

Environmental Education for *Pemindang*

(Case Study on Coastal Communities of Tambaksari Village)

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Abstract— *Pemindangan* is an effort to preserve and to process fish through salting and steaming techniques. The person who earns a living through *pemindangan* is called *pemindang*. Most of the *pemindang* in Tambaksari Village clean their fish and dispose their waste into the river. This study aims to analyze the importance of environmental education to all *pemindang* in Tambaksari Village. The research used qualitative methods with a case study approach. The subjects of the study were 25 *pemindang* and 348 consumers in the Tambaksari village community. The data were collected through observation, in-depth interviews, FGD, and document analysis. Triangulation technique was applied for testing the data validity. The data were analyzed through the process of data reduction, data stages, data displays, and data conclusions or verification. The results of the study show that environmental education given to *pemindang* is very important and it is carried out by providing training and counseling, giving proper *memindang* techniques, managing *pindang* byproducts / wastes and monitoring the *pemindangan* process. High awareness and commitment from all *pemindang* are required to save the river and to guarantee the hygiene of their *pindang* fish. It takes time to change the environmentally conscious behavior of the *pemindang*.

Keywords— *Environmental Education, Pemindang*

I. INTRODUCTION

Tambaksari Village is one of the *pindang* fish producers in Rowosari District, Kendal Regency. *Pindang* fish is one of the smoked and processed fish by means of salting, so that the fish will not damage or rotten in a long time [1-2]. The average *pindang* fish production per person per day is around 50 kg. At least every day, there are 250 *pindang* producers who earn their living. Though is in the form of Home Industry (IR), total production of this village is more or less 12,500 kg/day. This great production contributes significantly to their income. Among the production costs are purchasing fish of Rp. 15,000 / kg, production cost, and operational fee of Rp. 3,000 / kg. Thus, the net profit/person/day is Rp. 150,000. If it is calculated in one village, the net profit reaches 12,500 kg x Rp.3,000,- which equals to Rp. 67,500,000,-/day or Rp. 2,025,000,000,- / month, or

Rp.24,300,000,000,-/year. This figure is very fantastic incomes for a person who lives in a village.

The IR *pemindangan* in Tambaksari Village is divided into 3 categories, namely IR 1 (beginner) with the characteristics of a continuous production pattern/ easy to change, the product being sold, producing goods based on consumer orders, usually on certain occasions per day. The sales system is very loose; It means that after the product has been sold there is no longer any relationships with the consumers. These IRs are usually vulnerable to bankruptcy due to an erratic production system and family finances management system. The capital is still relatively small which is in accordance with their ability to pay monthly installment or in average of 5 million rupiah. The production process still used a traditional technique. It is done manually or without using any mechanical tools. Usually, the length of such effort is less than one year. The number of workforce is still small 1 to 2 people including the owner. Fortunately, there is only 1 person belonging to this level in Tambaksari Village.

The second type of the *pindang* producer is called IR 2 (the developing level). This type of *Pindang* producers is characterized by a semi-continuous production pattern with a loose sales system too. This IR easily changes their products when the market demand is low or when they found the decreasing sales. Their capital is still relatively small, but they have started to borrow fund from non-formal Microfinance Institutions (MFIs) of around 5 million rupiahs-25 million rupiah. The length of their business is around 1 to 2 years. The production process is already using simple mechanical tools with a workforce of around 3 to 5 people including the owner. The number of *pemindangan* producers at this level in Tambaksari Village is 310 people.

The third type is IR 3 (Modern level) which has a continuous production pattern and has a characteristic with a particular sales system. The level of business sustainability is high, because they have been able to manage their business well. Their capital ranges from more than 25 million rupiahs to 50 million rupiah borrowed from private and formal microfinance institutions (MFIs). The production process has already used high technology and clean production sites. Length

of business is more than 2 years. The number of workforce is around 6 to 10 people including the owner. The number of this type of producers in Tambaksari Village is 37 people.

Basically, *pemindangan* is a process of minimizing bacteria through heating and adding salt, so that it will inhibit the growth of bacteria remaining in fish and reduce water content in fish meat [3-5]. The processed fish are flying fish, tuna, cue, *lemuru*, and mackerel.

It is found in Tambaksari Village that average *pemindangan* process is still done conventionally, especially in IR 1 and IR 2 levels. The followings are the stages in the *pemindangan* process; (1) fish droppings are removed from the fish's body and then washed thoroughly, (2) fish are cleaned then packaged in containers, (3) after that the salting process is proceeded, (4) the salted fish is boiled, (5) then it is drained, (6) after being drained, the fish is cooled and (7) it is ready to be marketed.

Not all producers have awareness on the importance of within food hygiene standards. It can be seen from the fact that there are still many fish washing processes done in the river, including removing fish waste. Of course, this causes problems for environmental conservation. The river becomes polluted, fishy smell, and if the river flow is small then the waste will accumulate and become a pile of garbage. The sticky odor that is left behind will invite flies to swarm around it and will have an impact on public health, including the spread of bacteria/ germs, and infected diseases.

For this reason, serious efforts are needed to raise awareness on the importance of environmental conservation for the community, especially for the *pemindang* in Tambaksari Village, Rowosari District, Kendal Regency.

II. METHODS

A. Research Methods

This study uses qualitative methods with case study. It means that this research is conducted to reveal problems regarding the importance of environmental education for the *pemindangan*.

B. Place and Time

The study was conducted in Tambaksari Village, Rowosari District, Kendal Regency. There are three types of *pemindang* namely: IR 1 (Beginner level), IR 2 (Developing level) and IR 3 (Advanced level); most of which are still using simple mechanical equipment and techniques that are not yet standardized. The problems are hygiene of *pemindang* processing and the disposal of production waste into the river causing environmental pollution. The research was conducted from January 2018 to September 2018. The subjects of the research were 25 people in the Tambaksari village. The informants are their families, the Tambaksari village community, community leaders, facilitators of the 25 people IR *pemindang* and consumers.

C. Methods of Collecting Data

Data collection methods were observations of shady production, in-depth interviews, and Focus Group Discussion (FGD). The researchers also collected the information from documents, namely articles related to *pemindangan*, IR data and other documents.

D. Data Validity Techniques

The validity of the data was checked by triangulation techniques in which the data from interview were cross checked with the written documents.

E. Data Analysis Method

Data were analyzed by using Longwe analysis techniques. This is conducted because 80% of production activities are carried out by women in production, so this research included gender research. Based on Longwe's analysis, women's Welfare, Access, Critical Awareness, Participation and Control in *pemindangan* activities are still low. This is due to the cultural constraints, namely the perception of male domination as a form of patriarchal culture. Finally, it has an impact on the economic, social and cultural life of female perpetrators of IR *pemindangan*. The following is the elaboration of five stages according to Longwe in the production of the *pemindangan* in the Tambaksari Village:

TABLE 1. RESULTS OF LONGWE ANALYSIS IN THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION IN TAMBAKSARI VILLAGER

Component	Description
Welfare	The welfare of female <i>pemindang</i> is low because the proceeds of the sale are managed by the husband, even though 90% of the <i>pemindangan</i> process is carried out by women. The money received sometimes is not enough to meet their daily needs, so that the female <i>pemindang</i> is unable to allocate funds to buy the appropriate standard <i>pemindangan</i> equipment's. To minimize expenditure, they wash fish in the river and dispose of waste into the river because they do not need to pay for clean water and waste.
Access	Access of the female <i>pemindang</i> to participate in socialization and various activities is limited. This is due to the still strong patriarchal culture that perceives that public activities including participating in various business socialization or training are the public domain, namely the male work area, while the women's work area is in the domestic sphere including a series of steps in the <i>pemindangan</i> process.
Critical Awareness	Because they rarely attend socialization or training, the critical awareness of female <i>pemindang</i> is still low, including the importance of environmental education in the <i>pemindangan</i> process.
Participation	Participation of female <i>pemindang</i> is low in environmental education efforts because it is not supported by knowledge and skills regarding the correct way to <i>pemindang</i> .
Control	Females <i>pemindang</i> have no control over environmental education efforts, because of various obstacles faced.

III. RESULTS AND DISCUSSION

Pindang fish are processed fish that are quite popular with the community [6-8]. This is because the taste is very delicious; the price is relatively cheap and easily available [9]. Fish processing with *pemindangan* techniques has several advantages, namely: the method of processing is simple and it does not require expensive tools; the result is a mature product that can be eaten immediately without cooking; the taste fits the taste of Indonesian people in general; it can be eaten in a large amount, so that the contribution of the protein is large enough for the improvement of community nutrition.

Pemindangan business includes IR which is done simply by makeshift equipment [10]. IR is a production system that produces a product through the process of forming added value from certain raw materials. It is carried out at producers' houses or not in a specific location (such as a factory) by using simple production tools.

The production process utilizes infrastructure, facilities, and other production equipment owned by individuals or groups of joint businesses or cooperatives. Generally, products from IR are handmade, unique, and different from other *pindang* fish.

The Indonesian Government through the Ministry of Women's Empowerment and Child Protection has sought various ways to build IRs to be more efficient and effective. The objective of IR development is to increase family income through productive activities carried out at home with the support of family members, to develop creative industries that are the strengths of women in the home industry, and to encourage the strengthening of IR networks. The objective of IR development is micro businesses that are managed by and or become workplaces of women.

The *pemindangan* process carried out by IR 1 and IR 2 in Tambaksari Village is categorized into simple process, both techniques and equipment used. The production process is still below the standard of food processing since most of the *pemindang* producers wash their fish in the river and dispose the waste into the river, thus polluting the river flow. Stinky smell and piles of fish waste have made the environment dirty and caused infectious disease. They claim that disposing the wastes into the river is more practical, easy, and economical. Washing with running water means having to pay excess to water supplier (in Indonesia called PAM), as well as handing over production waste to the janitor means the *pemindang* producers must pay the cleaning fee.



Fig. 1. The wastes were disposed into the river

Efforts to increase the awareness of the *pemindang* producers on clean and healthy environment have been carried out by various parties, including the government through KPPA, BKKBN, the Marine and Fisheries Service at Kendal, and Private through SOEs and universities in Central Java. They were trained to maintain the cleanliness of the environment, both in the family and the community, including *pindang* fish cleaning process. As seen in the following picture:



Fig. 2. Socialization of the most Proper *Memindang* Process

The socialization of environmental education for the *pemindang* was attended by the number of producers in Tambaksari Village with accompanying resource persons for fisheries from the Marine and Fisheries Service at Kendal. One of the materials presented is the most proper way of *pemindangan* process. This is done with the aim of developing awareness about the importance of opening business in accordance with the standards and the importance of preserving the environment as the businesses. This not only to get the maximum profit but also to pay attention to the environment around the business sites. *Pemindang* producers are also a part of the community that is obliged to protect the environment.

The socialization is a part of education in the community. Education is a conscious effort that is carried out in a planned, systematic and measurable manner to change the attitude of an individual [11-14]. Education is not only formal in schools, but also education for society in general [15-18].

Environmental education is teaching and learning processes which promotes environmental management as an important means of producing human resources who have environmental sensitivity [19]. Environmental education functions as an indicator of environmental concern and problem associated with it, as well as creating a society that has knowledge, and ideas in finding alternative solutions to solve environmental problems [20]. The general functions of environmental education include: (1) to help explaining issues of concern and attention to economic, social, political and ecological linkages in cities and in rural areas; (2) to provide opportunities for everyone in developing the knowledge, values, attitudes, commitments and abilities needed to protect and improve the environment and (3) to create

new patterns of behavior for each individual, group and society as the main actors in the environment.

There is a reciprocal relationship between humans and the environment [21-24]. This is because humans as the main actors indirectly influence their environment and vice versa. Through this reciprocal relationship humans and the environment cannot be separated. If the living environment is damaged, then humans in carrying out their activities will also be disrupted. A damaged environment is an environment that can no longer carry out its function in supporting human life. In human life, there is a driving element in carrying out its activities called desire. Human desire to improve the quality of life is something that cannot be avoided, but without the wisdom of the process of achieving it, it will have a bad impact on the quality of life that will be obtained.

The objectives of environmental education can be grouped into six components, namely: (a) Awareness, which encourages each individual to gain awareness and sensitivity to the environment and the problem; (b) Knowledge, which helps each individual to gain various experiences and basic understanding of the environment and its problems; (c) Attitude, which assists each individual to obtain a set of values and the ability to get the right choices, and develops feelings that are sensitive to the environment and provide motivation to actively participate in improving and in protecting the environment; (d) Skills, which motivate each individual to acquire skills in identifying and in solving environmental problems; (e) Participation, which provides motivation for each individual to actively participate in solving environmental problems; (f) Evaluation, which encourages each individual to have the ability to evaluate environmental knowledge in terms of ecological, social, economic, political, and educational factors. The followings are the detailed description the training objectives:

TABLE 2. ENVIRONMENTAL TRAINING OBJECTIVES IN TAMBAKSARI VILLAGE

Component	Description
Awareness	giving encouragement to each producer to gain awareness and sensitivity to the environment and river pollution due to the disposal of processed <i>pindang</i> fish waste into the river
Knowledge	helping each producer to gain a variety of experiences and basic understanding of the environment and river pollution
Attitude	helping every producer to obtain a set of values and the ability to get the right choices, and developing feelings that are sensitive to the environment and provide motivation to actively participate in improving and in protecting the environment
Skills	helping each producer to acquire skills in identifying and solving environmental problems namely river pollution due to the disposal of processed <i>pindang</i> fish waste
Participation	providing motivation to each producer to actively participate in solving river pollution problems due to the disposal of processed <i>pindang</i> fish waste
Evaluation	encourage each producer to have the ability to evaluate environmental knowledge in terms of ecological, social, economic, political, and educational factors

Based on the table above, regarding the environmental education for *pemindang* producers through the dissemination of environmental education, the most proper way of *pemindangan* processing method is expected to foster the awareness of the *pemindang* producers on the importance of the environment. This awareness arises because the knowledge gained during the socialization and can hopefully change their attitude. The skills gained are expected to increase the participation of *pemindang* in preserving the environment. In the end, the *pemindang* can evaluate environmental knowledge in terms of various fields of life.

The follow-up of the socialization was in the form of assistance given by the Marine and Fisheries Service at Kendal and from Tambaksari Village. The assistance is carried out on an ongoing basis by monitoring the process. The *pemindang* producers who have done the *pemindangan* production properly will be facilitated by the companion team, including getting equipment assistance to increase the productivity of their business. The aid of the tool is used as a stimulus for other *pemindang*, so that they are motivated to do the same. The following is a picture of the implementation of socialization of environmental education for *pemindang*;



Fig. 3. Implementation of the results of socialization of the method of production of the clean *pindang* fish

Based on the picture above it is seen that the *pemindang* has the awareness to apply a proper *memindang* process, namely running water to clean the fish, clean production site, separated waste box, wearing aprons and head cover, and using metal box for smoking the fish.

The results of mentoring show that not all the *pemindang* have implemented the training materials. Of the 348 *pemindang* in Tambaksari Village, only about 5 people have produced *pindang* fish according to the standards. The failure of this program is due to the difficulty of changing the mindset of the *pemindang* producers on the importance of protecting the environment by using clean and correct procedures. In addition to the limited funds, the facilities, and infrastructure the producers have obstacles in implementing the environmental awareness.

IV. CONCLUSION

Environmental education is not only applied in formal schools, but it is also important to certain communities, such as the community of *pemindang*. With the existence of environmental education for the producers through the

dissemination of the right way of production, it grows the awareness of the *pemindang* to preserve the environment. Provision of knowledge and skills acquired when attending socialization is practiced in the production process of *pindang* fish. Active participation from the *pemindang* will have a positive impact on environmental conservation efforts, especially rivers. *Pemindang* can evaluate the entire series of activities in the *pemindangan* process whether it has been in accordance with the standards or not. Although not all *pemindang* producers have the same awareness, but only five producers who has changed their mindset, and they are expected to become the agents of change in the production of *pindang* fish. Hence, they may maintain the environmental sustainability, especially the river environment.

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