JURNAL GEOGRAFI
https://journal.unnes.ac.id/nju/index.php/JG

Management of the Potential of the National Livestock Barn in the Napan TTU Border Area with a Sociogeographic Approach

Bella Theo Tomi Pamungkas [1)] Fernando Saragih [2)] Vanida Mundiarti [3)]

[1,2,3]Departement of Geography Education, Nusa Cendana University,Indonesia

Article Info

Article History
Submitted 2024-10-03
Revised 2024-11-27
Accepted 2024-11-29

Keywords
Potential livestock barn, border area, FGD, Napan Village

Abstrak

Pentingnya pengembangan wilayah perbatasan sebagai salah satu program yang dijalankan oleh pemerintah harus didukung oleh potensi yang ada. Peternakan merupakan salah satu penyumbang pendapatan terbesar bagi masyarakat di Desa Napan. Belum adanya lokasi sebagai potensi pengembangan lumbung ternak di Desa Napan menjadi suatu permasalahan. Maka perlu dilakukan penentuan wilayah sebagai potensi pengembangan lumbung ternak di Desa Napan. Penelitian ini termasuk penelitian mix method dan metode menggunakan forum group discussion (FGD) dan IDW. Key informan yaitu Kepala Desa Napan dan masyarakat. Kesimpulan dari penelitian ini menunjukkan bahwa pengembangan lumbung ternak di Desa Napan cukup besar karena didukung oleh jumlah dan jenis ternak yang beragam dan masyarakat sepakat untuk mengembangkan lumbung ternak di sana. Lokasi pengembangan lumbung ternak diperoleh seluas 2,11 km^2. Potensi yang besar tersebut dapat menjadikan Desa Napan sebagai potensi pengembangan di wilayah perbatasan khususnya di bidang peternakan. Selain itu untuk mengatasi masalah penjualan ternak secara ilegal perlu dibangun posko-posko pengawasan di wilayah perbatasan sehingga angka kejadian dapat ditekan.

Abstract

The importance of developing border areas as one of the programs run by the government must be supported by existing potential. Livestock is one of the largest contributors to income for the community in Napan Village. The absence of a location as a potential for developing livestock barns in Napan Village is a problem. Therefore, it is necessary to determine whether the area has a potential for developing livestock barns in Napan Village. This study includes mixed-method research and methods using forum group discussions (FGD) and IDW. Key informants are the Head of Napan Village and the community. The conclusion of this study shows that the development of livestock barns in Napan Village is quite large because it is supported by the number and types of diverse livestock and the community agrees to develop livestock barns there. The location for developing livestock barns is obtained as wide as 2.11 km2. This great potential can give Napan Village the potential for development in border areas, especially in the field of livestock. In addition, to overcome the problem of illegal livestock sales, it is necessary to build surveillance posts in border areas so that the number of incidents can be suppressed.

E-mail: bella.pamungkas@staff.undana.ac.id

p-ISSN 2549-3078 e-ISSN 2549-3094

INTRODUCTION

Livestock directly contributes to the livelihoods and food security of nearly a billion people, and in developing countries, the meat and dairy sectors have grown at average annual rates of 5.1 percent and 3.6 percent, respectively, since 1970 (Robinson et al., 2014). Livestock accounts for up to half of the technical potential of the agriculture, forestry and land-use sectors, through management options that sustainably intensify livestock production, promote carbon sequestration in pastures and reduce emissions from manure, as well as through reducing demand for livestock products (Herrero et al., 2016). Livestock is linked to climate change in several domains: livestock emits greenhouse gases (GHGs), agricultural practices can also contribute to GHG sequestration, livestock can produce products that displace fossil fuels, and livestock systems are affected by climate change, are vulnerable to it and need to adapt to it, all at varying degrees (Rivera-Ferre et al., 2016).

The study of livestock and its ecosystems along the geographical gradient of a country is gradually becoming increasingly important; taking into account the continuous increase in human settlement on land, climate and environmental changes, and improved agricultural practices for cereal crop production; to support resource-based production planning (Khan, 2017). Livestock is an important activity in a region, but livestock sustainability assessments tend to focus primarily on environmental and economic dimensions; therefore, these assessments may be limited because they do not fully consider various socio-geographic aspects (Ryschawy et al., 2017). The socio-geographic research system is a structural part of the community environment and the role of the region is determined by metric and topological features (Bilous, 2022).

Since 2018, East Nusa Tenggara Province has been the main supplier of cattle to other regions in Indonesia(Priyanto, 2017). Timor Tengah Utara (TTU) s one of the regencies in East Nusa Tenggara Province (NTT) which is a livestock base area based on community livestock (Simamora & Matoneng, 2024). This is in line with the goal of the North Central Timor Regency Government, namely to increase the processing industry for agricultural, livestock and fisheries products (Feka, 2024). Napan is one of the villages in TTU Regency located on the border in the land border area of the Unitary State of the Republic of Indonesia (RI) - the Democratic Republic of Timor Leste (RDTL). Various potential conflicts in North Central Timor Regency (TTU) can disrupt order and security, and hinder development in border areas, one of which is in Napan Village (Julqurniati & Susanty, 2019). The importance of managing livestock barns in Napan Village is the fulfillment of government programs. Namely, the development of border areas is an important part of the national medium-term plan agenda which aims to strengthen the integrity and sovereignty of the region and improve community welfare (Yudha & Dina, 2020). So village development on the border is integrated with national development missions such as (a) maintaining the integrity and sovereignty of the region, (b) national security defense, and (c) improving the welfare of village communities (Arifianto, 2014). This study is to determine the appropriate location to be used as a livestock barn, so that the national development mission related to improving the welfare of village communities can be achieved.

METHODS

This research was conducted in Napan Village, North Bikomi District, North Central Timor Regency. Napan Village is located in North Bikomi District, North Central Timor Regency, East Nusa Tenggara Province, with an area of 5.68 km2 (Napan, 2023).

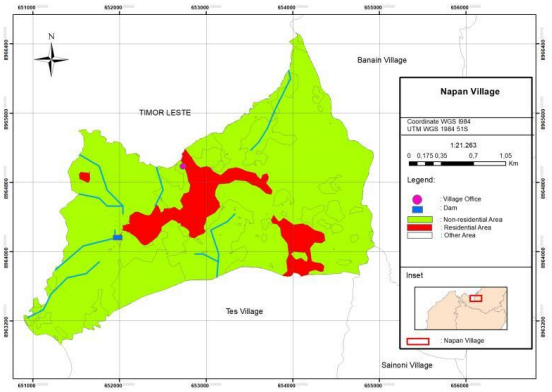

Figure 1. Napan Village

This research is a qualitative This research is a qualitative with a phenomenological approach and quantitative research. The data used in this study are primary data and secondary data. Primary data were obtained from the interviews conducted in Focus Group Discussions (FGD) with community and from observations related to the conditions of Napan

Village. In FGD, a phenomenological approach method is required which attempts to reveal the substantive meaning of an event (Sya'bani, 2017). Secondary data used in this study are administrative maps, Napan Village monographic data, sentinel 2 imagery and demnas data which will be used in map processing. In this study, after the delimitation of the area based on the land cover map, the next step is to use the location value scoring obtained from making a 250 m x 250m grid. The following is the scoring table:

Table 1. Point Location Score Based on Matching and FGD Results

Criteria	Score
Cannot be used as a livestock barn (Slope class 3-5, laterite soil type, land cover in the form of settlements and forests, not crossed by rivers)	1
Can be used as a livestock barn but prone to illegal livestock trade (Slope class 1-2, land cover in the form of grass, cambisol soil type, crossed by rivers, prone to illegal livestock trade)	2
Can be used as a livestock barn and safe (Slope class 1-2, land cover in the form of grass, cambisol soil type, crossed by rivers, safe from illegal livestock trade)	3

Source: Nowar et al., (2015), Susilo et al., (2019), Awalin Khusnawati & Kusuma (2020)

Data interpolation is done based on scoring from table 1. Furthermore, to obtain information, Focus Group Discussion (FGD) is conducted in groups. The FGD method is a way to obtain data or information from an interaction between informants or respondents based on the results of discussions in a group with the aim of solving a particular problem (Mashfufa, 2018). The approach used is to match the data that has been processed in the form of a grid related to conditions in the community's view (such as prone to crime and so on). FGD activities in this study were carried out on a village scale, namely in Napan Village which was attended by the Napan Village community.Through FGD, it is hoped that data and problem solving related to the management of livestock barn potential can be obtained, especially every development activity must pay attention to socio-cultural values in developing the potential of an area (Saefatu & Rahmawati, 2023). The results of the FGD activities in the form of basic information on the potential of livestock barns in Napan Village were then subjected to qualitative descriptive analysis. The recapitulation of the FGD results was then supplemented with spatial information in the form of location or area information that could be used as livestock barns. The results of the analysis illustrate the spatial data analysis of the potential for livestock barns in Napan Village. The research flow diagram can be seen in the image below:

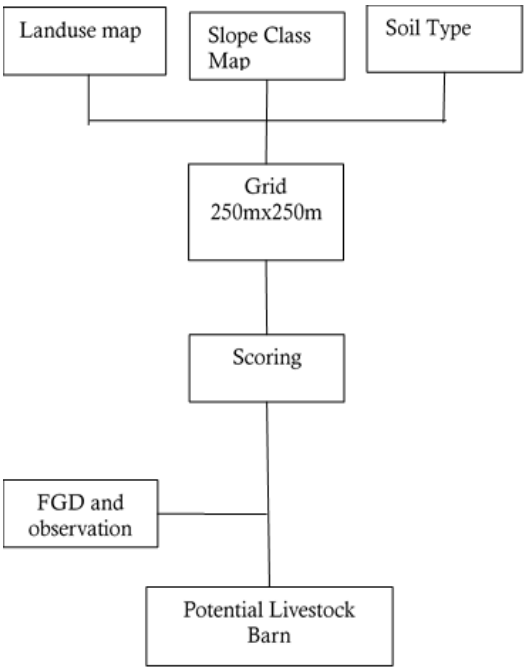

Figure 2. Flow Chart

RESULTS AND DISCUSSION

1. Livestock in Napan Village

In rural areas, most of them are used as agricultural/plantation areas in the narrow sense and in the broad sense which includes agriculture, forestry, animal husbandry, and fisheries as the livelihoods of most of the population (Banowati et al., 2018). Just like in Napan Village where the largest livelihood of the population is in the livestock sector. Napan Village is one of the villages in North Central Timor Regency whose main sectors are agriculture and livestock. The following is livestock data in Napan Village:

Table 2. Livestock in Napan Village

Type	Number
Cow	713
Buffalo	0
Pork	481
Chicken	907
Broiler Types	0
Duck	31
Horse	12
Goat	687

Source: Research Results, 2024

Based on table 2, Stock in Napan Village are native chickens, with total 907, followed with cows with a total of 713, and goats 687.

2. Potential Locations for Livestock Barn Development

The potential location for livestock barn development is carried out by analyzing geographical aspects such as: slope class, soil type, and land cover. First, the creation of slope class maps is obtained from the analysis of Dem data using raster analysis (slope) which is then input into the van Zuidam classification (Rahmawati, A., 2021). Based on the research results, Napan Village is located at the altitude of 0-700 meters above sea level with a slope class of 1 until class 4.

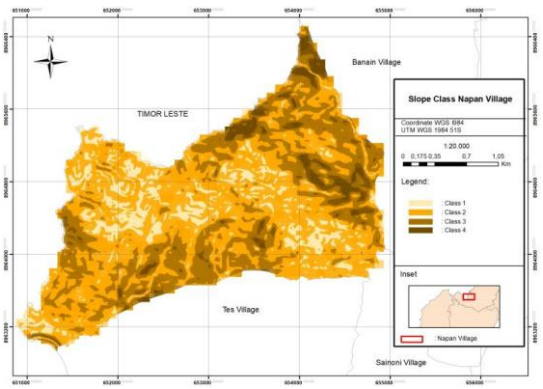

Figure 3. Slope Class

From **Figure 3**, it is known that the area of class 1 slope is 78.91 ha, class 2 is 346.9 ha, class 3 is 196.7 ha and class 4 is 44.9 ha. Areas with gentle slopes or class 1-2 slopes are areas that can be used for livestock development (Nurkholis et al., 2018). From Figure 3 the area of slope classes 1 and 2 is 425.81 ha. The type of soil in Napan Village is Cambisol ustic soil. Cambisol ustic soil is soil with a slightly acidic to alkaline pH with a fairly fine to medium texture (Susanti et al., 2020). Soil with a cambisol ustic texture can be used for the development of animal feed crops (Manuputty et al., 2018). Based on the slope class and soil type, the location of Napan Village can be used as a location for a livestock barn.

Furthermore, to find out the potential of livestock barns, of course, land cover data is also used to find out the water sources that flow into the area. The following is a picture of a land cover map in Napan Village:

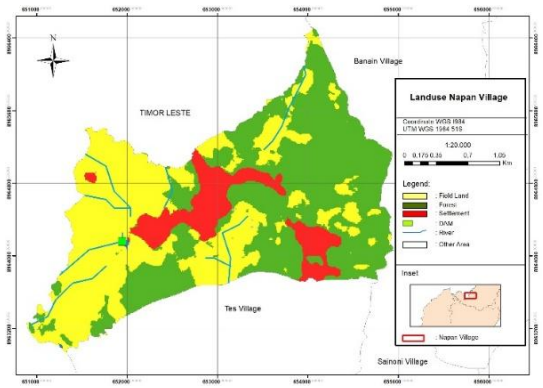

Figure 4. Landuse in Napan Village

Based on Figure 4, a 250m x 250m grid was then created to determine the potential of the location as a livestock barn.

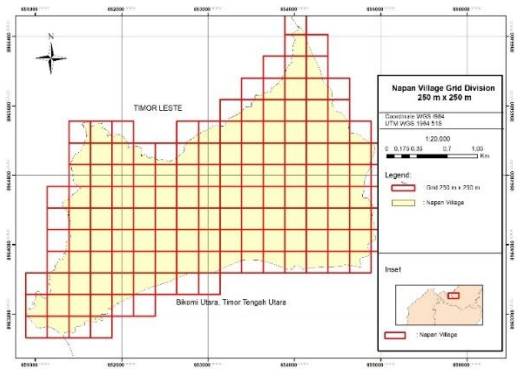

Figure 5. Grid Divission

Based on Figure 5, it is known that there are a total of 140 grids. From the grid, scoring was carried out based on the criteria on table 1 (such as slope, type of soil, and landuse) from mapping results and supporting data from FGD with the village community (types of plants and conditions in the field such as crime), then interpolation was carried out with IDW Spatial and the results are as follows:

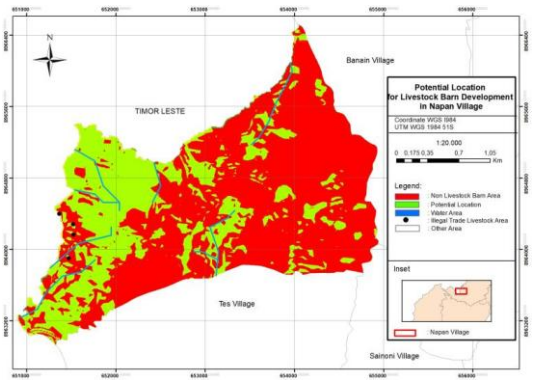

Figure 6. Potential Location for Livestock Barn Development in Napan Village

Next, from Figure 6, the area is calculated as follows:

Table 3. Potential Area for Livestock Barn Development

Information	Area (km^2)
Livestock Barn Development	2,11
Non-Livestock Barn Development	3,34
Prone to Illegal Livestock Sales	0,23

Source: Research Results, 2024

The results of the mapping of slope classes, soil types, land cover, and FGD results show that the potential location of livestock pens is in the western part of Napan Village because it is a grassland area. land cover in the grassland area based on additional information from the Head of Napan Village, Wedelinus Kefi said that Napan Village is rich in legume grass plants that are usually used by residents for animal feed. Legumes themselves provide benefits in improving the condition of the body score of productive mothers during the dry season and increasing reproductive performance (in cattle) (Hau & Nulik, 2017).

The villagers are very hopeful that the plan for Napan Village to become a location for developing potential livestock barns will increase the income of the villagers and reduce the level of illegal livestock trade in the border area. Illegal livestock sales occur because the location borders Timor Leste. To overcome this, it is necessary to build monitoring posts in areas prone to illegal livestock sales.

CONCLUSION

The potential for developing livestock barns in Napan Village is quite large because it is supported by the large number and types of livestock as well as the appropriate slope class, soil type and land cover. The location for developing livestock barns is 2.11 km^2 with Leguminosae plants that are widely found in Napan Village. This great potential can make Napan Village a potential development area in the border area. In addition, it is necessary to build surveillance posts in the border area to suppress the level of illegal livestock trade.

REFERENCES

Arifianto, S. (2014). *Initiating " Desa Informasi " in the Borderline*. *5*, 20.

Awalin Khusnawati, N., & Kusuma, A. P. (2020). Sistem Informasi Geografis Pemetaan Potensi Wilayah Peternakan Menggunakan Weighted Overlay. *Jurnal Mnemonic*, *3*(2), 21–29. https://doi.org/10.36040/mnemonic.v3i2.2788

Banowati, E., Indriyanti, D. R., & Juhadi, J. (2018). Pengembangan Model Pemanfaatan Lahan Di Bawah Tegakan (Pldt) Untuk Pengentasan Kemiskinan Dan Realisasi Ketahanan Pangan Di Kabupaten Pati. *Jurnal Geografi*, *15*(1), 7–15. https://journal.unnes.ac.id/nju/index.php/JG/article/view/15266

Bilous, Y. V. B. (2022). Горизонти науки. *Часопис Соціально-Економічної Географії*, *March*.

Feka, G. T. (2024). PELAKSANAAN FUNGSI BADAN PERENCANAAN PEMBANGUNAN DAERAH KABUPETAN TIMOR TENGAH UTARA DITINJAU DARI PERATURAN DAERAH KABUPATEN TIMOR TENGAH UTARA NOMOR 9 TAHUN 2008 TENTANG ORGANISASI DAN TATA KERJA BADAN PERENCANAAN PEMBANGUNAN DAERAH, INSPEKTORAT DAN LEM. *Petitum Law Journal*, *1*(2), 177–188. https://doi.org/https://doi.org/10.35508/pelana.v1i2.14155

Hau, D. H. K., & Nulik, J. (2017). *Kajian Pengembangan dan Pemanfaatan Tanaman Pakan Leguminosa Mendukung Peningkatan Produksi Ternak Sapi di Nusa Tenggara Timur*. *August 2017*, 585–594. https://doi.org/10.14334/pros.semnas.tpv-2017-p.587-596

Herrero, M., Henderson, B., Havlík, P., Thornton, P. K., Conant, R. T., Smith, P., Wirsenius, S., Hristov, A. N., Gerber, P., Gill, M., Butterbach-Bahl, K., Valin, H., Garnett, T., & Stehfest, E. (2016). Greenhouse gas mitigation potentials in the livestock sector. *Nature Climate Change*, *6*(5), 452–461.

https://doi.org/10.1038/nclimate 2925

Julqurniati, N., & Susanty, D. I. (2019). Perbatasan Darat Republik Indonesia-Republik Demokratik Kabupaten Timor Tengah Utara Provinsi Nusa Tenggara Timur). *Jurnal Analisa Sosiologi*, *8*(April), 58–78.

Khan, H. K. M. (2017). geographic distribution of livestock and poultry in Bangladesh. *Bangladesh Journal Of Animal Science*, 65–81.

Manuputty, J., Gaspersz, E. Y., & Talakua, S. M. (2018). Evaluasi Kemampuan Lahan Dan Arahan Pemanfaatan Lahan Di Daerah Aliran Sungai Wai Tina Kabupaten Buru Selatan Provinsi Maluku. *Agrologia*, *3*(1). https://doi.org/10.30598/a.v3i1.261

Mashfufa, E. W. (2018). Efektifitas FGD (Focus Group Discussion) Tentang Kekerasa pada Anak Effectiveness of Focus Group Discussion about Violence in Children. *Jurnal Keperawatan*, *9*(1), 11–16. http://ejournal.umm.ac.id/index.php/keperawatan/issue/view

Napan, K. D. (2023). *Data Monografi Desa Napan*.

Nowar, W., Baskoro, D. P. T., & Tjahjono, B. (2015). Analisis Kesesuaian Lahan Komoditas Unggulan Dan Arahan Pengembangannya Di Wilayahkabupaten Cianjur. *Tataloka*, *17*(2), 87. https://doi.org/10.14710/tataloka.17.2.87-98

Nurkholis, A., Widyaningsih, Y., Dyah Rahma, A., Suci, A., Abdillah, A., Aprila Wangge, G., Sari Widiastuti, A., & Ayu Maretya, D. (2018). Analisis Neraca Air Das Sembung, Kabupaten Sleman, Diy. *Jurnal Teknik Sipil Dan Lingkungan*, *2*(3), 457–470. http://doi.org/10.17605/OSF.IO/YMHKG

Priyanto, D. (2017). Strategi Pengembalian Wilayah Nusa Tenggara Timur sebagai Sumber Ternak Sapi Potong. *Jurnal Penelitian Dan Pengembangan Pertanian*, *35*(4), 167. https://doi.org/10.21082/jp3.v35n4.2016.p167-178

Rahmawati, A., B. T. (2021). Pemetaan Tingkatan Cuaca Ekstrim. *Pemetaan Tingkatan Cuaca Ekstrim Masing-Masing Kecamatan Di Kota Kupang*, *2*, 1–10.

Rivera-Ferre, M. G., López-i-Gelats, F., Howden, M., Smith, P., Morton, J. F., & Herrero, M. (2016). Re-framing the climate change debate in the livestock sector: mitigation and adaptation options. *Wiley Interdisciplinary Reviews: Climate Change*, *7*(6), 869–892. https://doi.org/10.1002/wcc.421

Robinson, T. P., William Wint, G. R., Conchedda, G., Van Boeckel, T. P., Ercoli, V., Palamara, E., Cinardi, G., D'Aietti, L., Hay, S. I., & Gilbert, M. (2014). Mapping the global distribution of livestock. *PLoS ONE*, *9*(5). https://doi.org/10.1371/journal.pone.0096084

Ryschawy, J., Disenhaus, C., Bertrand, S., Allaire, G., Aznar, O., Plantureux, S., Josien, E., Guinot, C., Lasseur, J., Perrot, C., Tchakerian, E., Aubert, C., & Tichit, M. (2017). Assessing multiple goods and services derived from livestock farming on a nation-wide gradient. *Animal*, *11*(10), 1861–1872. https://doi.org/10.1017/S1751731117000829

Saefatu, J. F., & Rahmawati, A. (2023). Peran Masyarakat Terhadap Konservasi Daerah Aliran Sungai (Das) Bagian Hilir Desa Noelmina Kecamatan Takari Kabupaten Kupang. *Jurnal Geografi*, *19*(2), 110–126. https://doi.org/10.35508/jgeo.v19i2.14056

Simamora, T., & Matoneng, O. W. (2024). Karakteristik Peternak, Sifat dan Proses Adopsi Inovasi Peternakan Sapi Potong di Kabupaten Timor Tengah Utara (TTU). *Jas*, *9*(1), 11–19. https://doi.org/10.32938/ja.v9i1.5429

Susanti, B. T., Rochaddi, B., Suryono, C. A., & Irwani, I. (2020). Kontaminasi pestisida organofosfat dan logam berat pada airtanah di Wilayah Pantai Utara Jawa Tengah dan Jawa Timur. *Jurnal Kelautan Tropis*, *23*(3), 341–348. https://doi.org/10.14710/jkt.v23i3.9398

Susilo, B., Hatta, G. M., Badaruddin, B., & Kadir, S. (2019). Evaluasi Pemanfaatan Penggunaan Lahan Berbasis Pola Ruang Kawasan Budidaya Kabupaten Hulu Sungai Utara. *EnviroScienteae*, *15*(2), 166. https://doi.org/10.20527/es.v15i2.6946

Sya'bani, M. A. Y. (2017). UPAYA MENINGKATKAN KEAKTIFAN MENYATAKAN PENDAPAT MAHASISWA PENDIDIKAN AGAMA ISLAM MELALUI FOCUS GROUP DISCUSSION (FGD) DALAM MATA KULIAH PROFESI KEGURUAN (Studi Kasus Implementasi Program Lesson Study pada Mahasiswa Pendidikan Agama Islam Fakultas Agama I. *Tamaddun Jurnal Pendidikan Dan Pemikiran Keagamaan*, *14*(1), 5–24.

Yudha, E. P., & Dina, R. A. (2020). Pengembangan Potensi Wilayah Kawasan Perbatasan Negara Indonesia (Studi Kasus: Ranai-Natuna). *Tata Loka*, *22*(3), 366–378. https://doi.org/10.14710/tataloka.22.3.366-378