Bojonegoro Regency Spatial Utilization Evaluation Study

by Agustina Nurul Hidayati

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A B S T R A C T

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Land use that is not comprehensive causes problems in the use of space in Bojonegoro Regency. In fact, land use in Bojonegoro Regency is dominated by production forest land, which is 85,469.38 Ha or 38,4 % of the total land area. This study aims to examine and evaluate the realization of regional development activities and spatial use. This research was conducted by coodinating data and Geographic Information Systems (GIS) and Overlay Techniques. From the result of the polynomial trend analysis, it can be seen that there are deviations and changes in rice fields into settlements of 65 % of the total area of Bojonegoro Regency.

Preliminary

Space utilization is a series of development programs that utilize space based on the time period set in the regional spatial plan (Kutarga et al., 2008). Utilization of space can function to support the process of sustainable development with wise land use, namely the use of land for protection and cultivation functions. To find out, this development is measured by indicators of the development of an area that can be seen from population growth (Soetomo, 2009 in Ansar, 2021). Therefore, a sustainable perspective should be considered in land use. The sustainable perspective in question emphasizes land use coordination (ecological sustainability), land use profitability (economic sustainability), and land use justice (social sustainability) (Pauline and Andreas, 2009).

Sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their needs (World Commission on Environment and Development, 1987). Sustainable development can also be interpreted as a process of dynamic change from resource exploitation, investment direction, orientation to technological development, and institutional changes carried out according to future and current needs (Rogers et al., 2008). Sustainable development requires three things to grow together, namely economic, socio-cultural, and environmental.

The sustainable use of urban space means seeing the city as an ecosystem. The city as an ecosystem consists of interacting natural, artificial and social ecosystems. Based on this, sustainable use of urban space is the use of space in harmony for the continuity of space as an economic, socio-cultural, and ecological function (Mukaryanti et al., 2006). In addition, the implementation of spatial planning must be well integrated from planning, utilization to

controlling space. In this case the use of space in accordance with the spatial plan and orderly in its control can realize community welfare and sustainable environmental protection (Djakapermana et al., 2005).

The incompatibility of land use with spatial planning is feared to reduce the physical capabilities of the land and can threaten the sustainability of resources (Kurnianti, 2015). Inconsistencies or violations that occur can be caused by several factors, including pressure from market developments on space, unclear control mechanisms, and weak law enforcement, where such deviations can occur because spatial planning products do not pay attention to aspects of space utilization implementation. or vice versa less space utilization. pay attention to the spatial plan (Bakar, 2008). Because errors in the preparation of spatial plans will manage various problems in the middle of the city, such as irregular settlements, changes in the use of critical land that do not meet conservation requirements, and even lead to conflicts (Robert, 2016).

Utilization of space must refer to a comprehensive spatial arrangement, so that space can be utilized optimally while adhering to the principle of sustainability. Spatial planning includes planning utilization and control of space utilization. According to Law Number 26 of 2007 concerning Spatial Planning, "Controlling the use of space is an effort to realize an orderly spatial layout". These instruments include stipulation of zoning regulations, permits, provision of incentives and disincentives, and imposition of sanctions (Ministry of Public Works 2007). Although in the laws and regulations several instruments for controlling the use of space have been established, in practice there are still deviations in the use of space that are not in line with the RTRW.

.Various obstacles faced by the Government of Bojonegoro Regency in realizing regional development in accordance with the regional spatial plan are caused by operational, administrative, technical factors and market development demands. Therefore, it is very important to evaluate the product of the spatial plan. This evaluation activity is emphasized on space utilization activities which are part of space utilization monitoring activities.

Methodology

Evaluation of the spatial use of Bojonegoro Regency was carried out using the method of discussion and coordination with surveys in the form of interviews and mapping. the description is as follows.

1. Develop methodologies, work consolidation and work plans in accordance with the aims and objectives of the scope of activities. coordinate with the Bojonegoro district government and provide a base map and collect district information and data related to land use.

2. Prepare a basic map of land use in Bojonegoro Regency obtained through the Public Works Department of Highways and Spatial Planning of Bojonegoro Regency.

Primary data collection was obtained by surveyors during the data collection process using in-depth interviews, documentation and observations of organizational management conducted by the Department of Communications and Information Technology of Bojonegoro Regency. Then a survey design will be prepared for the purpose of identifying land use conditions.

Secondary data collection was carried out by collecting data from the Public Works Department of Highways and Spatial Planning of Bojonegoro Regency. Field survey activities are intended to collect secondary data in the form of a base map of Bojonegoro Regency. Then the land cover classification was carried out based on the land cover classification hierarchy at various scales according to SNI 7645-1:2012 on land cover classification.

In carrying out land use evaluation activities, it is carried out with a geospatial

approach that utilizes Geographic Information Systems (GIS). Geographic Information System is an information system designed to manage data related to geographic or spatial coordinates (Light, 1993 in Haurissa, 2019). GIS is a software or hardware system, data, people, organizations, and institutions that collect, provide, analyze, and summarize information covering the earth's area in the form of spatial and tabular data (Chrisman, 1997 in Haurissa, 2019).

In this study, GIS is used to analyze such an overlay technique which is often called spatial analysis. GIS uses spatial analysis methods, land resource balance analysis, and land suitability analysis. The following is an overlay technique in evaluating land use.
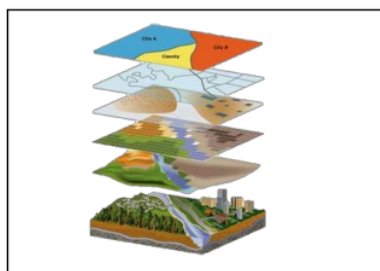

Figure 1. Overlay Process On Map

The analysis process is carried out by overlaying maps, comparing data and information. Comparison of data and information is used to analyze data derived from the contents of the Regional Regulation on RTRW and documents submitted by the related OPD. This comparison is done by calculating based on the value scale that has been set for these loads and the weights for each aspect of spatial planning. evaluation of the spatial structure and spatial pattern after the assessment is carried out, then the weighting is carried out. weighting is done by using the binary number system (0 or 1).

Results and Discussion

Land use in Bojonegoro Regency is dominated by production forest land, covering an area of 85,469.38 Ha or 37.4% of the total land area. The total population is 1,324,336 people or 415,733 families consisting of 666,727 men and 657,609 women.

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Bojonegoro Regency's economic growth in 2018 reached 7.4% (without oil and gas) and 12.3% (with oil and gas). The economic growth of Bojonegoro Regency in 2018 was the highest compared to all regencies/cities in East Java Province and also the highest when compared to East Java's economic growth of 3.3%. However, these efforts still need to be improved, especially for non-oil and gas economic growth through optimization of the basic sector, namely agriculture.

The leading sectors and commodities owned by Bojonegoro Regency are:
1. Agriculture, Horticulture, Plantation, Livestock, and Fisheries;
2. Creative industry sector;
3. Oil and Gas Sector;
4. Tourism Sector.

Table 1. Land Use of Bojonegoro Regency in 2017

Existing Land Use	Land Area (Ha)
Badan Air	572,79
Protected Forest Area	1269,37
Production Forest Area	85469,38
Industrial Area	139,76

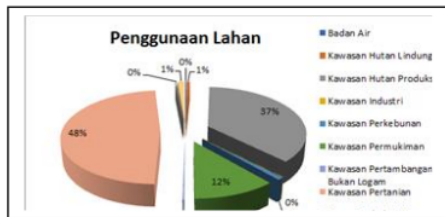|	
Plantation Area	2059,76
Residential Area	26596,99
Non-Metal Mineral Mining Area	514,52
Agricultural Area	111788,67
Green Open Space	471,22
River	3011,43

Source : 2017, image Map Processing

Figure 1. Land Use in Bojonegoro Regency in 2017

Figure 2. Land Use Map of Bojonegoro Regency

1. Protected Area

The pattern of using protected area space aims to realize environmental sustainability, increase environmental carrying capacity and maintain the balance of ecosystems between regions in order to support the sustainable development process. Based on these considerations, the planned use of the protected area

a. Directing the function of the protected area which includes the spatial utilization plan that provides protection for the area under

it, the nature reserve area, the local protected area, and the disaster area.

b. Maintain water catchment areas or areas that function hydrologically to ensure the availability of water sources.

c. Controlling the use of space outside the forest area so that the protected area continues to function.

Table 2. Area of Protected Area of Bojonegoro Regency in 2011

Existing Land Use	Land Area (Ha)
KPH Bojonegoro	1.051,40
KPH Parengan	4,3
KPH Padangan	4,4
KPH Jatirogo	-
KPH Cepu	-
KPH Sarada	449,3
KPH Ngawi	-
Jumlah	**1.509,40**

Source : 2017 Image Map Processing

Figure 3. Interpretation of Land Use in Bojonegoro Regency in 2019

The geospatial approach utilizes a geographic information system (GIS). GIS is used to analyze the overlay technique which is often called spatial analysis. GIS uses spatial analysis methods, land resource balance analysis, and land suitability analysis. The overlay in this activity is intended to evaluate the suitability of land use in existing conditions with the spatial pattern plan contained in the RTRW document of Bojonegoro Regency. Where in this evaluation

obtained land use trends and maps of land use deviations as well.

Trend analysis is carried out to see changes from year to year with the data used, namely land use data for 2011, 2015 and 2019. The results of trends in land use changes will later be used as a reference in land evaluation, which in the evaluation of land use is used in addition to land use trends. , use deviation is also used in evaluating land use. Land use trends are carried out with Polynomial Analysis, then to see trends in land use for settlements, for rice fields and for mining.

Based on the results of the polynomial analysis that has been carried out, it can be seen that the trend of land use change in Bojonegoro Regency includes; the trend of changing land use into settlements, the trend of changing land use into rice fields, and the trend of changing land use into mining. In Bojonegoro Regency, which experienced the largest land change trend for settlements was dominated by Bojonegoro Regency, and the highest land change trend for rice fields was dominated by Gayam and Ngasem Districts, and the highest land change trend for Mining was dominated by Kasiman District. and District Sights. Then for the trend of land conversion into settlements, the lowest occurred in Dander and Trucuk Subdistricts, and the lowest trend for land conversion into rice fields was in Ngraho District, and the lowest trend for land use changes to mining. in the district of Gayam.

Land Use Deviation

These deviations can be seen from the comparison between the spatial pattern plans contained in the Bojonegoro Regency Spatial Plan document. The areas in Bojonegoro Regency are in accordance with the spatial plan with their existing conditions, but some have not been realized and there are deviations between the spatial plan and existing conditions with different land uses.
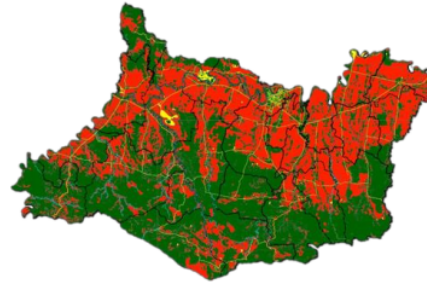
Gambar 5. Simpangan Kabupaten Bojonegoro

Table 3. Deviations by District

Disticts	Area (Ha)		
	Not Realized	Deviate	Accordance
Balen	4.772	1.555	-
Baureno	5.332	37,94	1.741,48
Bojonegoro	1.187	3,47	1.379
Bubulan	809,08	38,73	6.937
Dander	6.116	39,07	5.946
Gayam	3.617	440,73	2.270,20
Gondang	3.226	113,77	9.051
Kanor	4.459	153,14	1.679
Kalitidu	5.275	16,7	1.492
Kapas	3.037	7,91	1.397
Kasiman	3.092	6,36	1.760
Kedawen	1.369	18,63	4.369
Kedungadem	4.537	39,41	10.834
Kepohbaru	5.016	2.709	-
Malo	3.033	318,17	1.992
Margomulyo	1.850	27,45	9.092
Ngambon	1.444	58,72	3.262
Ngasem	5.006	92,98	8.763
Ngaro	3.008	3,38	5.564
Pandangan	2.896	11,68	2.048
Purwosari	2.567	9,36	3.054
Sekar	27.420.042	1.895.075,00	103.854.659
Sugihwaras	4.049	99,09	4.632
Sukosewu	4.049	99,09	4.632
Sumberejo	5.714	1.927	-
Tambakrejo	5.700	129,09	13.570
Temayang	2.105	104,38	9.503
Trucuk	2.436	83,24	2.331

Source : 2017 Map Image Process

Table 4. Total Deviation in Bojonegoro Regency

Deviation	Area (Ha)
Unrealized	98.314
Deviate	2.040
Accordance	130.265

Source : 2017 Map Image Process

It can be concluded that the trend of land use change in Bojonegoro Regency is the largest, namely the change of rice fields into settlements which dominates almost 65% of the total area of Bojonegoro Regency while the lowest land use change is the change of agricultural land into settlements which only occurs in one sub-district and one area. one impact. tall. for areas that deviate from the spatial pattern regulations only slightly. This shows that in Bojonegoro Regency there is no tendency for high land use changes and land use deviations are still dominated by land use in accordance with spatial patterns.

Figure 6. Residential Land Use Evaluation Map

Figure 7. Ricefield Land Utilization Evaluation Map

Figure 8. Mining Land Use Evaluation Map

2. Instructions for use

Based on the Regional Spatial Plan (RTRW) of Bojonegoro Regency and in accordance with the results of the analysis in the form of trends in land use changes in the settlement arrangement, namely in Balen District. Balen Subdistrict has a high trend value of land use change into settlements and according to the RTRW, Bojonegoro Regency is an urban settlement area as well as a rural settlement area.

Coclusion

The land use map was prepared with data and High Resolution Satellite Imagery with a scale of 1:5,000 in accordance with the Indonesian National Standard 7645-1 of 2014 concerning Land Cover Classification. The trend of change using polynomial analysis shows that the land use change in Bojonegoro Regency is 65% of the total area of Bojonegoro Regency, dominated by rice fields as settlements. Evaluation of space utilization is adjusted to the Regional Spatial Plan document by comparing land use from year to year in accordance with the laws and regulations and related policies. In

Bojonegoro Regency there is a conformity, not realized or deviate with existing conditions and spatial patterns.

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