy catch, consisting of:
 - Handling process of anchovies starting from the boat lift net to the drying area
 - Construction of the drying equipment in some locations
 - Improvement of storage system in the warehouse
2. Marketing improvement of caught anchovies, consisting of:
 - Preparation of packed and labeled anchovy products with small–medium sizes (They are Easy to Carry) *i.e.* 100 g, 200 g, 500 g and 1000 g
 - Expansion of the location and marketing segments (Stores, Mart, Airport)

These programs were conducted through a series of training and mentoring session, with an main objective is the quality of the catch of anchovy is increasing. In addition, the programs included monitoring (during the programs) and evaluation (towards the end of the program).

Program Implementation

a. Processing Facility Development

Construction of processing facilities is needed by the fishing community for improving the quality of the caught fish. Moreover, a few drying facilities are incapable of accommodating the drying process. This construction covers the addition of anchovy drying facilities and improvement/construction of anchovy storage facilities. In reference to the results of the first survey conducted in June 2016, the number of anchovy drying



facilities available in Saramaake village was still few. This resulted in catch loss during the peak of the harvest season. Fifteen (15) groups within the community will obtain support in the form of drying facility provision. The drying facility in this program is 50 m length and 1 m width, equipped with a plastic cover. Furthermore, a renovation of the storage used to store the anchovies was also conducted to improve its condition. The new storage facility is located behind the old one and it is built with a floor and brick walls. The new storage is specifically used to store bulk dried anchovy. Anchovies are packed into sacks and placed on pallets to avoid direct contact with any damp on the floor.

b. Training

Training is necessary to increase knowledge and skills of the fishermen in Saramaake Village. The training activity is designed in accordance with the community needs, covering the handling of anchovies starting from the anchovies in the boat-lift-net which are then dried in the drying facility, packing the dried anchovies, labelling, and marketing initiation. At the beach, training of the anchovy handling improvement was conducted for 2 days. There were 30 group participants who received the training, consisting of boat-lift-net owners and fishermen. The training was divided into two parts *i.e.* handling observation and evaluation by the community and conveying suggestions for handling improvements.

In the training, the use of clean and dry plastic sheeting and the way to wash anchovy with clean sea water to maintain its quality were described. The plastic sheeting used to cover the anchovies on boats must always be cleaned and dried after use. Packaging is functioned not only to wrap and cover the product, but also to protect the anchovy so as that it has a long shelf life (Marsh & Bugusu 2007). In this matter, the fishermen in Saramaake village were given an introductory training into packaging material and labelling. Anchovies will be packed in dry condition containing $\pm 5\%$ of fat. Subsequently, anchovy packaging utilizes *PP* plastic material of food grade or food grade HDPE which is slightly thicker, so that oxygen does not penetrate into the package easily (Robertson, 2013; Siracusa, 2012). Oxygen from the air that goes into the package potentially damages the fat within the anchovy, causing it to become rancid. Thus, there is detailed information on the packaging to convey to the consumers. The regulations for manufacturers to provide information regarding the product being sold on the label has been established by the Indonesia government through Drug and Food Supervision Agency (BPOM-Indonesian). Labels containing information about the product is usually installed on the packaging surface, including the brand, material composition, nutritional value (AKG-Indonesian), expiration date, home food industry number (PIRT-Indonesian), etc.

c. Mentoring

The mentoring activity was conducted in handling anchovies with a high retail value. It was performed on daily basis by visiting each group of boat-lift-net owners and fishermen, recording the development and issues in anchovy handling techniques and processes, and providing solutions to those issues by the mentors. In addition, the mentoring covered various activities in the form of both technicality (related to quality improvement of the caught anchovy: the construction of drying facility, marketing) and non-technicality (related to initiation of community meetings, and group discussions).

The mentors held a joint discussion with the fishing community and the-boat-lift net owners to establish their willingness to accept the assistance provided, as well as technical discussion regarding the provision of necessary materials. In reference to the discussions, the boat-lift-net owners received assistance in a form of a drying facility and a 50-meter-net and 50-meter-covering plastic. In October 2016, the manufacture of the



anchovy drying facility was technically initiated in accordance with the availability of all the materials to be used to dry the fish at the manufacturing location. In producing packed anchovies, the community has been accompanied by mentors to perform such activity. Mentors encourage the community to produce packed anchovy in various sizes ranging from 100 gram, 200 gram, 500 gram to 1000 gram. The activity is also performed by using sealer machines and speaner.

Monitoring and Evaluation

Monitoring and evaluation on community empowerment activity was conducted in January 2017, through a series of discussions and questionnaires conveyed to the program participants (Figure 4). An overview of the evaluation result conducted in January 2017 ($n = 12$) is presented in Figure 5. In reference to the data analysis, it is revealed that 100% of fishing community assessed that the program is beneficial for them, and 92% considered that this program was in line with their expectations, 92% absorbed the skills of the program, 92% utilized the improved anchovy drying facility, and 67% was the opinion that the drying facility was adequate. In addition, the anchovy drying facility has been look after well by the fishermen (100%). This indicates the necessity of an adequate drying facility for the fisherman, especially in the high season.



Figure 4 Monitoring and Evaluating Activities Conducted to Examine the Activity Progress

In relation to work discipline and environmental preservation, the fishing community has not followed the experts and mentors' guidance completely (not 100%). Around 90% of the fishermen do not throw trash into the sea; however, 100% of them rinse their catch with clean water. The survey reveals that around 50% of the fishermen still store fuel close to their catch. The whole fishing community (100 %) conduct discussions to solve problems; nonetheless, only around 60% conduct discussions to perform better marketing, and around 83% had a tendency to create boat-lift-net. In relation to the catch potential, around 22% of the community had an assumption that the fish were abundant, or around 75% assume that fish number starts to decline for several reasons e.g. sewage and weather around the fishing location. The fishing community also considers that the fish need to be boiled if caught in large numbers (75%). The fishermen also expect that to run the programs properly, addition drying appliances, lamp replacement, and electricity generator provision will be required.

In reference to the observations, the community managed to handle anchovy from the boat lift net fairly well. Fishermen rinsed the anchovies with clean water. This is also reflected in the results of the evaluation in which a percentage of (100%, $n=12$) of the fishermen conducted rising process with clean water. The fish that had been cleansed were taken to the drying facility. Drying was carried out by the community quite well; however, there was no change in terms of drying time. In general, the drying process takes 1–3 days (1.5 days on average) with water content of the anchovies is 15 % less than that of the previous content of 19%.

Dried anchovies were stored under proper condition. In storage, the anchovies are collected on daily basis. After reaching a relatively large amount, the anchovies are delivered to the collectors/traders. In the collector's storage, the anchovies were stored and later are sent to Ternate, if the volume is adequate. Based on the evaluation, half of the fishermen (50%) did not improve their storage condition. A group of people registered in a Joint Business Group (KUB-Indonesian) initiated the packaging and labelling activities (which had not been done previously). The group has packed the anchovies into smaller units (100 g, 200 g, 500 g, 1000 g) twice *i.e.* in November 2016 and January 2017.

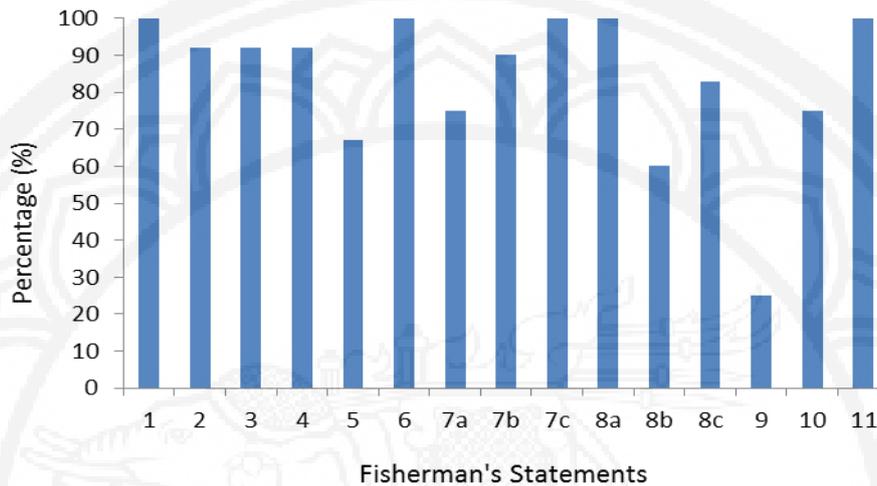


Figure 5 Various statements by fishermen in relation to the implementation of the program of community empowerment in Saramaake Village, East Halmahera

Key:

1. Benefits were obtained
2. Relevance between the program implementation and expectations
3. Groups with skill improvement
4. Maximized utilization of drying facility
5. Capability of drying facility provided to accommodate the caught anchovies
6. Good maintenance towards the drying facility provided
7. General Regulation and rules established by the mentors which are already implemented
 - a. Not leaving trash around the boat-lift-net
 - b. Taking water from clean location to wash the anchovies
 - c. Not storing fuel in the storage
8. Community members conducted discussions in solving problems
 - a. Wet anchovies
 - b. Better anchovy marketing
 - c. Construction of new charts
9. Relatively high number of anchovies caught
10. Abundant anchovy production and unfavorable weather conditions and the necessary to boil
11. Expectation that the program will benefit the community (e.g. drying facility, lights, and electricity generators)

In October 2016, the packaging of dried anchovy was started after the training. The marketing locations were located in some areas *i.e.* Buli Mart (Buli), the mess of PT Antam Tbk (Ternate), and Sultan Baabullah Airport (Ternate). The marketing sizes consisted of 100 g, 200 g, 500 g, and 1 kg. Dried and processed



anchovies were marketed in November 2016. Some marketing was done, both at Ternate airport and other tourism locations. In accordance with an increase in the market value, Home Food Industry Number (PIRT-Indonesian) training was conducted in December 2016. Currently, these products are certified, have owned Home Food Industry Number (PIRT-Indonesian) and can be marketed more widely. The selling of anchovies marketed at Buli Mart is quite promising, while at Ternate Airport sale was less successful. In 2016, the target of marketing activity was to introduce a branded product to the community.

Discussion

The community empowerment program is expected to increase not only the capacity level of the individuals but also groups or organizations in sustaining anchovy-fishery-resource management. Narayan *in* Pradono, Faisal, Adriani, Rikeu, & Fajriasanti (2016) defines empowerment as the expansion of assets and capabilities of poor people to participate in, negotiation with, influence, control and hold accountable institutions that affect their live. The empowerment is one approach of community development (Samah & Aref, 2009), which is commonly used for community and social responsibility program (CSR). The CSR has been defined in many ways (Sawandi, 2016), and it is no consensus among researchers (Alamer, Salamon, Qureshi, & Rasli, 2015). The CSR has been widely interpreted as the way companies take into account interest of a broader range stakeholders beyond owners and stakeholders of the firm. Hence, it is about the firms develop policies and practices to minimize the negative impacts and even increase the positive impacts of their business practices on various stakeholder groups (Tan-Mullins & Hofman, 2014). The community development process can be difficult, time consuming and costly (Vadeveloo & Singaraveloo, 2013). A co-management approach, a collaboration between local community, local government, universities, and private sectors, is applied to build the community collective capacity at the local level *i.e.* in Saramaake village. The success rate of community empowerment program can be measured by the extent to which the groups involved understand and carry out their respective roles so that the program can be conducted and give impact on improving community socio-economic living conditions and preserving the anchovy fishery resources.

The community empowerment program, through improving the quality of the caught anchovies and the market initiation in Saramaake village, has been managed well. It also involved various interrelated and mutually supporting parties. Antam Ltd., holding a social responsibility towards the local community, has cooperated with Bogor Agricultural University (IPB) in the community empowerment. The success of the program was highly influenced by the participating rate of the participants in the overall program implementation. According to Nasdian (2014), participation is an active process, initiation was created by the community and guided by its own way of thinking by utilizing the facilities and processes (institutions and mechanisms) in which they can effectively assert control.

According to Plummer & Fitzgibbon (2004), there are five characteristics of co-management that can be observed and play a role in empowering the community *i.e.* (i) pluralism, illustrating wide participation in the community empowerment program; (ii) communication and negotiation, showing the exchange of information between two or more members of the community through dialogue in order to achieve consensus and mutual understanding; (iii) decision-making, indicating that the decisions made through dialogue in a community with a diverse knowledge; (iv) social learning, indicating that benefits are obtained simultaneously out of the knowledge



of actors involved through the value exchange, strategy development, action implementation, reflection, and feedback; and (v) the commitment, emerging from each program activity of the community members involved.

The concept of empowerment in development context is mostly associated with the concept of independence, participation, networking, and justice. According to Craig and Mayo *in* Nugroho (2007), participation is an important component in the growth efforts of self-reliance and the empowerment process. Empowerment strategies place community participation as the primary developmental issue. In addition to its importance, there are several issues that may inhabit the implementation of community empowerment at a practical level. According to Widjanti (2011), there are two patterns of community empowerment. The first pattern shows the role of the actor empowerment capability to be effective in increasing community empowerment, if the preceding community holds the empowerment. Meanwhile, the second pattern suggests that the increased community empowerment can be achieved through the empowerment process because of the role of human and physical capital.

There are several problems faced by the fishermen in Saramaake affecting the quality of produced dried anchovies. They can be grouped into two categories *i.e.* the problems related to inadequate facilities and those related to the anchovy handling of post caught fish. Some of the problems faced by the fishermen in Saramaake village are generally associated with the lack of facilities, inadequate handling of post-caught anchovies in boat-lift-net, and an inferior position in determining the price. A solution is necessary to overcome these problems so that anchovies can be processed into products, and dried anchovies can be stored in appropriate ways to have a longer life-span. Moreover, produced dried anchovy products can have high quality, be clean and hygienic, and obtain a viable price.

The fishing community commonly has an anchovy drying facility; however, the facility is generally owned by the boat-lift-net owners. During the peak harvest, the large amount of anchovies caught is not in balanced with the sufficient drying space. In most cases, the boat-lift-net owners prioritize their own use of the drying facility. Consequently, the anchovies of chart workers cannot be dried immediately causing their fish to degrade. Moreover, the anchovies have to be discarded if a drying facility is unavailable. In addition, the condition for dried anchovy storage is not hygienic. Thus, there is no storage for the dried anchovies; nonetheless, it does not fulfil the qualified condition, and the storage facility is also mixed with other items *e.g.* dessel fuel, pest spraying tool, motorcycles, *etc.* Dried anchovies are also placed on the floor resulting in damp and dirt-contaminated conditions. After the training activities and the construction of drying facilities, these conditions became better, and there is less dried fish and fish disposal.

Prior to the training, post-catch anchovies handling in the boat-lift-net until keeping them in the storage was not performed well; therefore, it affected the quality of anchovies produced. Some treatments which reduce the product quality of anchovies include washing anchovies with turbid/dirty seawater as the anchovies were taken off of the boat and taken to drying space which reduced the cleanliness and appearance of the dried anchovies. During the monitoring, the anchovy washing activity was performed by using only clean water. The fishermen in Saramaake do not have a strong bargaining position in pricing their product. During this time, the anchovy price was determined by the wholesalers from Ternate unilaterally, and this makes the fishermen loose money. They were unable to set the price in line with their expectation and hard work. In reference to this matter, the fishermen are trained to do the packaging, so that it can be sold partially at better prices.

The fishermen in Saramaake village commonly market their anchovy products to the local trader who then sell them to the wholesaler in Ternate in bulk form. In the transaction process, the price of anchovy is determined



by big collector without undergoing the bidding process and mostly this leads to a low price. This is due to the fishermen's low bargaining power. In this case, the fishermen in Saramaake village can obtain higher prices if the products are sold directly to the buyers. Nevertheless, the fishermen in the Saramaake village are still incapable of finding their own market or buyer. Therefore, they need a training in packaging the products into small attractive packages of anchovy (Sizes of 100g, 200g, 500g and 1000g), and later sell them to consumers directly or to shops. Processed anchovy products are also sold directly to consumers or stores (Consignment).

Anchovies have high nutritional value. The results of proximate analysis conducted by AOAC method (Association of Official Analytical Chemist (AOAC), 2009) showed that the processed dried anchovies have 65.5% protein, 5.9% fat, 12.7% minerals and 18.6% water. In reference to Gunawan's research (2006), anchovy contains calcium and fluorine in the form of CaF_2 in adequately high concentrations. Because of the fragility of the fish, an alternative way of preservation is required. One of the common methods is by salting. This preservation and ripening processes does not affect the CaF_2 contained in anchovy. Thus, the high level of calcium makes anchovy excellent to prevent bone loss or osteoporosis. Anchovies are marine animal foods commonly consumed by Indonesians. They contain a total energy content of 74 kilo calories, vitamin A (42 IU) and vitamin B1 (0.24 mg).

Based on the observations, the marketing of dried anchovy as products caught by fishermen (boat-lift-net owners and fishermen) in Saramaake village is still highly dependable on local collectors with prices set by the wholesalers in Ternate. Although this price is still considered to be relatively favorable for the fishermen, it is still much lower compared to the relevant market price (Buli and Ternate markets). The price set by the fishermen in Saramaake village is almost half of the market price. This advantage the traders (village traders and wholesalers). Market information and prices are controlled by the traders; hence, the fishermen simply perform the role as price-takers. This situation shows that the anchovy market structure in the Saramaake village (in particular), and East Halmahera (in general), tends to be oligopsony. Such a market tends to exploit the fishermen further; therefore, they become highly dependent on the village traders. This type of market structure commonly occurs in the markets for agricultural and livestock commodities. If this situation is allowed to continue, the living conditions of fishermen will be worsened and they may even entangled in the poverty cycle in the long term.

The fishermen's mindsets and behaviors which tend to be consumptive with short-term thinking, encourage them not to comprehend the future. This is primarily caused by the abundant fish resources, including anchovy in the waters of Saramaake village and its surrounding; therefore, catching the anchovy does not require excessive hard work. In general, the boat-lift-net owners have more prosperous lives, while the employees are highly dependable on these owners. On contrary, the fishermen's incomes are adequately *i.e.* reaching up to 4-5 million IDR/month for the boat-lift-net employees (fishermen); nonetheless, due to the extravagant lifestyles, there is no capital accumulation (saving), and they can only afford their children's education until junior high school level.

The Community empowerment model conducted in Saramaake Village was similar to the model applied in other areas in Indonesia *i.e.* Gebe Island of Central Halmahera (North Moluccas Province) and Indramayu (West Java Province) (Sulistiono et al., 2012; Sulistiono et al., 2015; Darmansah et al., 2016a; Darmansah et al., 2016b; Ma'arif et al., 2016; Sehabudin et al., 2017; Setiabudi et al., 2017). The activities consisted of potential resource survey, training, implementation of the program based on the training, mentoring, market



development, and development of cooperative business group. These activities at some areas were successful and an agenda for community learning for their business has been set up, and this activity also requires mentoring for its sustainability. If marketing activities and product quality improvements are successful, they will certainly increase the results of the catching of anchovies from these waters. If it cannot be controlled, will lead to excessive catching and may be an over fishing. However until the end of this study, the activities had not expressed over fishing activities, although there was an increase in the number of fishing gear from 16 (2016) to around 25 (2017) in the village. In 2017, there will be also an extension activity on the sustainability use and conservation of resources and environment, so that fishermen are also concerned about the fish and environmental resources in their village. In relation to the monitoring and evaluation results conducted, in general, the community has gained benefits from this activity in both knowledge and skills, and the program conducted is perceived to fulfill the original expectations. In addition, the community also expects a better anchovy market. Furthermore, the community has also gained understanding of ecological and resource conservation.

Conclusion and Suggestion

Conclusion

Saramaake village located in East Halmahera Regency area is best known for its anchovy catches. Some activities relating to community empowerment had been conducted from June 2016 to January 2017 aiming to improve the quality of products (New Anchovy Drying Equipment Construction, and Storage Management and Improvement), efforts in producing the product packaging and labelling the product, as well as to initiate the market development. In reference to the observations, the community has gained the knowledge and technology associated with the handling and processing of fishery products. The marketing of dried anchovies becomes saleable in smaller packaging and labelling (100 g, 200 g, 500 g and 1000 g), and marketable to wider area (Antam Ltd. office in Ternate, Antam Cooperative in Buli, Ternate Airport). Based on the data analysis through monitoring and evaluation, it is revealed that the fishing community considers that the program is beneficial for fishermen (100%), including a benefit in the skills (92%). The program is also compatible to what is expected by fishermen (92%). Through this activity, the fishermen can be more capable in managing their businesses independently.

Suggestion

Improving the quality of the fish catch and the initiation of market development can be conducted through continuous coaching and in a group. Thus, these is a need for better society roles, cooperation with local governments and mentors, as well as mentoring from educational institutions (universities) which are all required in order to support the program development to become business groups in the form of a cooperative.

Acknowledgements

Sincere gratitude is expressed to PT Antam Tbk for the trust and cooperation in conducting the community empowerment in Saramaake village, East Halmahera, North Moluccas. Gratitude is also expressed to the field mentors (Mr. Taufik M. Yusuf, BSc-in Fisheries and Marine Sciences and Ms. Lina Ariani, BSc-in Agricultural Technology) for their assistance during this activity. Thanks are due to Dr. Wini Tri Laksani and Dr. Achmad Fachrudin of Faculty of Fisheries and Marine Sciences and Dr Titik Sumarti of Faculty of Human



Ecology, Bogor Agricultural University for their correction of the previous manuscript. Lastly, we express our gratitude to the fishermen in Saramaake for their cooperation in implementing the community empowerment program in Saramaake Village.

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