An alternative policy of livestock farmers’ empowerment towards environmental vision

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Abstract. Livestock is one out of five agricultural sub-sectors. The livestock farmers in South Bangka face the difficulty in ensuring the availability of skilled manpower in livestock farming. The objective of the study is to understand the socio-economic of livestock farmers and to analyse the alternative policy related to the environmental vision through livestock farmers’ empowerment. A qualitative descriptive approach was used to analyse the data using SWOT analysis in determining the alternative policy on the livestock farmers’ empowerment in visioning the sustainable environment. The study discovered that although multi-ethnic society remained, the horizontal conflict was never revealed. The majority of livestock farmers were at low socio-economic status households. It suggested that the policymaker should design the livestock farmers’ empowerment towards the environmental vision by providing environmentally friendly livestock production. The program can vary such as modernizing the livestock breeding system, increasing the added value, creating ecotourism in grassland conservation, and forming the ecotourism guide.

1. Introduction

In Indonesia, the socio-economic livestock farmer is considered as homogeneity. It can be shown by the low level of education, the seasonal productivity of livestock, lack of financial support, inadequate supporting facilities, poor market mechanism, absence of technology transfer and communication. It leads to an uncertain income.

The need for meat in the country has not met with the supply of the meat [1]. The imported meat becomes its solution [1,2]. The import value in 2018 is 80,000 tons. It has increased by 17% for the previous year. It is due to the high demand for meat as it plays a vital role in ensuring the national food supply [1]. Thus, sustainable livestock development should be implemented by providing the livestock farmer empowerment program. Empowerment is believed to be able in solving the problems faced by farmers [3].

The empowerment program to eradicate poverty in the rural area is considered as an appropriate strategy [4]. Normally, the empowerment program in a rural area is implemented by forming the farmer group [5]. Unfortunately, most farmers in the group are not active in the farmer group activities. It makes...
the quality of farmers not improving [5]. In addition, the development program frequently does not fulfill the need of the people [5],[6].

Capacity building, institutional strengthening, and partnership development are the three strategies on the rural area development using society-based [7]. The Majority of rural society depends on their life on the agriculture and livestock sector [8]. The level of poverty in the rural area becomes the controversy as the agriculture sector has its agricultural potential for the welfare of the people [9]. It is due to the inability of people to reach the welfare of the people [9].

Government has been providing some programs to eradicate poverty. However, the goal has not been achieved. The prevention of poverty is an effort to empower the poor not being dependent on others [8]. It is mandatory for government to increase the welfare of the people including rural society [5]. The empowerment program in the agricultural sector becomes one of the development forms [7]. The livestock sub-sector has its strategic position to improve the income and reach the economic welfare of the people. It can also provide job opportunities [10].

The livestock farmers are part of business actors in rural area. They are considered as the marginalized people that face some obstacles [10][11][12]. Environmental degradation affects significantly the income of livestock farmers in Panca Tunggal. They tend to work on the illegal tin mining in the Bangka Selatan waters area. These issues require a solution to improve the quality of life of the people through livestock farmers’ empowerment policy that is environmental vision and sustainability.

2. Research Methodology
The study was conducted in Panca Tunggal, South Bangka. The purposive sampling was employed as the sampling method. Two months from February to March was spent as the duration of the study. The descriptive analysis was the nature of the study. The data was collected through face-to-face interview by using questionnaire. The respondents were some stakeholders such as agriculture department, non-governmental organization and livestock farmers. Table 1 showed the respondents in details.

| No  | Type of Respondents                      | Persons |
|-----|----------------------------------------|---------|
| 1   | Head Department and Division of Fisheries | 2       |
| 2   | Private/Business Sector                 | 2       |
| 3   | Agriculture Extension Worker            | 2       |
| 4   | Head of Farmer Group                    | 2       |
| 5   | Panca Tunggal People                    | 30      |
|     | Total                                  | 38      |

Two types of data were used: primary and secondary data. The primary data was derived from the real condition in the field. It was also derived from the questionnaire asked to respondents. The secondary data was obtained from the local government such as agriculture and livestock department in South Bangka, livestock area and marketing management institution and journal articles. The secondary data that gained from those sources were about education, livelihoods, income, capital, facilities, health, industry, livestock skills, ethnics, feed quality and health of animal.

The data analysis of the study was conducted by the following two stages: the socio-economic analysis and analytical hierarchy process to determine the alternatives of the sustainable empowerment policy [14].

The analysis of the livestock socio-economic was derived from a questionnaire. The data was collected, entered and analysed. The quantitative data was analysed using partial analysis which was table analysis and R/C ratio. The basic form of quantitative analysis was mainly on describing the current phenomena [15].
It formulated the alternative empowerment policy towards the sustainable and environmental vision by using the analytical hierarchy process (AHP). Its measurement was conducted by creating the measurement scale in the scoring index or numeric value [14]. The stages of the AHP were: i) identifying system and determining solution; ii) drafting the hierarchy structure; iii) making the pairwise comparison matrices; iv) calculating the matrix of individual opinion; v) calculating the joint opinion; vi) processing the vertical; and vii) revising the opinion.

3. Results and Discussion

3.1 Socio-Economic Conditions

The study found that three fourth of respondents did not graduate from primary school. The low level of education affected the awareness of people to protect the environment [18][19]. The majority of the people in the location of the study were livestock farmers. The human resource was one of the crucial factors in determining the success of the program as education is the basic in providing the knowledge on how to be successful livestock farmers [18]. Education played a vital role in bringing the mechanism that could alter the characteristics and behavior. Human being have their own characteristics and behaviors (knowledge, attitude, and skills) as well as reasoning and creativity so that between one and another was different [18]. The characteristics would determine performance and productivity [16][17][18]. In the study, the data of 30 respondents was used by using partial analysis of both table and R/C analyses. The partial analysis of the respondent was shown in Table 2.

| No | Description                      | Economic Valuation | Total          |
|----|----------------------------------|--------------------|----------------|
|    |                                  | Cash              | Non Cash       |                |
| 1  | Revenue                          | 55,478,672        | 399,672,400    | 455,151,072    |
| 2  | Expenditure                      | 25,465,200        | 160,255,150    | 185,720,350    |
| 3  | Total revenue/ period            | 24,864,210        | 214,414,250    | 239,278,460    |
|    | Average income/year              | 4,556,870         | 46,873,450     | 51,430,320     |
|    | Average income/year/livestock    | 306,685.45        | 3,453,978.2    | 3,760,663.65   |
|    | farmer                           |                    |                |                |
|    | Average income /month/livestock  | 52,268.79         | 360,320.68     | 412,589.47     |
|    | farmer                           |                    |                | 1.28           |

The livestock farmer was able to earn 239,278,460 rupiah/period. The average income was 3,760,663.65 rupiah/year/ livestock farmer or 412,589.47 rupiah/month/livestock farmer. It implied that the livestock farmer required to increase the business scale to earn more income. Table 2 showed the comparison analysis between revenue and expenditure which was 239,278,460 as the revenue/period and 185,720,350 as the expenditure/period with the ratio 1.28. It meant every 100 rupiah would earn 128 rupiah. When the R/C equaled to 1, it meant break-even point [19].

3.2 The Alternative Empowerment Policy of Sustainable and Environmental Vision Livestock Farmer

To implement the empowerment policy of sustainable and environmental vision livestock farmer, it needed the integrated implementation. It started with the policy, rules, and regulation support. The legal certainty was effectively implemented to manage the planning and the utilization of the government, private, and beneficiaries. The form of a new policy in the empowerment program of livestock farmers was participative-based, decentralization, and referred to as the principles of economic efficiency, fairness, and sustainability. The following was the AHP analysis that could be used to determine the alternative policy.
Table 3. Priority Score and the Alternative Policy of Sustainable and Environmental Vision 
Livestock Farmer Empowerment.

| No | Alternative                          | Score | Priority |
|----|-------------------------------------|-------|----------|
| 1  | Environmentally friendly animal husbandry | 0.49  | 1        |
| 2  | Modernized animal husbandry          | 0.47  | 2        |
| 3  | Added value improvement              | 0.30  | 3        |
| 4  | The grassland ecotourism             | 0.24  | 4        |
| 5  | The livestock tour guide             | 0.21  | 5        |

The first priority was the environmentally friendly animal husbandry to improve the welfare of society. The livestock farmer received an effective solution in promoting the livestock through a certain occasion. It could be promoted when a religious celebration occurred. They could earn more revenue than the normal event. The promotion was facilitated by the local agriculture department and the local trader.

The implementation of environmentally friendly beef cattle was not necessary to put the cattle in the cage. It just lived in the post-harvest agriculture land. It also applied to feed consumed by beef cattle. It could use palm oil waste and grass. Besides, the feces of beef cattle could be utilized as the fertilizer so that integrated farming could be implemented.

The second priority was modernized animal husbandry. It meant the transformation process in the agribusiness sector that was in line with the current situation. It endeavored to put the livestock development of the country aligning with developed countries as well as stimulate the developmental alignment amongst the provinces in the country. It required four mandatory requirements which were to modernize: i) the farmer and trader; ii) the labor; iii) the livestock company; and iv) livestock agribusiness structure.

The next priority was the added value improvement from livestock production such as egg, meat, milk, skin, etc. It tried to process from the raw materials into semi-finished goods or finished goods. It could provide the improvement of the revenue. The added value improvement would give the contribution to the livestock farmer as the product shelf life would be longer and the income would be increased.

The fourth priority was grassland ecotourism. It was supported by the potential of tourism resources from both natural and human resources. In addition, it could feed the cattle as grassland agriculture. The form of the livestock was based on the land use management in cultivating grass and legume or nuts. It applied in some developed countries.

The final priority was the livestock tour guide. The animal husbandry area was the potential to develop and considered a large market for daily and weekly tourism attraction. It required the support from the well-trained local tour guide. It was important as it could contribute to the local economy as well as to avoid the horizontal conflict between local and non-local tour guide.

4. Conclusions
The study concludes that the socio-economic of livestock farmers were considered as dynamic due to varying on ethnicity. The horizontal conflict was zero cases. The local culture remained while the culture maintenance was inadequate. The economic condition was considered at a low level. Furthermore, the priority of the alternative livestock farmer empowerment policy that is sustainable and environmental vision can be implemented. Those are i) environmentally and friendly animal husbandry with score 0.49; ii) modernized animal husbandry with score 0.47; iii) added value improvement with score 0.30; iv) the grassland ecotourism with score 0.24; and v) the livestock tour guide with score 0.21.

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