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## THE IMPACT OF THE EXISTENCE OF THE SEAWEED INDUSTRY ON THE SOCIO-ECONOMIC CONDITIONS OF THE COMMUNITY IN SUPPA DISTRICT, PINRANG REGENCY

### DAMPAK KEBERADAAN INDUSTRI RUMPUT LAUT TERHADAP KONDISI SOSIAL EKONOMI MASYARAKAT DI KECAMATAN SUPPA KABUPATEN PINRANG

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#### ABSTRACT

This research has the aim of knowing the public's perception of the existence of the seaweed industry, describe social and economic changes before and after the seaweed industry, and the impact on the community on the existence of the seaweed industry. The research was carried out in April-June 2019 in Suppa District, Pinrang Regency. This type of research uses a survey research type taking samples from the research population. Sampling using simple random sampling with a sample of 30 people. Data was collected through direct interviews and questionnaires to a number of selected respondents. The data analysis used is descriptive qualitative and quantitative data analysis. The results of this study indicate a positive response from the community about the existence of a seaweed industry built in their area. As many as 50% of the community stated that they strongly agreed with the existence of the seaweed industry and 67% of the local community expressed their interest in registering as workers in the seaweed industry. The existence of the seaweed industry can reduce the unemployment rate in Suppa District, Pinrang Regency. In addition, negative impacts also occur such as land disputes, pollution and also waste from the seaweed industry.

Keywords: impact, social, economic, seaweed industry, community.

#### ABSTRAK

Penelitian ini bertujuan untuk mengetahui persepsi masyarakat terhadap keberadaan industri rumput laut, mendeskripsikan perubahan sosial dan ekonomi sebelum dan sesudah adanya industri rumput laut, serta dampaknya bagi masyarakat terhadap keberadaan industri rumput laut. Penelitian ini dilaksanakan selama dua bulan yaitu pada bulan April-Juni 2019 di wilayah PT. Biota Laut Ganggang (PT. BLG) pada Kecamatan Suppa Kabupaten Pinrang. Penelitian ini merupakan penelitian survei yang mengambil beberapa sampel dari populasi penelitian. Teknik pengambilan sampel penelitian menggunakan sampel acak sederhana. Jumlah sampel dalam penelitian ini sebanyak 30 orang. Pengambilan data penelitian dikumpulkan melalui proses observasi, wawancara dan penyebaran kuesioner kepada sejumlah responden terpilih. Analisis data penelitian menggunakan analisis data deskriptif kualitatif dan kuantitatif. Hasil penelitian ini menunjukkan respon positif dari masyarakat tentang keberadaan industri rumput laut yang dibangun di daerah mereka. Sebanyak 50% masyarakat menyatakan sangat setuju dengan adanya industri rumput laut dan 67% masyarakat lokal menyatakan minatnya untuk mendaftarkan diri sebagai pekerja di industri rumput laut. Keberadaan industri rumput laut dapat mengurangi tingkat pengangguran di Kecamatan Suppa Kabupaten Pinrang. Selain itu, dampak negatif juga terjadi seperti sengketa lahan, pencemaran dan juga limbah dari industri rumput laut.

Kata kunci: dampak, sosial, ekonomi, industri rumput laut, masyarakat.

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## INTRODUCTION

The existence of industry as a result of technological advances, provides a good improvement and convenience for people's lives (Howara, 2013). With the achievement of faster technology in the industrial sector, it can increase the income per capita of the community so that the standard of living can be increased. The seaweed industry is a business that is engaged in processing seaweed products that produce quality products. Seaweed is a marine organic sources that has critical monetary value (Rahim, 2018; Imaniar, K. et al., 2013). Seaweed products get a lot of market demand both locally and internationally (Langford et al., 2021). The development of the seaweed industry is an opportunity as well as a threat that must be observed and is a part that greatly influences and determines the direction and results of development in the fisheries sectors (Hafting & Craigie, 2015; Sunarjan, 2001).

Seaweed is an important commodity and has economic value (Rosyidah et al., 2019). Seaweed cultivation is a livelihood for coastal communities (Waldron et al., 2021). Recognizing the an increasing number of crucial function of seaweed in coastal livelihoods, the Government of Indonesia has prioritized the improvement of the seaweed industry (Presidential Regulation of the Republic of Indonesia Number 33 of 2019 concerning Guidelines for the National Seaweed Industry Development Map 2018-2021). It presents a roadmap for business seaweed improvement from 2018 to 2021 and descriptions possibilities for improved seaweed manufacturing and improved home price-brought processing. Efforts to growth brought price have centered meals products, animal feed products, fertilizers, cosmetics and bioethanol (Hafting & Craigie, 2015; Sarkar et al., 2016; Waldron et al., 2021; Abbott et al., 2020).

The worldwide pit of seaweed is predicted to growth withinside the coming years because of the improvement of latest merchandise the use of seaweed (Abidin et al., 2018). Seaweed has many benefits including for medicine, cosmetics, food industry, textiles, paper, and bioenergy production (Nor et al., 2020; Stévant & Rebours, 2021). On the opposite hand, Indonesia as an archipelagic country with the second one longest shoreline after Canada is predicted so as to compete in order that Indonesia will advantage greater from the seaweed industry (Saputro et al., 2021).

The existence of the seaweed industry has a positive impact on the community, such as the construction of public facilities, absorption of local labor and seaweed products can be absorbed by the seaweed industry. But on the other hand, it cannot be denied that what is achieved in the industrial sector can have an adverse impact on the social and environment, such as people's habits in the social and economic conditions of the surrounding community (Sunarjan, 2001). Besides that, Industry has social obligations in the communities affected by the seaweed industry activities. This obligation is in the form of Corporate Social Responsibility (CSR) activities to provide compensation to the community by carrying out useful activities, such as community empowerment and improving road access or public facilities in the seaweed industrial area. The output of this activity is expected to be able to contribute to the community to facilitate the utilization of coastal resources and develop seaweed commodities.

Suppa Subdistrict is one of the Minapolitan areas in Pinrang Regency that develops fishery commodities. One of the commodities produced is seaweed, and Polewali village is the location for seaweed companies in Pinrang district. The monetary situation of the human beings within the village continues to be dependent on agricultural and fishery products. People still rely on the crops they cultivate. The existence of the seaweed industry is expected to increase income for some people who work in the industry.

The potential of seaweed is very large in Pinrang Regency, especially Suppa District. The presence of abundant raw materials so that the foreign investment company PT. Biota Laut Ganggang (PT. BLT). The company is engaged in the production and sale of Hydrocolloids. This company uses seaweed as the basic ingredient which is processed into carrageenan, agar agar and konjac gum. PT. Biota Laut Ganggang (BLG) is the largest seaweed company in Indonesia which is engaged in seaweed processing. Thus, the existence of this company will have an impact on the community, both positive and negative impacts (Emblemsvåg *et al.*, 2020).

The existence of the seaweed industry in the location of community settlements has a socio-economic impact on the community (Tahang *et al.*, 2019). The impact can be in the form of a positive impact or a negative impact. Based on this, this research was conducted with the aim of providing a clear picture of the attitude or perception of the community towards the existence of your grass industry and what are the impacts caused by the existence of the seaweed industry.

## RESEARCH METHODS

### Time and Place

This research was carried on from April to June 2019. This research was carried on at a seaweed company (PT. Biota Laut Ganggang) in Suppa District, Pinrang Regency. This location was chosen purposively with the consideration that the seaweed industry is very active in production activities so that it absorbs a lot of local labor and community seaweed products. The selected location has great potential for seaweed, both in terms of land potential and human resources.

### Sampling Method

The type of research is qualitative approaches and quantitative approaches. The approach used in this research is a mixed methods approach. This mixed methods approach is used with the reason to more understand the research problem by converging (or triangulating) quantitative data in the form of calculation and qualitative data in the form of descriptive details. Mixed methods research is a research approach that combines qualitative and quantitative forms. This method implicates philosophical hypotheticals, the employment of qualitative and quantitative approaches, and the blending of the two approaches in one research (Creswell, 2010). The research sample was taken using simple random sampling. The population in this study is the community affected by the existence of the seaweed industry. The number of samples taken in the study were 30 people. This refers to the opinion which states that if the total population has reached one hundred, a sample of

10-15% of the total population is used, this is the minimum acceptable sample size based on the research method used (Sugiyono, 2013).

#### Data Collection Techniques

Data collection techniques were carried out through direct interviews, questionnaires, field observations and literature studies. Analysis of the data used to answer the problem so that the specified goals can be achieved are analyzed descriptively qualitatively and quantitatively (Usman, 2009). Analysis of the data used to answer problems in order to reach the specified objectives. The results of interviews and observations are written in a detailed field note and then analyzed qualitatively to determine the social influence before and after the existence of this industry and to be able to systematically describe the management system in managing the industry. PT. BLG was established in 2016 which is located in Polewali Village, Suppa District, Pinrang Regency. The company was established on a land area of 32 hectares with an average production capacity of 1,200 tons per month. To find out the income data of the community by using the results of interviews with the community regarding the income of the community before and after the existence of the company. Revenue data before the company's existence was taken in 2015 and revenue data after the company operated in 2019. Thus, the period from 2015 - 2019 can be seen to assess whether there is a difference in income during that period.

#### Data Analysis

The data analysis used in this research is descriptive qualitative and descriptive quantitative obtained from field data in the form of interviews through questionnaires with data in the form of letters and numbers which are then processed. To assess public perception using qualitative data which is then processed into a frequency table. This data was then analyzed using qualitative descriptive. Quantitative data analysis was carried out using a formula that calculates the total value of respondents' income by using income analysis in order to determine the total income of respondents before and after the existence of the PT. Biota Laut Ganggang. Data and information were obtained from direct interviews with seaweed communities living in Polewali Village, Suppa Subdistrict, Pinrang Regency. To find out the income of the community before and after the seaweed industry, the following income analysis was used:

$$\pi = TR - TC \quad (1)$$

Description:

$\pi$  = Income

TR = Total Revenue

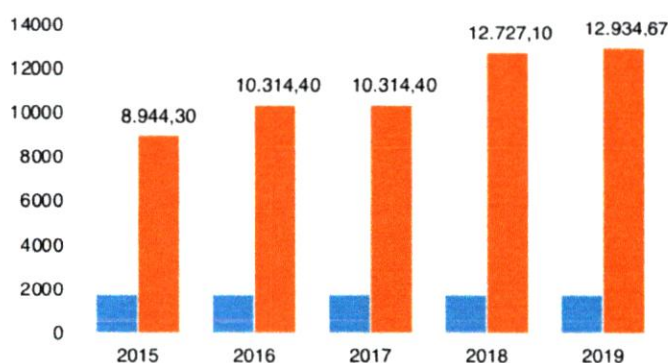
TC = Total Cost

In addition to using the above analysis, the calculation of income is also calculated from the salaries or wages of the community. Some of the respondents taken in this study are people who work as employees or workers at PT. BLG. Salaries or wages of the community are then analyzed by comparing their income before and after the existence of this seaweed industry.

## RESULT AND DISCUSSION

### Development of Seaweed in Suppa District

Suppa has potential for seaweed cultivation in Pinrang Regency. Seaweed cultivation in Suppa, Pinrang Regency, has developed quite rapidly. This can be from an increase in the amount of production and productivity. This increase in production is partly due to the stimulus in the form of export opportunities to various regions in the country and various countries.



Source: Suppa District in Numbers 2016-2020

**Figure 1. Development of Total Seaweed Production and Fishery Households in Suppa District**

The increase in gross production tends to occur every year so that it will have an impact on the fishery household economy. In 2019, seaweed production in Suppa District reached 12,934.67 tons. This is supported by the number of fishing households as many as 1,722 fishery households. Several communities in Suppa Subdistrict, Pinrang Regency have cultivated seaweed at various depths along the coast in Suppa Subdistrict. Topographically, the waters of Suppa Subdistrict have a sandy bottom, sandy mud and rocky sand, where at the bottom of the waters are overgrown by several ecosystems, namely seagrass, coral reefs and in coastal areas. In addition, the condition of the waters is relatively calm which makes these waters very supportive for fisheries, especially for seaweed cultivation.

Suppa District has an area of sea waters of approximately 95,000 km<sup>2</sup>, calculated based on the length of the coastline and a limit of 200 nautical miles from the coastline. The potential land area for marine cultivation is approximately 1,551.75 Ha. The area of land used for marine aquaculture is currently still 26.96% of the available land area (418.5 Ha). Efforts to increase seaweed production need to be carried out by utilizing the potential of the land area that is still available and supporting facilities and infrastructure and other supporting factors such as the availability of quality seaweed seeds, a suitable environment, appropriate cultivation methods and the suitability of the number of seeds planted with the depth of the water and uptake of seaweed products in the industry.

The existence of PT. Biota Laut Ganggang (PT. BLG) has a good impact on the seaweed industry in Suppa District. The yield of seaweed cultivators can be absorbed quickly of course with consideration of the quality of the seaweed in accordance with the specified quality. In addition to

the absorption of seaweed products, PT. BLG also provides job opportunities for local communities in Suppa District to become part of the company. The total number of employees in this fishing industry reaches 500 workers. The 15 workers are technical personnel from China and the rest are local residents (Humas Sulsei, 2020). According to data from the Statistics Center of Pinrang Regency in 2019 there has been a significant decrease in unemployment starting from 2016 the number of unemployed was 8,013 people to 6,769 people. This shows that the existence of PT BLG also triggers the unemployment rate in Pinrang district. The community in Suppa Subdistrict felt the impact of PT BLG being established in the middle of a residential area in Suppa Subdistrict.

#### **Public Perception of Seaweed Industry Development Program**

A person's perception can be influenced by several factors, namely, age, education, occupation, and experience. For example, in terms of age, the age composition of the people who are sampled is very diverse. The age of most respondents is people who are >30 years old by 40%. At that age, people have a lot of experience and knowledge so that in providing perceptions and making decisions, they are very objective. In addition, the educational aspect also has an influence on a person's perception. As many as 46% of the people used as research samples are high school educated. The compulsory education program in Indonesia has been fulfilled. But in decision making, one's knowledge is very influential in making the right decision. In addition to the education level, there is also an elementary school education level of 17%, junior high school at 17% and tertiary education at 20%. In general, the level of public education is quite good so that in giving an assessment of the condition of the existence of the seaweed industry it is very good.

However, the seaweed industry development program in Suppa District is strongly influenced by how to socialize and communicate the problems of the program with the people living in the surrounding environment, so that the community can accept it without blaming certain parties. At the beginning of the seaweed industry development plan, the company previously held outreach to the community in Suppa District, Pinrang Regency. At the time of socialization the company has introduced to the public with details about the seaweed industry.

Initially the local people were skeptical about the existence of an industry that would be built in the area where they lived. Of course, this is caused by public concerns about the impact of pollution that occurs from the waste produced by the company. However, after the company and the local government provided information and understanding to the public that the waste from the seaweed industry did not pollute the surrounding area too much, because the seaweed managed by the company only reached the limit of semi-finished goods, the waste was immediately managed and disposed of in the river, in the end the community agreed with the development of the company.

The company will assist the community in increasing job opportunities, especially for youth, so that it can improve the welfare of the community in terms of increasing the standard of living of the more advanced community. Based on this, it can explain the indications of the success of economic development by looking at economic growth (Hill, 2002).

In addition, this company also provides guarantees to the people, this is part of the responsibility for the smooth running of the company (work) in the seaweed industry and this is what convinces the community and approves the development of the company.

**Table 1. Results of Analysis of Public Perceptions of the Seaweed Industry Development Plan**

No	Response	Percentage (%)				Total (%)
		Strongly agree	Agree	Less Agree	Disagree	
1	Approval of the development plan	50	30	15	5	100
2	Interested Involved	50	17	18	15	100
3	Hope for the realization of development	44	25	16	15	100

Public perception of the development of the seaweed industry has received a presentation (50%) of the respondents who said they strongly agree with the plan to develop the seaweed industry. Community involvement in industrial activities around (50%) of respondents stated that they were very interested in registering themselves as workers in the Industry and around (44%) of respondents stated that they really hoped to be involved with the development of industrial estates, and around (5%) did not agree with the development planning. (15%) are not interested in being involved as workers, and (15%) do not expect to be involved in the development of the seaweed industry. In general, the results of the analysis show that 72% of the people in Suppa District agree with the development of the seaweed industry. The development of the seaweed industry will help the community in developing the seaweed market, employment and other benefits through CSR (Corporate Social Responsibility) activities which will greatly help the community in Suppa District.

**The Impact of the Existence of the Seaweed Industry Development on the Social Condition of the Community**

Industrialization is one form of essence as a step towards modernization, so that modernization is expected to be able to improve people's living standards. Why is that because in addition to being able to create new jobs, it also absorbs workers both around the company and outside the region, so that human resources are utilized properly. One of the responses from respondents to the existence of industry is that some respondents strongly support the development of the company. The respondent's reason is because the company has created job opportunities.

The condition of the employees in the company is that the majority of the workforce/employees are local people, so the company prioritizes the surrounding community, but there are also people from outside such as employees from Enrekang Regency, Pangkep Barru, Pare-Pare, Sidrap etc. The results of the interviews with the respondents show that the company is very helpful to the surrounding community as it wants the community to be a priority industrial employee in terms of employment opportunities. With the presence of the company, the unemployment rate of the community has decreased. Especially the young people who live in the area of the company, in this case the development of this company is very helpful for the government in solving the unemployment problem that occurs.

**Table 2. Percentage of Community Unemployment Rate on Seaweed Industry Development**

No.	Development Plan	Community Social Conditions		Percentage (%)
		Good (%)	Bad (%)	
1	Before the development	40	60	100
2	After the development	90	10	100

From the table 2, we can see that the social condition of the community before the development of the seaweed industry (60%) was bad due to the lack of available jobs and the difficulty of being accepted as workers, then (40%) of the respondents stated that one alternative to reduce the number of unemployed was farming, gardening or opening a trading business. However, after the development of the seaweed industry, there was an increase (90%) of the respondents saying it was good because of changes in various socio-economic aspects, one of which was people's livelihoods and changes in people's income levels. Meanwhile (10%) of the respondents do not work because some have retired and the rest are housewives. With this development, it can provide employment opportunities for the surrounding community.

#### Impact of Seaweed Industry Development on Community Economic Condition

Industrial development and development has resulted in changes in various socio-economic aspects of the community, these changes include changes in livelihoods, changes in the number of opportunities, changes in people's living standards. From the results of this study, it is clear that the improvement in people's living standards after the development of the seaweed industry is better than before.

**Table 3. Community Economic Conditions After the Development of the Seaweed Industry**

No.	Development Classification	Respondent's Condition Category (%)				Total (%)
		Excellent	Good	Poorly	Bad	
1	Before the development	17	33	50	0	100
2	After the development	57	40	3	0	100

The economic condition of the community has changed after the seaweed industry. The data above shows that the community is very grateful for the development of the seaweed industry. Of the respondents (57%) admitted that their lives are better because of their stable financial condition and receiving a monthly salary and also benefiting the surrounding community who have businesses or sell. Respondents (17%) felt they were already working in their state before the seaweed industry developed. The results of this survey show that the development of the seaweed industry has a very positive impact on the community. Previously, it was very difficult for the community to find work, but after the development of the seaweed industry, it really helped increase family income.

**Table 4. Distribution of Respondents by Level of Community Income**

No.	Income Level (Month)	Percentage (%)	
		Before	After
1	> IDR 2,800,000	17	57
2	IDR 2,000,000 – IDR 2,800,000	3	23
3	IDR 1,500,000 – IDR 2,000,000	13	10
4	IDR 1,000,000 – IDR 1,500,000	13	7
5	< IDR 1,000,000	54	3
	Total	100	100

The results of the survey show that income in the surrounding area precedes industrial development, the average income of the community was less than Rp. 1,000,000 with a percentage of around (54%), and respondents who earned IDR 2,800,000 is only around (17%). However, after industrial development, there was an increase in income. People who initially earned IDR 2,000,000-IDR 2,800,000 only around (3%) increased to (23%) after the construction, and the income of respondents who earned less than IDR 1,000,000 only (3%) after the industrial development, compared to before the development the percentage reached (54%). The increase in income from the community cannot be separated from the existence of the seaweed industry and the absorption of a lot of labor so that there are great opportunities for people to get jobs.

**Table 5. Community Perceptions About Opportunities To Get Employment Opportunities**

No.	Category	Very Many Opportunities	Many Opportunities	Less Opportunity	Total (%)
1.	Before the development	13	37	50	100
2.	After the development	57	33	10	100

Employment opportunities are very open for the community to work in the seaweed industry. Job opportunities include job vacancies that have been filled and all job vacancies that have not been filled. Job vacancies mean there are job opportunities to be filled and this is commonly referred to as manpower needs (Husni, 2006).

#### **Negative Impact of the Seaweed Industry**

The existence of the seaweed industry not only has a positive impact on the socio-economic community (Hasselström et al., 2018). Negative impacts also began to appear before the development of the seaweed industry. As a result of industrial development resulting in land disputes that occur between the community and the company. The community initially did not agree with the use of their land to be used as land for company development, because the land was used by the community for farming and gardening. However, after discussions between the community concerned and the local village head, the community agreed with the company's development on their land. There are also respondents/communities that are still afraid of the impact of pollution from the company, these people are afraid that one day there will be pollution in their area produced by the company.

Based on the impact of development according to (Michael, 2000) there are primary and secondary, then there will be positive impacts and negative impacts. Positive impacts are environmental changes that bring benefits while negative impacts are forms of changes that cause harm to human life. The negative impact of industrial development that is felt by the community is the reduction of land for farming, the potential for air pollution, waste (Hasselström et al., 2018), and damage to road access due to industrial trucks that use the road every day.

The problem of developing the seaweed industry is the location of the seaweed industry. The location of the grass industry in the coastal area is feared to cause considerable environmental problems (Holmer, 2010), and the local community critically expresses negative judgments about the boundaries of the seaweed industry activities (Emblemsvåg et al., 2020).

## CONCLUSION AND SUGGESTION

### Conclusion

The socio-economic impact of the community with the existence of the seaweed industry greatly impacts the absorption of local people's labor and increases people's income. In addition, the existence of the seaweed industry also has a negative impact on local communities in the form of land disputes and pollution and waste from the seaweed industry.

### Suggestion

Efforts to improve the community's economy from industrialization activities are urgently needed. Apart from the supply of seaweed to the industry is still needed. Seaweed business development efforts are very open for the community to open land for seaweed cultivation. In addition, the negative impacts of seaweed industrial activities need to be addressed immediately, especially liquid waste which is very detrimental to the community environment and aquatic habitats.

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