Coastal Livelihood Sustainability Analysis of Migration Activity at Tanjung Luar and Salura Island Indonesia

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Abstract. Coastal Livelihood Sustainability Analysis (CLSA) concept is one form of SES (Social Ecological System) framework. CLSA is developed from the coastal and ocean resource management framework, where social structures are always linked to ecological or natural systems. The purpose of this research is to analyze the interaction or connectivity of the functional systematic relationship. This is based on humans always utilizing the ecological services of a functional system relationship. This CLSA approach is a systematic approach that is influenced by temporal spatial aspects. The interaction results of social and ecological systems can be seen from the existence of assets (human made capital), which is an aspect of the material resources used by humans to carry out activities. There are several types of human made capital, which are described as physical, human, economic and social assets. All these assets are necessary to achieve the objectives of resource sustainability. The sustainability of the livelihood management of migrant fishing communities, which have high livelihood vulnerabilities. The sustainability of livelihoods is supported by five major livelihood sources that will be enabled to develop life as a capital asset. The main sources of livelihood are the assets or natural capital, human capital, financial capital, physical capital and social capital. The success of sustainable livelihood is strongly influenced by the condition of all capitals that is how value of service flowing from stock of capital owned. CLSA in this research is the identification to livelihood assets of migrant fishermen at origin and destination area in migration activity. There are different condition between destination and origin area of migration. This research can be improved of capital assets. By knowing the status of resources and capital assets of livelihood at Tanjung Luar and Salura, it can be determined alternative livelihoods. Alternative livelihoods can be created in order to improve the welfare of coastal communities. The method in this research is a survey research method. The analysis conducted is quantitative descriptive analysis using the CLSA framework of Emerton. Stages and steps in the data analysis were to assess the status and owned of livelihood assets, that consists are natural resources assets, human assets, economic assets, social assets, and also physical assets. The result of this research is determined that Salura Island as a destination area only has the high of natural resources assets. This means that the main livelihood assets of the Salura Island are natural resources assets. Usually the assets of resources, human, financial, physical and social assets are mostly better in the destination area of migration, but the results of the research have determined that different with concept of migration. The result also shows that Salura Island as a migration destination with higher asset resource existence can be used as a source of livelihood by squid migrant fish to continue the sustainability of livelihood.

Keywords. Coastal livelihood, capital assets; migration; Salura Island; Tanjung Luar
1. Introduction
Coastal livelihood sustainability analysis is a study of the overall aspects which influenced livelihoods in coastal communities. This analysis includes an analysis the condition of natural resources and livelihoods. The sustainability of livelihoods is supported by five major livelihood sources that will be enabled to develop life as a capital asset. The main sources of livelihood are the assets or natural capital, human capital, financial capital, physical capital and social capital. The success of sustainable livelihood is strongly influenced by the condition of all capitals that is how the value of services that flow from stock of capital assets. The results showed that if the capital assets compare between migrant’s area in Tanjung Luar West Nusa Tenggara Province with a migration destination area in Salura island of East Nusa Tenggara Province, the interesting phenomenon is obtained.

Fishermen and coastal communities in general are poor and marginalized communities that are usually very vulnerable to the destruction of the resources that depend on the livelihoods. According to Saragih [1] identification of vulnerability is very important in order to know the sustainable livelihood. Livelihood or livelihood is an important asset, in which there are assets in the form of human capital, natural capital, social capital, physical capital, and financial capital. The activity of these assets in the process is greatly influenced by the existing institutional and social relations. This dependence is possible because the relationship between human and natural resources cannot be separated. The size or achievement of sustainable livelihood success is income generation, welfare improvement, vulnerability reduction, increased security and food, and sustainable resource use. The notion of vulnerability is a condition that puts the public at risk of a thing. Communities with poverty and marginal rates are usually owned by communities living in urban slum areas or pockets of poverty in large urban and coastal cities. This community is the biggest risk to sustainable livelihoods.

The individual's level of vulnerability is determined by their level of exposure to deal with stressful or non-stressful situations. According to Frank Ellis (2000) in [1] states that a particular family or community unit lives its life and livelihood in various assets owned both material and non-material inherent in the family system. The assets can be social capital, human capital, financial capital economy, natural resources and environmental capital, as well as physical capital. These assets can appear in the form of social, institutional and organizational relations. As it is written in [1] that these assets are particularly vulnerable to some vulnerabilities such as shocking events, natural disasters, technological disasters, conflicts.

Turner et al (2003) in [2] stated about vulnerability as a system, subsystem or system component related to activities that occur continuously that can cause disaster, damage or pressure. This concept is not new but is an ongoing and risk-related study and disaster. Research focuses on limits of damage, pressure, climatic effects and resilience (resistance) that are understood as effects and responses that affect system or system components. The basic concepts of vulnerability analysis are based on the following aspects: (1) the relationship between humans and their environment and the process of their use of the environment (2) the damage and pressures arising from the scope of the existing system and (3) the human relations and the environmental system associated with which the vulnerability occurs including the excessive use and effect (such as the extent, effects and processes of adaptation and adjustment). If the components are related and interact with each other than the system analysis and scope is more complex.

Vulnerability as a unity of physical, social, economic, and environmental processes, which may pose a risk. The physical factors include placement sensitivity and the environment built because of population density, remoteness, location, building construction and infrastructure. Social factors are related to social issues such as the level of welfare / individual health, gender, health, literacy, education, security, human rights, social wealth, traditional values, beliefs, and organizational systems. Economic factors are linked to the issue of poverty which includes poverty levels of individuals, communities, and the national economy, debt, access to credit, loans, and insurance, and diversity.

2. Methodology
Livelihoods Approach (SLA) sustainability approach, according to Ellis [3] is basically a framework that can understand the variety and complexity of a strategy that can be developed by a household or individual.
There are four components that make up this approach: (1) the context of sustainability (vulnerability context), (2) livelihood assets, (3) policies, (4) processes and institutions (institutional and process). The outcomes or outcomes of this SLA approach are the analysis or discussion of (1) life assets consisting of natural assets, physical assets, human assets, financial assets, and social capital assets; (2) activities or daily activities (activities), and (3) access related to institutions and social relations.

This analysis uses several stages of activity, as follows:
1. Analyzing the economic activities of all communities / respondents (fishermen migrants) residing on Salura Island, which comes from doing seasonal migration activities. All types of livelihoods associated with this seasonal migration, migration of migrant fishermen will be identified. Identification of these livelihoods is also linked to existing natural resource conditions.
2. Analyzing the influence of these migrant fishermen on the condition of natural resources.
3. Identify the needs of the people in Salura Island as well as migrant fishermen.
4. Identify income recovery programs, in this case for migrant fishermen
5. Develop livelihood options strategies, by developing beneficial societal programs.
6. Formulate institutional and budget, supervisory frameworks
By going through the CLSA the sustainability of fishermen will undoubtedly continue, despite the many threats and uncertainties in their incomes [4].

3. Results and Discussion
3.1 Natural Resources and Livelihood of Community
The analysis of fishing activities of migrant fishermen is identified based on the activities and assets of the fishery are form of behavioral analysis in the effort fulfill daily needs. This analysis aims to identify the activities of coastal communities, whether the migrant fishermen are migrants as well as local communities that directly affect the condition of natural resource damage that arises in conducting activities both from a social and economic point of view.

3.2 Assets of Fishing Activity
Description of the fishery have purpose to know that how effort of fishermen in collecting an investment, It can be used to increase income in their daily livelihoods. Ownership of these assets can be used as in indicator of the high value of the investment, then whether influenced to fishing results of fishermen. In this research, assets are described from three components, namely assets of the boat, assets of fishing gear, and also assets of ship engine. All of the components are very important in migration activity, especially for seasonal migration with long distance. These are components also arise from interviews about the main components and important in fishing activity.
3.2.1 Natural Assets

Natural capital is a critical carrying capacity for sustainable livelihoods. Damages and imbalance of natural resources can disrupt the livelihoods of people who have a high dependence on existing resources. Natural assets are determined from all natural conditions that exist and can be developed, ie from the condition of coastal ecosystems, squid resources, livestock, agriculture and fishery aspects in general. From the existing diagrams on the condition of the natural assets in the migrants and Salura Island as the destination areas, the value of the resource assets, scores for the squid resource aspect, coastal ecosystems and livestock has a higher value than the natural assets in the migrant origin areas, namely Tanjung Luar, especially for squid resources and coastal ecosystem condition. This means that the sustainability of natural resources as a
capital to support life will still be utilized and maintained, because it has high productivity. Unlike in the area of origin, namely in Tanjung Luar, the condition of coastal ecosystems has a low score, which is 0.5. With the condition of this natural asset one of the things that encourage migrant fishermen to make the movement to the island of Salura to get the abundant natural resources, because of the over exploitation of resources, especially the squid in the area of origin of migrants.

The results of research on population perceptions of natural resource assets related to coastal ecosystems and abundance of squid in migration destination areas also state that in the last 5 years changed, but not so big changes. 97.1% thought that the coastal ecosystem was in good condition during that period, while 2.9% thought it was no better than the last five years. The perceptions on the condition of natural resources of the squid also showed good condition, 88.6% of respondents that the abundance of squid in the last five years has increased, although not many, by 5.7% even argue that the resources of squid increased twice fold more.

| No | Natural Assets    | Score  | Range of Score |
|----|------------------|--------|----------------|
| 1  | Ecosystem        | 1      | 0-3            |
| 2  | Squid resources  | 2      | 0-3            |
| 3  | Fishery          | 3      | 0-3            |
| 4  | Agriculture      | 1      | 0-3            |
| 5  | Farm             | 1      | 0-3            |
|    | **Number of Total** | **8**  | **0-15**       |

Description: 0=no, 1=worst, 2=middle, 3=good

**Figure 2.** Natural Assets Diagram

### 3.2.2 Social Asset

According to Sulistiawati [5], social assets in the CLSA analysis are useful social resources and are used by communities to achieve livelihood objectives, which are expressed in aspects that are not easy to measure (intangible), but have a benefit that can be felt by the community. Social assets are closely related to structure and process. In this study social assets that are used as indicators are (1) coastal resource management system (2) social institutions (3) social network (4) cultural custom and (5) conflict level. Social assets are strongly linked to social relationships and relationships that exist in society. Utilization of resources in Salura which are dependent on the livelihoods of migrant and local populations can lead to conflict, but at the same time a positive interaction between the two. In addition, social assets are also identified from cultural customs in the community.
That is identified as good conditions with three scores, while for conflict level, coastal resource management system and social network are in moderate condition, namely with a score of two, while for the value of the score is less is on aspects of the existence of social institutions, if the condition of social assets for migration destination is Salura, the highest value is in the cultural tradition. This condition is very different from the condition of social asset in migrant area of origin that is in Tanjung Luar, all aspects of this social asset are in moderate condition that has scored two. For social institutions, Tanjung Luar conditions are better than in Salura.

| No | Social Assets              | Score | Range of Score |
|----|----------------------------|-------|----------------|
| 1  | Resource management system | 2     | 0-3            |
| 2  | Social Institution         | 2     | 0-3            |
| 3  | Social Network             | 2     | 0-3            |
| 4  | Cultural Customs           | 3     | 0-3            |
| 5  | Level of Conflict          | 1     | 0-3            |

Table 2. Social Assets of Tanjung Luar and Salura

Description: 0=there is no, 1=worst, 2=middle, 3=good

3.2.3 Human Assets

Human assets in CLSA analysis can be identified from important factors that determine and affect the quality of human resources. The quality of human resources is a description of the knowledge, abilities and skills possessed. Human assets are determined from two aspects: education and health. Educational aspects can be illustrated from the level of educational participation, educational status, and skill level. The level of health can be described from the public participation in health.

Figure 3. Social Assets Diagram
Table 3. Human Assets of Tanjung Luar and Salura

| No | Human Assets          | Score | Score | Range of Score |
|----|----------------------|-------|-------|----------------|
|    |                      | Tanjung Luar | Salura |                |
| 1  | Education participation | 2     | 1     | 0-3            |
| 2  | Formal Education     | 2     | 1     | 0-3            |
| 3  | Business skill       | 3     | 1     | 0-3            |
| 4  | Awareness of health aspects | 2   | 2     | 0-3            |
| 5  | Participation to health | 2     | 2     | 0-3            |

| Number of Amount | 11 | 7 | 0-15 |

Description: 0 = there is no, 1 = worst, 2 = middle, 3 = good

The result of the research shows that for Tanjung Tanjung, the highest human asset is the condition of business skill, namely that there is wide job and business opportunity, while education aspect like education level and education participation have scored two, which means in medium condition. This is different from the conditions in the migration destination area, namely in Salura, that human assets for education are still lacking, both from the formal education component, educational participation as well as business skills. The business skills at Tanjung Luar are much more diverse, they can cultivate handicrafts from coastal and waste waste, boat technicians, net makers and other types of skills. This phenomenon is acknowledged by migration actors that are migratory fishermen who make Salura as the destination of migration, that from the aspect of its human assets, Tanjung Luar is still much better than the migration destination destination which it is the place for their livelihood. From the aspect of health seen from the awareness of the importance of health and participation to health, it has the same condition, which has a score of two for conditions in Tanjung Luar and Salura.

Figure 4. Human Assets Diagram
3.2.4 Financial Assets

Financial assets in question are the existence of financial resources that can be utilized to achieve livelihood objectives for fishermen and coastal communities, both in Salura and Tanjung Luar. Financial assets in the research area can be identified from existing savings, existing formal and informal financial institutions, revenues and aid projects. Formal financial institution is a bank or credit institution that can help fishermen and the community in obtaining business capital and to meet the needs of everyday household. From the diagram it appears that for formal financial institutions in Tanjung Luar it has a moderate condition with a score of two, which means that there are formal financial institutions that serve them with moderate conditions, both in the number and level of service. This is in stark contrast to the conditions on Salura Island, where there is no formal financial institution. However, if viewed from the aspect of existing informal financial institutions, then conditions on the island of Salura has a score of one meaningful enough.

The existing informal financial institution is like a village cooperative that can be used for savings and savings and loans. For the savings rate, most have the opinion, but not the routine and the number is relatively small. This is because they prefer to save goods that are investing, such as buying livestock, fishing gear and others that tend to be cashed back quickly and easily. The aid project for the existing migrant fishermen on Salura Island and Tanjung Luar is present, but it is in moderate condition. For in Salura Island many aid projects are for seaweed cultivation. from the diagram also seen that for the income level, the migrant fishermen have a much better income level compared with the people in Salura Island, this is because the migrant fisherman from Tanjung Luar has more skill effort in filling the spare time when not catch the fish in Salura.

| Table 4. Financial Assets of Tanjung Luar and Salura |
|---------------------------------|
| No | Financial Assets                      | Score | Range of Score |
|----|--------------------------------------|-------|----------------|
| 1  | Financial Informal Institution       | 2     | 0-3            |
| 2  | Financial Formal Institution         | 2     | 0-3            |
| 3  | Savings                              | 1     | 0-3            |
| 4  | Income                               | 2     | 0-3            |
| 5  | Project assistance                   | 2     | 0-3            |
|    | Number of Amount                     | 9     | 5              |
|    |                                      |       | 0-15           |

Description: 0=no, 1=worst, 2=middle, 3=good

![Financial Assets Diagram](image)
3.2.5 Assets of Physical and Infrastructural Infrastructure

Physical facilities or infrastructure or artificial assets are very important in supporting the sustainability of human life. Various fulfillment of life, can work well and effectively if there are available artificial physical assets as appropriate and with relatively good conditions. Public facilities and various forms of public facilities, such as, educational facilities, health, places of worship, transportation and communication. If the condition of artificial assets is relatively good in an area or place, then the life of the community will also be relatively better too. This is because they are no longer preoccupied with the scarcity or limited facilities and public facilities and infrastructure, so that energy and thoughts can be directed to the main job. It will be very different if not fulfilled its facilities, the quality of life will also be less, because they must always find ways to survive with these facilities, so that the skills of effort is also much reduced and little variation of employment opportunities that can be raised.

The diagram in figure 6 shows indicators of the physical facilities and infrastructure assets used in this CLSA analysis, ie primary school buildings, (primary, secondary school buildings, health centers, puskesmas, docks, road conditions, bridges, the presence of TPI, power lines, home telephones, permanent houses and places of worship. The results of diagram show that Salura Island has a lower physical or artificial physical condition. Some facilities and infrastructure such as TPI, telephone network, Puskesmas not exist in Salura Island, very different from the condition in Tanjung Luar almost partially large facilities and infrastructures are available. Some facilities and facilities such as elementary school buildings, places of worship, junior high schools, high school buildings, health centers, health centers, docks, bridges, TPI, and power lines are available in good condition. The availability of clean water is in moderate condition, whereas for Salura only condition of permanent house having good condition, while in Tanjung Luar for coastal villages almost most of which is a non-permanent stage house. The existence of this artificial physical asset sanat influence on the development of an area both for the improvement of welfare and sustainability of livelihood. Like the livelihood of respondents in this study, of course the existence of TPI and the dock is absolutely necessary.

| No | Assets of physical          | Score | Range of Score |
|----|-----------------------------|-------|--------------|
| 1  | Building of Elementary School | 3     | 2            | 0-3          |
| 2  | Building of Junior Secondary School | 3     | 2            | 0-3          |
| 3  | Building of Junior High School | 1     | 1            | 0-3          |
| 4  | Puskesmas                    | 3     | 0            | 0-3          |
| 5  | Health Centers               | 3     | 0            | 0-3          |
| 6  | Dock                         | 3     | 0            | 0-3          |
| 7  | Street                       | 2     | 1            | 0-3          |
| 8  | Bridge                       | 2     | 0            | 0-3          |
| 9  | TPI                          | 3     | 0            | 0-3          |
| 10 | Electrical services          | 3     | 1            | 0-3          |
| 11 | PAM                          | 2     | 2            | 0-3          |
| 12 | Permanent houses             | 2     | 2            | 0-3          |
| 13 | Permanent Telephone          | 2     | 0            | 0-3          |
| 14 | Worship Place                | 3     | 2            | 0-3          |
|    | Number of amount             | 35    | 13           | 0-42         |

Description : 0=there is no, 1=worst, 2=middle, 3=good
It turns out that Salura as a migration destination only has a good condition on the aspects of natural assets of the total existing capital assets, especially for the abundance of squid, while for human assets, financial, physical, and social assets are almost in the most in less until enough. This phenomenon can be concluded that migration by migrant fishermen from Tanjung Luar to Salura is really only supported by the motivation to get better natural resources in the area of origin, so that will be significant with the income they get. This is very different from the theory of migration, that the movement of people like migration is strongly influenced by motivation to earn a better income, more job opportunities, and much better facilities than their home regions. But for the phenomenon of migrant squid migrants they actually migrate to a destination that is at all worse for their social and economic condition compared to Tanjung Luar. The following is the result of comparison of capital asset scores (livelihood) from Tanjung Luar and Salura areas.

The overall assets of Tanjung Luar's livelihoods have a higher score, so it can be assured that from Tanjung Luar as migration-origin areas the reality is better than the migration destination of Salura. These results suggest that theoretically, migration destination areas that always provide better conditions for convenience and business opportunities for migrants are not always true. Salura as a migration destination only has only a good natural asset, which has a score of 11 out of a maximum score of 15, unlike the outer Cape only has a score of 8. In this case it becomes the dependence of the livelihood of the population of the origin region, which is in total capital assets much better This shows that fishermen andon squid and local people have a very high dependence on natural assets for migration destination areas.

**Table 6.** Capital Livelihood Assets of Tanjung Luar and Salura

| No | Capital Livelihood Assets                | Score | Range of Score |
|----|-----------------------------------------|-------|----------------|
|    |                                         | Tanjung Luar | Salura  |
| 1  | Natural Assets                          | 8      | 11             | 0-15 |
| 2  | Social Assets                           | 10     | 8              | 0-15 |
| 3  | Human Assets                            | 11     | 7              | 0-15 |
| 4  | Financial Assets                        | 9      | 5              | 0-15 |
| 5  | Physical and Infrastructure Assets      | 35     | 13             | 0-42 |
|    | Number of amount                        | 73     | 44             | 0-102 |

Description: 0=there is no, 1=worst, 2=middle, 3=good
4. Conclusion
The indicators of social sustainability can be reflected from the high level of life's important assets. The main livelihood assets on Salura Island are natural assets. Natural livelihood assets will have a high value compared to other assets, making it extremely vulnerable to disturbance. This is because migrant fishermen and local people have a high dependence on natural assets. Management of natural resources, especially squid resources to maintain population abundance. An alternative work option that can be given is squid catching activity, hence alternative work that can be given is to equip work related to profession of fisherman. It is expected that natural resource assets will no longer depend on the existing natural resources.

5. References
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