

PROCEEDING D-IcoM

Dewantara International Conference on Multidisciplinary

D-ICoM 2022

Excellent and Character Science and Humanity  
in Post COVID-19 Perspective

To commemorate the 67<sup>th</sup> anniversary of Universitas Sarjanawiyata Tamansiswa, the scientific committee will host an international conference, D-ICoM, with the theme Excellent and Character Science and Humanity in Post COVID-19 Perspective.

This forum is initiated for scholars, practitioners, and other parties to disseminate, discuss, and collaborate ideas, best practices, and researches from various multidisciplinary subjects related to the theme.

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Perspective**

**Yogyakarta, 3 Desember 2022**

**Editor :**

Ari Setiawan, V. Reza Bayu Kurniawan, Yuli Prihatni,  
Nurcholish Arifin H, Th. Laksmi Widyarini



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## **Preface**

Thank God, we pray for the presence of the Divine Robb for holding the D-ICoM activity which is a multidisciplinary international conference. This activity was organized by LPM UST in collaboration with various parties. We convey our thanks to all the users who have submitted their best articles. This proceeding contains various articles from various fields. The collected articles are edited and presented in the form of proceedings. The fields in this proceeding are economics, education, engineering, agriculture, and psychology. I hope the articles in this process are useful. We, the entire committee, apologize if there are many shortcomings in the organization of the conference. We also apologize if there are shortcomings and mistakes in the preparation of the proceedings. Thank you

our respect  
committee team

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# **The Social and Economic Dimension of Seaweed Farming in South Sulawesi**

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## **Abstract**

*Seaweed started to attract the attention of international consumers when people's awareness about healthy food and urban lifestyle emerged. The urban lifestyle is also inspired by culinary delights from Japan and Korea which are made from seaweed. This situation has led to an increase in demand for seaweed and cause local communities are interesting in cultivating seaweed. This study aims to (1) describe the social aspects of seaweed farming, and (2) describe the economic aspects of seaweed farming. This research was conducted at the largest producer of seaweed in Bulukumba Regency South Sulawesi. Data was collected through a survey of seaweed farmers. The results of this study indicate that (1) On the social aspect, farmers generally finished junior and senior high school level. The kinship between farmers is very strong, especially the behavior of helping each other when there is an urgent need. (2) On the economic dimension, famers's income is highly dependent on the length of the stretched rope, plant density, production, and the price set. From the economic analysis it is known that in a harvest season with a price level of IDR 17.447/kg, farmers earn an average income of IDR 41,577,543 per season with a rope length of 487,7 meters*

Keywords: Keywords: *Social dimension; economic dimension; seaweed farming*

## **INTRODUCTION**

There are three main reasons why seaweed is important to discuss. First, seaweed is growing because ecologically Indonesian waters, especially eastern Indonesia, are very suitable for seaweed development. Second, the culinary urban life style that is currently developing where culinary culture has reached all levels of society influenced by Korean and Japanese cuisine which makes seaweed one of

their favorite menus. As a result, the demand for seaweed increases. Third, due to ecological reasons and the reason for this increasing market demand, seaweed farmers are trying to increase their production.

Apart from being culinary as a life style, seaweed is also used for pharmaceutical and health purposes as well as helping the environment, especially in the current climate change situation. Seaweeds are an excellent source of nutritious human food because of their low lipid content, high minerals, fibers, polyunsaturated fatty acids, polysaccharides, vitamins, and bioactive compounds. Many seaweeds sub-products offer unique properties to develop various functional foods for the food processing industries. In the perspective of climate change mitigation, seaweed farms absorb carbon, serve as a CO2 sink and reduce agricultural emissions by providing raw materials for biofuel production and livestock feed. Seaweed farming system also helps in climate change adaptation by absorbing wave energy, safeguarding shorelines, raising the pH of the surrounding water, and oxygenating the waters to minimize the impacts of ocean acidification and hypoxia on a localized scale (Sultana et al., 2022).

The prospect of developing seaweed globally can be seen as a form of fulfillment. Global food security is a dynamic operational notion that has been evolving over decades with regards to its definition and policy application (Clay, 2003). Food security is acquired when all individuals have physical, financial, and social access to nutritious, adequate, and safe food which can fulfill their unique dietary requirements and choices of food for a healthy and active lifestyle (Leandro et al., 2020). Indonesia has top five seaweed-producing provinces namely South Sulawesi South, East Nusa Tenggara, North Kalimantan, Central Sulawesi, and West Nusa Tenggara. Seaweed production in Indonesia is spread across 23 provinces. The total national seaweed production in 2020 is 5.01 million wet tons consisting of 4.66 million wet tons of seaweed in the sea and 351,000 wet tons of seaweed in ponds (BPS, 2022).

Table 1. Total Seaweed Production Volume by Top Five Seaweed-Producer (Wet Ton) 2021

Province	Production (wet ton)	Percentage (%)
Sulawesi Selatan	1.409.700	30.25
Nusa Tenggara Timur	1.037.875	22.27
Kalimantan Utara	441.152	9.47
Nusa Tenggara Barat	402.687	8.64
Sulawesi Tengah	393.458	8.44
Top Five Province	3.684.872	79.07
Other Province	975.832	20.93
Indonesia	4.660.704	100

Source: Results of the Potential Fisheries Commodity Survey Seaweed Aquaculture 2021 Series-2

Information in Table 1 shows that Eastern Indonesia contributes nearly 80 percent of seaweed production in Indonesia in 2021, and South Sulawesi is the

largest contributor to seaweed production, namely 30 percent (BPS, 2021). What can be seen in Table 1 cannot be read simply as the physical production of seaweed, but a study of the social and economic dimensions of seaweed farmers is something that cannot be ignored. Apart from the favorable ecological conditions, what is equally important is the social and economic situation of the seaweed farmers themselves.

Seaweed is one of the main aquaculture commodities with high economic value and has broad market opportunities, both national and export oriented. Seaweed can be cultivated so that it becomes one of the strategic commodities in the fisheries revitalization program. Amount Most of the seaweed production (80 percent) is sold in the form of dried seaweed as a basic ingredient for various products. Post-harvest processing in the form of industrial production has not been carried out much (Suryawati & Ma'ruf, 2019). Marketing of seaweed which still relies on sales in the form of dried seaweed has implications for the low income earned by these farmers. Even if it is sold in the form of processed products, it can increase the income of the farmers themselves.

## METHOD

This study was carried out in XYZ Village which is a center for seaweed production in Bukukumba Regency, South Sulawesi. Data were obtained from 65 seaweed farmers through a survey. The results of data collection were then analyzed descriptively and given interpretations that were relevant to the purpose of this study. The selection of Bulukumba district was motivated by its position as the center of South Sulawesi's seaweed production. This study deliberately chose one of the villages in Ganatarang subdistrict with the consideration that local farmers have cultivated seaweed for more than 10 years.



Figure 1. Bulukumba District Map

### A. Social Dimension

The social aspect is inseparable and inherent in a person, including seaweed farmers. This section will discuss the education and social relations of seaweed farmers in Bulukumba.

#### Education

Seaweed farmers generally have low education. Low education is one of the characteristics of farmers in Indonesia. The results of the interviews show that most of those who work as seaweed farmers have elementary and junior high school education. This does not mean that in this household there are no highly educated family members. This study found that household members with higher education were not permitted by their families to work as seaweed farmers. They are expected to work in the city or take up other fields so that family life can be lifted. The educational distribution of seaweed farmers is presented in Table 2.

Table 1. Seaweed Farmer's Level Education

Education	Frequency	Percentage (%)
SD	36	55.4
SMP	22	33.8
SMA	7	10.8
Total	65	100

Source: Primary Data, 2021

It can be seen that more than 80 percent of seaweed farmers have low education (elementary and junior high schools). However, this description needs to be read as a mere description of the farmer, not as a description of all household members. This is because in-depth interviews revealed that there were household members (children) who were studying in college and most likely the family would not allow these children to continue their parents' business as seaweed farmers. This situation is different from what happened to the children of shallot farmers where their children were trained to work as farmers from a young age (Azuz et al., 2022). Information in Table 2 shows that most of the seaweed managers have low elementary education (55.4 percent) There is not seaweed farmer who has ever attended college. The low level of education of seaweed farmers was also found in South Sulawesi Pengkep. If this level of education is compared with the education level national, it can be seen that the education of national seaweed level is proportionately higher in low level education about 65 percent. (Marhawati et al., 2020; BPS, 2022).

#### Social Relation

Social relations are inseparable from all human activities. Rural economic activities cannot be established without the support of social ties, especially this because social ties between communities are very closely intertwined. Social bonds that eventually form social relations are not always in the form of support, sometimes social relations can bind vulnerable groups to continue to be in a dominated situation (Bourdieu, 2013).

The social relations that occur in seaweed farming activities can be seen from the efforts of seaweed farmers who have little capital to maintain their relationship

with the seaweed collectors in that location. This study found that collectors always maintain their relationship with small farmers through the assistance they provide. If there is an urgent need for money from their customers they never refuse. Whatever funds are requested by the customer's seaweed farmers, they will be fulfilled. This convenience makes grass farmers feel very lucky and maintain social relations. Seaweed farmers will always sell their crops to regular collectors. This relationship is not a balanced relationship, farmers are in an inferior position and traders are in a superior position.

The social relations that are built between fellow grass farmers look more balanced. They give each other help if one farmer needs help. The sudden need for funds is usually for medical purposes and donations for the dead. This study found that social relations between seaweed farmers were mostly at the two-way level. They will borrow from each other and ask for help. This is not seen in the relationship between farmers and traders.

Unbalanced social relations in the world of fisheries in South Sulawesi are known as *punggawa* and *sawi*. *Punggawa* is the owner of the fishing vessel while *sawi* are those who work on the vessel. (Hasriyanti & Syarif, 2021). Before seaweed developed, Makassar Bugis fishermen were familiar with social relations in which each position was known as *punggawa* and *mustard greens*. The social relationship between the *punggawa* and *sawi* is composed of a strong social structure and is supported by economic capital, causing this relationship to continue and be inherited as long as the retainer's child remains in the position of ship owner (Agam et al., 2021).

#### **B. Economic Dimension**

At the economic dimension level, seaweed farming is generally discussed at two levels, namely seaweed farming income and marketing. This study is only limited to the income of seaweed farmers. The income of seaweed farmers depends on the length of the rope, seeds, climate and price. The length of the stretch of seaweed straps shows the seaweed population. The length of the rope stretch is in the realm of the seaweed farmer, while the climate and price are external factors which the farmer uncontrol.

The characteristics of the seaweed business area are seen from the number of stretches, the length of each stretch, and the distance between the bundles of seaweed in each stretch. From these three things, the plant population can then be calculated so that the estimated average production can be known. This study found that the number of stretches owned by each farmer was different, as well as the length of each stretch. The number of stretches owned by farmers is between 100 – 1000 stretches. Each stretch is between 13 – 22 meters long. The average price at the farm level is Rp. 17,447/kg. Total production of 154900 kg per season for 65 seaweed farmers. With this price level, in one season the total income of seaweed farmers is IDR 270,2540,300 or on average each farmer earns IDR 41,577,543. This revenue is not net income because production costs have not been calculated.

## CONCLUSION

This study concludes that first, the social relations that exist consist of two, namely those that are balanced and those that are unbalanced. Unbalanced relations can be seen between seaweed farmers and collectors, while equal social relations are established among fellow seaweed farmers. Second, seaweed farmers earn a gross income of IDR 41,5777,543 per season.

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## Excellent and Character Science and Humanity in Post COVID-19 Perspective

To commemorate the 67<sup>th</sup> anniversary of Universitas Sarjanawiyata Tamansiswa, the scientific committee will host an international conference, D-ICoM, with the theme Excellent and Character Science and Humanity in Post COVID-19 Perspective.

This forum is initiated for scholars, practitioners, and other parties to disseminate, discuss, and collaborate ideas, best practices, and researches from various multidisciplinary subjects related to the theme.

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