

The Reborn of Seaweed Cultivation in Nusa Lembongan Bali

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Abstract

Bali is one of the seaweed commodity-producing provinces in Indonesia. One of the villages in Bali that produces these commodities is Lembongan Village, Nusa Penida District, Klungkung Regency. The existence of seaweed cultivation, making the community's economy increasing. The tourism sector is increasingly stretched to be one of the factors that cause people to switch professions. The existence of the COVID-19 pandemic has made the tourism sector worse. This encourages people to cultivate seaweed which for years they have left. Based on these phenomena, this study aims to find out how the impact of the re-born of seaweed cultivation on the economy of seaweed farmers in Lembongan Village, Klungkung Regency, Bali and find out what supporting factors and inhibiting factors in carrying out seaweed cultivation again after years have been abandoned. This type of research is a qualitative descriptive study with data collection techniques through documentation studies and *in-depth interviews*. Informants in this study consisted of 1 Head of Lembongan Village and 3 seaweed farmers in Lembongan Village. The data collected will be analyzed using the Interactive Miles, Huberman, and Saldana models. The results showed that seaweed cultivation was able to have an impact on increasing the economy of the local community in terms of increasing income and providing employment. There are supporting and inhibiting factors in conducting seaweed cultivation which has long been abandoned by the people of Lembongan Village. For supporting factors, including 1). The government is serious about starting from the Regent to the village government in handling the presence of seaweed; 2). Soaring seaweed prices and demand for dried seaweed; 3). The emergence of public awareness of the existence of seaweed that can sustain their economy; 4). The existence of community knowledge about seaweed cultivation. Then for the imaging factors, namely: 1). A crisis of generations of seaweed farmers; and 2). Lack of seaweed drying land due to tourism development.

Keywords: *tourism, COVID-19 pandemic, economy, seaweed cultivation.*

I. INTRODUCTION

Bali is one of the seaweed commodity-producing provinces in Indonesia. As much as 65% of seaweed is cultivated on

three other islands in the southeast of Bali, namely Nusa Penida, Nusa Lembongan

and Nusa Ceningan. All three are included in the Nusa Penida District, Klungkung Regency (Suriyani, 2018). Since ancient times the life of the Balinese people, especially the Lembongan Village is familiar with agriculture, the vast land and high productivity of the land is used by the community to grow coconut plants, beans, tubers have become the main commodity

making up the agricultural structure on Lembongan Island. The community is not familiar with seaweed cultivation (Kompasiana, 2017).

Over time, seaweed has become a large commodity in Nusa Lembongan. Seaweed began to develop in Lembongan more or less in 1976. Beginning with the arrival of a researcher who tried to plant a species of *Spenosium* and *Cattonie*, this is where the beginning of the changing patterns of life and economy of the Nusa Lembongan community (Ujiana, 2016 in Kompasiana, 2017). The researcher cultivated seaweed species *catatonia* and *spenosum* to be developed in Nusa Lembongan. This moment made a change in people's perception, turning into seaweed farmers. The entire farming community flocked to participate in the development of seaweed, starting from trying to plant to focusing on developing seaweed cultivation itself. At that time the community was very famous with the development of seaweed and became the beginning of a change in mindset, patterns of life, culture and economy of the people in Nusa Lembongan and Nusa Penida. (Kompasiana, 2017). According to Ujiana (2016) in Kompasiana (2017), many Lembongan people have become wealthy from seaweed cultivation. Not only buying houses and land in Bali, but they are also able to send their children to the college level. The change in the shape of the house building became one of the tangible proofs of economic development in that era.



In 2013, the cultivation of seaweed amounted to more than 100,000 tons. But in 2014 it dropped to more than 83 thousand tons. In 2015 and 2016 increased to 106 thousand tons more. While in 2017, seaweed cultivation has dropped dramatically to more than 59.7 tons (Mustofa, 2019). That is because several seaweed farmers prefer to work in the tourism industry. The threat of tourism industry waste also contributes to this condition. This triggers price fluctuations and slowness of processing business into more high-value products (Suriyani, 2018).

The mindset of the Lembongan people now leads to the tourism industry and leaves behind the potential of natural resources, which were once the prima donna especially seaweed. No more glorified seaweed, no more people who become *owners* in their own business. Local wisdom, which has always been excellent, shifts to a new concept based on "selling the beauty of nature". In a short period seaweed cultivator activities that were once large-scale, become small grains that adorn a natural beauty, and become the main attraction of thousands of people visiting to see (Kompasiana, 2017).

The seaweed cultivation business in Nusa Lembongan is not in line with existing tourism development. Seaweed cultivation tends to decline, while tourism development in Nusa Lembongan has shown significant progress in the area. Based on the results of research on the seaweed cultivator community, it was found that the level of complexity of Nusa Lembongan tourism was high. These results were obtained from the density of regional users, the completeness of the variety of tourist attractions and activities, the intensive use of time, the availability of supporting infrastructure, and the variety of tourists. This tourist area is not only known and visited by local people but

also visited by foreign tourists (Artana et al 2016).

Entering 2019, the coronavirus outbreak has changed the face of tourism in the Nusa Penida District, Klungkung in the last two weeks. If previously stretched tourism is very passionate, now weakened after no more Chinese tourists who came. The impact of sluggish tourism activities is greatly felt by the community in Lembongan Village, Nusa Penida District. Lonely tourist visits, especially China, have been felt since the beginning of February. If usually Nusa Penida and Nusa Lembongan are always full of Chinese tourists, now it is free. Its influence is felt, especially for residents who trade around tourist destinations and entrepreneurs in both sea and land transportation. The Lembongan people who have been relying on tourism all this time, can only wait for the coronavirus to be controlled and tourist visits back to normal (Izarman, 2020).

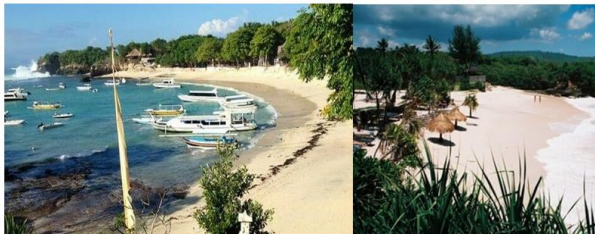


Figure 2. The atmosphere of the beach in Nusa Lembongan before and during the COVID 19 pandemic

The weakening of the tourism sector has caused seaweed cultivation in Nusa Lembongan, Nusa Penida District, Klungkung Regency to return to the interest of the local community. Seaweed cultivation is a village potential that should not be abandoned by the people of Nusa Lembongan because it can sustain the community's economy (Prabowo, 2020). At present, there are 200 families of Lembongan villagers who are directly involved in cultivating seaweed. Production results vary, some produce an average of 300 kg to 500 kg per month during the last harvest. Even if the season is good, it can produce 700 kg per month with a selling price of 18,000 rupiahs per kg. (Balipost, 2020). From the results of interviews with the head of the seaweed cultivation group in Nusa Lembongan, the following data were obtained:

Table 1. Data on Seaweed Production 2015-2020 on Nusa Lembongan Island

	2015	2016	2017	2018	2019	2020
January	800 kg	275 kg	-	-	85 kg	50 kg
February	750 kg	250 kg	-	-	90 kg	60 kg
March	765 kg	275 kg	-	-	95 kg	900 kg
April	795 kg	250 kg	-	50 kg	90 kg	10,000 kg
May	800 kg	225 kg	-	75 kg	95 kg	12,000 kg
June	760 kg	200 kg	-	80 kg	100 kg	18,000 kg
July	780 kg	350 kg	-	60 kg	90 kg	20,000 kg
August	800 kg	250 kg	-	60 kg	85 kg	-
September	700 kg	-	-	50 kg	95 kg	-
October	900 kg	-	-	90 kg	100 kg	-
November	850 kg	-	-	80 kg	90 kg	-
December	600 kg	-	-	60 kg	150 kg	-
Average	775 kg	173 kg	0	50.5 kg	97 kg	

Source: Chairman of the Nusa Lembongan Sea Shell Cultivation Group (I Wayan Suarbawa)

From the table above it can be explained that from 2016 to March 2018 there was absolutely no seaweed cultivation because the seaweed was exposed to *Ice Ice* and attacked by fish pests so that people ban Yes, we have shifted to the tourism sector and at the same time the tourist destinations in Nusa Lembongan have begun to hit. In 2018 the Nusa Lembongan Seaweed Cultivation Group only assisted the Local Government in the seaweed demonstration plot from April to December with an average sale of 50.5 kg. In 2019 the seaweed cultivation group began cultivating seaweed again with only 8 farmers at that time. The existence of the Covit 19 pandemic starting in March 2020 when the tourism sector began to die in Nusa Lembongan in particular, so that people who made their living from the tourism sector returned to pursue seaweed cultivation, and showed very sharp results, in February which only produced 65 kg and consecutively. also increased until July 2020 producing 20,000 kg with the number of farmers who were originally 8 people, now with the number of farmers as many as 145 people.

Based on a review of the above phenomena, this study aims to determine how the impact of the rebirth of seaweed cultivation on the economy of the people in Nusa Lembongan Bali and to find out what are the supporting and inhibiting factors in carrying out seaweed cultivation again after years of abandonment.

II. LITERATURE REVIEW

Economic Recovery through Community Empowerment

Recovery is the beginning of the rebuilding effort and is part of the general development carried out. The aim is to foster social, economic and cultural

activities with the main objectives of the development of social and cultural economic activities, the establishment of law and order and the rise of community participation in all aspects of life (Nurjanah, 2012: 74). This must be done because there are many people/victims whose economic conditions are unfavourable and their livelihoods are disrupted. Recovery aspects, related to the improvement and restoration of all aspects of public/community services to an adequate/normal level, including a socio-economic recovery in the medium and long term (Nurjanah, 2012: 77).

Community economic empowerment is strengthening ownership of the factors of production, strengthening distribution and marketing mastery, strengthening the community to get an adequate salary/wage, and strengthening the community to obtain information, knowledge and skills, which must be carried out in multiple aspects, both from the aspect of its society, as well as its policy aspects. A clear understanding of the characteristics of the problem of community powerlessness in the economic field is important to do. Because with a clear understanding of this, it will be more productive in formulating concepts, approaches, and operational forms of community economic empowerment under the characteristics of local problems (Soekamto & Sulistyowati, 2014: 3-4).

The concept of economic empowerment according to Sumodinigrat is briefly described as follows: (Hutomo, 2000: 7)

- 1) Empowerment of the people's economy is an effort to create a strong, large, modern, and highly competitive economy in the mechanism true market. Because the constraints on people's economic development are structural obstacles, the empowerment of the people's economy must be done through structural changes. Structural

changes are changes from the traditional economy to the modern economy, from a weak economy to a strong economy, from a subsistence economy to a market economy, from dependence to independence.

- 2) Its policies in empowering the people's economy are (1) providing opportunities or greater access to production assets (especially capital), (2) strengthening the position of transactions and partnerships of people's economic businesses, so that the people's economic actors are not merely *price takers*, (3) services education and health, (4) strengthening small industries, (5) encouraging the emergence of new entrepreneurs, and (6) spatial equality.

Seaweed Farming in Lembongan Village Lembongan

The village has a characteristic as a seaweed producing area and a lot of its marine products. The pattern of livelihoods of the population in Nusa Lembongan can be said to experience dynamic changes according to changing times. Before the entry of tourism to Nusa Lembongan in 1991 specifically, the Lembongan Village with the maritime potential and seaweed farming land use made the majority of the people's livelihoods highly related to marine resources, particularly coastal waters. But after the entry of tourism and the public began to recognize the benefits of tourism as time goes on grass farming increasingly displaced, less competitive with the progress of tourism (Pradnyana & Nugroho, 2019).

Seaweed cultivation land in Lembongan Village is decreasing because of changes in the function of cultivated land into the interests of tourism. No one knows for sure how much land was used to cultivate seaweed during the heyday of the 1980s to

the early 2000s but it is estimated to reach 50 hectares with hundreds of plots of land filled with seaweed. Now it only looks visible stakes used to install a stretch of seaweed rope, there is no longer a view like rice fields in the middle of the sea like before. The government together with farmers tried to replant seaweed until the beginning of 2019, the area of land used by four farmers reached 8 acres with the condition of seaweed growing fertile where the land is spread south of Lembongan Island, almost 15 meters from the Lebaoh coastline 8 plot. (Pradnyana & Nugroho, 2019)

Previous

Research Akyarko Research (2017) with the title *"Assessing the Socio-Economic Benefits of Seaweed Production to Rural Coastal Areas in Ghana"* concluded that the cultivation of seaweed species of *Kalvarezii* and *Eucheuma* had produced positive socio-economic impacts in many coastal communities throughout the world because of unique characteristics such as low capital and technology requirements and short growing cycles. However, this positive contribution has been reduced in some places due to the effect of low prices and disease. Seaweed farming has made a major contribution to improving the standard of living of coastal residents of Zanzibar. This has changed the tradition of coastal women who spend their days indoors with those who go to seaweed farming, get cash and contribute to the needs of their families.

Robinson's research (2013) entitled *"Consequences and Challenges of Tourism and Seaweed Farming: A Narrative on a Coastal Community in Zanzibar"* concluded that the consequences of globalization in coastal communities vary greatly with the nature of external forces and the strength of local communities, as well as the level of integration of

communities and assets they are in a broader national and global framework. Jambiani points out that the drivers of external change, in this case, tourism and seaweed farming, have brought prospects but also introduced vulnerability to local communities. Seaweed farming continues to provide opportunities for livelihood improvement, despite hard work and limited wages, while fluctuations and dramatic declines in 'backpacker' tourism have lost many people from much-needed direct and indirect income.

Research Ginigaddara *et al.* (2018) with the title "*Seaweed farming as a sustainable livelihood option for northern coastal communities in Sri Lanka*" concludes that this study concludes that the current seaweed farming system on the northern coast of Sri Lanka is quite profitable and results in considerable additional employment opportunities, so this business is financially profitable. The perception of the importance of seaweed as a vital livelihood choice proves that the system is socially acceptable among coastal communities in Northern Sri Lanka. This finding reveals the different possibilities of efforts to further enhance as a commercial company to exploit its full potential. However, further investigation is needed to identify the biological sustainability of the system to recommend it for further replication to other coastal areas in Sri Lanka. Besides, there is a definite need for open interaction between the government, farmers, traders, and representatives from related sectors to further promote seaweed farming as a commercial venture on the coast of Sri Lanka.

Research Mao *et al.* (2010) with the title "*Post-SARS tourist arrival recovery patterns: An analysis based on a catastrophe theory*" concluded that the recovery of the state of a disaster system to its normal state depends on two control

factors. The awakening of normal factors provides a precondition for returning the system to its original state, and the presence of a separation factor creates a hysteresis effect that impacts the system recovery time.

Baraero-Era and Rosario (2010) research with the title "*Examining Tourism Resilience Practices as a Base for a Post-COVID 19 Recovery in the Philippines*" concludes that tourism resilience also calls upon different key stakeholders to work together at various levels towards recovery. The role and manner of doing business will be redefined or redefined, as resilience in the context of this pandemic, it cannot be resisted and there is no reflection returning to the state of the tourism industry to where it was before. The way to live and do new things will develop. For example, health and sanitation practices that were rejected from this health crisis such as social distance, frequent hand washing, and living a healthier lifestyle are likely to become new post-COVID norms 19. Tourism resilience will be reflected in various ways and forms of adaptation and a systematic transformation that the government and its people will use to overcome this health crisis and, move forward, towards the recovery of tourism. Travel and tourism have experienced wars and catastrophic events in the past, and with an effective resilient strategy, we will recover from this pandemic.

III. RESEARCH METHODS

The type of research used in this article is qualitative research. Sukmadinata (2011: 94) defines qualitative research as research conducted to be able to understand the phenomena that occur in the social sphere for the subject. From various types of qualitative research, descriptive research is used this time. Here the researcher will describe the impact of the rebirth of

seaweed cultivation on the economy of seaweed farmers in Lembongan Village, Nusa Penida District, Klungkung Regency, Bali.

Research Locations

The study was located in Nusa Lembongan Village, Nusa Penida District, Klungkung Regency, Bali Province.

Data Collection Techniques Data

Collection techniques used in this study are the study of documentation and *in-depth interviews*. Documentation studies are carried out through news searches *online*, previous journals, and books that are relevant to the research problem. Then data collection through (*in-depth interviews*) is done to strengthen the results of the study of documentation. The informants in this study were grouped into 2 (two) groups, namely group A, consisting of 1 village head and group B being seaweed farmers with 3 people. The naming of informants from each group was coded in the order of the number of informants, for example, group A had 1 informant, then the naming of informants - A1 and group B there were 3 informants, then the naming of informants - B1, informant - B2, and informant - B3.

Data Analysis Techniques

According to Miles *et al.* (2014), data analysis conducted in qualitative research was carried out to the point of being saturated using three methods namely, *data reduction*, *data display* and *conclusion drawing/verification*.

a. *Data Reduction* (Data Reduction)

Reduce the data is a thinking process that requires intelligence, the breadth and depth of insight that high. This is needed in reducing the data because reducing the data obtained means to summarize, choose the main things,

focus on the things that are considered important, look for themes and patterns and discard things that are considered unnecessary.

b. *Data Display* (Data Presentation)

After the mere use of data, the next step was to present the data. In general, the data presented in qualitative research is in the form of narrative text

c. *Conclusion Drawing / Verification*

Conclusion making is the last thing done in data analysis. Problems and formulations of problems in qualitative research are tentative because they are temporary and will develop after researching the field. Thus, the conclusions in qualitative research can answer the problem formulation that was formulated from the beginning or not. The conclusion that emerges is expected that a discovery that has not existed before can be a description or a picture of a subject that is still blurred becomes clear after research, can be a causal relationship, hypothesis or even a new theory.

IV. RESULTS AND DISCUSSION

General Object of Research Object

Nusa Lembongan is in a group with Nusa Penida and Nusa Ceningan but Nusa Penida is bigger while Nusa Ceningan is smaller. Nusa Lembongan and Nusa Ceningan are connected by a 300-meter suspension bridge. Motorbikes can cross the bridge. Administratively, Nusa Lembongan which has an area of 615 hectares belongs to the Klungkung Regency, Bali. Nusa Lembongan can be accessed from Sanur Village Harbor in Denpasar and Tribuana Harbor in East Bali by wooden ships. The two lines are the traditional route of Bali-Nusa Lembongan-Nusa Ceningan for residents. The wooden ships are equipped with

balancing bamboo called kantih on either side to reduce shocks when crashing on the waves. While departing from Benoa specifically for tourists with modern chartered ships (Kompas.com, 2008). But since the development of tourism, Bali-Nusa Lembongan-Nusa Ceningan transportation has used boat transportation, so it's easier and easier to reach it.

Residents generally rely on seaweed to make a living. Red algae (*rhodophytaseaweed*) grows naturally in the strait and its crops have been exported to several European countries and Japan. Seaweed can be a raw paper material and can be processed into bioenergy (Kompas.com, 2008). Community activities on the island of Nusa Lembongan, Bali, daily life can not be separated from seaweed, this is because the island located in the southeast of the island of Bali is one of the best seaweed producers in Bali (Madani, 2013).

The Impact of Rebirth of Seaweed Cultivation in the Community Economy in Lembongan Village, Klungkung Regency, Bali

Seaweed cultivation efforts in Lembongan Village, Nusa Penida began to be developed again this year, after a long time it has been abandoned by the community. In addition to preserving seaweed farming, income as a seaweed farmer is also quite promising (Suputra, 2019). It is undeniable that this macroalgae plant has been significantly able to move the economic life of the community, how not until now this one commodity is still the belle of coastal communities and is a major alternative business. The impact of seaweed farming business activities also affects the movement of the local economy in aquaculture production centres. The indicators can be seen from the significant changes in the increase in people's income and the provision of employment.

(Directorate General of Aquaculture, 2019).

The village head of Lembongan stated that more than 90% of the source of income was seaweed, the rest were employees of hotels and others. This shows that the seaweed cultivation has a profound impact on the economy of the Lembongan Village community. Seaweed has significantly brought about the socio-economic change of the people of Nusa Penida. Why not, through the seaweed business the people's income has begun to increase so that it can directly change the social status of the community, currently the head of the family can meet family needs, education for children and build houses properly, there are even farmers who have succeeded in sending their children to the bench College. (Directorate General of Aquaculture, 2019)

Income obtained from seaweed cultivation is fairly large, with an intensity of harvest time of 45 days can earn millions of rupiah depending on how many farmers can harvest. The price of seaweed in Lembongan Village itself is currently different from the price in Denpasar which reaches Rp. 14,500 per kilogram for dried seaweed, this is because the quantity or supply of seaweed in Lembongan Village is relatively small in 2019. The results of interviews of some farmers who still cultivate seaweed said that for at least 35 days depending on weather factors and also the condition of the water process to reach the grass harvest Dry sea gets a gross profit of Rp. 3,000,000 if it has an area of 1 acre and weighs around 120-150 kilograms. This condition is so beneficial for seaweed farmers who have the main profession as a tourism entrepreneur while maintaining seaweed as the main commodity in Lembongan Village.

Also, according to interviews with the Head of Lembongan Village, the return of

the seaweed cultivation is expected to be able to support the tourism sector in Lembongan Village which continues to grow. The seaweed field will be arranged in such a way that it will attract tourists to visit and observe. The collaboration of seaweed farming activities and the tourism sector can have a positive impact on the economy of the Lembongan Village community. One farmer argues that one of the beaches used for planting seaweed is Lebaoh Beach. This beach does save natural charm that is different from most beaches. Through collaboration with the tourism sector, this beach can be known to many people as the beach with the largest supply of seaweed in Lembongan. So that it does not rule out the income of farmers also increases.

Supporting Factors and Inhibiting Factors in Implementing Seaweed Cultivation after Years Have Been Abandoned

Supporting factors in implementing seaweed cultivation again after years have been abandoned namely the seriousness of the government from the Regent to village government level addressing the problems regarding the existence of seaweed in Lembongan Village. Seeing the success of the trial planting of seeds that produce high-quality seaweed, the community's trust is slowly starting to grow and is confident that seaweed can be cultivated again. Then the price of seaweed soared and the increasing demand for dried seaweed. Seeing the increasing demand for seaweed every year makes seaweed prices increase and stable. Bali, in particular, experienced an increase in the sale value of seaweed because it is one of the areas that produce the highest quality seaweed in Indonesia. At present, the selling value of dried seaweed has increased from Rp. 14,500 to Rp. 14,600 per kilogram depending on quality and market demand. Increasing and stable prices are an

opportunity to cultivate seaweed, the community must be keen to see this opportunity to improve the level of welfare, especially in Lembongan Village. Also, at this time there is a sense of public awareness about the presence of seaweed in Lembongan Village. The need for other alternatives besides the tourism sector as a source of income in the event of a crisis in the tourism sector, namely returning to seaweed cultivation. Work experience or knowledge of seaweed farming techniques in Lembongan Village also contributed to the re-establishment of seaweed farming. That is because the knowledge of seaweed will be inherent in their lives and become a culture so that when seaweed farmers cultivate seaweed again they will not forget how the process and stages of seaweed processing start from the nursery process to dry the harvest (Pradnyana & Nugroho, 2019).

The inhibiting factor in carrying out seaweed cultivation again after years has been abandoned is the lack of regeneration of farmers in Lembongan Village. Teenagers are in their comfortable position where tourism is considered the safest choice when choosing a profession. The crisis of farmers' regeneration for young people who are reluctant to enter the agricultural sector is a serious concern in the sustainability of seaweed farming in Lembongan Village, in contrast to the disasters that occur suddenly and have a direct impact, the crisis of farmers' regeneration goes slowly but has an impact big in the future without realizing it. Besides, the lack of drying land to produce dried seaweed. Developing tourism in Lembongan Village has a detrimental impact on the sustainability of seaweed cultivation because it narrows the space for farmers who need large enough land for seaweed cultivation activities. Development of lodging such as hotels, villas, and *bungalows* occur so quickly and cause the reduction of seaweed cultivation

land on the mainland, especially those located on the seashore considering the seaweed cultivation activities require large enough land on land to dry the seaweed harvest so that the water content reduced and ready to be marketed. Substantial capital at the beginning of the Seaweed cultivation process was also an inhibiting factor due to the economic crisis during the pandemic. the average yield of a survey of farmers per 1 acre spent IDR 6,500,000 starting from stakes, ropes, nets and seaweed seeds. This causes people who used to be farmers are reluctant to return to farming because they have trouble finding a place for the drying process, when in fact some lands can be used as farmers' drying grounds without rental fees (Pradnyana & Nugroho, 2019).

V. CONCLUSION

The weakening of the tourism sector is a stimulus for the people of Lembongan Village to conduct seaweed cultivation again. Because this cultivation can have an impact on the increasing economy of the local community, namely in terms of increasing income and providing employment. There are supporting and inhibiting factors in conducting seaweed cultivation which has long been abandoned by the people of Lembongan Village. For supporting factors, including 1). The government is serious about starting from the Regent to the village government in handling the presence of seaweed; 2). Soaring seaweed prices and demand for dried seaweed; 3). The emergence of public awareness of the existence of seaweed that can sustain their economy; 4). The existence of community knowledge about seaweed cultivation. Then for the imaging factors, namely: 1). A crisis of generations of seaweed farmers; and 2). Lack of seaweed drying land due to tourism development. 3) Substantial capital at the beginning of the seaweed cultivation process.

From this conclusion, it is necessary to have an active role of the government and the community in re-cultivating seaweed in Lembongan Village. The need for education for the younger generation that the importance of seaweed cultivation, so that later the cultivation of seaweed will remain and be of interest to the younger generation to run a business.

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