



The Role Of Women In Seaweed Pre-Production Handling At The Indonesian Border

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Abstract-Nunukan Regency is one of the regencies located in North Kalimantan Province which is known as the border area between Indonesia and Malaysia, making this area a center for trade in goods and services, which is quite strategic. This area has enormous potential, not only in agriculture and plantations but also in the marine fisheries sector. The seaweed commodity produced is Eucheuma cottoni. To increase the productivity of seaweed production, the community is enthusiastic about being able to participate in these activities. Based on this, this research was conducted to look at the Role of Women in Handling the Pre-Production of Seaweed at the Indonesian Border. The research method used was purposive sampling with a total sample of 60 people by analyzing descriptive qualitative data. The results showed that the pre-production activities consisted of 42 women and 18 men. This shows that women have a fairly high activity involvement compared to men. The amount of income generated is in the range of IDR 50,000 to IDR 195,000 per day. Some of the additional assets owned from this involvement include gold, motorbikes, cellphones, educational investments, daily needs, and others. So it can be concluded that women have a significant role in the success of seaweed production activities and are able to increase economic income and assets owned.

Keywords ; Seaweed; women, income, asset

I. INTRODUCTION

Nunukan Regency is one of the regencies located in North Borneo which is known as the border area between Indonesia and Malaysia which makes this area a quite strategic trade center for goods and services. This area has enormous potential, not only in agriculture and plantations but also in the marine fisheries sector with a population of 203,220 people and an area of 14,247.50 km² [9]. The marine fishery sector that is currently being carried out by the community is seaweed production. The seaweed commodity produced is the type of Eucheuma cottoni which began to enter the Nunukan district in 2008 brought by local residents who tried to cultivate it. Until 2009, this seaweed began to be eyed by the local community because it has a quite tempting economic value at a price of Rp. 9.000-10.000/kg.

Over time, the price continues to experience a significant price increase until it reaches the highest price in 2022 of Rp. 40,000/kg which indirectly increases the income of seaweed farmers. To support these activities, the community is enthusiastic about being able to participate in these activities so that they can generate money from the production activities carried out. Before the production process is carried out, several post-harvest activities such as selecting new seeds for planting, drying the harvest, packaging, up to the loading process require a lot of resources. Seeing the opportunities that exist, this is an opportunity for all people, both women and men, to participate/work in this field. The purpose of this writing is to describe the role of women in the border area towards being involved in handling pre-production seaweed which has an impact on their economic income and assets.

II. METHOD

A. Place and Date

The research was conducted in Nunukan Regency, West Sebatik District in May and July 2023. The types of data used were primary and secondary data with the collection method carried out through interviews, participant observation, document and literature analysis, concrete documentation analysis, life history approach and tracing research that is relevant to the research being conducted

B. Data Analysis

This research method uses purposive sampling. Purposive sampling is a sampling technique from data sources with certain considerations [8]. The number of samples taken was 60 people. The sample taken has the criteria specified in the questionnaire and comes from a group of people who work in pre-production seaweed production on the border of Indonesia and Malaysia, namely West Sebatik District (Mantikas, Liang Bunyu, Bebatu). Data analysis techniques were carried out through descriptive qualitative analysis. Qualitative research is a type of research that emphasizes processes and meanings that are not tested, or measured precisely with data in the form of descriptive data. This study describes events heard, felt, and made narrative statements. This research has a natural characteristic of phenomena that occur in the field where researchers are the key instrument, data collection techniques are not only combined with theory but with facts found during field research with inductive data [3].

III. DISCUSSION

A. Development of Nunukan Seaweed Production

Seaweed production activities have been carried out by the Nunukan community for more than the last 10 years since 2009 with the type of commodity produced being *Kappycus alvarezzi* as a type of carrageenan-producing seaweed of the kappa type. The magnitude of the potential for seaweed production activities, many fish fishermen change professions to seaweed farmers. The production activities carried out are with a longline system by installing stakes to tie the span ropes which are assisted with used bottles as a substitute for floats. The maintenance cycle is carried out for approximately 45-50 days, which is sufficient time to be harvested and of good quality.

The development of the seaweed production business in Nunukan, North Kalimantan has a multiplier effect on the community. Not only for the business owners themselves but for all people involved who can feel an increase in the economy. Nunukan Regency has 4 sub-districts that have the potential for seaweed development, namely West Sebatik, Sebatik, South Nunukan and Nunukan. From 2012-2014, only about 19% of the total land area in Nunukan Regency used land area [6]. Land use for seaweed production in South Nunukan District showed a very significant trend of increasing from 443 ha in 2012 to 1,713 ha in 2014. On the other hand, land use in Sebatik District was classified as the smallest, namely only 40 ha in 2014 [1].

To support the development of seaweed production in Nunukan Regency, including Sebatik Island, the Government of Nunukan Regency through the Maritime Affairs and Fisheries Service has drafted a zoning plan for coastal areas and small islands (RZWP3K) for Nunukan Regency for 2014-2034 [5]. The zoning plan has identified potential and existing fishery production activities which include the production of seaweed, marine fish, and ponds. In its implementation, this zoning plan has also been outlined in the draft regional regulation regarding RZWP3K in Nunukan Regency [1].

One area that has quite rapid development of seaweed is the West Sebatik sub-district. Seaweed is a superior product for Community Development where 70% of the population depends on the seaweed business [4]. Along the main road which is also a coastal area, you will see pre-production activities carried out by the community. Pre-production activities are grass-tying activities known as mabbetang, cleaning the ropes, and working on span ropes. To support this activity, currently, the local government is making artificial rivers, normalizing existing rivers, and clearing unproductive land as a place to carry out pre and postharvest seaweed handling activities.



Fig 1. Land clearing and river normalization

The high production activity carried out by the community makes the coastal area in Nunukan full of seaweed production activities, indirectly influencing the level of the local economy. It can be seen that the number of workers absorbed to participate in the production activities carried out. These activities include the production itself, maintenance, harvesting, tying the seeds, making spanning rafters, drying, and packing up to the loading stage. Seaweed is sold by farmers after carrying out a drying process with a maximum moisture content of 30% [1]. However, in Nunukan Regency, farmers generally sell at a rate of 35-38% to collectors/middlemen. The collector will then carry out the further drying process according to the buyer's request. The dried seaweed is then sent to the Surabaya and Makassar markets

B. Women's Involvement in Seaweed Pre-Production

Seaweed production activities are inseparable from pre-production activities. This activity requires a lot of resources to support the efficiency of time used to maximize production activities carried out. Pre-production activities carried out are handling seeds. Seed handling is done by sorting and installing new seeds on span ropes Units

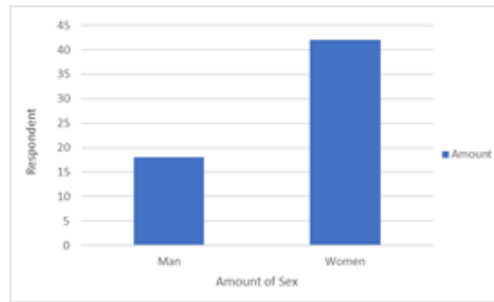


Fig 2. Pre Production Respondents

The results of interviews conducted with 60 respondents who were involved in pre-production activities consisted of 42 women and 18 men. This shows that women have a fairly high activity involvement compared to men. However, from the results of field observations conducted, activities such as production, harvesting, post-harvest packaging, and loading are dominated by men. Pre-production activities, in this case tying seaweed, are mostly carried out by women because these activities do not require a lot of energy. They only need to sit down, choose the seeds, and tie and arrange the tied grass. Reference [11], women have a significant involvement in the seaweed pre-production process compared to production activities.

C. Income and Addition of Assets

The high activity of seaweed production in Nunukan has a significant impact on the absorption of human resources to participate in the activities carried out. Most production activities are carried out in the South Nunukan and West Sebatik sub-districts. Along the Nunukan coast, production activities can be seen in the waters of the ring road, Sedadap, Mansapa, Tanjung Harapan, Mamolo, West Sebatik and several other coastal areas in Nunukan Regency. To support these activities, pre-production activities involve a lot of manpower needed to speed up the process of production activities to be carried out.

Pre-production activities such as making ring ropes and ropes and tying seeds are generally carried out by housewives, school children, college students, and women from various professions doing grass-tying activities. They come from various surrounding areas and outside the region such as South Sulawesi, Southeast Sulawesi, and also Indonesian Migrant Workers (TKI) who cannot enter the Tawau area of Malaysia because they do not have a worker's passport. Several respondents said that they had come to work as binders on purpose. They even rent or build a house by renting land close to the production site with the aim of reducing the costs and labor that must be spent. The activity of tying seaweed seeds to a rope is called ma'bettang. In 2022, the highest wage is Rp. 12.00-13.000 per span with double rope type (2 rings) and wages for single rope (1 ring) of IDR 10,000 per span. The more ropes completed, the greater the wages that will be obtained. The income received by respondents from pre-cultivation activities can be seen in Table 1.

TABLE 1. RESPONDENT MINIMUM SALARY

NO	Repondent	Salary
1	30	10,000.00
2	20	12,000.00
3	10	13,000.00
Amount	60	

Table 1 shows that 30 respondents earn Rp. 10,000 per rope, 20 people earn Rp. 12,000 per rope and 10 people with a wage of Rp. 13,000 per span rope. Wages vary depending on the type of rope (double rope and single rope) and the number of ropes that are completed in tying the thallus. Double ropes are able to bind 2 thallus of seeds while single ropes can only bind 1 thallus.

TABLE 2. MINIMUM INCOME LEVEL OF RESPONDENTS

Salary (Rp)	Number of Ropes	Respondent	Income (Rp)
10,000	± 5	6	50,000.00
	± 10	16	100,000.00
	± 15	8	150,000.00
12,000	± 5	2	60,000.00
	± 10	10	120,000.00
	± 15	8	180,000.00
13,000	± 5	0	65,000.00
	± 10	10	130,000.00
	± 15	0	195,000.00
Amount		60	

Based on the results of interviews conducted with several respondents, the minimum wage they get is quite varied. Respondents were able to tie 5-15 ropes per day depending on their level of agility and skill in tying the thallus. The wages earned by respondents are in the range of Rp. 50,000 up to Rp. 195,000,-. Income varied depending on the type of rope and the respondent's ability to complete the rope span. The highest income was Rp. 195,000 per day with a wage of IDR 13,000 per span rope and the lowest wage is IDR 50,000 per day with a wage of IDR 10,000 per span rope. The value is quite promising to be used as a source of income because if it is averaged, the income that can be obtained by respondents in 1 month is at least IDR 1,500,000, - greater than those who have to work as waiters, sales clerks, honorary and other jobs. The amount of income earned makes many people tempted and interested in working as seaweed binders. The high income earned indirectly had an impact on increasing the income earned and also the addition of the respondent's assets.

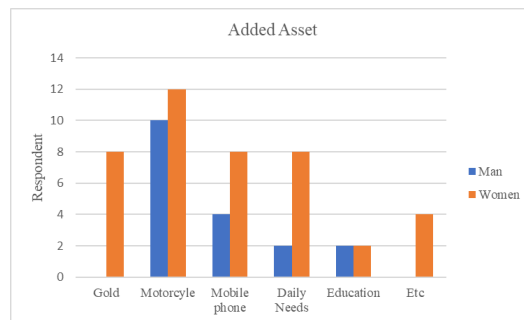


Fig 3. Addition of Pre-Production Respondent Assets

Based on Fig 2, the graph shows that the most added assets are motorbikes, followed by assets in the form of gold, cellphones, daily necessities, education, and others. The highest addition of assets was also made by female respondents compared to men. Male respondents only added assets in the form of motorbikes, cellphones, education, and daily needs while female respondents were able to add assets in the form of gold, motorbikes, cellphones, education, daily needs, and others. The involvement of women in pre-production activities is a form of women's participation to support their family's economy. The high number of women and their assets shows that women have a tendency to make efforts to help the family's economy and also how to manage their income by adding to their assets. In general, women's involvement in work is also influenced by low-income levels, which encourages them to participate in supporting the family economy [10]. Management capabilities naturally become an added value for storing and adding to the assets needed in the family.

Seaweed production activities provide enormous opportunities for the role of women to significantly improve their family's economy, so the seaweed production business provides a breath of fresh air for improving social welfare. Jobs are open, income increases, and the standard of living can be better. government support is also needed to ensure that the community's economic activities run well, including technical assistance by fisheries extension workers and capital facilities that can be accessed through the Maritime and Fisheries Business Capital Management Agency [7]

IV. CONCLUSION

The role of women in seaweed pre-production activities in the West Sebatik Subdistrict towards household assets showed significant results. Based on the results of interviews conducted, the women previously only worked as waitresses, sales assistants, and laundry workers and some who did not have an income now can have a better income. They can also add assets in the form of gold, motorbikes, cellphones, education, daily needs and others. The income earned varies from Rp. 50,000 to Rp. 195,000 in a day so this shows that women play a more significant role in the success of seaweed production and in increasing economic income and assets.

ACKNOWLEDGMENT

Thank you to the research activity team on Increasing Household Income on Women's Involvement in Pre-production Seaweed Activities who have assisted in the process of collecting field data for this research. Thank you also to the Nunukan State Polytechnic who assisted in coordination and assistance in the field during the course of this research.

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