

ANALYSIS OF SPATIAL ENVIRONMENTAL CARRYING CAPACITY BASED ON SUSTAINABLE FOOD SECURITY IN PRINGSEWU DISTRICT

Dedy Miswar¹, Agus Suyatna², Muhajir Utomo³

¹Student of the Doctoral Program in Environmental Sciences at the Lampung University
Postgraduate Program

²Main Promoter

³Co Promoters

Email: de_miswar@yahoo.com. correspondent: 081369270577

ABSTRACT: Non-agricultural land needs tend to increase. This encourages the conversion of agricultural land and if not controlled it can threaten food security. This study aims to analyze spatially the carrying capacity and capacity of the environment based on food security. Provider ecosystem services, regulatory ecosystem services, cultural economic services, and supporting ecosystem services are the research variables used by considering land use, population size, and economic growth. The method used is interpretation by delineating SPOT 6 satellite imagery in 2016, surveying and scoring the variables used. Data analysis was descriptive qualitative with a spatial approach through scoring and overlaying spatial data. The results are in the form of a map of regional distribution that has environmental support and capacity based on sustainable food security in the form of recommendations. The conclusions in the study show that the carrying capacity and capacity are expected to provide a recommendation for sustainable food security (LP2B) in Pringsewu District.

Keywords: Carrying capacity, sustainable food agricultural land, data spatial.

1. INTRODUCTION

This study aims to analyze spatially the carrying capacity of environment based on food security. provider ecosystem services, regulatory ecosystem services, cultural economic services, and supporting ecosystem services are used as the basis for carrying out the analysis taking into account aspects of land conversion, population size and economic growth. this is in accordance with the results of research conducted by Miswar et al. (2018) that pringsewu district has a very high carrying capacity. in line with the development of development where, the conversion of land, especially agricultural land, will continue to change while the availability of land is not enough to compensate. besides economic growth and a large population, it will encourage land conversion.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Widjaya (2017) conducted a study of land use change in Pesawaran District, Lampung Province with the aim of describing the distribution of food agriculture, the tendency of food land conversion; identify the causal factors and formulate concepts and strategies for overcoming the conversion of food land. The method used is exploratory and qualitative with the results of the conversion of food land taking a long time, beginning with the transfer of land rights through a relatively low frequency of buying and selling process. Transfer of food land functions is caused by economic factors.

Agung Pratama, et al (2018) conducted a study on the broad potential and sustainable food agriculture (LP2B) reserves in Pesawaran District which refers to the Minister of Agriculture Regulation Number 07 / permentan / OT.140 / 2/2012 and Decree Number 837 / KPTS / II / UM / 8/1980 by overlaying maps of land availability and regional functions. The results showed that the potential of agricultural land and sustainable agricultural land reserves was still high. MF. Anita Widhy Handari, et al. (2012) also conducted a research on the priority of sustainable pagan agricultural protection policies in Magelang Regency. The results of the study were in the form of the implementation of Law Number 41 of 2009 in Magelang Regency until the location identification stage.

Anna Karenina (2016) in her research stated that the Regional Regulations used to regulate land use change had not gone well, rapid changes in paddy fields, and the presence of internal and external factors that greatly influenced the strategy of sustainable food agriculture in Tangerang Regency. This is reinforced by Gesthi Ika Janti (2016) in her research stating that the Bantul Regency Government has not been serious in preparing the policy of Sustainable Food Farming Land Protection policy. So far several studies have been carried out as a basis for drafting regulations. The main obstacle lies in the spatial planning policy that has been prepared previously.

Rossi Prabowo (2010) stated that in order to ensure the sustainability of food security through increasing national food availability, especially rice, while increasing the welfare of farmers, long-term and short-term policies are needed. Based on the results of the research that has been done above, it shows that sustainable food agriculture is very important to be realized, especially the strategies carried out for the conversion of agricultural land so that development can run well.

3. RESEARCH METHODS

The method used in this study is an interpretation by delineating SPOT 6 satellite imagery in 2016, surveys and scoring. The results are in the form of a map of regional distribution that has environmental support and capacity based on sustainable food security in the form of recommendations.

Spatial data scoring and overlay referred to for each ecosystem service environmental carrying capacity through 18 thematic maps that have been made, among others: food provider maps, clean water supply maps, fiber provider maps, energy provider maps, genetic source provider maps, regulatory maps climate, water flow control and flood control maps, prevention and protection maps of natural disasters, water purification maps, waste processing and decomposition maps, air quality maintenance maps, pollination settings maps, pest and disease control maps, place maps residence and living space, recreation maps, natural aesthetic maps, maps of soil formation and fertility maintenance, and nutrient cycle maps based on coefficients formulated by experts based on their land units.

Stages carried out by answering questions to achieve the goal of food security based on environmental carrying capacity based on land use maps and ecoregion maps that produce maps of land units. Then each variable of ecosystem services is given a score producing environmental carrying capacity. These results are analyzed by considering land use, population, and economic growth. To see how the sustainability of sustainable food agriculture is overlaid again with a map of the use of existing rice fields. The final results are in the form of recommendations on how to sustain sustainable food agriculture in Pringsewu Regency.

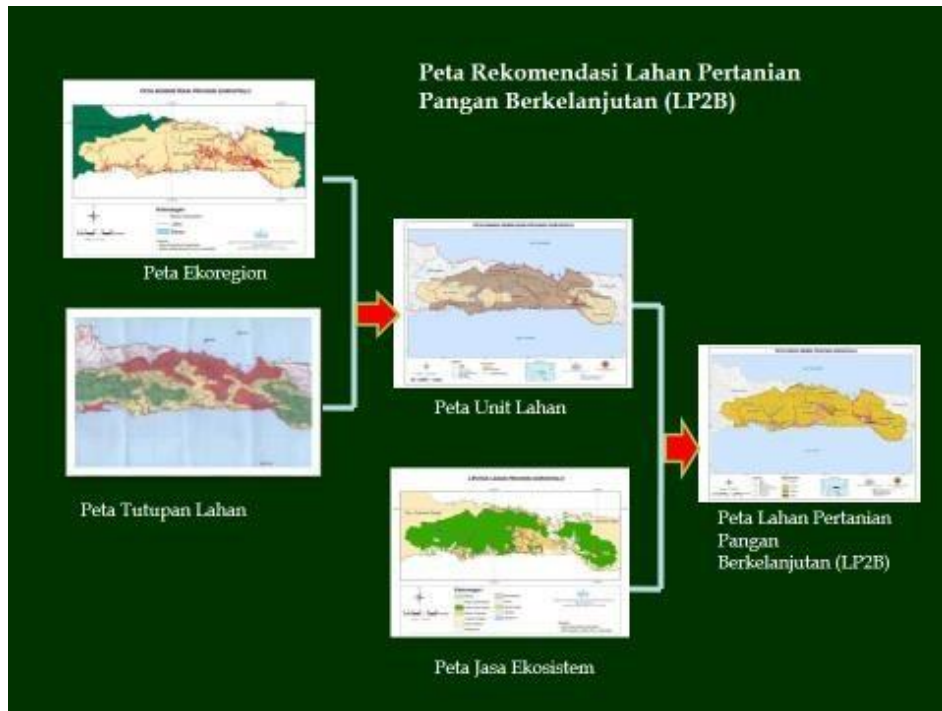


Figure 1. Method of Recommendation for Sustainable Food Agriculture (LP2B)

4. DISCUSSIONS AND ANALYSIS OF RESULTS

Data analysis was descriptive qualitative with a spatial approach through scoring and overlaying spatial data using scoring carried out based on land units resulting from overlaying ecoregion maps and land cover maps. These results are then analyzed by considering land use, population, and economic growth.

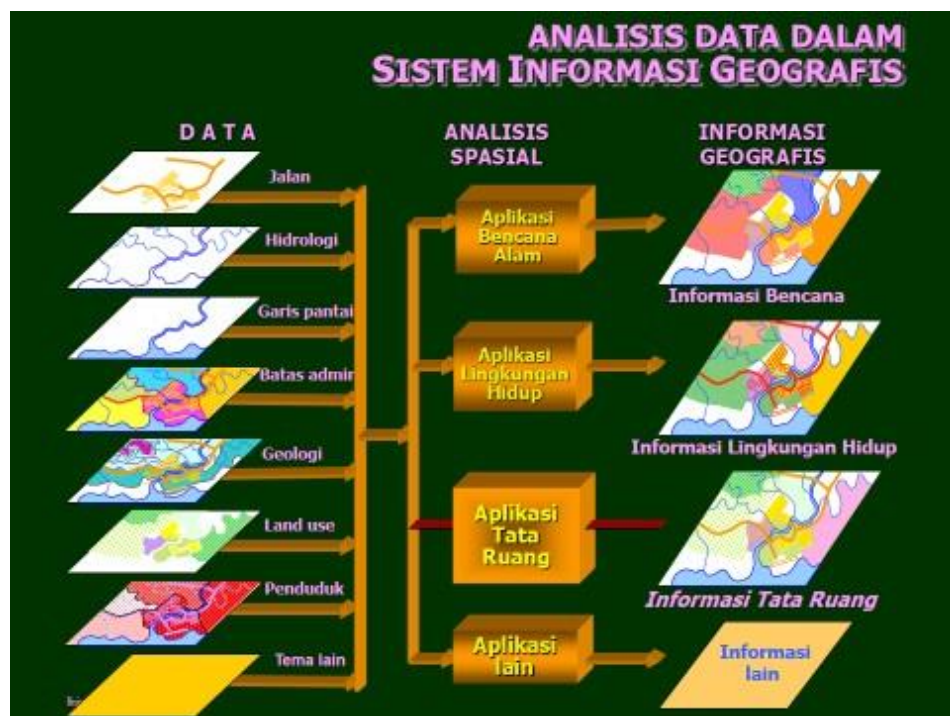


Figure 2. Spatial Data Analysis Method



Figure 3. Spatial recommendations for Sustainable Food Agriculture (LPB2)

5. CONCLUSION

The conclusions in the study show that the carrying capacity and capacity are expected to provide a recommendation for sustainable food security (LP2B) in Pringsewu District.

6. REFERENCES

- Agung Pratama, Et Al. 2018. Spatial Analysis Of Sustainable Food Agriculture Land (Lp2b) In Pesawaran District. Lampung Agricultural Engineering Journal Vol.7, No. 1: 41-50.
- Anna Karenina. 2016. Strategy For The Protection Of Sustainable Food Agriculture In Tangerang Regency. Research Report (Not Published). IPB. Bogor.
- Dedy Miswar, Et Al. (2018). Spatial Analysis Of The Carrying Capacity And Capacity Of The Environment In Pringsewu Regency. Research Report (Journal Process). University Of Lampung. Bandar Lampung.
- Gesthi Ika Janti. 2016. Protection Of Sustainable Food Farming To Strengthen Regional Food Security (Study In Bantul Regency, Special Region Of Yogyakarta). National Defense Journal. Vol. 22, No 1, April 2016: 1-21
- MF. Anita Widhy Handari, Et Al. 2012. Analysis Of Priority Policies For Sustainable Food Agricultural Land Protection In Magelang Regency. Journal Of Ecosciences. Vol. IV. No. 3. November 2012.
- Rossi Prabowo. 2010. Government Policy In Realizing Food Security In Indonesia. Nutrition And Food Journal.
- Sudarma Widjaya. 2017. Transfer Of Food Land Function In Pesawaran District, Lampung Province. ACCULTURATION Available Online: [Http://Ejournal.Unsrat.Ac.Id/Index.Php/Akulurasi](http://Ejournal.Unsrat.Ac.Id/Index.Php/Akulurasi). Vol.5 No.10 (October 2017).

Legal basis

Republic of Indonesia Government Regulation Number 12 of 2012 Concerning Incentive for Sustainable Food Farmland Protection

Republic of Indonesia Government Regulation Number 1 of 2011 Concerning Determination And Transfer Of Sustainable Food Agriculture Land Functions

Government Regulation of The Republic of Indonesia Number 25 of 2012 Concerning Information Systems for Sustainable Food Farming

Republic of Indonesia Government Regulation Number 30 of 2012 Concerning Financing for Sustainable Food Farmland Protection

Law of The Republic of Indonesia Number 41 Of 2009 Concerning Protection of Sustainable Food Agriculture Land.