Sustainability Status and Strategy of Shrimp Agribusiness in Bengkulu Province

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ABSTRACT
The aims of this study were to evaluate the sustainability status and recommend strategy of Fishing Shrimp Agribusiness in Bengkulu Province. Sustainability status has ordinate in five dimensions such as ecology, technology, social, economic and legal-institution. Within each dimension, a set of nine attributes considered critical to sustainability is defined (Roy, 1979; Duft, 1979; Saragih, 1996 Simatupang, 2004). Multi-Dimensional Scaling (MDS) with Rap-fish technique approach has used to evaluate sustainability status. Study showed that overall sustainability status of Shrimp agribusiness is adequate (53.5 %). Meanwhile, technological, social, economic, and legal-institutional dimensions index accordingly; (60.4 %), (65.0 %), (75.9 %) and (53.6 %), but ecological status so bad that it’s score is only 12.8 %. Several sensitive attributes and policy recommendations in order to support Shrimp Agribusiness sustainability in Bengkulu Province are also identified in this research. Government intervention is needed to achieve such attributes.

Key words: sustainability status, fishing shrimp agribusiness, multi-dimensional scaling (MDS)

INTRODUCTION
Davis and Goldberg (1957) in Simatupang (2004) defines that Agribusiness is the sum total of all operations involved in the manufacture and distributions of farm supplies; production operations on the farm and the storage, processing and distribution of farm commodities and items made from them. Based on that definition it could be said that agribusiness is a system that consist of five components which are interdependent each other. Then in theme of sustainability development Gold (1999) said that there are three main principles, economically efficient, socially justice and ecologically resiliency. While in sustainable agriculture many scholars develop much more criteria such as food security, livelihood security, ecological security (Pearce et al,1994; Vishnudas et al., 2005; Mc Arthur, 2008 ). Meanwhile, some scholars said that sustainable agriculture development need two perquisites namely; an agriculture technical friendly and guaranty of equal and justice job opportunity for everybody (Dewi, 2011; Abdullah, 2010; and Yusvianty, 2010)

In Bengkulu shrimp is produced by two different systems. First, shrimp is caught using fishing gear almost in sea fishing ground. Second, shrimp came from marine culture a long sea shore. Now a day shrimp production in Bengkulu increase flatly (Fisheries Official of Bengkulu, 2013). That is predicted because of using unsustainable fishing gear and unprogressive development of shrimp marine culture. Almost shrimp production in Bengkulu come from fishing by fisherman that using small trawl (‘Cantrang’) as a fishing gear. Beside that a bit of them use tram-net as a fishing gear which operate in traditional manner.

Base on above background this main research aim is to show sustainability status of shrimp fishing effort which using small trawl in Province of Bengkulu. Then it also purpose to show sensitive attributes which have significant impact on agribusiness of shrimp in Bengkulu. Finally, it also aims to design sustainability strategy of shrimp agribusiness in Bengkulu Province.

MATERIALS AND METHODS
This study is conducted in Bengkulu. The research location was chosen purposely which base on technical and economical perspective. This research conducted in July to November in 2012. There were two kind of data which using in this study namely primary data secondary data. Primary data included perception of expert on sustainable attribute that collected through in-depth interview. There
were 30 experts get involved in this study. They consisted of 15 academic experts and 15 practical experts. Meanwhile, secondary data came from formal institution such as library, statistic board and fisheries official in Bengkulu Province.

Sustainable analysis used in this research was a Multi-Dimensional Scaling (MDS) approach which adopted from RAPFISH-Rapid Assessment Techniques for Fisheries (Pitcher and Preikshot, 2001). There were three stages in Multi-Dimensional Scaling (MDS) analysis. First, determining of sustainable attribute include; ecological, technological, social, economical and institutional dimension. Then, scientific judgment scoring of on each attribute by expert. An arrangement of sustainable index and status on shrimp agribusiness in Bengkulu. Sustainable index status could be seen on Table 1 below.

<table>
<thead>
<tr>
<th>No.</th>
<th>Index</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0-25</td>
<td>Bad</td>
</tr>
<tr>
<td>2.</td>
<td>26-50</td>
<td>Poor</td>
</tr>
<tr>
<td>3.</td>
<td>51-75</td>
<td>Adequate</td>
</tr>
<tr>
<td>4.</td>
<td>76-100</td>
<td>Good</td>
</tr>
</tbody>
</table>

(Adopted from Susilo, 2003)

**RESULTS AND DISCUSSION**

RAPFISH-Rapid Assessment Techniques for Fisheries (Pitcher and Preikshot, 2001) which used in this study show that sustainable status of fishing shrimp agribusiness in Bengkulu Province like in Table 2 below.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Score of Index</th>
<th>Category</th>
<th>Stress (%)</th>
<th>R2 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology</td>
<td>12.8</td>
<td>Bad</td>
<td>13.2</td>
<td>95.1</td>
</tr>
<tr>
<td>Technology</td>
<td>60.4</td>
<td>Adequate</td>
<td>13.3</td>
<td>94.9</td>
</tr>
<tr>
<td>Social</td>
<td>65.0</td>
<td>Adequate</td>
<td>14.5</td>
<td>93.8</td>
</tr>
<tr>
<td>Economic</td>
<td>75.9</td>
<td>Good</td>
<td>13.8</td>
<td>94.5</td>
</tr>
<tr>
<td>Institutional</td>
<td>53.6</td>
<td>Adequate</td>
<td>15.5</td>
<td>94.4</td>
</tr>
<tr>
<td>Over All</td>
<td>53.5</td>
<td>Adequate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 show that a validity of using RAPFISH-Rapid Assessment Techniques for Fisheries in Fishing Shrimp Agribusiness in Bengkulu. Stress value which far below than 25 % and r-squared correlation value bigger than 90 % for all dimension indicated that using this model in fishing shrimp agribusiness in this study is valid and good qualified to describe sustainable status.

Study also showed that overall sustainability status of Shrimp agribusiness is adequate (53.5 %). Meanwhile, technological, social, economic, and legal-institutional dimensions index accordingly; (60.4 %), (65.0%), (75.9 %) and (53.6 %), but ecological status extremely bad that is score just 12.8 % (see figure 1 below). From Figure 1 also tell us that only one dimension that is economic dimension which has scoring more than 75 % or good category.
Leverage of Attribute on Ecological Dimensions

Figure 2 shows that there five attributes which strongly impact on unsustainable of fishing shrimp agribusiness in ecological dimension in Bengkulu. Those are input decrease water quality, production process lead to smell bad, production process lead to crowded sound, distribution of output produce danger pollutant and input destroy land. On the other side, there four attribute are not impact on sustainable of that agribusiness as can be seen on above figure.

Leverage of Attribute on Economic Dimensions

From Figure 3 there are four attributes that have significant impacts on sustainable fishing shrimp agribusiness namely it is a profitable agribusiness, has access to market, create job opportunity significantly and revenue to autonomy government. Beside that there are four attributes that have no significantly effect on sustainable fishing agribusiness in Bengkulu.
Strategy to Sustainable Fishing Agribusiness in Bengkulu

Based on this study to promote sustainable of fishing shrimp agribusiness in the future there are some strategies could be conducted. Strategy is chosen to swing sensitive attribute which has strong leverage. Choosing strong leverage attribute is able to establish effective action plan in sustainable of fishing agribusiness development. Strategy chosen include people empowerment, infrastructure development and government intervene to market and input distribution. Through that strategy several sensitive attributes are implemented as government policy in order to support Shrimp Agribusiness sustainability in Bengkulu Province.

CONCLUSION

1 Overall sustainability status of shrimp agribusiness is adequate (53.5 %). Meanwhile, technological, social, economic, and legal-institutional dimensions index were (60.4 %), (65.0 %), (75.9 %) and (53.6 %), respectively, but ecological status is considered very low, 12.8 %.

2 Several sensitive attributes and policy recommendations in order to support fishing Shrimp Agribusiness sustainability in Bengkulu Province are also identified in this research.

3 Government intervention is needed to achieve such attributes to promote sustainable of fishing shrimp agribusiness.

REFERENCE

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Duft, K.D. 1979. Agribusiness includes all business enterprises that buy from or sell to farmers. The transactions may involve either a product, a commodity, or a service and encompasses items such as Productive resources (feed, seed, fertilizer, equipment, energy, machinery, etc).
Agricultural commodities (all food and fiber) and Facilitative services (credit, insurance, marketing, storing, processing, transportation, packaging, distribution, etc).
Saragih, B. 1996. Agribisnis merupakan cara baru melihat dan membangun pertanian dimana pembangunan ekonomi berbasis pertanian tidak hanya terbatas pada pada pembangunan subsistem usaha tani saja.