

Back To Nature: Local Wisdom is An Solutions To Attain Sustainable Seaweed Aquaculture (*Kappaphycus alvarezii*) In West Ceram Regency

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Abstract

The form of local wisdom to maintaining fisheries resources in West Ceram Regency known as “sasi”. “Sasi” is the rule to keep commodities and harvested it at the perfect time. “Sasi” system is enforced from generation to generation without the written rules, but very obeyed by society. The entrance of the transmigrants from other provinces, resulting in loss of the

form of local wisdom in West Ceram Regency. This study aims to apply and designing “sasi” system into seaweed cultivation to sustainable. Method used in this study is a survey method. Data were obtained from questionnaires, in-depth interviews and field observations. The result showed the priority solutions to attain sustainability of seaweed aquaculture is the implementation of the “sasi” into the activity process of seaweed cultivation, customary institution for sale the dried seaweed to the intermediatery traders, and the formation of “kewang” as an overseer of seaweed cultivation.

Keywords: Sustainability, Seaweed, Local wisdom, Sasi

1. Introduction

The strategy of developing countries tropics in overcoming poverty and promote local development is creating new alternative job opportunities (Cinner *et al.*, 2010; Torre-Castro dan Lindström, 2010). Some of this last decade, the seaweed cultivation is one alternative job opportunities which projects included in the integrated coastal zone management (ICZM) (Sievanen *et al.*, 2005). Seaweed cultivation are started with people in the philippines and applied in other tropical location regions such as Indonesia, Kiribati, Malaysia, Kamboja, Fiji, South Korea, Solomon Islands and Vietnam (Ask dan Azanza, 2002; McHugh, 2006).

The cultivating seaweed in Indonesia begins in 1985, developed by the farmers using traditional technology and simple facilities (Neish, 2013). The business of cultivating seaweed in West Ceram Regency conducted by the cultivator in groups and individuals since 2006, which simple done without modern technology to improvement of its production. Activities seaweed cultivation in West Ceram Regency are scattered over several villages are Osi Island, Kotania, Wael, Nuruwe and Kamal village with species are cultivated is *Kappaphycus alvarezii*.

The problems that arise in the activities of seaweed cultivation in West Ceram Regency is jealousy between the cultivator of seaweed, cultivator of groupers and fishermen catch in trying to establish a costal zone in West Ceram Regency. Jealousy is leading to destruction of cultivation seaweed area with the provision of potassium, so that the seaweed cultivator switch their job to cut down mangrove trees to be sold as timber fuel and take the coral reefs for sale as home building materials.

The system of the local wisdom in the management of the resources to be sustainable from generation to generation in West Ceram Regency as known as “Sasi”. “Sasi” system is the rules to keep the result of natural resources that can be harvested the right time. As long as the time and the entry of the migrants from various areas outside resulting in loss of the “Sasi” system.

The purpose of this research is to apply return of a system the local wisdom in seaweed cultivation activities ranging from upstream to downstream. The implementation of the “Sasi” system started from the activities of the seaweed cultivation, a monitoring system, and also the marketing business to the seaweed cultivation to be sustainable.

2. Research Methods

2.1 Place and Time of Research

This research was conducted from January to May 2015 at the location of the seaweed cultivation in the West Ceram Regency, Maluku Province, Indonesia .

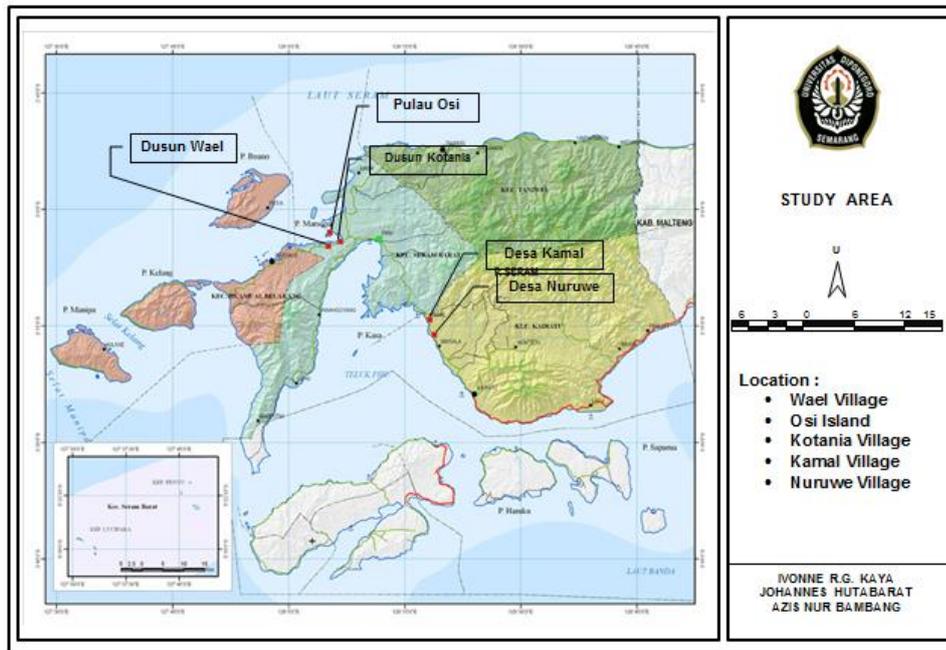


Figure 1. Study Area

2.2 Data Collection Techniques

The primary data was obtained with direct observation at the seaweed cultivation about the activities cultivation, as well as direct interview with the cultivator about obstacles cultivation activities as well as a system “Sasi”. This research was supported by the literature study associated research objectives too.

2.3 Identifying Seaweed Cultivation Activity and “Sasi” System

Information to the activities of seaweed cultivation and “Sasi” system performed with direct observation and analyzed in descriptive on the condition that occurs in the research locations.

2.4 Analyzing the Strategy with Application “Sasi”

The application of the “Sasi” system in the activities of seaweed cultivation applied from the activities of planting seaweed, the harvesting, supervision, until marketing in order until the business of cultivating in West Ceram Regency can provide optimal results and increase income of the cultivator.

3. Result and Discussion

3.1 Seaweed Cultivation Activity

The cultivation of seaweed in West Ceram Regency implemented by systems group. Technical used for seaweed cultivation is longline method. A longline method is a method of cultivation on the location or land in fixed on a coastal areas in West Ceram Regency. A cultivator of the group (10 people) having 2 hectares area, with the 40 line so that production capacity is 1.2 tons per cycle .

A period of the process cultivation starts when planting the seed of seaweed with the time of the harvesting (one cycle harvesting), is 45 days. Almost all the results of the harvest seaweed in the West Ceram Regency traded in the form of dried seaweed, with the water level of 35%. For drying seaweed, the cultivator do it by way of drying in 2 - 3 days under the rays of the sun.

A profession the community in West Ceram Regency of prior to the business of cultivating seaweed, a large proportion were as farmers and they are still active with their previous job. Some claimed willing to turn the business of cultivating seaweed, a few were still hesitant and even voted for to continue a profession as a farmer.

Fishermen who have changed profession to be the cultivator of the seaweed into this business, are optimistic that can fulfill a need his life. They believed, that by planting will get the result, another with runs that the results not been confirmed depends on the existence of fish that is. But, there are also a fisherman who still have doubts and worried if their products would undergo failure because of diseases and does not provide profit that allows. While they gonna stay as fishers because they already have adequate equipment like a boat, figure and nets. The state of opinions on the top is that a common occurrence in a society by fishermen to develop relatively new things. For that, they needed more time in making decisions, if these conditions is what happened, there would be benefits and the negatives.

The positive benefits is going to happen a balance or efficiency in the use of resources that exist. In which variety the utilization of resources and the potential healing gets faster. For suppose is only used by an activity then it was feared that will happen over-exploitation. The perspective of an assortment of potential adverse activities if it would have a conflict of land use.

The conflict in the use of land later became a trigger to the decline in the production of seaweed in West Ceram Regency. Production decline happened in 2011 caused by pollution of land under cultivation seaweed with potassium declining harvest so the results. This resulted in the professional turned to distillers cultivator of the eucalyptus oil, a wood seller of mangrove and coral reefs.

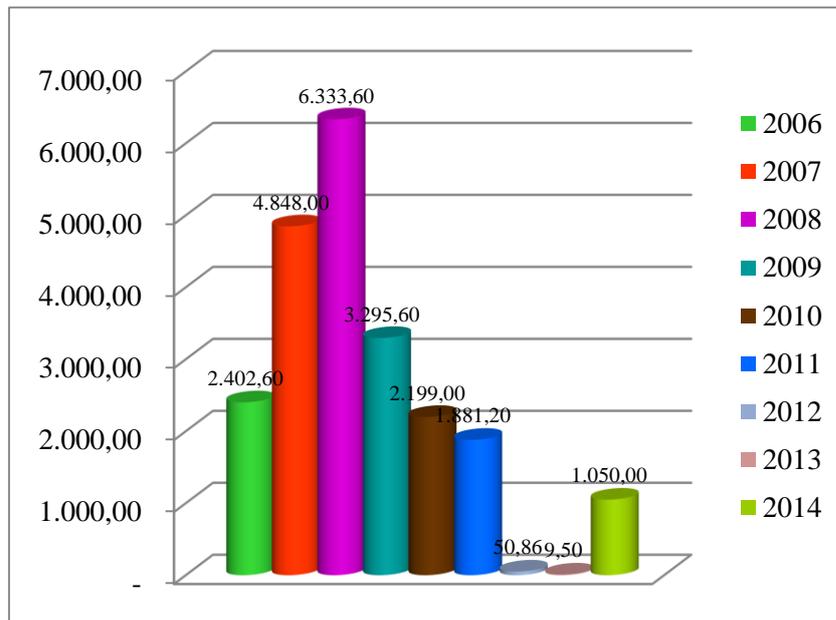


Figure 2. Volume production of dried seaweed at West Ceram Regency in 2006-2014

3.2 Seaweed Cultivation Activity

A system of local wisdom in the West Ceram Regency known with “Sasi” that is customary law that applied to arrange and manage natural wealth in every village. “Sasi” is a ban not to take the results of agricultural resources and fisheries in certain period of time.

The role of “Sasi” is as a form of security against natural resources and governing the community to maintain and keep the manners of social life including distribution of the division of natural resources. The kind of “Sasi” be occur at West Ceram Regency, ca be seen in Table 1.

Table 1. The kind of “Sasi” that applies in West Ceram Regency

No.	The Kind of “Sasi”	Function “Sasi”	Type of “Sasi”
1.	General Sasi		
	a. Water Sasi		
	• Sea “Sasi”	This “Sasi” includes sea and coastal area in the village. The “Sasi” system applicable on the entrie marine products worth economically important.	<ul style="list-style-type: none"> ▪ Fish “Sasi” ▪ Sea cucumber “Sasi” ▪ Molusca “Sasi” (<i>Trochus niloticus</i>) ▪ Sands and coral “Sasi”
	• River “Sasi”	This “Sasi” set about the things that cannot be done at a river.	<ul style="list-style-type: none"> ▪ Prohibitive to launder at a river ▪ Prohibitive to cut down the tree at the

No.	The Kind of "Sasi"	Function "Sasi"	Type of "Sasi"
	banks of the river		
	b. Land "Sasi"		
	• Forest "Sasi"	This "Sasi" includes a variety of plants in the mainland. Usually in the "Sasi" is a plant, both planted by the community or growing in a wild. The plants is plantations that usually used to meet daily needs and will be harvested when the results have a maximum.	<ul style="list-style-type: none"> ▪ Coconut "Sasi" ▪ Clove "Sasi" ▪ Rattan "Sasi" ▪ Fruits "Sasi"
	• Animal "Sasi"	This "Sasi" protect certain kinds of animals in the forest and arranged his arrest in accordance with the local people.	<ul style="list-style-type: none"> ▪ Cuscus "Sasi" (<i>Phalanger orientalis</i>)
2.	Personal "Sasi"	This "Sasi" imposed by a person to something to her and reported to the village government. Personal sasi this only applies to the forest "Sasi".	<ul style="list-style-type: none"> ▪ Coconut "Sasi" ▪ Clove "Sasi" ▪ Rattan "Sasi" ▪ Fruits "Sasi"
3.	Religion "Sasi"	This "Sasi" set by religious leaders. "Sasi" is also called spiritual "Sasi" or belief "Sasi". It relates to religious belief or native living in society when they have not adhered to the official religion such as Moeslim and Christian. "Sasi" trust closely related with the public trust in the power of spirits of ancestors and the power of the universe in the past.	<ul style="list-style-type: none"> ▪ "Sasi" at coastal area for 1 – 2 month when anyone died due to drowning. ▪ "Sasi" at forest area for 1 – 2 month when anyone died in the forest.

This "Sasi" system have been further strengthened by organization that formed in the structure of government indigenous in every land. New layers of indigenous people had played a role in the governance structure customary in West Ceram Regency is:

1) *Raja*

Is it the most highly regarded leader and the country as well as the head of the customs.

2) *Saniri Negeri*

Is a discussion of the people as well as the judiciary that set the rules and decided the problems associated with customs matters. The "Raja" in this act as the head of "Saniri".

3) *Kepala Soa*

Kepala Soa have it under the king and serves as council of ministers (maid the king) that is inherited in an hereditary manner .

4) *Kewang*

The task of Kewang is to oversee all existing natural resources on land or sea in the area. Kewang regulate all things associated with the rules of “Sasi”.

5) *Kapitan*

Kapitan is a warlord. Duties and functions is to maintain the stability of the wheels of the government and the threat of danger from outside.

6) *Marinyo*

Marinyo is the term given in connection with his duties to provide information to the public.

The role and function of customary institutions this is especially honored by community in West Ceram Regency, but with the presence of the community migrants from other provinces, then resulted in the loss of this system “Sasi”. Thus, against the management of resources on land and at sea is unable to walk in an optimum manner .

3.3 Seaweed Cultivation Based Local Wisdom

The management of the business of cultivating seaweed in West Ceram Regency done by applying the local wisdom element. The implementation of the “Sasi” done by strengthening back costumary institutions to settle this matter in the public, so that is to protect it from the interests of a party another. The implementation of the “Sasi” system in the activities of seaweed cultivation done as follows:

1) The implementation of seaweed cultivation

The Closed “Sasi”. The closed “Sasi” process begins with agreement of the parties involved i.e. the village head, customs figures, religious figures, seaweed cultivator and the community. Agreement in the determination of the “Sasi” is the closure of the seaweed cultivation at the time for 40-45 planting day. During the process of close “Sasi” people banned from doing the activity of that disruption to the cultivation .

The Open “Sasi”. The implementation of open “Sasi” carried by the parties as cover. The process of open “Sasi” is the process of harvesting seaweed at the time the results have reached the point of optimal .

The sanction for those who violate the rules of “Sasi” given in accordance with the level or type of violations committed. The sanction given such as fines and isolation within the community.

2) The formation of “Kewang”

The formation of “Kewang” done to keep commodities seaweed in the planting and harvesting. Whether occurring “Kewang” serves to control damaging the land under cultivation. If the “Kewang” found people who do the destruction, it will be in accordance

with the sanctions applicable in the community .

3) The formation of marketing institution

Marketing institution seaweed whose members made up of the cultivator of seaweed and a member of institutions customary. This institution serves to accommodate the results of all the cropping of seaweed from the cultivator of in the form of dried seaweed. All this seaweed will be sold at the price of the system to avoid of price fluctuation in adverse the cultivator of seaweed

4. Conclusions and Suggestions

4.1 Conclusions

1) Seaweed cultivation activities in West Ceram Regency has decrease from 2011 due to the social jealousy of the other fisherman by giving potassium on cultivating lands, so that they have changed profession into sellers eucalyptus oil, mangrove wood and the coral reef.

2) The sustainability of the business of seaweed cultivating can be done by the application of return of a system the local wisdom in the form of “Sasi” to managing and maintaining commodities seaweed so as to be sustainable and also improve income of the cultivator.

4.2 Suggestions

1) The application of seaweed cultivation based local wisdom expected to improve the sustainability of the business of cultivating seaweed from upstream to downstream and minimizing the problems that occur in the activities of the cultivation.

2) For the regional government, is expected to formulate the regulation on the recognition and protection of indigenous and local wisdom system in West Ceram Regency.

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