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Structure and Space Pattern in Gunungpati Sub-District: Space Utilization Evaluation Analysis

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Abstract: This article focuses on the evaluation of regional spatial planning policies, namely the Regional Regulation of the City of Semarang Number 14 of 2011 concerning the 2011-2031 Regional Spatial Plan, particularly regarding the spatial structure and spatial patterns in the Gunungpati District. Because the issue of spatial planning has caused various environmental problems in urban areas. This article refers to the Regulation of the Minister of Agrarian and Spatial Planning Number 9 of 2017 concerning Guidelines for Monitoring and Evaluation of Spatial Use, using a literature study methodology approach. The results show that the spatial structure determination in Gunungpati District needs to be changed because of the emergence of settlements that are on quite /very sloping slopes. As a result, Gunungpati District as a conservation area, water catchment, and green catchment as well as protecting the area below has changed. Meanwhile, the network of facilities and infrastructure as well as green open space in Gunungpati District has met the requirements of the RTRW for Semarang City. Based on the above considerations, a concrete policy is needed in maintaining the function of the Gunungpati District, so that it can protect the ecosystem in its area. Besides the importance of providing education to the public regarding sustainable urban development, to create complex environmental preservation, this article contributes to the field of public management and a collaborative governance policy model that is directly implemented in the city of Semarang.

***Keywords*:** Space Utilization, Structure Pattern, Space Pattern.

1. Introduction

Spatial planning in various metropolitan cities is currently a hot topic of discussion.[1] Because mistakes in drafting a spatial plan will regulate various problems in the middle of the city, such as irregular settlements, the criticality of land, the land conversion that is not following conservation requirements, and even causes conflicts.[2] Therefore, spatial planning is related to resource management in urban areas and is also related to urbanization issues. Because the issue of urbanization is not only related to population growth in urban areas but is closely related to changes in consumption, production structure, demand for jobs, development of communication, changes in the structure of society from being a rural area (agrarian) to an urban area[3].

In general, the effects of urbanization can change the resource management system in urban areas. This change is due to increased community needs, such as land, clean water, space, and so on (Marcus and Detwyler in Afrizal, 2016). For these needs, complex urban spatial planning is required to meet the needs of urban communities. Decreasing water quality, widespread slum settlements, are caused by a lack of understanding of complex spatial planning. Finally, it seems that city planning is only a mere assumption.[4]

On that basis, the Semarang City Spatial Planning (RTRW) policy must include a decision-making process on structural spatial elements, such as settlements, infrastructure, networks, services, natural resources, and culture. Even the RTRW of Semarang City must be used as a guideline (including models and regulations) for all building construction to achieve a balanced, sustainable spatial development and improve the quality of life.[5]

In general, the RTRW for Semarang City divides the area into three categories, namely coastal, lowland, and highland areas. Recently, one of the focuses of the Semarang City Government in expanding the city is the highland

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1 Ernesto d'Albergo and Christian Lefèvre, "Constructing Metropolitan Scales: Economic, Political and Discursive Determinants," *Territory, Politics, Governance* 6, no. 2 (2018): 147–58, https://doi.org/10.1080/21622671.2018.1459203.

2 Robert Bartłomiejski, "Environmental Conflicts in Port Cities," *Opuscula Sociologica*, no. 4 (2016): 33–44, https://doi.org/10.18276/os.2016.4-03.

3 M. Chairul Basrun Umanailo et al., "The Urbanization and Diversification of Farmland Namlea Village," *International Journal of Scientific and Technology Research* 8, no. 8 (2019): 1049–53, https://doi.org/10.31219/osf.io/5ybx3.

4 Nazaruddin, 2015)

5 Sergio Segura and Belen Pedregal, "Monitoring and Evaluation Framework for Spatial Plans: A Spanish Case Study," *Sustainability (Switzerland)* 9, no. 10 (2017), https://doi.org/10.3390/su9101706.

area. The main basis is the highland area, including the area that has the most potential land for population distribution, including Gunungpati District.[6]

Gunungpati District is a water catchment area, protected area and parts of it are disaster-prone areas. The designation of the area is intended to protect the area underneath to avoid flooding, protect agricultural and forestry lands in Semarang City and become a protected area because it is on a fairly sloping slope.[7] However, there are still land conversion activities in Gunungpati District that are not following conservation requirement[8], and generally, these activities are carried out from agricultural land to non-agricultural land.[9] The result of this inappropriate land use has had an impact on the damage to the soil structure, shifting the landscape, increasing the potential for natural disasters to cause conflict during society.[10] This practice illustrates that the Semarang City Government is inconsistent in implementing the RTRW policy. This inconsistency can be seen from the number of land-use change permits in the Gunungpati District. Recorded from 2012 to 2016, there were 437 land-use change permits.

This land change case shows that the RTRW of Semarang City has not accommodated environmental resilience, there are no specific boundaries in the highlands, especially in Gunungpati District. This is an indication that the spatial planning of the city of Semarang is not yet mature, there is no serious and in-depth study. It is feared that the results of the spatial planning formulation will become a unilateral legal product.

Based on this, it is very important and relevant to evaluate to readjust the RTRW of Semarang City with the spatial conditions in Gunungpati District. The importance of evaluating spatial planning is to provide information that can promote effective planning dynamics and change collective decision making.[11]

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6 Hala Haidir and Iwan Rudiarto, "Lahan Potensial Permukiman Di Kota Semarang," *Tataloka* 21, no. 4 (2019): 575, https://doi.org/10.14710/tataloka.21.4.575-588.

7 T. Yulianto, S. Suripin, and H. Purnaweni, "Zoning Landslide Vulnerable Area According to Geological Structure, Slopes, and Landuse Parameters in Trangkil Sukorejo Gunungpati Semarang City's Residental Area," *Journal of Physics: Conference Series* 1217, no. 1 (2019), https://doi.org/10.1088/1742-6596/1217/1/012029.

8 Aidy and Sri Rahayu Huzaini, "Tingkat Kekritisan Lahan Di Kecamatan Gunungpati Kota Semarang," *Teknik Perencanaan Wilayah Kota* 2, no. 2 (2013): 242–51.

9 Sawitri Subiyanto and Fauzi Janu Amarrohman, "Spatial Studies and Juridical Utilization of Vacant Land and Abandoned Land Control in Efforts of Regional Authority in Semarang City," *MATEC Web of Conferences* 159 (2018), https://doi.org/10.1051/matecconf/201815901044.

10 Shaikh Shamim Hasan et al., "Impact of Land Use Change on Ecosystem Services: A Review," *Environmental Development* 34, no. April (2020): 100527, https://doi.org/10.1016/j.envdev.2020.100527.

11 Robert Goodspeed, "Land Lines , Lincoln Institute of Land Policy," no. May 2020 (2017): 4–8.

So, this study will examine whether there is a match between the RTRW of Semarang City and the spatial structure and pattern in the Gunungpati District.

Like several cities in India, they have evaluated spatial plans because their spatial policies are still limited to physical and economic issues and weaken the issue of climate change. Among the factors are awareness of low spatial planning policy implementation, moderate level of analytical skills, and limited response to action.[12] The spatial planning policy evaluation also took place in Baiyun, Guizhou Province, China, by measuring the effectiveness of land use. It was concluded that the spatial planning policy failed. The cause is the absence of control and spatial distribution of urban development, the expansion of fragmented cities, and the high conversion of agricultural land in urban areas.[13] Evaluation of spatial policies also took place in Beijing by assessing the suitability of spatial plans and performance. This study examines the degree of conformity between urban master plans, detailed plans, development permits, and observed development results. The results of this study indicate that there is a mismatch between all the basic stages of implementing the plan and poor implementation of planning, mainly due to the existence of large areas of development without a development permit.[14]

Based on the three studies above, it can be concluded that the evaluation of spatial plans is due to the lack of seriousness of the implementers in implementing spatial planning policies. The main factor in the failure of the spatial planning policy is that human resource capacity is still weak both in context and conceptually. Apart from that, the study above also only measures the suitability between the spatial planning theory and its implementation. If we examine further, the evaluation of spatial plans is not only seen from the perspective of suitability, instead, this spatial evaluation is more emphasized on the conditions of spatial structure and patterns. This is because the incompatibility of the spatial structure and pattern of an area will have an impact on many aspects, especially in further policy formulation, such as managing facilities and infrastructure,

[12] Parveen Kumar and Davide Geneletti, "How Are Climate Change Concerns Addressed by Spatial Plans? An Evaluation Framework, and an Application to Indian Cities," *Land Use Policy* 42 (2015): 210–26, https://doi.org/10.1016/j.landusepol.2014.07.016.

[13] Xiaoqiang Shen et al., "Evaluating the Effectiveness of Land Use Plans in Containing Urban Expansion: An Integrated View," *Land Use Policy* 80, no. October 2018 (2019): 205–13, https://doi.org/10.1016/j.landusepol.2018.10.001.

[14] Ying Long et al., "Evaluation of Urban Planning Implementation from Spatial Dimension: An Analytical Framework for Chinese Cities and Case Study of Beijing," *Habitat International* 101, no. November 2018 (2020): 102197, https://doi.org/10.1016/j.habitatint.2020.102197.

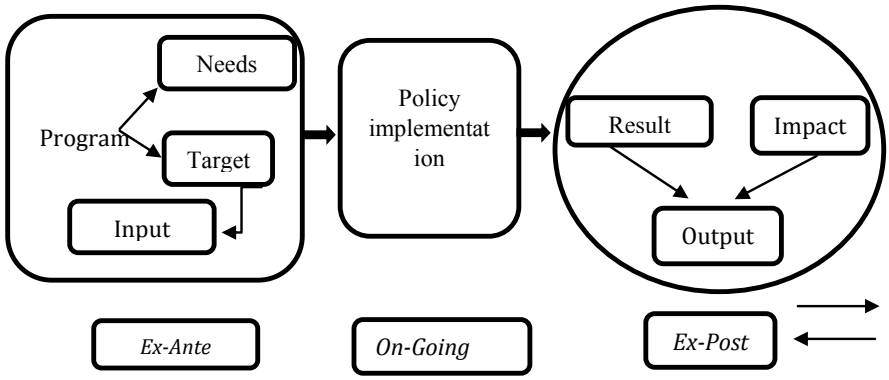
handling social problems, and so on. Therefore, this study will emphasize the evaluation of the spatial structure and spatial patterns concerning the Regulation of the Minister of Agrarian Affairs and Spatial Planning Number 9 of 2017 concerning Guidelines for Monitoring and Evaluation of Spatial Use.

2. Literature Review

2.1. Public Policy Evaluation

In general, the public policy cycle consists of (a) setting the policy agenda; (b) policy formulation; (c) policy adoption; (d) policy implementation; and (e) policy evaluation (Dunn, 2004). Policy evaluation is a policy formulated to determine the results and impacts. Policy evaluation is also defined as an assessment of policy effectiveness, efficiency, relevance, coherence during, and after implementation Therefore, policy evaluation can provide information related to policy performance, the extent to which policy objectives can be realized, and their social impacts Likewise, Dunn (2004) also explains the benefits, one of which is to redefine the problem of public policy and policy alternatives. Wollman (2006) also categorizes policy evaluation into three parts, namely ex-ante evaluation, on-going evaluation, and ex-post evaluation.

Figure.1 Policy Evaluation



Source: Wollman, 2006 in Anggraeni and Setyono, 2020.

If referring to the Minister of Agrarian and Spatial Planning Regulation No. 9 of 2017 concerning Guidelines for Monitoring and Evaluation of Space Utilization, evaluation of space utilization is an activity of assessing efforts to realize spatial structures and patterns following the predetermined spatial plan.

Spatial structure is the arrangement of residential centers and a network system of infrastructure and facilities that function as support for social and economic activities of the community which hierarchically have functional relationships. Whereas the spatial pattern is the distribution of space allocation in an area that includes space designation for protection functions and spatial designation for cultivation functions. This space utilization evaluation is carried out at least twice in five years (RTRW for Semarang City).

2.2. Spatial Plan

Spatial planning is the essence of land development in urban areas that takes into account environmental values and changing socio-economic conditions [15]. The main philosophy of spatial planning is integration and coordination to improve planning systems and promote sustainable development.[16] Coordination and integration refer to spatial planning strategies, land-use zoning, development objectives, provision of infrastructure, and others. If referring to the Minister of Agrarian and Spatial Planning Regulation No. 9 of 2017 concerning Guidelines for Monitoring and Evaluation of Space Utilization, a spatial plan is a spatial plan for an area that is a geographical unit along with all related elements whose boundaries and systems are determined based on administrative aspects.

3. Method of Research

This paper uses the literature study method, namely collecting data, information, by examining research journals, books, literature as well as reliable sources both written and digital that are related and relevant to this study (Creswell, 2009). The data analysis used in this article is condensation. Condensation is in the form of selection, focusing, simplification, abstracting (data transformation), data presentation, and inductive conclusion.[17]

The focus of this study is Gunungpati District. The interest in this study is that Gunungpati District is a water catchment area, has a fairly sloping slope

[15] Hee Sun Choi and Gil Sang Lee, "Planning Support Systems (PSS)-Based Spatial Plan Alternatives and Environmental Assessment," *Sustainability (Switzerland)* 8, no. 3 (2016), https://doi.org/10.3390/su8030286.environmental assessment, and internalization of environmental analysis and planning. A Planning Support System (PSS

[16] Lei Wang and Jianfa Shen, "The Challenge of Spatial Plan Coordination in Urban China: The Case of Suzhou City," *Urban Policy and Research* 35, no. 2 (2017): 180–98, https://doi.org/10.1080/08111146.2016.1159553.

[17] Matthew B Miles, A. Michael Huberman, and Johnny. Saldaña, "Qualitative Data Analysis, A Methods Sourcebook, Edition 3. USA: Sage Publications," in *Qualitative Data Analysis, A Methods Sourcebook, Edition 3. USA: Sage Publications*, 2014, https://doi.org/10.7748/ns.30.25.33.s40.

(prone to disasters), and agricultural land is often converted to non-agricultural land.

4. Result and Discussion

Departing from Law Number 26 of 2007 concerning Spatial Planning Article 11 Paragraph 2 mandates the Regional Government to carry out spatial planning which includes regional spatial planning, territorial space utilization, and control of regional space utilization. Therefore, the RTRW document can be used effectively to prevent conflicts between functions, the process of spatial use and to protect the community as space users from environmental hazards. Although in practice, the RTRW document that has been prepared and approved by all stakeholders, sometimes runs not according to the theory because it is influenced by various factors, both internal and external.

On that basis, the RTRW policy is not only seen as a guide for physical development in urban areas, as in other studies by articulating that the spatial plan is to realize infrastructure within a broad regional governance framework.[18] RTRW is closely related to the environmental resilience of a region, starting from the soil structure, spatial structure, slope, and spatial patterns. These are all analyzed in detail in the sustainable development of a city so that no components are eliminated.

So, before examining further regarding the spatial structure and spatial patterns, this discussion begins with the development of the city area where the RTRW of Semarang City has divided clusters to serve as guidelines in city development.

Table.1 Regional Development of Semarang City

Development Area	City Territory Section	Allocation Priority
City Development Area I	Part of the city area I: Sub-District. Central Semarang, East Semarang District, South Semarang District	Offices, trade, services
	Part of the city area II: Sub-District Gajah Mungkur, Kec Candisari	Offices, trade, services, police education, sports
	Part of the city area III: Sub-District Semarang Barat, Kec Semarang Utara	Part of the city area III: West Semarang District, North Semarang District

[18] Long et al., "Evaluation of Urban Planning Implementation from Spatial Dimension: An Analytical Framework for Chinese Cities and Case Study of Beijing."

City Development Area II	Region IV city: Genuk area	Industry
	The area of city X: Tugu district and Ngaliyan district	Industry
City Development Area III	Part of the city area V: Sub-District Gayamsari and Kec Pedurungan	Sub City Service Center
	Part of the city area VI: Sub-District Tembalang	Education
	Part of the city area VII: Sub-District Banyumani	Military offices
City Development Area IV	Part of the city area VIII: Sub-District Gunungpati	Education, agriculture, conservation
	Part of the city area IX: Sub-District Mijen	Public service office

Source: Semarang City RTRW 2011-2031.

Table 1 shows that the expansion of Semarang City will be dominated by suburban areas, especially Gunungpati District. This can be seen from Tembalang Subdistrict, with the priority of area designation in education, making it one of the targets for migrants to carry out their lives in Semarang City. Tembalang District occupies the first position in the population growth rate in Semarang City. The population growth of the Tembalang District has reached 8,507 in the last three years.[19] Similar to Gunungpati District as an Education area, in the next, five to ten years the distribution direction map of Semarang City population will be focused on Gunungpati District (see figure 1), because the area has the most potential land in Semarang City.[20]

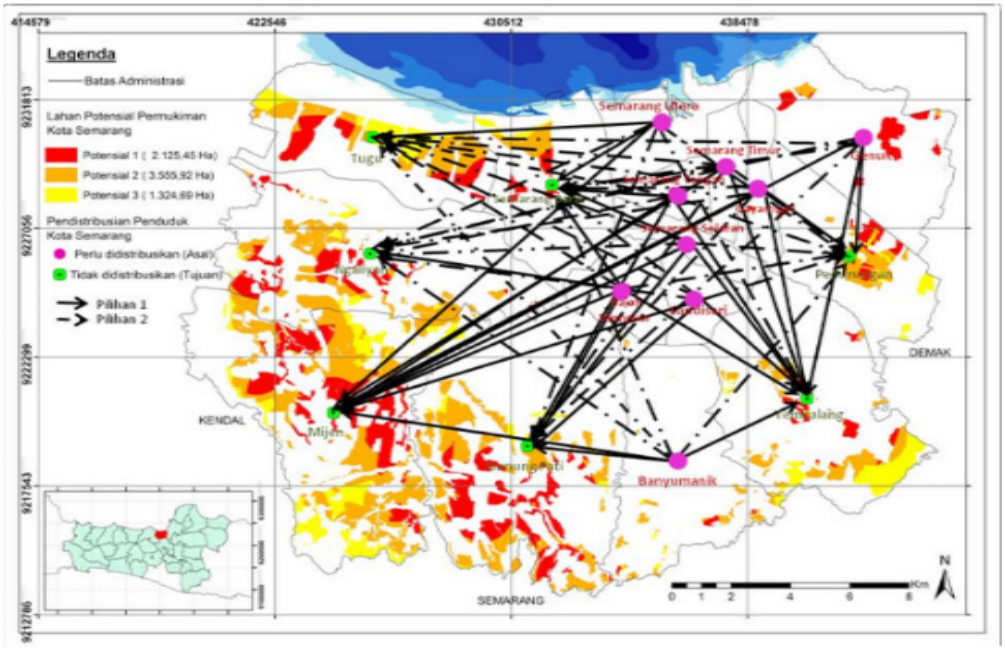
The physical characteristics of the Gunungpati District affect land use patterns. One of its characteristics is that Gunungpati District is located in the administrative border area between Semarang City and Semarang Regency. This characteristic dominates its land use in wetland agricultural areas and

[19] BPS Semarang City, 2019.

[20] Haidir and Rudiarto, "Lahan Potensial Permukiman Di Kota Semarang."whereby settlements require a land while land in a city has many activities, and it is limited. This limited potential settlement lands greatly influence the direction of the population in finding a place to settle. This study aims to study on potential settlement land in Semarang City. The methods used are quantitative descriptive and spatial descriptive that consist of settlement land suitability analysis (overlaying and weighting

conservation areas. Therefore, the distribution of the direction of residents of Semarang City to the Gunungpati District is a challenge for the Semarang City Government. The population distribution strategy is an effort of the Semarang City Government to prevent the emergence of illegal settlements, population disparities, decreased environmental capacity, and other activities that violate conservation requirements. Therefore, as a first step to develop this strategy, it is important to review the implementation of the Semarang City RTRW 2011-2031 related to the spatial structure and pattern in the Gunungpati District. This spatial structure and pattern analysis will serve as guidance or evidence for policy-makers in making further decisions regarding conditions in Gunungpati District. (evidence-based policy).

Figure 1. Population Distribution of Semarang City 2019



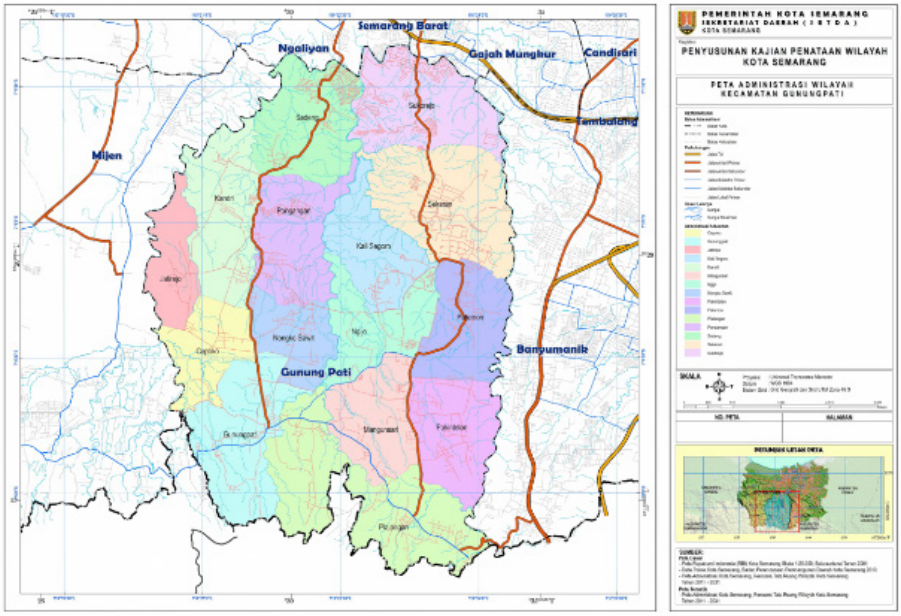
Source: Haidir and Rudiarto, 2019.

4.1. Gunungpati District Room Structure

Referring to the previous notion of spatial structure, namely the arrangement of residential centers and a network of infrastructure and facilities that serve as support for social and economic activities of the community which hierarchically

have functional relationships. The spatial structure in the city of Semarang is formed by elements of urban functional activities that are integrated into each structural network. The development of the spatial structure in Gunungpati District is aimed at realizing equal distribution of regional development between the center and the periphery following the potential and functions as well as activities in the periphery areas, to obtain an effective and efficient city and regional service system.

Figure 2. Map of Gunungpati District.



Source. Semarang City Development Planning Agency.

4.2. Settlement of Gunungpati Sub-District

Gunungpati District has an area of 54.11 Km2 or 14.48% of the total area of Semarang City 373.7 Km2. As explained in the development of the city area, Gunungpati District is conservation, agriculture, and education area. Then rural residential areas are allocated throughout the rural environment. Meanwhile, urban residential areas are allocated around the center of the Gunungpati District, namely Gunungpati Village and Sekaran Village. For example, related to the education area, Sekaran Village was the target location for the relocation of Semarang State

University (UNNES). The move of the UNNES campus from Kelud to Sekaran Village has attracted people to come to Gunungpati District, both students, lecturers, workers, and business people. The transfer also encouraged the growth of settlements and an increase in the economic sector, especially the Micro, Small, and Medium Enterprises (MSMEs) sector. The increasing flow of urbanization has demanded various human needs, especially residential needs.

The suitability of the spatial structure plan with residential land use in Gunungpati District with a very suitable category was 1612.2 hectares, the appropriate category was 1079.3 hectares, and the less suitable category was 2719.5 hectares (Table 2). Areas that are not suitable for settlement are land with high slope levels, critical land, land for buffers, and land for protected areas.

Table.2 Suitability of Settlement Land Use in Gunungpati District

No	Land Category	Area of residential land use (Ha)
1	Very suitable	1612,2
2	Corresponding	1079,3
3	Quite appropriate	2719,5

Source: [21]

Table.2 shows that the designation of residential land is more inappropriate / less suitable than according to the spatial structure. This shows that two years after the issuance of the RTRW for Semarang City 2011-2031, there have been many violations of the RTRW policy for Semarang City in Gunungpati District. The slopes with high slopes should not be used as land for settlements or built-up land, instead, this area is made more for settlement. On the one hand, the distribution of the population to Semarang Atas, especially the Gunungpati District, will reduce the environmental burden in Semarang Bawah. On the other hand, the increase in settlements in Gunungpati Subdistrict resulted in reduced green open space, narrowed agricultural land, and reduced water catchment areas.

[21] Satria & Rahayu, 2012.

Table.3 Slope Level of Semarang City Slope

Territory	Slope Type	Slope Percentage	Information
Kec. Genuk Kec. Pedurungan Kec. Gayamsari Kec. Semarang Timur Kec. Semarang Utara Kec. Tugu	I	0-2%	
Kec. Tembalang, Kec. Banyumanik Kec. Mijen			Most Regions
Kec. Semarang Barat Kec.Semarang Selatan Kec. Candisari Kec. Gajahmungkur Kec. Gunungpati Kec. Ngaliyan	II	2-5%	
Kec. Gunungpati	III	15-40%	Around Kaligarang & Kali Kreo (Gunungpati)
Kec. Mijen			Part of the Region (Wonoplumbon Area)
Kec. Banyumanik Kec. Candisari			Most Regions
Kec. Banyumanik	IV	>50%	Part of the Region (South East)
Kec. Gunungpati			Some Areas (Around Kali Garang & Kali Kripik)

Source: Compiled from several sources.

Table 3 shows that the Gunungpati District area has several points with a fairly high slope. This proves that most of Gunungpati District has fertile soil

structures, high water absorption, but is classified as a landslide-prone area so that it becomes a conservation area for the protection of the surrounding nature.

Regarding areas that are not / are not suitable for these settlements, the RTRW of Semarang City only discusses, in general, the level of slope, that is, slopes above 40% are considered as protected areas, critical lands, and buffer lands. The RTRW of Semarang City does not explain in detail the boundaries in areas with a slope of more than 40%. This lack of detail resulted in the opening of legal loopholes for land use in the Gunungpati District. For example, there was a land conversion to developed land of 28.02 Ha or an increase of 39.5%. This activity has shifted the landscape significantly so that the possibility of landslides is greater.[22] The rate of erosion also occurs in the Sekaran Village, because it is on a fairly sloping slope. Then it takes the zoning rate of erosion and is divided into four zonings. First, the zoning of RW 1,3,5,6 is in the very light category. Both RW 2 zoning are in the light category. The three zoning RW 4 and 7 are in the moderate category.[23] In fact, in the Trangkil Sukorejo area, nearly 60% of landslide-prone areas with a sloping 25-45% have settlements.[24]

Herein lies the weakness of the RTRW for the City of Semarang, that there are still incomplete environmental studies. So that it seems that the RTRW of Semarang City has failed in its implementation and that failure stands out in the inability to accommodate the values of local wisdom (local wisdom) and the interests of many people at the local and community scale. In the end, spatial planning has not been able to solve various urban problems. Therefore, spatial planning must be reviewed in its formulation, not just looking at zoning regulations, but it is very important to look at existing conditions and consider the development of communities, especially in the suburbs.

4.3. Gunungpati District Infrastructure and Facilities Network System

Following the directions in the RTRW that the primary function of City Area Development VIII is determined for agriculture, conservation, and education

[22] Nurma Kumala Dewi and Iwan Rudiarto, "Pengaruh Konversi Lahan Terhadap Kondisi Lingkungan Di Wilayah Peri-Urban Kota Semarang (Studi Kasus: Area Berkembang Kecamatan Gunungpati)," *Jurnal Pembangunan Wilayah & Kota* 10, no. 2 (2014): 115, https://doi.org/10.14710/pwk.v10i2.7641.

[23] Nur Hikmah 'Izzatul, Nailul Hikmah, and Lu'lu'il Munawaroh, "Zonasi Tingkat Bahaya Erosi Kelurahan Sekaran Kecamatan Gunungpati Kota Semarang Berbasis Sistem Informasi Geografis" 44, no. 1 (2017): 34–42, https://doi.org/10.15294/fis.v44i1.11667.

[24] Yulianto, Suripin, and Purnaweni, "Zoning Landslide Vulnerable Area According to Geological Structure, Slopes, and Landuse Parameters in Trangkil Sukorejo Gunungpati Semarang City's Residental Area."

activities. One of the activities to support the primary function is the network of facilities and infrastructure. This network is intended for the community in accessing their needs to be more efficient. Such as road networks, trade, services, and all networks are allocated in Gunungpati and Sekaran Villages as the center of Gunungpati District.

If the analysis of the network of facilities and infrastructure is linked with land conversion activities in Gunungpati District, there is a significant correlation. For example, land conversion activities resulted in negative impacts for the people of the Gunungpati district, such as damage to soil structure, the greater potential for landslides, and so on. However, in this discussion, this conversion activity has a positive impact on the people of the Gunungpati District. This positive impact has been felt since the existence of UNNES in the Gunungpati District.

Before the land conversion to non-agricultural activities, the people of the Gunungpati District were still left behind. Limited facilities and facilities make it difficult for the community to develop. The majority of people living in the Gunungpati District are farmers. When this land conversion occurs, the needs of the community can be met efficiently because various public facilities are already available, including the addition of roads, worship, education, health, and so on. The economic impact is also well manifested in Gunungpati District as a result of this conversion, such as the opening of employment opportunities, the emergence of small and medium economic activities, and various other economic activities.

Table.3 Infrastructure Network Gunungpati District.

No	Means Unit	Number of units
	Education facility	
1	Public School	1
	Private School	33
	State University	1
	Health facility	
2	Hospital	1
	Polyclinic	5
	Economic Means	

3	Wholesalers	14
	Intermediate Trader	12
	Small Trader	596
	Cooperative	3
	Road Network (Road Length) / Km	
4	Asphalt	164.05
	Not Paved	13.68
	Others	55.33
	Worship Facilities	
5	Mosque	98
	Surau	229
	Church	4
	Temple / Temple / Vihara	2

Source: BPS Semarang City, 2019, and Gunungpati District in Figures, 2019.

All facilities, infrastructure, and settlement networks have a functional relationship. Functional relationships are relationships that are based on the functions that each spatial structure has. The complete network of facilities in the Gunungpati District is very helpful in the process of meeting economic and social needs. Nowadays, the development of the Gunungpati district is relatively fast. All these developments began when the UNNES campus was in Gunungpati District. In the end, economic growth, opening up employment opportunities, adding tourist attractions, and so on continued to run well and Gunungpati District became one of the urban expansion areas in Semarang City.

4.4. Gunungpati District Spatial Pattern

Referring to the Minister of Agrarian and Spatial Planning Regulation No. 9 of 2017, that the spatial pattern is the distribution of spatial use in an area that includes a spatial designation for protection functions and spatial designation for cultivation functions. The spatial pattern in Gunungpati District was nominated for conservation areas. This area is undeveloped or undeveloped. This area is a strategy of the Semarang City Government to protect protected areas and cultivation areas

4.5. Gunungpati District Protection Function

The RTRW of Semarang City explains that the goal of urban spatial planning is to create the city of Semarang as a center for trade, international scale services that are safe, comfortable, and sustainable. Therefore, one of the efforts made was to map each sub-district with its priority function and nature.

Administratively, Gunungpati District is one of the border areas between Semarang City and Semarang Regency. The position of the Gunungpati Subdistrict has resulted in its land-use being dominated by wetland agricultural areas and conservation areas. The use of land as a wetland agricultural area is oriented for the cultivation of food crops. This area is dominated by villages such as Sumurejo Village, Plalangan Village, and Gunungpati Village. Meanwhile, land use as a conservation area is also dominated by Sumurejo Village, Plalangan Village, and Gunungpati Village.

Table.4 Land Use in Gunungpati District

No	Land Use	Kelurahan
1	Conservation area	Kelurahan Gunungpati, Kelurahan Plalangan, Kelurahan Sumurejo
2	Residential Area	Kelurahan Plalangan, Kelurahan Sumurejo
3	Wetland Agricultural Area	Kelurahan Gunungpati, Kelurahan Plalangan, Kelurahan Sumurejo

Source: Semarang City RTRW 2011-2031.

Table.4 shows that Kelurahan Plalangan and Kelurahan Gunungpati are designated as conservation areas and wetland agricultural areas. This is due to their topographic conditions between 25-40% and some > 40%. However, there was an error in the designation of the land, especially in Plalangan Village, where there were still settlements. The RTRW has confirmed that areas with slopes of > 40% are used as protected areas without buildings and not developed. The mismatch between spatial patterns and residential land use patterns has an impact on many things. For example, in the formulation of further policies related to the use and control of spatial planning. This arrangement consists of providing and managing infrastructure, handling social problems (slum settlements, illegal settlements, etc.), and building permits.

4.6. Cultivation function in Gunungpati District

The cultivation area is an area that is utilized in a planned and directed manner so that it can be efficient and effective for human life. One of the cultivation areas is Green Open Space (RTH). RTH is part of open space, namely spaces in urban areas both in the form of areas and areas that are open and without buildings.

The RTRW of Semarang City explains that the minimum limit for green open space is 30%. This requirement applies to all districts in the city of Semarang. The distribution of green open space in Gunungpati District has met the requirements, namely 3291.39 Ha or 60.96% of the total area of 5399.09 Ha (Semarang City Development Planning Agency). The use of green space in the Gunungpati District is more in the form of filling green plants or green plants such as plantations, forests, and agricultural land.

5. Conclusions and Recommendations

Space Utilization Evaluation in Gunungpati District is an effort to balance the social, economy, and environment in the development of Semarang City. Spatial structure and spatial patterns are an important part of utilizing space in the Gunungpati District. The suitability of the Semarang City RTRW with the application of spatial structures and patterns will have a major impact on the community in Gunungpati District. This suitability is seen from the aspects of the structure and spatial patterns which include settlements, infrastructure networks, and green open spaces in the Gunungpati District.

Table 5. Suitability of Spatial Structure and Patterns in Gunungpati District.

No	Land Use	**Space Structure & Pattern (**v)	
		Corresponding	**not as expected**
1	Settlement		v
2	The network of Facilities and Infrastructure	v	
3	Green open space	v	

This study concludes that there is a mismatch in the implementation of the RTRW for the City of Semarang, especially about the spatial structure, namely the settlements in Gunungpati District. This mismatch was found in the presence of settlements on slopes with sufficient/high slopes, which should not have allowed

the slope in its development because the best status was protected by the RTRW of Semarang City. Meanwhile, the network of facilities and infrastructure as well as green open spaces in Gunungpati District is classified according to the content of the RTRW of Semarang City.

Finding a mismatch between the RTRW and its implementation, especially about spatial structure and patterns, this study suggests policymakers or the Semarang City Government look in more detail, approaching the community towards residents who live on slopes with a moderate/high slope. The Semarang City Government must conduct a review of the RTRW, especially related to spatial structure and patterns. It takes clear boundaries in the contents of the RTRW, so that discipline can be manifested during society. In the end, people's welfare through environmental sustainability can be felt well.

Besides the importance of providing education to the public regarding sustainable urban development, to create complex environmental preservation, this article contributes to the field of public management and a collaborative governance policy model that is directly implemented in the city of Semarang.

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