Production Capacity and Beef Consumtion in the Nusa Tenggara Timur Province, Indonesia

[1]Jefirstson Richset Riwukore, [2]Ahmad Yani, [2]Asnath Maria Fuah, [2]Luki Abdullah, [2]Rudy Priyanto, [2]Bagus Priyo Purwanto, [3]Fellyanus Habaora and [4]Yohanes Susanto
[1]Program Studi Ilmu Manajemen, Universitas Indo Global Mandiri, 30129 Palembang, Indonesia
[2]Fakultas Peternakan, Institut Pertanian Bogor, Jln. Raya Darmaga, Kampus IPB Darmaga, 16680 Bogor, Indonesia
[3]Departemen Ilmu Produksi dan Teknologi Peternakan, Sekolah Pascasarjana, IPB, Jln. Raya Darmaga, Kampus IPB Darmaga, 16680 Bogor, Indonesia
[4]Universitas Bina Insan, Lubuk Linggau, 31626 Sumatera Selatan, Indonesia

Corresponding Author:
Jefirstson Richset Riwukore
Program Studi Ilmu Manajemen, Universitas Indo Global Mandiri, 30129 Palembang, Indonesia

Abstract: One of the livestock products that play an important role in improving food security in Indonesia is beef. Increased income, changes in consumption patterns and population growth and increased public knowledge about nutrition affect the need for the number of cattle being slaughtered as one of the producers of meat protein in Indonesia. The purpose of this research was to determine the production capacity and consumption of beef in the province of East Nusa Tenggara (NTT). This research was conducted in NTT for 6 months, starting from Juli to Desember, 2019. This study of beef consumption is included in the case study classification. The type of data used in this study are primary and secondary data obtained from sources related to this study. Analysis of the data obtained was carried out descriptively, namely analysis carried out by way of explanation, writing and statements that could be in the form of words (qualitative) and numbers (quantitative). Data analysis was conducted to determine the production capacity of beef cattle, beef production and consumption of beef. The results of this study indicate that cutting cattle to meet the needs of the resident in NTT is increasing year by year along with the rate of resident growth and lifestyle of the community. The cuts carried out are still within the limits of Law which is under 10% of the total cattle population in NTT. But the slaughter of these livestock did not meet the standards of nutrition and animal protein needs. This is because the consumption of protein from beef products in NTT has only reached 12% of the ideal total protein requirement for each person.

INTRODUCTION

Increased community food security in terms of livestock products is influenced by many factors, namely the ability to provide livestock products and technical capabilities in increasing people's purchasing power[1, 2]. One of the livestock products that play an important role in improving food security in Indonesia is beef. Increased income, changes in consumption patterns and human population growth and increased public knowledge about food nutrition affect the need for the number of cattle being slaughtered as one of the producers of beef protein in Indonesia. But the increase in beef cattle production is greatly influenced by production facilities such as feed, commodity prices and production efficiency. Efforts to improve the ability of production facilities are needed to increase the productivity of cattle in an effort to fulfill the needs of beef consumption in Indonesia.

Beef consumption in Indonesia is still low if compared to other developing countries. Indonesian beef consumption is only 2.61 kg/capita/year, far below the average consumption of beef in other third world countries (5 kg/capita/year) and developed countries (25 kg/capita/year), especially compared to the average consumption in Australia reach to 40 kg/capita/year. Consumption of Source food of low protein in Indonesia is directly or indirectly affected by household income[3] The role of farm in increasing income is considered not to be maximal because the beef cattle business in Indonesia is generally carried out traditionally and on a relatively small scale (supporting). Traditional management causes thin cattle due to lack of feed consequence in the long dry season and livestock are susceptible to disease[4]. This factor causes the pattern of consumption of meat protein (beef) in the household is very low because the income earned is also low. Some of the efforts made by the government in spurring domestic livestock production such as: livestock development, improving the quality of breeds through artificial insemination programs and disease eradication program, so it is hoped that this effort will be able to offset the demand for livestock products which is increasing rapidly or even faster than the rate of consumption income[5].

One of the beef cattle producing provinces in Indonesia is the province of Nusa Tenggara Timur (NTT). The contribution of Bali cattle from NTT as beef cattle to fulfill national animal protein needs is 26.92%. However, the intake of animal protein from meat products by humans in NTT is still low, only reach 2.54 g a day. The ideal consumption of animal protein for each person is 50 g per person per day[2]. This means that the human of NTT is still low in fulfilling protein consumption even though it is a central area for beef cattle production in Indonesia.

The province of NTT is seen from the cattle population per year being rank fifth nationally as many as 1,041,023 tails after the provinces of East Java, Central Java, South Sulawesi and West Nusa Tenggara. However, the cattle population is not comparable with human welfare indicators in NTT, namely economic growth, income per capita, poverty level and level of welfare. Economic growth and per capita income can be seen from the growth of the Gross Regional Domestic Product (GRDP) in the area, the level of poverty can be seen from the number of poor people in the area and the level of population welfare can be seen from the value of the Human Development Index (HDI). For example, NTT's HDI of new reached 64,39 well below the national average of 71,39. This shows that the level of welfare of the human in NTT is very low compared to the average welfare in other provinces in Indonesia.Regions that have a low HDI indicate that the area is included in the category of disadvantaged areas so that it has an influence on low per capita income, increased poverty and decreased welfare. These economic growth indicators affect the level of beef consumption available in NTT.

Domestic meat needs are mostly concentrated in the provinces of DKI Jakarta, West Java and Banten which is 60% of the national meat needs. To fulfill these needs, 750 beef cattle of slaughtered per day are supplied from Australian imports, East Java, Central Java, Bali, West Nusa Tenggara and NTT. Beef cattle from NTT contribute around 26.92% to the supply of beef cattle it.

The impact of importing beef cattle out of NTT that does not consider the dynamics of beef cattle in NTT can affect the supply of meat to the community in NTT is reduced and the full consumption of beef protein in the population in NTT is also reduced. To know the ability of beef cattle production in NTT on fulfilling the supply of meat and meat consumption needs for human in NTT can be done with an approach to calculating the production capacity of beef cattle, beef production and beef consumption according to existing conditions in NTT.Thus the operational limitation in this study is production capacity, consumption level, beef production capacity and meat consumption calculation. Production capacity is the adequacy of beef cattle supply, the consumption level is the amount of beef consumed per capita, the average weight of beef cut produces 170 kg of beef and calculation of beef consumption using the method used by the Ministry of Agriculture in Republik Indonesia.

NTT conditions with indicators of low protein consumption and low economic growth can also produce the hypothesis that: NTT's role as a livestock exporter area causes this region to lack sufficient beef supply for consumption and NTT's role as an exporter area is because this region has fulfilled the needs of domestic

beef as a source of animal protein. Thus, the purpose of this study was to determine the adequacy of beef cattle supply and the level of beef consumption in NTT. The benefits of this research as information material to the government in an effort to improve the welfare of the human.

MATERIALS AND METHODS

This research was conducted for 6 months, starting in July-December, 2019 in the province of Nusa Tenggara Timur. This study of beef consumption is included in the case study research classification. Case studies are approaches that aim to maintain the wholeness of objects. Case studies are useful for providing information on further research because they can provide an explanation of important variables and the observation process. The subject used is the population, namely the generalization area which consists of objects/subjects that have certain qualities and characteristics determined by the researcher to be studied and then conclusions drawn. So, the population is not only people but also other natural objects. The population is also not just the amount that exists on the subjects studied but includes all the characteristics/properties possessed by the subject or object. The type of data used in this study are primary data (obtained from interviews) and secondary (obtained from sources related to this study).

Data analysis of the type of data obtained in this study was done descriptively, that is the analysis carried out by means of explanation, writing and statements which can be in the form of words (qualitative) and numbers (quantitative). Data analysis was carried out to determine the production capacity of beef cattle, beef production and beef consumption, through the following steps.

Calculate the production capacity of beef cattle in 1 year with the mandate of the Livestock Law No. 18 of 2009 where cattle slaughtering is only allowed 10% of the total population. Calculate beef production by means of total of slaughtered cattle×115 kg (one cattle produce 115 kg of beef). Divide the amount of beef production by the total human population of the region.

RESULTS

Overview of Nusa Tenggara Timur: Nusa Tenggara Timur is one of the 34 provinces in Indonesia. The total area of NTT province is 48,718.10 km^2 divided into 22 regencies/cities. Administratively, NTT is located at 800-1200 South Latitude and 11800-12500 East Longitude. The administrative boundaries of NTT are north of Flores Sea, East of Timor Leste, Maluku and the Banda Sea. South of the Indian Ocean and West of the province of West Nusa Tenggara.

In 2017 the human population in NTT showed a figure of 5.287.302 humans with a composition of 2.619.181 people of the male population and 2.668.121 people of the female population. Of this total, when viewed in terms of the number of households, there are 1.144,8 households in NTT with an average household membership of 4.6 people.

Adequacy of beef stock in NTT: An adequate supply of beef cattle in NTT when linked to the Republik Indonesia of Law about Livestock and Veterinary No. 18 of 2009, where one of them is the production capacity of beef cattle in one year is the accumulation of the number of slaughtering cattle and the number of cattle coming out of the area is only allowed 10% of the total population. Adequacy of beef cattle supply in NTT can be seen in Table 1.

Table 1: Adequacy of beef supply in NTT

Years	Cattle population (tails)	Cattle slaughtering		Total cut (tails)	Cut from population (%)
		Cut in the slaughterhouse (tails)	Cut outside the RPH (tails)		
2000	485.329	24.565	2.056	26.621	5.49
2001	495.051	26.211	2.115	28.326	5.72
2002	502.589	29.703	2.970	32.673	6.50
2003	512.999	26.078	2.970	29.048	5.66
2004	522.929	33.427	6.684	40.111	7.67
2005	533.710	40.695	8.834	49.529	9.28
2006	544.482	40.156	8.031	48.187	8.85
2007	555.383	40.958	8.195	49.153	8.85
2008	573.461	41.805	8.361	50.166	8.75
2009	577.552	43.215	10.836	54.051	9.36
2010	600.923	42.226	8.448	50.674	8.43
2011	778.633	58.066	11.855	69.921	8.98
2012	814.450	60.583	12.126	72.709	8.93
2013	803.450	61.571	12.315	73.886	9.20
2014	865.731	64.758	12.952	77.710	8.98
2015	902.326	68.326	13.664	81.990	9.09
2016	930.997	69.121	13.823	82.944	8.91
2017	1.007.608	68.252	13.650	81.902	8.13
2018	1.030.523	69.243	13.295	82.538	8.01
2019	1.041.023	69.232	13.321	82.553	7.93

Processed from the East Nusa Tenggara Provincial Livestock Services Report

Table 2: Production and consumption of beef in NTT, 2000-2019

Years	Cattle population (tails)	Human population (person)	Beef production (kg)	Beef consumption (kg/capita/year)
2000	485.329	3.808.477	5.581.284	1.47
2001	495.051	3.888.735	5.693.087	1.46
2002	502.589	3.888.735	5.779.774	1.49
2003	512.999	4.088.058	5.899.489	1.44
2004	522.929	4.188.774	6.013.684	1.44
2005	533.710	4.260.294	6.137.665	1.44
2006	544.482	4.355.121	6.261.543	1.44
2007	555.383	4.448.873	6.386.905	1.44
2008	573.461	4.534.319	6.594.802	1.45
2009	577.552	4.619.655	6.641.848	1.44
2010	600.923	4.683.827	6.910.615	1.48
2011	778.633	4.788.600	8.954.280	1.87
2012	814.450	4.871.200	9.366.175	1.92
2013	803.450	4.954.000	9.239.675	1.87
2014	865.731	5.036.900	9.955.907	1.98
2015	902.326	5.120.100	10.376.749	2.03
2016	930.997	5.203.514	10.706.466	2.06
2017	1.007.608	5.287.302	11.587.492	2.19
2018	1.030.523	5.291.003	9.491.870	1.79
2019	1.041.023	5.321.043	9.493.595	1.78

Processed from the East Nusa Tenggara Provincial Livestock Services Report

Beef consumption level in NTT: Calculation of beef consumption in Indonesia does not yet have a standard. Cattle importer's association, fattening cattle and researchers still disagree about the calculation of beef consumption. The implication is that there is no agreement on national beef needs. The researchers used the beef consumption reference based on the consumption of 13 types of food products that use beef as processed products and refer to data on public consumption, especially, households from the National Socio-Economic Survey as well as the level of consumer participation in a commodity[6].

Beef commodity as a processed product is a commodity that has a consumption participation rate reach to 100% indeed it is appropriate to use the total population as a denominator of per capita consumption per year, so, to calculate the level of beef consumption in NTT seen by calculating cattle slaughter and the average weight of cattle be converted to the amount of beef production.

The average body weight of cattle that cut in the slaughterhouse is 115 kg per cattle. The average slaughter of cattle in a slaughterhouse is 55.533 cattle per year. For more details can be seen in Table 2.

DISCUSSION

The data in Table 1 shows that the percentage of cattle slaughtering to the total population of cattle in NTT is still below 10% in variations of slaughtering from 5.49-9.36% of the total cattle population in NTT. The lowest percentage of cattle slaughtering for beef sufficiency in NTT occurred in 2000 and the highest occurred in 2009.

Cattle slaughter that occurs outside of the slaughterhouse shows an increase from year to year.

Slaughter of cattle outside the slaughterhouse allows for productive slaughter of female cattle due to government supervision which is also still weak. This is also reinforced by information from cattle butchers that slaughter of female cattle in a slaughterhouse can reach 99% every day. This shows that weak supervision of the prohibition of productive female cutting in the slaughterhouse has a negative impact on the supervision of the prohibition of productive female cutting outside the slaughterhouse.

In general, the availability of cattle in NTT to be slaughtered as a provider of beef availability has not yet been over slaughtered where is still below 10%. But the role of the government to limit the slaughter of productive females in the slaughterhouse and outside the slaughterhouse is very expected considering the development of cattle population per year which is not optimal

The level of beef consumption in NTT is 2.19 kg/capita/year and when compared to the national level of beef consumption in 2016 of 2.61 kg/capita/year, it is much lower than the national level of beef consumption. This shows that the average level of consumption of beef per capita in the NTT region is related to the level of welfare of the community. The NTT region is a region with a poverty level number 3 after the provinces of Papua and West Papua. This condition causes the level of consumption of animal protein from beef is very low. Everyone needs a daily protein intake of at least 50 g per day or 18,25 kg/capita/year[2]. Consumption of protein in the human population of Indonesia and NTT in particular, is still very low, reaching only 12% per year of the total protein requirements needed by each person. Lack of protein intake that is lacking in NTT causes the prevalence of malnutrition in the human population of NTT, especially, children is very high[3].

CONCLUSION

Cattle slaughtering to fulfill the needs of meat consumption for humans in NTT is increasing from year to year in line with the rate of population growth and people's lifestyle. Slaughtering is still within the limits of legislation which is under 10% of the total cattle population in NTT. But the slaughter of these animals has not met the standards of nutrition and animal protein needs. This is because the consumption of protein from beef products in NTT only reaches 12% of the total ideal protein requirement for each person.

SUGGESTION

Suggestion from this research is the role of government in supervising slaughter of cattle outside the slaughterhouse and in slaughterhouse needs to be improved because slaughtering of a productive female is still very high. Cutting productive females if not prevented will have an impact on the decrease of the cattle population due to the absence of a parent. This research has not included livestock expenditure data from NTT due to limited information and further research on this information is very important, given the percentage of cattle slaughter increases each year and reach to 10% and if added to livestock expenditure data there is the potential for cattle population pressure which can have an impact on degradation cattle population. The role of NTT as a livestock export area will change to a domestic production area if it is not prevented from now on.

REFERENCES

01. Ilham, N., B. Wiryono, I.K. Karyasa, M.N.A. Kirom and S. Hastuti, 2001. [Analysis of supply and demand for leading livestock commodities]. Center for Agriculture Socio Economic Research, Bogor, Indonesia. (In Indonesian)
02. Riwukore, J.R. and F. Habaora, 2018. [Beef Cattle Production System]. Deepublish Press, Yogyakarta, Indonesia, (In Indonesian).
03. Riwukore, J.R., H. Manafe and F. Habaora, 2019. [Strategies for handling stunting risk in Indonesia (Case study in Kupang City, Nusa Tenggara Timur province, Indonesia) (In Indonesian)]. Int. J. Latest Res. Hum. Social Sci. (IJLRHSS.), 2: 17-25.
04. Sukada, I.K., I.W. Subrata and I.G. Suarta, 2016. [Potential of beef cattle, dairy cows and buffaloes as meat producers in the province of East Nusa Tenggara (In Indonesian)]. Anim. Husbandry Sci. Mag., 19: 101-104.
05. Soedjana, T.D., 2016. [Supply, demand and consumption of livestock products in Indonesia (In Indonesian)]. J. Agro Econ. Res. Forum, 15: 17-34.
06. Soedjana, T.D., 2013. [Participation in consumption as a measure of meat food security status (In Indonesian)]. J. Wartazoa, 23: 166-175.