

## **Technical, Economic and Social Feasibilities of Beef Cattle Development in Bintuni Papua Barat**

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**ABSTRACT:** In order to empowerment of Papua community as well as to meet of beef requirement in Papua, then BP LNG Tangguh creates a Papua community empowerment program through development of beef cattle farm in Bintuni Regency. The approach of this program was conducted through several social and religious foundations in Bintuni. To know the readiness of the aid recipient, then a feasibility study including technical, economic and social aspect was conducted. The purpose of this study was to know reasonable of candidate aid recipient and determine input for beef cattle development based on technical, economic and social aspects. The study was conducted in Bintuni, Manimeri and Tuhiba districts, Bintuni Regency Papua Barat Province. Data was collected from 5 social and religious foundations namely Muhammadiyah Foundation, Catholic Foundation, Protestan Foundation, An-Nur Foundation and Tujuh Bersaudara Cooperation with 65 respondents from local tribes of Sebyar, Sumury and Irarutu. Indepth interview technique and direct observation was used to collect data in this study. Data was analyzed using descriptive method. Result of this study showed that technically, the average carrying capacity in 5 locations was 2-6 animal unit/ha/year, 64.57% of recipient has not experience in husbandry, 67% of people in a low level of food security, 35.54% of recipient live under poverty level and the average income IDR 43,945,758/year. Based on this study, the development of beef cattle farm in 3 foundations using mini ranch system with number of cattle of 50-60 head, meanwhile 2 foundations using mini ranch system with number of cattle of 20 head. Implementation of beef cattle development in 5 foundations should be accompanied by economic program to prevent the farmer sell their cattle before age cut off due to economic reason.

**Keywords:** Feasibility, Beef cattle, Empowerment, Ranch, Household

### **INTRODUCTION**

Papua, in general is an area with huge potential for development beef cattle due to supporting region as extensive natural pasture. Based on data of BPS (2007) and Team of Monitoring and Evaluation of livestock, Papua Barat Province (2005), forage production and agricultural by product in Papua Barat Province was 42,442,750 tons produced from the area of 4,244,274 ha. That forage production is able to supply for beef cattle as much as 3,876,050 head. The availability of livestock resources particularly local feed and forage area provides a great opportunity for development beef cattle in Papua Barat province.

Population in Papua Barat Province shows a trend of increasing since present both province and regency. Rate of population growth from 2003 to 2005 was 10.83% (SUPAS, 2005) or the number of population in this province at 2005 was 643,012 head. Increasing some activities including tourism industry, hotel, restaurant, trading, transportation and business service caused Papua Barat Province needs to have the availability of adequate stocks of livestock product.

Based on data of BPS and BAPPEDA Papua Barat Province (2014), cattle slaughtering increased from 4,701 head in 2004 to 24,261 heads in 2013. Ratio of the cattle slaughtering to cattle population was increased in each year. Trend of a surge in consumption that is not balanced

with the growth of the cattle population is a challenge for government to seriously review the management aspects of beef cattle supply.

In order to empowerment of Papua community as well as to meet of beef requirement in Papua, then BP LNG Tangguh creates a Papua community empowerment program through development of beef cattle farm in Bintuni Regency. The approach of this program was conducted through several social and religious foundations in Bintuni. It is hoped that the community can play an active role as a supplier of beef demand for BP Tangguh. The objective of program in the short term is to increase community participation through the provision of beef demand for company, whereas in the long term is to provide beef to meet the needs of people in Bintuni area, even the provinces of West Papua and Papua.

### MATERIALS AND METHODS

The study was conducted in Bintuni, Manimeri and Tuhiba districts, Bintuni Regency Papua Barat Province. Data was collected from 5 social and religious foundations namely Muhammadiyah Foundation, Catholic Foundation, Protestan Foundation, An-Nur Foundation and Tujuh Bersaudara Cooperation with 65 respondents from local tribes of Sebyar, Sumury and Irarutu. Indepth interview technique and direct observation was used to collect data in this study. Data was analyzed using descriptive method.

#### 1. Stocking rate

Calculated based on Voisin (1959) as follows :

DT = A × B, where :

DT = stocking rate

A = forage consumption per animal unit per month divided by forage production per Hectare

B =  $(Y - 1)s = r$ , where : Y = Land requirement (paddock) per animal unit per year

S = grazing period (30 days)

R = rest period (70 days)

One animal unit (AU) is equivalent to a cattle with body weight of 266 kg that consume 5 kg dry matter per day. Total digestible nutrient requirement for maintenance and production is 0.6618 ton/Ha/year.

#### 2. Economic feasibility is determined based on aspects of income community, poverty status and food security.

A. Income community is total income obtained by each household

B. Food security analysis

The value of food security is measured by using the share of household food expenditure, using equation as below: (Supardi, 2002; Ilham dan Sinaga, 2007)

$$\omega = \frac{\text{Food expenditure}}{\text{Total expenditure}} \times 100\%$$

where  $\omega$  = share of food expenditure

a. Share of food expenditure < 60% of total expenditure is food security household.

b. Share of food expenditure  $\geq$  60% of total expenditure is no food security household.

c. Poverty criteria

To know poverty is based on criteria of Sayogyo (1986) as follows : town poor 320 kg/capita/year (3,156.16 kkal/capita/year) b. urban poor 240 kg/capita/year (2,367.12 kkal/capita/year).

3. Socio-cultural feasibility is assessed based on farmer knowledge and community perception on the development of beef cattle in various models of development.

#### A. Raising

Knowledge of respondent about raising cattle on all aspects of the management including feeding, disease, production, reproduction and cages were known by using interview techniques. Respondent replied were grouped into 3 categories as below:

- a. They have no experience (if the respondents were able to answer the question only to 40% of the total questions).
- b. They have experience but in limited knowledge (if the respondents were able to answer the question > 40% to 70% of the total questions).
- c. They have experience and well knowledge (if the respondents were able to answer the question > 70% to 100% of the total questions).

#### B. Community perception of the development of beef cattle

Community perception of the development of beef cattle were known through some informations such as livelihood diversity, control and use of land, leadership and decision-making, religion and other cultures, and factors that support or hamper beef cattle development.

## RESULTS AND DISCUSSION

Results of the study of stocking rate, economic status, strengths and weaknesses of the group as well as recommendations for pattern of beef cattle development presented in Table 1.

Estimates of stocking rate both in dry matter and TDN contents of forages ranged from 2 to 6 AU/ha/year. The stocking rate value based on fresh matter obtained in this study was lower than result reported by Sawen and Junaidi (2011) namely 4.9 and 6.6 AU/Ha/year for natural pasture in Fakfak and Sorong. Nevertheless, the value was slightly better than the stocking rate of natural pasture in Papua, which averaged only 2 AU/ha/year. Reksohadiprodjo (1994) stated that a pasture is classified to be productive when at least it has stocking rate of 2.5 AU/ha/year. Therefore, if the land at the survey site will be made as the location for development of beef cattle, it can be improved through the introduction of superior species of cutting and grazing grasses, including the composition with the types of legume, and intensive raising with the cut and carry feeding system.

**Table 1.** Foundation, stocking rate, economic status, and recommendation of cattle raising system in Bintuni regency

| No. | Fondations/<br>Location  | Economic                             |   |  | Strengths and<br>Weaknesses of<br>members and<br>foundation                          | Recomendation<br>of pattern raising |
|-----|--|--------------------------------------|---|--|--|-------------------------------------|
|     |  | a. Land<br>area (m <sup>2</sup> )    | b. AI (IDR/year)                                      | b. PH (%)  |  |                                     |
|     |  | b. Stocking<br>rate (AU/<br>Ha/year) | c. NFS (%)  |  |  |                                     |
| 1   | Muhammadiyah<br>Foundation SP-5,<br>Manimeri District                              | a. 30<br>b. 4.00                     | a. AI : 23,277,959<br>b. PH : 23.08<br>c. NFS : 65.38 | a. Strong<br>institution,<br>b. limited land<br>and located in<br>the city   | Group system<br>using mini ranch<br>pattern with<br>number of cows<br>of 20 heads    |                                     |
| 2   | Catholic<br>Foundation /<br>Pasamai vilage,<br>Manimeri District                   | a. 65.649<br>b. 6.00                 | a. AI : 43,200,000<br>b. PH : 33.33<br>c. NFS ; 50.00 | a. Good<br>willingness to<br>work with other<br>tribes<br>b. Still depend<br>on customary<br>rights                          | Group system<br>using mini ranch<br>pattern with<br>number of cows<br>of 50-60 heads |                                     |
| 3   | Protestan<br>Foundation /<br>Agresigemberai<br>Vilage (SP-5),<br>Manimeri District | a. 48.511<br>b. 3.00                 | a. AI : 29,240,000<br>b. PH : 20.00<br>c. NFS : 40.00 | a. Good<br>willingness to<br>work with other<br>tribes<br>b. Extensive<br>land and<br>strategic for<br>development           | Group system<br>using mini ranch<br>pattern with<br>number of cows<br>of 50-60 heads |                                     |
| 4   | An-Nur<br>Foundation /<br>SP-1,<br>Manimeri District                               | a. 14.75<br>b. -                     | a. AI : 48,733,333<br>b. PH : 22.22<br>c. NFS : 55.56 | a. Strong<br>supporting<br>foundation<br>b. Limited land<br>and separated  | Group system<br>with the number<br>of cows 20 heads                                  |                                     |
| 5   | Tujuh Bersaudara<br>Cooperation / Km<br>9 West Bintuni,<br>Bintuni District        | a. 29.79<br>b. 4.00                  | a. AIH : 6,425,000<br>b. PH : 35.71<br>c. NFS : 78.57 | a. Good<br>willingness to<br>work with other<br>tribes<br>b. Land<br>far from<br>settlements and<br>transportation<br>access | Group system<br>using mini ranch<br>pattern with<br>number of cows<br>of 50-60 heads |                                     |

Note : AI: Average income; PH: Poor Household; NFS: No Food Security in Household

Respondents who are a prospective beneficiary community have an average income of IDR. 43,945,758 /year. Most of respondents (64.46%) have been free of poverty, but based on the food security indicators showed that most of respondents (64.57%) have not food security. It means that they have been able to meet the basic needs of life, but not yet in a prosperous level. Thus based on economic aspect, the prospective beneficiary community is eligible for beef cattle development program to improve the welfare of the family.

Based on the results of the feasibility analysis of beef cattle business for 20 years with a scale of 60 heads was obtained BCR value of 2.8, a positive NPV at 16th year with a value of IDR 176,560,384.86 and IDR of 15.22%. This indicates that these activities can move above the prevailing bank rate (12%). It can be concluded that the beef cattle business that include community empowerment is feasible to be done.

Most of respondents approximately 68.47% didn't have experiences in cattle raising, 27.04% of respondents have experienced but in limited knowledge, and 4.49% of respondent have experience and also have well knowledge in cattle raising. In the future, development of beef cattle, three groups will be mixed to work together in order to get transfer of knowledge and work spirit under supervision by expert.

The recommendation of pattern of cattle development in each foundation and cooperation were group system using mini ranch pattern with number of cattle of 20 heads in Muhammadiyah and An-Nur Foundations, whereas group system using mini ranch pattern with number of cattle of 50-60 heads in Catholic Foundation, Protestant Foundation and Tujuh Bersaudara Cooperation.

## CONCLUSION

Based on aspects of technical, economic and social, beef cattle farm in Bintuni regency is feasible to be developed. The development of beef cattle farm in Catholic and Protestant Foundations as well as Tujuh Bersaudara Cooperation using group system with mini ranch pattern and number of cattle of 50-60 heads, meanwhile Muhammadiyah and An-Nur Foundations using group system with mini ranch pattern and number of cattle of 20 heads. The farmer will be mixed to work together between Papua and non Papua communities in order to get transfer of knowledge and work spirit.

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