Implementation of Spatial Planning in the Dieng Plateau Region of Banjarnegara Regency

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A B S T R A K

Dataran Tinggi terletak di 6 wilayah, yaitu Banjarnegara, Wonosobo, Pekalongan, Batang, Temanggung, dan Kendal. Kawasan yang diprioritaskan berada di Kabupaten Banjarnegara. Pemrioritasan ini didasarkan pada potensi kerusakan lingkungan dan pemanfaatan ruang di dalamnya. Penelitian ini bertujuan untuk menganalisis kondisi penggunaan lahan eksisting beserta peruntukan ruang kawasan sesuai RTRW Kabupaten Banjarnegara Tahun 2011-2031. Selain itu, dianalisis juga kesesuaian antara keduanya, berpedoman pada kriteria dalam Permen ATR/BPN Nomor 6 Tahun 2017 beserta faktor-faktor yang menyebabkan. Metode yang digunakan adalah metode kualitatif. Kondisi eksisting diinterpretasi melalui Citra Quickbird dan survey lapangan. Hasil penelitian menunjukan 11 jenis penggunaan lahan eksisting yang teridentifikasi dengan luasan terbesar kebun sayur dan ada 10 jenis peruntukan ruang dengan luasan terbesar lahan pertanian hortikultura. Tingkat kesesuaian keduanya tergolong tinggi. Dari kriteria jenis dan besaran, ketidaksesuaian memiliki persentase sebesar 9,36%. Dari segi dampak, pemanfaatan ruang menimbulkan dampak lokal dan regional. Kondisi ini dipengaruhi oleh faktor alami, faktor sosial, serta faktor lainnya (faktor teknis dan faktor regulasi).

Keywords:
Land Use
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Spatial Implemetation

A B S T R A C T

Dieng Plateau is located across 6 administratives jurisdiction. It lays on 6 regencies, namely Banjarnegara, Wonosobo, Pekalongan, Batang, Temanggung, and Kendal. Most of priority part located in Banjarnegara. This research aims to analyze the condition of existing land use and its spatial planning. It also analyzes the suitability in both condition, based on criteria proposed by Ministry Regulation of ATR/BPN Number 6 Year 2017. Also, the factor causing this suitability. The method used is qualitative method. The existing condition is identified through Quickbird interpretation and field survey. Other primary and secondary data also collected from local government and population. This reseach shows that there are 11 existing land use that could be identified with the biggest amount of vegetable garden. For the planning, there are 10 types with the biggest amount of horticulture land. The level of suitability could be classified as high. From the criteria of type and amount, the unsuitability percentage is only 9,36%. While from the effect, the land use implementation effecting both local and regional scale. This condition is caused by natural factor, social factor, and other factor (technical factor and regulation factor).

Introduction

Dieng Plateau is an example of a region that requires particular spatial planning. This area located in 6 district administrative areas, namely Banjarnegara, Wonosobo, Temanggung, Kendal, Pekalongan, and Batang. The most significant part of the Dieng plateau is in Pekalongan Regency. However, in terms of potential damage, the priority areas are in Banjarnegara and Wonosobo Regencies. Therefore, both included in the priority areas related to the handling and management of space (TKPD Wonosobo Regency, 2009). Of the two districts, Banjarnegara District has an area and critical slope higher than

Wonosobo Regency. Therefore, the focus of the study conducted in the Dieng Plateau Area in Banjarnegara Regency.

The complexity of the area is realized and has included in Spatial Planning (RTRW). One of them regulated in the Banjarnegara District RTRW 2011-2031 and Governor Regulation (Pergub) No. 5 of 2009. According to the Banjarnegara RTRW, the Dieng plateau region has a protection and cultivation function. Besides, this region has also become a strategic area in the socio-cultural and environmental carrying capacity. However, the plans have prepared in the Spatial Planning (RTRW) cannot necessarily guarantee the functioning of the city in the field running in a balanced manner. Therefore, the potential for tourism and agricultural activities often overlap with other functions in the area.

Spatial planning is conceived as being crucial for the implementation of adaptation policies, due to the fact that land use and land de- velopment have a significant impact on the vulnerability of cities to the effects of climate change (Bulkeley, 2013; Hurlimann & March, 2012; Measham et al., 2011; Dawson et al., 2009; Macintosh, 2013; Barnett & O'Neill, 2010; Davidse, Othengrafen, & Deppisch, 2015).

Spatial planning has always been one of the main concerns of town planners, but this type of planning has not been able to become operational in the context of medium-term plans (The & Alborz, 2017). Indications of the discrepancy seen from the many types of dominant land use, such as intensive use of agricultural land to tourism activities that are starting to develop. These activities continue to build and expand to cause changes that can be following or vice versa with planning. These conditions are also noteworthy given the situation of the area prone to disasters, both landslides, floods, and the potential for toxic gas. The argument that strategic spatial planning is a key means of achieving transformations towards environmental sustainability motivates a thorough analysis of some key elements of strategic spatial planning. Transformative change is maintained to be distinct from incremental change (Gustafsson, Hermelin, & Smas, 2018).

The links between cadastre and spatial planning described above make it natural to integrate the data they contain. This means that some spatial planning information should also be recorded as 3D objects, which is certainly necessary for areas that are subject to various types of development restrictions. Such limitations may result from the provisions of legal regulations ordering other areas of life (e.g., environmental protection, protection of agricultural land, landscape protection, protection of monuments, natural hazards, etc.) (Bydłosz, Bieda, & Parzych, 2018).

The plans were drawn up related to the management of spatial use also have an implementation period that can be hampered by developments or ongoing activities. For this reason, it is necessary to know the suitability of conditions in the field with the plan. Crucially, the importance of spatial planning, understood both as a regulative land process and as a strategic and integrated vision for a more efficient territorial arrangement, is largely absent in the main- stream literature focusing on the conceptual analyses of terri- torial development and territorial cohesion (Medeiros, 2019).

Implementation analysis focused on the study of space and land use. This study analyzes the existing conditions, which are seen to be following applicable regulations. After that, the factors cause conformity or incompatibility explained. There are several theoretical foundations used to answer these goals. The majority of the planning literature related to planning quality addresses methods and criteria of plan and/or planning quality as well as their application to certain case studies (Stöglehner, 2019). The first objective is responded to by the classification of land use by Malingreau and the classification of formal spaces based on the Spatial Planning (RTRW) of Banjarnegara Regency while the second objective refers to the implementation of the criteria for the application of spatial based on Permen ATR / BPN Number 6 of 2017. The factors are analyzed based on the theory of Yuniarto and Woro (1991: 35) about the factors that affect changes in land use in an area. More in particular, this article asks how can

strategic spatial plans be evaluated. At face value, evaluation in planning seems simple enough. Lest it should be considered a failure, planning must 'deliver the goods'. This means that the outcome of planned action must conform to what the plan says (Faludi, 2000).

Method

This study uses a qualitative approach, which is to understand spatial planning plans that have been carried out in the Dieng plateau region. The study based on the existing conditions and spatial regulations in force in the study area, namely the Banjarnegara District RTRW. The data collected consists of two types, namely primary and secondary data. The following are the types and techniques of data collection in this study.

The method used is a survey, namely the collection of primary data by field observations, structured interviews, and in-depth interviews. Whereas secondary data obtained through government agencies. Data analysis was performed using a qualitative approach. The approach used is done by analyzing the description of the results of data processing.

Result and Discussion

1. Use of Existing Land in the Dieng-Banjarnegara Highlands Region

Based on secondary data processing and field activities, it known that there are 11 types of existing land uses identified in the Dieng Plateau region in general, namely lakes / ponds, forests, mixed gardens, plantations, fields, vegetable gardens, agricultural industries, bush, villages, urban settlements, and other built-up areas. The most extensive land use is the vegetable garden, which is 5,061.71 ha or around 41.6% of the total land-use type. The use of forest land also has a sizeable area, which is 4,278.35 ha or about 35.2% of the entire area. Other types of land use also have different area and percentage in each district in the Dieng Plateau Region, Banjarnegara Regency.

2. Spatial Pattern of the Dieng Plateau Area in Banjarnegara

Based on the designation of the spatial pattern determined, the most extensive allocation in the study area is for horticultural activities, which is around 9419.92 ha or about 58.12% of the total area of the spatial pattern in the area. The most extensive allotment is in the District of Batur, which is about 5400.12 ha.

3. Conformity of Existing Land Use with RTRW of Banjarnegara Regency

Compliance and incompatibility of land use with a predetermined spatial plan can draw from several criteria. The criteria used here refer to the Minister Regulation (Permen) ATR / BPN Number 6 of 2017 concerning Procedures for Review of Spatial Planning. Two minimum standards must-see in knowing the suitability or level of implementation of the plan, namely in terms of type and magnitude, as well as the impact caused. The assessment results divided into two, namely high and low.

The classification of land-use types themselves matched between classifications of spatial planning patterns which are broken down according to their definitions with guidelines for grouping land-use types according to Malingreau. The following are the results of the alignment between broad classification of spatial patterns with details on the Malingreau rating.

a. Types and Spreads of Inconsistency

There are 34 points of non-conformity out of a total of 133 points if they have drawn from the type and extent of land use in the Dieng Plateau region of Banjarnegara Regency. The discrepancy obtained from a comparison between the quick bird imagery of the Dieng Plateau region in Banjarnegara in 2015 and the spatial pattern of the Banjarnegara District Spatial Plan. The analysis was tested for accuracy by checking samples in the field for each type of interpretation result space pattern. This suitability level can seen in Figure 1.

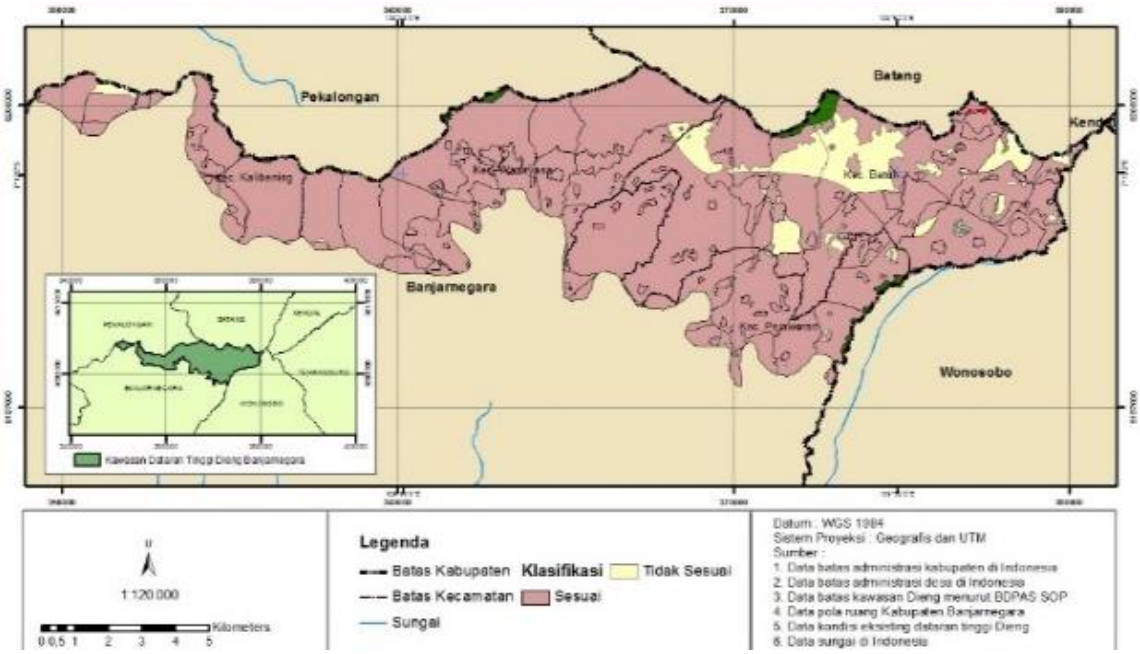

Figure 1 Spatial Suitability Map in the Dieng Plateau Region Banjarnegara Regency

b. Impacts of Inconsistencies

Besides, the type and size criteria, other criteria are highly classified, namely the impact of the incompatibility in the use of space. Therefore, the effect caused by the implementation of spatial use that occurs is quite significant in scale, namely the minimum area. The most prominent land use in the study area as according to the largest allocation of spatial patterns, namely horticultural agriculture, does not necessarily create a positive impact. According to the spatial pattern data processing in the study area, the allocation of horticultural agriculture is the largest, with an area of around 7911.01 ha. Conditions in the field are not much different, from the area plotted, the realization of horticultural agriculture in the field is around 5729.51. The extent of the existing condition is still the biggest compared to other types of space utilization.

Potato crops dominate horticultural agriculture. According to residents and the agriculture service, potatoes are indeed the highest agricultural potential and are suitable for growing in the Dieng Plateau region. However, planting carried out up into the hills without interspersed with other types of crops has quite an impact on the environment. Moreover, the alternation of potato plants is also carried out intercropping for similar seasonal vegetables such as carrots and cabbage. Potato planting environment created in such a way as to avoid the amount of water absorbed into the soil. This condition creates a massive run-off.

The use of land in the Dieng Plateau region of Banjarnegara Regency as the headwaters of the Serayu river dramatically affects the amount of sedimentation along the water flow through it. According to the statement from the Banjarnegara Regency Bappeda, the first and closest impact that can see in the deposition that occurred in Mrica Jenderal Sudirman, Banjarnegara. For this reason, hydropower plants carry out reforestation as an effort to reduce sedimentation.

In addition to sedimentation, environmental impacts such as pollution also occur. Contamination occurs because of the large number of dissolved substances from fertilizer to support agriculture in the Dieng Plateau region of Banjarnegara Regency. Position the area as upstream makes these fertilizers dissolve up to the downstream of Serayu River and into the sea. This condition reflects the environmental impacts that occur due to land use is more than the local scale but regional. Besides, these impacts not necessarily positive even though they have classified as high or following the parameters for evaluating the suitability of the Spatial Planning (RTRW) implementation stated in ATR / BPN Regulation Number 6 the Year 2017.

Apart from environmental and regional impacts, there are also impacts from the existence of non-conformities on a small scale. For example, there are mismatches in the use of PLTU land which located at several points in the Dieng Plateau region of Banjarnegara Regency. According to the Banjarnegara District Environmental Agency (DLH), an explosion had occurred without an apparent reason from the PLTU. This incident could cause corrosion in the surrounding buildings, including settlements.

The environmental impacts that arise are quite inversely proportional to the social / economic impacts caused. Horticultural agriculture is precisely the main livelihood of the people in the Dieng plateau region. Increased land productivity with potato and similar seasonal crops is also directly proportional to the increase in local community income. Potato from Dieng is a domestic reliable agricultural product that has been distributed to various regions in Indonesia as mentioned by the following farmers. Based on information from local farmers regarding the distribution of agrarian products produced, the market already has a regional scale, namely to cities outside Central Java and parts outside of Java.

Based on these statements, it knows that the two minimum criteria set out in Permen ATR / BPN Number 6 of 2017 to review the implementation of the Spatial Planning (RTRW). A spatial pattern plan is highly classified. From the type and size criteria, it ranked as high because of the achievement of conformity more than 50% and non-conformities occur caused by obstacles are still seeking to achieve in the next stage whereas the impact criteria are also classified high. The impacts arising from the implementation of the spatial plan are not only local but also regional. However, in terms of the nature of the effect, it tends to have, it is negative, namely with the environmental consequences arising from excess agricultural activities.

4. Factors That Affect the Level of Suitability of Spatial Use in the Dieng Plateau Region of Banjarnegara Regency

Influencing factors cause the level of suitability of spatial use in the Dieng Plateau of Banjarnegara Regency. Based on Yuniarto and Woro (1991: 35), the factors that influence changes in land use consist of natural and social elements. The following description of the influential factors based on conditions in the Dieng Plateau of Banjarnegara Regency.

a. Natural Factors

Physical factors also cause the use of agricultural land for annual crops which is dominant and entirely deviates from the suitability of the allotment of space in the highlands. Farmers claim to cultivate plants because they are physically suitable. Because not all plants can grow well with height and temperature like in the Dieng plateau region. This perception is following formal rules about the criteria for growing potato plants. According to the Agricultural Research and Development Center (BPPP), potato plants grow well in the highlands with altitudes above 1000 masl. A cold temperature, around 18-210C is also a criterion that matches the plant. Therefore, physical factors in this area become one of the considerations of space utilization that is recognized by the community.

However, these physical considerations only concern the productivity of plants grown on highland land. Meanwhile, the material balance of the environment is of little concern. Therefore, review of physical conditions is also one of the reasons for the occurrence of irregularities in land use in the Dieng Plateau Region of Banjarnegara Regency.

b. Social Factors

Spatial planning is a method for allocating land to different uses in the future, based on the current use and projections of economic and demographic growth (Albrechts 2006, Greiving et al. 2006b; Sutanta, Rajabifard, & Bishop, 2013). The livelihoods of residents as farmers cause great financial motive in making decisions on land use. These economic motives have led to land use in horticultural agriculture dominating and classified as inappropriate in several locations. Dominant plants are annual crops such as potatoes and carrots.

According to the government, land planning conditions cannot yet be regulated by the government as the authority in spatial planning. It caused by constraints in the form of land ownership and the right of farmers to freely use their land according to their choice.

In addition to property rights and economic motives, the use of horticultural agricultural land

has also existed long ago. Property rights to land are hereditary in the Dieng Plateau Area of Banjarnegara Regency. The tradition is not only related to property rights but also the type of land use, namely as agricultural land.

The Department of Agriculture also raised these constraints. Farmers are considered to have full freedom to determine the choice of plant species and their cultivation as stated in the Law of the Republic of Indonesia Number 12 of 1992 concerning Plant Cultivation Systems. Meanwhile, farmers tend to prioritize the importance of the economic value generated by a land-use system that has already cultivated. Therefore, it becomes difficult to change according to the intended designation and produce irregularities.

Utilization of land as a place to grow horticultural products is not only influenced or originated from the local population but also migrants. Potato and carrot farming land in the Dieng Plateau Region of Banjarnegara Regency was previously a tobacco and carrot planting area.

c. Other factors

- Regulatory Factors

This factor one of that directly influences the implementation of spatial planning because the allocation of space is the basis of land use regulation in force in the region, especially related to spatial planning. The general rule that applies in spatial planning in the Dieng Plateau Region of Banjarnegara Regency is Regional Regulation Number 11 of 2011 concerning RTRW of Banjarnegara Regency 2011-2031. However, this regulation still very general because made for the entire Banjarnegara District, so no one has correctly set the spatial plan in the Dieng Plateau Area of Banjarnegara Regency. The absence of specific regulations derived from the Banjarnegara District RTRW governing spatial planning in the Dieng Plateau region is one of the causes of the deviation of land use in several points.

- Technical Factors

Mismatches in the implementation of spatial planning at specific locations also caused by generalizations in the interpretation of spatial allocation. Generally, the results of non-conformity from this factor classified as minor. The error was discovered after direct checking because it was different from the results of the interpretation of the spatial pattern had been done. The small extent of the mismatch and the closeness of the location to the type allocated to the spatial pattern plan indicates a generalization. Also, the preparation of spatial patterns, mainly based on formal criteria. Existing field conditions that are minor tend to be generalized. So, not all discrepancies also caused by significant factors, but also due to technical errors in mapping.

Conclusion

There are 11 types of existing land uses identified in the Highlands with the most extensive land use being vegetable gardens, which classified as cultivation areas. As for the spatial allotment, there are ten species identified with the most significant area is horticultural agricultural space allotment types most widely available in Batur District

The level of suitability of the implementation of spatial planning based on Perda Number 11 of 2011 concerning RTRW of Banjarnegara Regency in 2011-2031 with existing conditions classified as high. From the type and size criteria, the discrepancy that occurred had a percentage of 9.36% or 34 points out of a total of 134 points that entered the research area. While the impact, the spatial use that occurred affected on both the local and regional scale.

Non-conformities be caused by two general factors, namely natural factors and social factors. Natural elements consist of physical factors. Social factors include economic and cultural factors. While additional factors found in the field consist of regulatory factors and technical factors.

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