The effectiveness of Panglima Laot of Simeulue and its coherence with fisheries management industry based on EAFM (Ecosystem Approach to Fisheries Management)

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Abstract. Fisheries management is an integrated approach using EAFM (Ecosystem Approach to Fisheries Management) to be able to guarantee the long-term utilization of fishery and maintain the fish stock in the manifest. The purpose of this research is to know the details of the Institutional domain EAFM indicators in Simeulue District and how the level of effectiveness against the management of the fishery based EAFM. This research was conducted in January until April 2018 on Institutional Commander LaotLhokSimeulue Timur. The data collection methods used by doing the interview and the dissemination of the questionnaire, as well as data obtained from institutions. Methods of analysis used are a composite analysis with simple arithmetic and visualization average flag model (flag modeling). The results showed that the Commander Laotdimasing-masing location has a different value in Commander LaotLhokSimeulue Timur gained an aggregate value of 89 and is in good condition.

1. Introduction

Fishery resources require the management of fisheries in a planned, structured, effective, and sustainable manner so as to prevent the actions that cause harm to the resource [1]. The management of fisheries aims to provide optimal socio-economic benefits for the community is not separated from the dynamic ecosystem that becomes living media for the fish resources themselves. The management of fisheries integrated using EAFM based approach (Ecosystem Approach Fisheries Management) is to ensure the utilization of long-term fisheries and the protection of fish stocks in the natural environment.

Fisheries and Marine Management in Aceh Province has its own customary laws. The customary law of Laot (marine) has existed since the 14th century during the time of Sultan Iskandar Muda Kingdom [2]. One of the customary legal institutions governing the management of fisheries and the Sea of ACEH is the customary law of Laot led by PanglimaLaot. The profile Book of marine resources and Fisheries of the regency of Simeulue mentions that Simeulue is one of regencies in Aceh...
province which is a cluster of islands so that it has the potential of fisheries dominated by sea capture fisheries. The fish capture in the island in 2015 was 13,965.6 tons [3]. Therefore, the potential value of the fishery requires proper management so that the potential number of sea capture fisheries in Simeulue is expected to increase. The implementation of customary law of Laot in Simeulue is not only involved the community independently but also had to go through a joint management mechanism involving various stakeholders, but in fact there are still few disputes between fisheries stakeholders and there are still fishermen who commit abuses such as fishermen who do fishing by using tools and dangerous potash poison. It proves that the role of the institution of Panglima Laot (the sea commander) in Simeulue is still not carried out well [4].

2. Materials and Methods

2.1 Site and time
The research was conducted for 3 months from February to April 2018. This research was conducted in Simeulue Regency, in the east of Laot Lhok Simeulue in Sinabang village.

2.2 Data retrieval methods
The research used was survey method and data collection conducted using purposive sampling method [5]. Data collection in this study was done by obtaining primary and secondary data. Primary data is data obtained from fishermen, community, the Panglima Laot, Marine Resource Supervision and Fisheries (PSDKP) and policemen. Secondary data on this research obtained from marine and fisheries resources Supervision (PSDKP), service of Solutan and Fisheries (DKP), police department, Secretariat commander of Laot, commander of Laot and on the results of related research.

2.3. Data analysis
The analysis used appraisal data from each of the institutional domain indicators against EAFM-based management to knows how the effectiveness of the institutional role of the Panglima Laot on EAFM-based fisheries management. The data processing technique in this research used tabulation data, while the technique analyzes it with an assessed indicator and then analyzed using a simple composite analysis based on arithmetic. Then visualizes the findings of the EAFM indicator using the Flag Modelling technique or the flag model.

3. Results and Discussions

3.1 Results
a. Indicator details
Analysis composite index of each of the EAFM indicators against the east of Laot Lhok, Timur, is shown in table 1 as follows:

| Table 1. East Lhok Simeulue composite Index Analysis |
|-----------------------------------------------|
| Indicator | 1 | 2 | 3 | 4 | 5 | 6 | Total |
| Result | 3 Violation | It is and effective | It is and ineffective | There is not yet fully running | Exist and support each other | There and Efactiv e |
| Score | | | | | | |
| Weights | 25 | 26 | 18 | 15 | 11 | 5 |
| Value | 50 | 78 | 45 | 45 | 33 | 27 | 278 |
Description: * 1) adherence to responsible Fisheries principles, 2) completeness of the rules of play, 3) decision making mechanism, 4) fisheries management Plan, 5) level of synergy policy and institutional fisheries management, 6) Stakeholder capacity.

b. The effectiveness assessment of the institutional domain of PanglimaLaotrole

The result of the measurement of the effectiveness of the institutional of PanglimaLaotrole at LhokSimeulue East is given in Tabel 2 below:

| Domain              | Composite Value | Flags Method | Description   |
|---------------------|-----------------|--------------|---------------|
| Institutional       | 89              | Excellent    |               |

3.2. Discussion

1. EAFM indicator details

(1) The indicator of compliance with responsible Fisheries principles

The indicator of adherence to fisheries principles responsible for the management of fisheries both formally and informal (customary) is one of the crucial indicators in the institutional domain to measure the level of Institutional effectiveness, where the purpose and benefits of this indicator is to determine the frequency of regulatory violations and rules in the management of fisheries in a fishery area. Based on it, the institutional is a guarantee for the management of sustainable fisheries and the sustainability of fish resources. This indicator is also set to be a major determining indicator in assessing one of the successful implementations of the ecosystem approach in fisheries management characterized by the highest weight [6].

The level of adherence to the fishery principles of PanglimaLaot of east LhokSimeulue is in moderate condition. The result of a direct interview with PanglimaLaot LhokSimeulue Timur stated that the violations occurring in the region is a dispute between traditional fishermen and "compressor fishermen" each year. This is due to the use of a compressor tool operated as a breathing apparatus for fishermen who dive to perform capture operations, but the use of the apparatus is troubling other fishermen because it is believed that such aids are used in conjunction with the use of potassium toxins so that the fishermen who use the compressor are more easily capturing the fishes.

The number of violations of fishing aids (ABPI) is a compressor tool that is still a big question for the fishermen community because there is still a lack of explanation about the use of the instrument as a tool that are allowed or not allowed. The definition of a compressor is simple as a tool to insert air and or send air with high pressure. Fishermen community in Simeulue district there are still many who do not know that the tool is actually not allowed and the tool also has legal certainty in the process of investigation of fishery crimes. However, in the region of the East Simeulue, most of the fishermen have already realized that the compressor tools are prohibited tools, it has also been stated in the regulations of the compressor equipment are baned by PanglimaLaot in the east Simeulue.

(2) The main rules completeness indicator in fishery management

The completeness of the main rules of fishery management is defined as the level of availability of regulations, equipment, officers and other fisheries management infrastructure and there is no recognition of its rules and effectiveness in Management of fisheries. The complete regulation and law enforcement are the basis in the implementation of responsible Fisheries management [7].

The main rules for fishery management in the district of PanglimaLaot East Simeulue went well. This is because the main rule of PanglimaLaot of East Laot LhokSimeulue already includes 5 EAFM domains including fish resources, habitat management and aquatic ecosystems, law enforcement about fishing tools and techniques, social life of fishermen That is managed properly, and the presence of institutions/agencies that play a role in fisheries management. Law enforcement in the region has been incorporated in various regions and applied to the authority of local governments in the management
of coastal areas, the regency of Simeulue has proposed some of its sea areas as marine conservation areas Penang region, Siumat, and Simanaha (KKLD PiSiSi). To support the task of PanglimaLaot especially in the supervision of the area formed working field under the PanglimaLaot is Task Force Supervisor and Supervisory Community Group (POKMASWAS). In addition to responsible to the PanglimaLaot Task Force Supervisor is a representatif of the community of Air Pinang Village and the involvement of government or management organizational unit of KKLD PISISI.

(3) Decision making mechanism indicator
Institutional mechanisms defined as Motode/institutional procedures in the community are constructed, institutional has a cultural and structural aspect. The cultural terms are norms and values, structurally in the form of various social roles. The institutional mechanisms are thus related to how the regulatory/norm/rule procedures are built specifically in the management of fisheries [8].

The indicators of the decision-making mechanism applied by the PanglimaLaot of East Simeulue are in good condition. The mechanism of implementation of the decision involves several institutions such as Commander LaotLhok, Dinas Marine and fisheries, and PSDKP.

(4) Fishery management plan (RPP) indicator
Based on Regent decree number 523/340/2014 in accordance with regulation of the Minister of Maritime and Fisheries No. 30 year 2010, the RPP has been determined that some of the sea areas of Simeulue are the recovery area or conservation area. The region includes into the area of PanglimaLaotEastSimeulue and PanglimaLaotSouthTeupah which is the territory of Simanaha Island of South Teupah and Siumat Sub district of Simeulue Timur which is managed to cooperate with related agencies such as Marine Service and fisheries and Lemabaga KKLD PISISI. Because the effectiveness of conservation area management is not separated from the active support of the community and the parties and efforts to ensure the utilization of conservation areas sustainably as a cultural identity and livelihood of society, it is formed collaborative institutional consisting of governance and community or customary beach law institutions in order to cooperate harmoniously and in harmony. The Institute of KKLD PISISI was formed on the section of coastal management, small islands and marine conservation in the Marine Service and fisheries of Simeulue regency.

(5) level of synergity policy and institutional fisheries management
The indicator of synergity level of policy and institutional fisheries management of PanglimaLaotLhokSimeulue East has been effective; communication between management institutions is quite good as well as inter-agency policy to support each other.

The synergy of the policies and institutions of PanglimaLaot can be increased through equal rights and obligations. The equation aims to protect the fishermen community in both conflict resolution, supervision, seafood management, and regulatory implementation to improve the welfare of the fishermen community in the region [9].

(6) Stakeholder capacity
The result of the research of the capacity indicator of PanglimaLaotLhokSimeulue East has gone well and the implementation has been applied among the fishermen community. There is a training related to fisheries management conducted by the Marine and Fisheries Department and other stakeholders [10]. The training is only attended by related institutions such as PanglimaLaot or local village apparatus. The material obtained the training was further resubmitted or socialized among the fishermen, in the area of Commander East LaotSimeulue, the socialization has been carried out and went well and training in accordance with the profession of fishermen, where the majority of fishermen in Simeulue itself are fishermen.
2. Level of effectiveness of PanglimaLaot role

The aggregate value of the research site refers to the extent to which the level of effectiveness of the PanglimaLaot is the management of fisheries. When PanglimaLaot has applied the management of fisheries based EAFM then the effectiveness of the role of PanglimaLaot is good as well as vice versa.

The aggregate value confirmed that commander of East LaotLhokSimeulue is at a high level of management effectiveness or in the category of excellent. Based on the results of the aggregate value of the research site stated that there is a good relationship between the role of Commander Laot in carrying out fisheries management in its territory.

4. Conclusion

1. Results from the breakdown of the indicators in the field indicate that the EAFM indicator is the best in its application at the research site which is the stakeholder capacity indicator, fishery management plan, policy synergity level and Stakeholder capacity

2. The aggregate value at the research site refers to the extent to which the degree of effectiveness of the relationship of PanglimaLaot has implemented EAFM-based fisheries management. The acquisition of an aggregate value of the EAFM indicator in East Laot institution is 89 located and is the highest level of management effectiveness with an aggregate value that is in excellent condition.

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