

# An empowerment model of seaweed farmers in coastal area of Southeast Sulawesi, Indonesia

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**Abstract.** This research was motivated by the large potential of seaweed in Southeast Sulawesi Province. Tinanggea Subdistrict of South Konawe Regency was chosen as the research site on the grounds that it is one of the centers of seaweed production that has been in existence since the 1970s, however it is extremely unfortunate that the economic conditions of the seaweed farmers in this area are still classified as poor. This research aimed to: 1) find out the problems encountered by the seaweed farmers and seek out their solutions; 2) formulate a development model for community empowerment-based seaweeds business to increase production and income. The results of the research led to several conclusions. Firstly, the problems that must be resolved to strengthen the empowerment of the seaweed farmers in Tinanggea Subdistrict comprised: 1) climate/weather change which is uncertain and unpredictable, 2) environmental pollution by mining companies, 3) low entrepreneurial spirit, 4) lack of policies support from local government, 5) capital limitations. Secondly, interventions to address the problems of the seaweed farmers in Tinanggea Subdistrict can be done in the form of programs or policies, such as 1) implementation of Corporate Social Responsibility (CSR), 2) enhancement of extension agents' role, 3) enhancement of government's role, 4) entrepreneurship and business management training, and 5) business capital assistance. Thirdly, the implementation of interventions in the form of programs or policies requires a synergy among several stakeholders, namely 1) the local government of South Konawe Regency, 2) mining companies operating in South Konawe Regency, 3) financial institutions both banks and non-banks as and 4) higher education institutions.

**Key Words:** community empowerment model, income, development model, seaweeds business.

## Introduction

**Background.** Indonesia is a country that has marine resource potential that is so diverse that lots of communities along the coastal zones rely upon it for their source of livelihood to fulfill their life needs. Anggodiredja (2010) in Nalefo (2013) argues that Indonesia has the vast ocean waters with the second longest coastline in the world after Canada. Indonesian marine waters are rich in minerals and sunlight, making them a fertile ground for the growth of seaweed. Indonesia's seaweed distribution potential is vast, either naturally-grown seaweeds or the cultivated ones, spreading almost all over the regions of Indonesia such as Sumatra, Java, Bali, Nusa Tenggara, Kalimantan, Sulawesi, and Papua.

The strategic water area that can be used for seaweed cultivation throughout Indonesia is approximately 1.2 million hectares in area (DKP 2005, 2006). Of this quite large area, however, until 2010, Indonesia was only able to make use of less than 5% of the potential territory available (DKP 2009, 2011).

Tinanggea Subdistrict is one of the seaweed production centers in South Konawe Regency, Southeast Sulawesi Province (Fausayana et al 2017) which has been known since the 1970s until present. However, it is very unfortunate that the economic life of the seaweed farmers in this subdistrict remains concerning. They have neither become

independent nor prosperous yet, even, the majority of whom are not able to produce independently since to some extent they still depend on loan capital either from banking, non-banking institutions or individuals.

There are three main elements that must be achieved to indicate the success of economic development raised by Todaro & Smith (2006) in Arsyad (2010), which are (1) the improved ability of the community to fulfill their basic needs (sustenance), (2) the increased sense of self-esteem as a human being, (3) the increased ability of community to freely choose (freedom from servitude) which is one of the basic human rights.

Soeharto (2010) in Firmansyah (2012) stated that the indicators of empowerment consist of the degree of empowerment and the basis of empowerment. Of the indicators, there are four relating to the former: a) level of awareness and desire to change (power to); b) ability to increase capacity to gain access (power within); c) ability to face obstacles (power over) and; d) level of cooperation and solidarity (power with). The other five relate to the latter, the empowerment basis of Friedman's in Rafiy (2014), namely a) community-based development, b) sustainability, c) community's participation, d) development of community social capital, e) elimination of gender inequality.

The development of seaweed business which is community empowerment-based not only aims to enhance the production and productivity of seaweed but also vital to increase the income and living standards of the community, especially the people in coastal areas. Furthermore, it is expected to increase seaweed exports, state foreign exchange revenues, the development of raw materials to meet the needs of various processing industries, as well as the economy of the coastal region through the expansion of employment opportunities and increased income.

Based on the description above, this research is to formulate a model of empowerment for the seaweed farmers along the coastal areas of Southeast Sulawesi and to address problems they face as suggested by Putera & Muthalib (2017). Their study suggests that the obstacles and challenges faced by seaweed farmers include climate/weather, capital, local government policies and environmental pollution by mining companies.

**Problem statements.** Based on the description of the background above, the following research foci are put forward:

1. What are the problems faced by the seaweed farmers in increasing production?
2. What are solutions to the problems faced by the seaweed farmers?
3. How is the model for developing the seaweed farmers in the coastal areas of Southeast Sulawesi?

**Aims of the research.** With regard to those research foci, this research has aims follows:

1. To identify the problems faced by seaweed farmers in increasing production.
2. To formulate solutions to problems faced in efforts to empower the community.
3. To formulate a model for seaweed farmers development in the coastal areas of Southeast Sulawesi.

## **Material and Method**

**Object of the research.** This research was conducted at the center of seaweed production in the coastal area of Southeast Sulawesi, namely in the Subdistrict of Tinanggea, South Konawe Regency, Indonesia, considering that the seaweed cultivation businesses in this area have been developed since the late 1970s. Unfortunately, until 2014 most of its community members who worked as the seaweed farmers earned very low income and remained poor. Therefore, it was not surprising if their standard of living was relatively low.

**Selection and setting of informants.** Qualitative research puts stress on the amount of information not on the number of informant, thus, the matter of the number of informants is not questioned as long as the information obtained is considered sufficient and valid

(Fatchan 2011). The research informants were the seaweed farmers in Tinanggea Subdistrict, South Konawe Regency (Table 1). The subdistrict is a center for seaweed production in the coastal areas of Southeast Sulawesi. Those informants selected based on the following criteria: (1) own a seaweed business as the main source of family income; (2) has been running seaweed business for at least 3 years; (3) willing to provide information related to the research theme.

Table 1

Profile of the research informants

| No | Name      | Age | Gender | Education | Occupation | Experience as seaweed farmer (years) | Location (village) |
|----|-----------|-----|--------|-----------|------------|--------------------------------------|--------------------|
| 1  | Masnawati | 43  | Female | SMA       | Farmer     | 20                                   | Akuni              |
| 2  | Irwan     | 38  | Male   | SMA       | Farmer     | 18                                   | Tinanggea          |
| 3  | Sardin    | 50  | Male   | SMP       | Farmer     | 25                                   | Tinanggea          |
| 4  | Jamal     | 45  | Male   | SMA       | Farmer     | 20                                   | Bungin             |

SMA is the name of a senior high school, and SMP is the name of a junior high school.

**Technique of data collection.** Data and information needed in this research were collected through several ways as follows:

1. Observations both prior to and after interview. In the former, the researchers were in the environment of the research object and tried to understand its situation and conditions. While in the latter, the researchers set out to verify information elicited by the informants with the real conditions in the field (triangulation).
2. In-depth interview both semi-structured and non-structured one. The length of the interview was adjusted to the situation and circumstances of the informants. In fact, each interview lasted variedly ranging from 30 to 90 minutes. It used instruments such as tape recorders, cameras and interview notebooks.
3. Documentation by collecting various data from the government and other reliable sources.

**Validity of data.** To ensure the quality of the data used, testing was carried out with several criteria as proposed by Lincoln & Guba (1994) in Fatchan (2013). For this purpose, triangulation was used. It was conducted in two different ways. The first, the researcher compared the data obtained from the observations with those obtained from the interviews; when there was a discrepancy between the words of the informant and the reality in the field, the researcher re-asked the informant to obtain the truly valid and accurate information. While the second, the researcher compared the understanding of one informant with the other informants as well as with those other than the informants; when there was a difference of statement between them, the researcher asked the concerned informant for confirmation.

**Data analysis.** Data were analyzed using an interactive technique adopted from Milles et al (2014). Such a technique was carried out in three stages of analysis as follows:

1. Data reduction, which involved the process of sorting, selecting, simplifying, and grouping the data obtained from field observation and interview. Afterwards, coding the data and making a summary of the themes relevant to the research focus, and thus the data irrelevant to the research focus were removed.
2. Data presentation, which involved the process of organizing information and describing it in the form of narrative text as well as matrices, graphs, networks and charts.
3. Drawing conclusion.

## Results and Discussion

**The issues faced by seaweed farmers.** The problems faced by seaweed farmers are quite diverse ranging from the internal problems of the farmers to the external ones.

Putera & Muthalib (2017) concluded that the problems faced by the seaweed farmers in the coastal areas of Southeast Sulawesi include climate/weather, capital, local government policies and environmental pollution by mining companies (Table 2).

Table 2

Issues and their impacts on the difficulties faced by seaweed farmer  
(Putera & Muthalib 2017)

| <i>Issues</i>                                  | <i>Impacts</i>  |
|--|---|
| 1. Climate/weather/season                      | <ul style="list-style-type: none"> <li>• Seaweeds suffer from diseases/pests</li> </ul> <ol style="list-style-type: none"> <li>1. Moss</li> <li>2. Seaweeds color turns white</li> </ol>  |
| 2. Capital                                     | <ul style="list-style-type: none"> <li>• Very little assets owned by the farmer</li> <li>• Lack of good access to the banking world</li> </ul> <ol style="list-style-type: none"> <li>1. There is no collateral/bankable collateral</li> </ol>            |
| 3. Environmental pollution by mining companies | <ul style="list-style-type: none"> <li>• Changes in seawater color that becomes red or cloudy</li> <li>• Decline in production and to some extent some farmers fail to harvest</li> <li>• Farmers alter their profession</li> </ul>                       |
| 4. Local government policies                   | <ul style="list-style-type: none"> <li>• Lack of supports from local government</li> </ul> <ol style="list-style-type: none"> <li>1. There are no such particular assistance as equipment, capital, and seeds provided by the local government</li> </ol> |

**Solutions to increase production and the farmers' income.** To address some of the above problems, such as those presented by Putera & Muthalib (2017), there are several ways to increase seaweed production and the income of farmers in Tinanggea Subdistrict, namely:

**1. Implementation of Corporate Social Responsibility (CSR) programs.** The operation of mining companies in South Konawe Regency, especially in Tinanggea Subdistrict has had a significant impact either positive or negative. One of the negative impacts felt by seaweed farmers was that there is pollution on land or seaweed cultivation areas. The pollution was caused by mining company's ships that crossed those areas. Moreover, mining waste materials from the mountain (mining area) have caused seawater to change its color to red.

The condition as such causes made some of the seaweed farmers unable or failed to produce since the area of seaweed cultivation had been polluted. Therefore, mining companies must have a commitment or responsibility to compensate this pollution. In several regulations in Indonesia, there are considerable responsibilities from a mining company to the environment around it. Such responsibilities are the contribution or benefit to communities around the mining area, for instance, RI (2007a) concerning limited liability companies article 74 and RI (2007b) concerning investment article 15, 17, and 34.

Article 74 paragraph (1) Law No. 40/2007 states that "a corporation operating business activity in the field and/or related with natural resources shall be obliged to implement social and environmental responsibilities". The paragraph (2) states that "the social and environmental responsibility as referred to in paragraph (1) shall constitute the obligation of the company which is budgeted and calculated as the cost of the company, implementation of which shall be performed with due observance to the appropriateness and fairness". Meanwhile, in the paragraph (3) "a company that does not implement the corporate social and environmental responsibility as provided in paragraph (1) will be liable to sanctions in accordance with the laws and regulations". Furthermore, the paragraph 4 says that "further provisions on corporate social and environmental responsibility will be regulated by government regulations".

In addition to that, corporate social and environmental responsibility is also pronounced in Law No. 25 of 2007 on investment particularly in the articles 15, 17 and

34. The article 15 declares that "every investor shall have obligations: a) to apply the principle of good corporate governance; b) to implement corporate social responsibility; c) to make a report on investment activities and submit it to the Investment Coordinating Board; d) to respect the cultural traditions of the community around the location of investment business activities; and e) to comply with all provisions of laws and regulations.

The provision of Corporate Social Responsibility (CSR) is the responsibility of mining companies that have been regulated in several regulations that prevail in Indonesia. One form of the CSRs to carry out is to seaweed farmers. This can be given in various ways adjusted to the needs of seaweed farmers, for example:

1. Capital assistance either directly related to seaweed cultivation, such as purchase of equipment, seeds and labor costs or indirectly related, such as capital assistance for ventures other than seaweed.
2. Purchase of equipment for seaweeds farmers aiming especially to develop or increase their seaweed production such as ropes, buoys, seeds, and others.
3. Training or technical coaching by mining companies aimed at seaweed farmers in order to improve their understanding of both cultivation and business management.
4. Coaching of the seaweed farmers in the form of guided villages can also be carried out by mining companies.

**2. The role of extension agents.** Agricultural extension agents (especially seaweed) need to be optimized in carrying out their functions. Although the majority of seaweed farmers have long been in this profession, the role of extension agents remains necessary, especially related to marketing and adding value to crops so that farmers can increase their income. At present, the seaweed farmers just rely on the sale of seaweed production in dry and wet forms, meaning that they do not give any added-value to seaweed produced. This situation makes the farmers' income very volatile depending on market prices and tends to be only one way to earn income.

The absence of agricultural extension agents in the village (in Indonesian: *kelurahan*) accounts for why the seaweed farmers tended to develop their seaweed business individually and less interested in cooperating with other seaweed farmers. The lack of cooperation among the seaweed farmers made their bargaining power weak, allowing the seaweed price to be fully controlled by collectors and big trader. Therefore the role of agents in giving understanding, inspiration and market information is needed by the seaweed farmers.

**3. Increasing the role of local government.** The attention of local government has to be increased in various forms of policy, ranging from regulation, equipment provision to capital assistance. The South Konawe Regency Government, especially related institutions such as the Office of Maritime and Fisheries Affairs, the Office of Cooperatives and SMEs, and the Office of Industry and Trade are expected to work together to deal with some of the problems faced by the seaweed farmers in Tinanggea Subdistrict.

Those offices may collaborate to carry out some programs such as training and technical guidance on seaweed derivative products processing for the seaweeds farmers. Increasing the skills of processing seaweed derivative products specifically for women (housewives) can have a significant influence on the farmers' income.

In addition, the related institutions (mainly those three offices) may carry out a sustainable mentoring to seaweed farmers by providing business capital to increase seaweed production followed by the provision of necessary equipment for processing the results of derivative products from seaweeds. Furthermore, the relevant agency (particularly the Industry and Trade Office of South Konawe Regency) can make either direct intervention by marketing those processed products or indirect by providing market information or facilitating network marketing.

Furthermore, the South Konawe Regency Cooperatives and SMEs Office can take an active role by facilitating the formation of cooperatives at seaweed production centers, such as in Akuni Village, Tinanggea Village, Bungin Jaya Village, Torokeku Village. These cooperatives can be pioneers to improve the bargaining position of the seaweed farmers to collectors, wholesaler traders, local governments and financial institutions as well as others.

The existence of an independent and modern cooperative in the centers of seaweed production will provide a sense of togetherness and kinship that is conducive to increased productivity of seaweed. Strong ties between the fellow seaweed farmers who are members of cooperatives will influence the farmers' behavior to "share and give each other" so that if there are farmers lacking capital they can cooperate with their fellows who have excess business capital.

The active cooperatives will be able to manage business capital and equipment assistance that are provided by the local government far better compared to those managed by the seaweed farmers individually. Moreover, businesses managed by an institution are relatively more transparent and productive.

**4. Training (skills improvement).** Lack of understanding, insight and skills cause a person to be unable to produce optimally. To overcome this, training is one way to improve understanding, insight and skills improvement. The seaweed farmers in Tinanggea Subdistrict need training especially on entrepreneurship and skills to make derivative products from seaweed.

Through entrepreneurship training, the seaweed farmers will be able to run their seaweed businesses independently to increase income. It was said by several informants that most housewives having a seaweed production center have possessed a skill of making products derived from seaweed, such as cendol (iced sweet dessert that contains droplets of green rice flour jelly, coconut milk and palm sugar syrup), dodol candy (a sweet toffee-like sugar palm-based confection) and cake. Such a skill was obtained from training held by the local government several years ago. However, the follow-up of this particular training has never been done so far by the local government. Therefore, further training is required particularly entrepreneurship training so that the skills that have been acquired by those housewives can be used to add the farmer households' income.

Training on business management also needs to be carried out so that the institutions formed to manage businesses or as a forum for the seaweed farmers can be managed well and transparently so that they are sustainable. The existence of a community institution that focuses on improving farmers' businesses is needed in order for the seaweed farmers to have a strong bargaining power with other stakeholders (such as investors, banks, local governments, traders, etc.)

**5. Business capital assistance.** The classical obstacle faced by farmers is the lack of capital owned and the inability to access capital in banking institutions, so they only relied on their own capital. The sources of capital that could be accessed by the seaweed farmers so far include Bank Rakyat Indonesia (BRI) and several cooperatives that had an office in Tinanggea subdistrict. However, only a few of the farmers who had access to banking institutions as the banks were very selective in providing or channeling credit to the seaweed farmers.

In addition, environmental pollution caused by mining operation made most seaweed farmers unable or fail to produce and as a result, they experienced to non-performing loans (bad credit). They encountered difficulties in returning the credit loans obtained from both banks and cooperatives operating in Tinanggea subdistrict. Therefore, the role of local government in finding solutions is needed especially to help the farmers obtain business capital to further expand their business (seaweed cultivation) coverage areas. The local government of South Konawe Regency through several related agencies can work together to provide business assistance in the form of funds and equipment required.

Mining companies can also participate by providing assistance to the seaweed farmers in the form of business capital and necessary equipment so that the activity of seaweed cultivation continues to run well. Moreover, the active role of the companies towards the surrounding environment manifests corporate responsibility that is clearly regulated within several prevailing regulations both in the form of laws and other forms, such as local regulations (*perda*).

**The development model for community empowerment-based seaweed business.** Empowerment is the key to increasing the level of welfare, therefore empowering

seaweed farmers must increase their income. Soeharto (2002) in Firmansyah (2012) states that there are four indicators to measure the degree of empowerment: (a) degree of awareness and desire to change (power to), (b) degree of ability to enhance capacity to gain access (power within), (c) ability to face obstacles (power over), and (d) degree of cooperation and solidarity (power with). Meanwhile, Friedman & Miles (2006) in Rafiy (2014), said that there are five variables to increase the basis of empowerment namely (a) community-based development, (b) sustainability, (c) community participation, (d) development of community social capital, (e) elimination of gender inequality. The indicators and variables presented by Soeharto (2008) and Freeman (2010) are factors that have to be considered in empowerment. In Figure 1 is a model for the development of the seaweed farmers in the coastal areas of Southeast Sulawesi, especially for Tinanggea subdistrict.

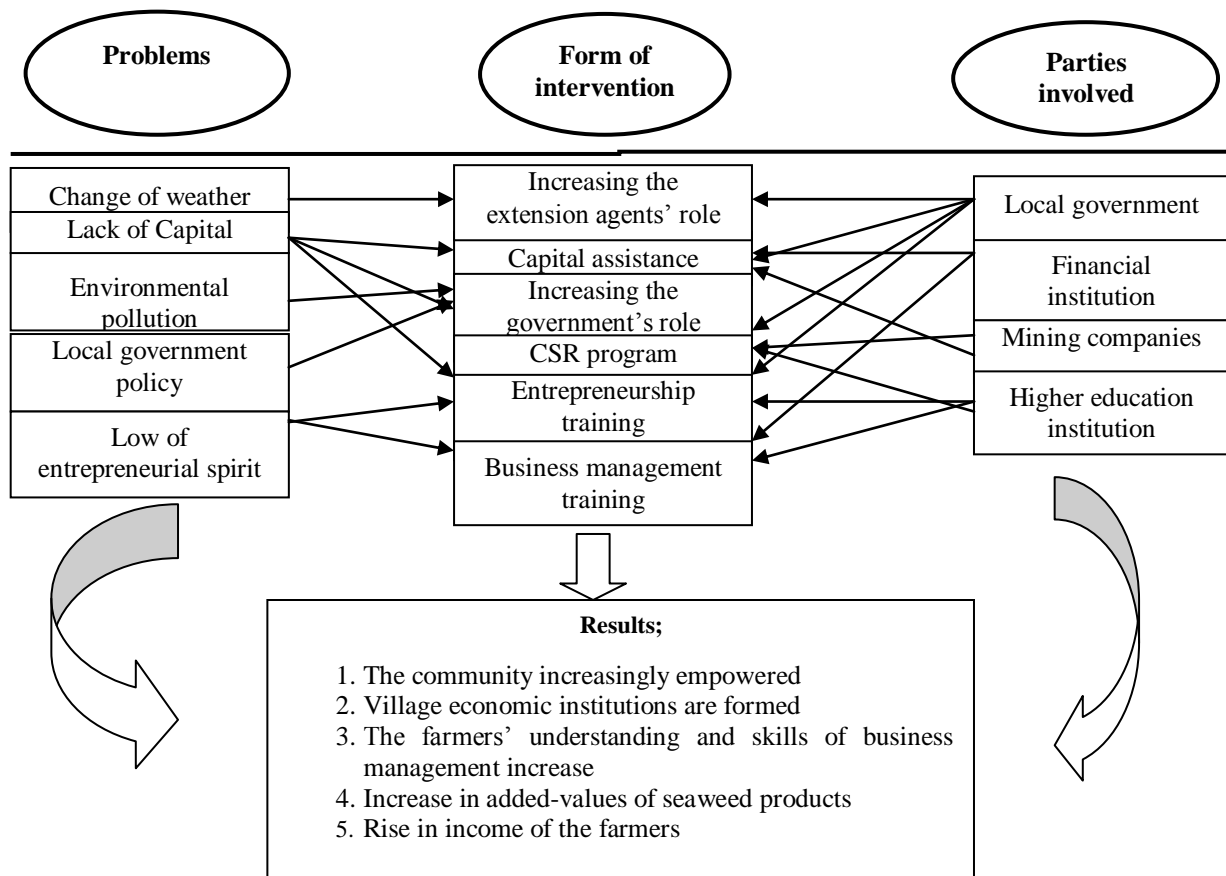


Figure 1. Development model of the seaweed farmers in coastal areas of Southeast Sulawesi.

**Conclusions.** Based on the analysis results, several conclusions can be made as follows:

1. Problems that must be resolved to strengthen the empowerment of the seaweed farmers in Tinanggea subdistrict include: (1) unpredictable or uncertain climate/weather; (2) environmental pollution by mining companies, (3) low of entrepreneurial spirit; (4) lack of local government policies; and (5) capital limitations.
2. Interventions to address the problem of the seaweed farmers in Tinanggea subdistrict can be done in various programs or policies, such as: (1) implementation of Corporate Social Responsibility (CSR) by mining companies; (2) strengthening of the extension agents' role; (3) strengthening of the government's role, (4) entrepreneurship and business management training; and (5) business capital assistance.

3. The implementation of interventions in the form of programs or policies requires a synergy of several stakeholders, namely: (1) the government of South Konawe Regency; (2) mining companies operating in South Konawe Regency; (3) financial institutions either banks or non-banks; and (4) higher education institutions.

**Suggestions.** Meanwhile, some suggestions from this research can be formulated as follows:

1. For the local government of South Konawe Regency, it has to be more proactive and increases a sense of concern in solving the problems faced by seaweed farmers. The related institutions of the local government (Office of Maritime and Fisheries Affairs, Office of Cooperatives and SMEs and Office of Industry and Trade) have to synergize to create a powerful and sustainable empowerment program. The program is not only "project" oriented in the sense that it ends after the accountability is complete, but instead, it needs to be "watched" continuously until the seaweed farmers become independent and successful.
2. For the seaweed farmers, they need to be creative and innovative in developing their cultivation business and take up entrepreneurial opportunities. Doing so, they will no longer rely solely on the sale of seaweed in the form of raw material as a source of income. Instead, they can make other derivative products made up of seaweed materials such as "dodol" seaweed, "cendol" and seaweed cakes.
3. For the nickel mining companies, they have to make a real contribution to the seaweed farmers of the communities nearby. It can be made in several ways such as business capital assistance, seaweed cultivation equipment assistance, entrepreneurship and business management training and skills enhancement as well as other forms needed by seaweed farmers.

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