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Inconsistency of Protected Rice Fields with Spatial Planning in Purworejo Regency

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ABSTRACT

This study aims to analyze the discrepancy between Protected Rice Fields (LSD) and the Regional Spatial Plan (RTRW) in Purworejo Regency, its impact on land management and spatial planning, and formulate solutions. The method used is a mixed approach with spatial overlay analysis techniques and in-depth interviews with relevant stakeholders. The results of the analysis indicate significant discrepancies concentrated in Grabag and Pituruh Districts, with a clustered distribution pattern. This discrepancy results in potential land use conversion, licensing conflicts, and irregularities in the implementation of spatial planning policies. To address this problem, recommendations for updating spatial data based on field verification, improving coordination between agencies, and strengthening education and outreach to land management communities were made. This study concludes that aligning LSD and RTRW data is crucial for achieving sustainable regional spatial management and protecting agricultural land.

A. Introduction

The conversion of rice fields is a major problem facing Indonesian agriculture and a contributing factor to the current decline in rice supply, directly reducing national rice production and increasing dependence on imports (Maryanti, 2022). Rapid development growth and population growth have increased demand for land, while the area of rice fields remains constant (Badoa et al., 2018). Population growth increases food demand, while development needs also increase. This makes agricultural land conversion an urgent issue that requires government intervention to control it through regulations.

Land conversion regulations established by the government must protect agricultural land so that it functions properly, remains stable, does not shrink, and maintains its fertility for food security (Ikhwanto, 2019). The government's efforts to achieve this are implemented through Law Number 41 of 2009 concerning the Protection of Sustainable Food Agricultural Land (PLP2B), better known as the LP2B Law. Protected Rice Fields (LP2B) are agricultural lands designated for protection and consistent

development to produce staple foods for national food independence, resilience, and sovereignty. As mandated by this regulation, LP2B is implemented through determinations by each regional government, as outlined in regional regulations concerning spatial planning.

The reorganization of land conversion control was further strengthened with the issuance of Presidential Regulation Number 59 of 2019 concerning the Control of Paddy Field Conversion. This regulation aims to accelerate the designation of Protected Paddy Fields (LSD) to maintain the availability of paddy fields nationally. However, the implementation of the LP2B Law remains weak, with its suboptimal performance in suppressing the rate of paddy field conversion. This right presents a barrier at the regional level, resulting in not all regions enacting LP2B-related regulations and limited availability of spatial data to support the designation of these lands (Dewinta & Warlina, 2017). The government has taken the initiative to establish Protected Rice Fields (LSD). This means the central government is taking the initiative to control land conversion through the designation of Protected Rice Fields (LSD) as a strategic step to ensure the availability of agricultural land in a more measurable manner and integrated with national policy.

The Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency issued Decree of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency Number 1589/SK-HK.02.01/XII/2021 concerning the Determination of Protected Rice Field Maps in Regencies/Cities in the Provinces of West Sumatra, Banten, West Java, Central Java, the Special Region of Yogyakarta, East Java, Bali, and West Nusa Tenggara.

This Decree from the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency is based on earlier laws and rules, including Law Number 41 of 2009 about protecting sustainable agricultural land, Presidential Regulation Number 59 of 2019 about controlling the conversion of rice field land, and Regulation Number 12 of 2020 about how to check rice field data against land and planning data, create maps of protected rice fields, and give advice on changing land use for those protected fields. Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency Number 2 of 2024 concerning Procedures for Verifying Paddy Field Data Against Land and Spatial Planning Data, Determining Protected Paddy Field Maps, and Recommendations for Land Use Changes on Protected Paddy Fields.

These various factors contribute to the district's potential for rapid regional development, which will impact agricultural land conversion. Therefore, the government established a spatial planning policy through Presidential Regulation Number 59 of 2019 to control the conversion of paddy fields. Protected rice fields are designated through spatial maps and may not be converted without going through strict verification procedures, as stipulated in the Regulation of the Minister of Agrarian Affairs and Spatial Planning Number 2 of 2024, with the aim of tightening supervision and ensuring that protected rice fields are not converted.

A common reality in the field is that the designated LSD (Land Use Area) is inconsistent with the Regency/City Spatial Plan, in the form of the Regional Spatial Plan (RTRW) and the Detailed Spatial Plan (RDTR) established by the local government. The Regional Spatial Plan, as defined in Law Number

26 of 2007 concerning Spatial Planning, serves as the basis for spatial utilization. This discrepancy between the LSD and the Regional Spatial Plan will undoubtedly impact spatial utilization, as has been the case in Purworejo Regency (Milasari et al., 2023).

According to the Central Statistics Agency (BPS) for Central Java Province in 2023, rice paddy fields in Indonesia have continued to experience significant shrinkage over the past two decades, including in Purworejo Regency. One of the main factors driving this change in land use is the increasing demand for land for housing development, particularly in areas adjacent to city centers or along main transportation routes. Rice production data in Purworejo Regency in 2019 showed a decrease of 21,348 tons (7.33%) compared to 2018. Rice production also tended to decline from 2018 to 2021. This decreased output is due to the increasingly alarming situation regarding changes in land use, particularly agricultural land.

Purworejo Regency, located in Central Java Province, is an area with significant agricultural potential, particularly in rice production. The agricultural sector is a key economic sector for the Purworejo community. However, the conversion of protected rice fields to non-agricultural use has increased due to development and the growing demand for land for housing and industrial activities (Dion Agasi Setiabudi, 2024).

In some areas, there is also a mismatch between the Regional Spatial Plan (RTRW) and protected rice fields, such as in Purworejo Regency. This mismatch causes problems in controlling land conversion, posing challenges for local governments and other stakeholders in managing existing rice fields. Furthermore, there are administrative and technical obstacles in the process of converting protected rice fields to protected areas, necessitating a comprehensive solution. Therefore, an in-depth analysis of the inconsistency of the LSD with the Purworejo Regency Spatial Plan (RTRW) is necessary.

B. Research Methods

This study discusses the discrepancy between the LSD and the Spatial Plan, its impact on the government, and solutions to the disparity. The method used in this study is a mixed method, namely quantitative and qualitative (Sugiono, 2013). The quantitative method was carried out to analyze the discrepancy between the Protected Rice Fields (LSD) and the Regional Spatial Plan (RTRW) in Purworejo Regency. This study also uses a spatial analysis approach (Marlina, 2016), which uses an overlay technique. This overlay technique is carried out by combining the LSD map with the Purworejo Regency RTRW map to observe which areas are not in accordance with the established Spatial Plan. The qualitative method was carried out to examine problems related to the impact and solutions to the LSD discrepancy. The qualitative method is a research method for examining the object of the problem with research results that emphasize the substance rather than generalization (Sugiono, 2013). The qualitative method is suitable for examining the conditions of a problem in depth (Sugiono, 2013). This research uses a qualitative method because it is considered more appropriate in addressing the problem, namely the impact of the mismatch between the Land Use and Spatial Planning (LSD)

and the Regional Spatial Plan (RTRW), as well as the solutions in Purworejo Regency. Spatial overlay analysis aims to visually and spatially identify mismatches between actual land use and spatial planning. Thus, this method helps reveal the distribution patterns of mismatches and which areas should be the focus of attention in the management of protected rice fields. This method is expected to provide a clear picture of the extent of these mismatches. This method is designed to answer the first research question, related to identifying mismatches between the LSD and the RTRW (Regional Spatial Plan). The second question, which is to obtain data directly through interviews and direct observation with relevant stakeholders, is that the solution to the mismatch between protected rice fields and spatial planning. The drawback of this method is its dependence on the availability and accuracy of spatial data. Spatial analysis using overlay techniques is highly dependent on the quality, accuracy, and scale of the LSD and RTRW maps. If there are differences in the format, resolution, or update time of the maps, the overlay results can lead to biased or inaccurate interpretations.

This research was conducted in Purworejo Regency, Central Java, which is geographically strategic and has good transportation access, making it a potential area for industrial, residential, and agricultural development. The main focus of the research is on the mismatch between the Protected Rice Fields (LSD) map and the Regional Spatial Plan (RTRW), which impacts development, investment, and sustainable land management. The study's population included all sub-districts in Purworejo Regency that experience mismatches between the LSD and the RTRW, with the entire population being utilized as a saturated sample. Informants were selected purposively, involving employees from four main agencies directly related to the LSD and RTRW issues, to obtain in-depth information. The collected data consisted of primary data (interviews) and secondary data (spatial documents), which were reviewed using spatial overlay analysis techniques with ArcMap 10.8 to measure the level of conformity between the LSD and the RTRW. The analysis also included the Average Nearest Neighbor method to determine the distribution pattern of mismatches (clustered, random, or scattered), as well as the classification of the level of mismatches in each sub-district. To address the impact and solution formulation, Miles and Huberman used qualitative data analysis techniques, including data collection, data reduction, data presentation, and conclusion drawing. This study not only presents spatial data but also considers the social, economic, and policy contexts so that the results are expected to provide a strong foundation for making more effective and sustainable spatial planning policies in Purworejo Regency (Miles and Huberman, 2014).

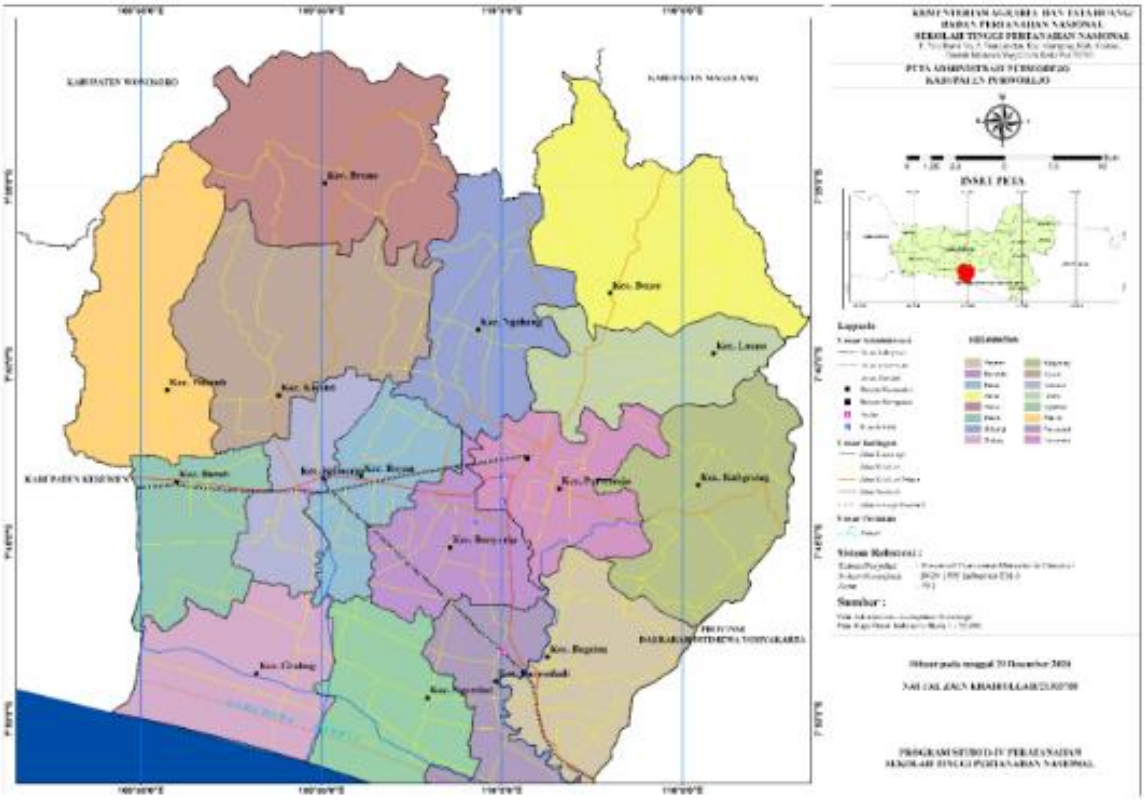


Figure 1. Administrative Map of Purworejo Regency
Source: Created by Researcher (2025)

B. Results and Discussion

Purworejo Regency's Land Use Area (LSD) was determined at 29,224.14 ha based on Decree of the Minister of ATR/KBPN No. 1589 of 2021 and is spread across all sub-districts. The highest distribution of LSD is in Ngombol Sub-district (3,819.17 ha), while the lowest is in Kaligesing Sub-district (93.25 ha). This determination was achieved by integrating various thematic maps, including maps of paddy fields, spatial planning, irrigation, and forest areas. The LSD and RTRW maps show that the LSD doesn't match the RTRW land use. The Purworejo Regency RTRW, as stipulated in Regional Regulation No. 10 of 2021, defines 16 categories of spatial use, including agricultural areas (29,784 ha), plantations (28,213 ha), rural and urban settlements, and industrial and defense areas. Inconsistencies arise when some LSDs are located outside the agricultural zone in the RTRW (Regional Spatial Plan), indicating pressure on agricultural land due to residential and industrial needs. This discovery serves as the foundation for research aimed at examining the effects and remedies for these discrepancies in spatial planning and spatial planning policies. The researchers' analysis, based on the obtained LSD shapefile data, shows the distribution of these LSDs. The distribution of LSDs and the RTRW can be seen in Figures 2 and 3.

The current Regional Spatial Plan (RTRW) for Purworejo Regency is based on Purworejo Regency Regional Regulation Number 10 of 2021 concerning the Purworejo Regency Spatial Plan for 2021–2041. The Purworejo Regency RTRW regulates spatial planning, or the division of district land uses, encompassing various functions, both as protected areas and cultivated areas. There are 16 spatial planning categories established under this regional regulation.

For a clearer picture of the spatial structure of Purworejo Regency, see the Spatial Map in Appendix 3. Based on the spatial data processing results from the RTRW (Regional Spatial Plan), information regarding the area of each spatial allocation plan is obtained, as presented in the following figure and table.

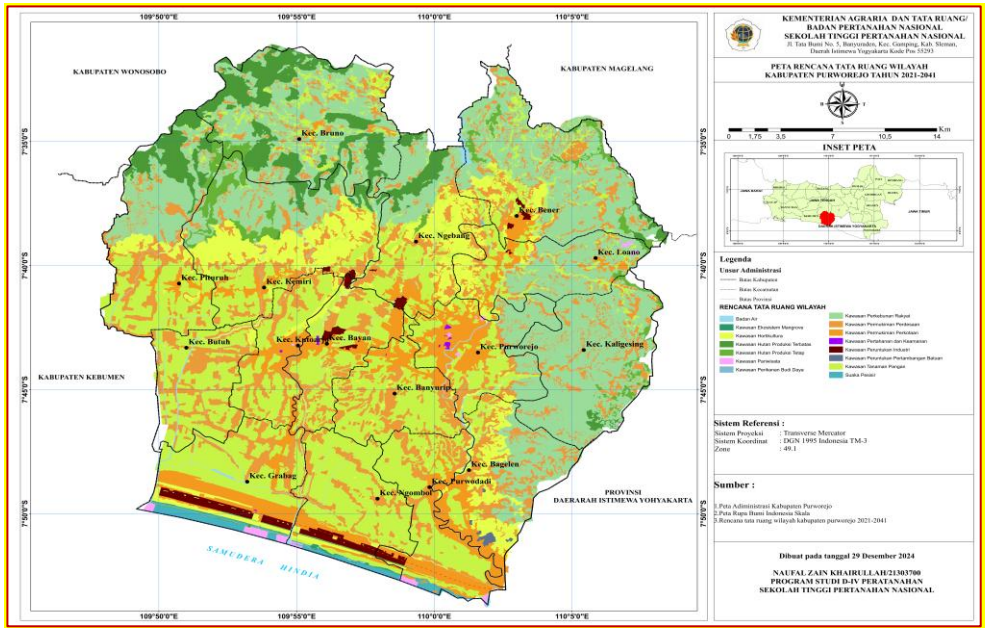


Figure 2. 2021 Spatial Plan Map.
Source: Created by Researcher (2025)

Table 1. Distribution of Regional Spatial Plans (RTRW) in Purworejo Regency

NO	Allocation of Regional Spatial Plans	Area of Spatial Plan (Ha)
1	Water bodies	1330,475801
2	Mangrove Ecosystem Area	91,94405995
3	Horticultural Area	9297,386165
4	Limited Production Forest Areas	6076,711663
5	Limited Production Forest Area/Tourism Area	52,10851565
6	Permanent Production Forest Areas	2192,919756
7	Tourism Areas	343,3370845
8	Aquaculture Fisheries Area	18,07046877
9	People's Plantation Areas	28213,98983
10	Rural Settlement Areas	18863,40079
11	Urban Residential Areas	9654,115538
12	Defense and Security Zone	51,93217933
13	Industrial Allocation Area	1250,400647
14	Rock Mining Allocation Area	96,36656477
15	Food Crop Area	29784,74369
16	Coastal Sanctuary	827,1168449
	Total	**108145,0196**

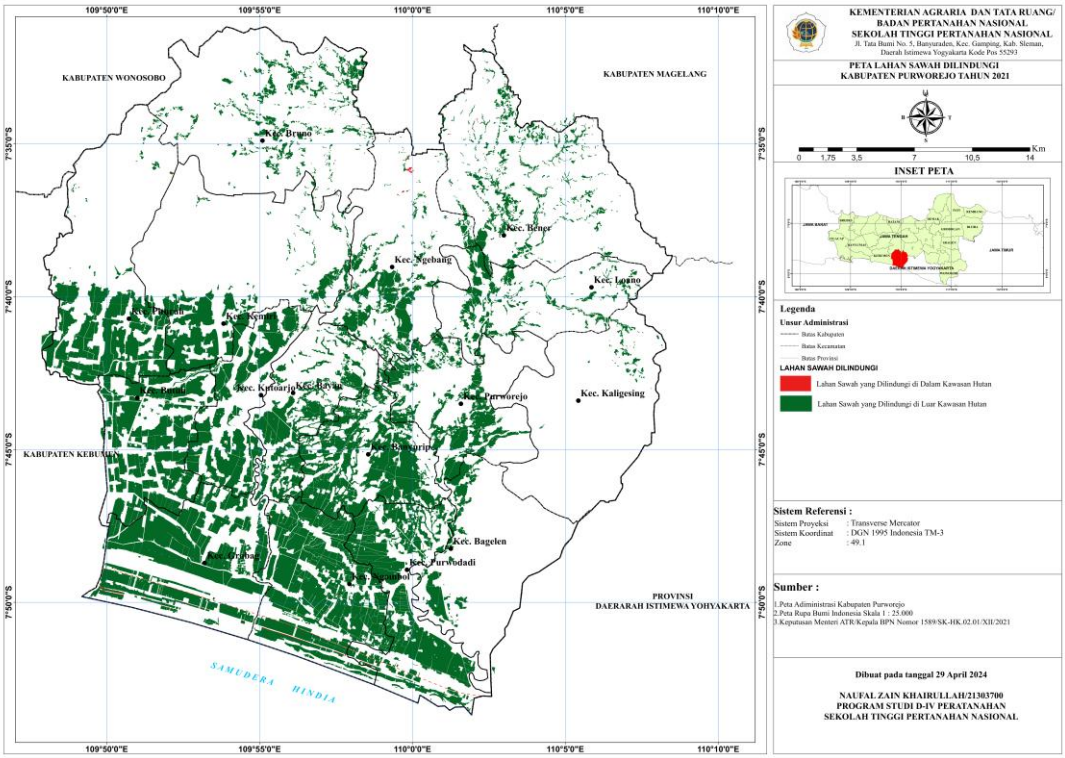


Figure 1. Map of Protected Rice Fields in 2021
Source: Made by Researchers (2025)

Table 1. Distribution of Protected Rice Fields (LSD) in Purworejo Regency

NO	District	Protected Rice Field Area (Ha)
1	Bagelen	608,13
2	Banyurip	2691,18
3	Bayan	1567,75
4	Bener	1012,27
5	Bruno	882,53
6	Butuh	2767,73
7	Gebang	1255,06
8	Grabag	3495,17
9	Kaligesing	93,25
10	Kemiri	1484,81
11	Kutoarjo	1959,10
12	Loano	815,65
13	Ngombol	3819,17
14	Pituruh	2408,02
15	Purwodadi	2930,83
16	Purworejo	1433,49
	Total	**29224,14**

Source: Map of Protected Rice Fields in 2021 (Figure 3)

The total area of protected rice fields is 29,224.14 hectares spread across 16 subdistricts. This data shows a fairly varied distribution, from very small ones like in Kaligesing with only about 93 hectares to very large ones in Ngombol with almost 3,819 hectares.

1. Incompatibility of Protected Rice Fields with Regional Spatial Planning in Purworejo Regency

The LSD was then classified into two categories, namely 'Compliant' and 'Inappropriate,' with the allocation in the RTRW. This classification can be seen in Figure 3. Based on the results of the analysis conducted by the researcher, the calculation of the extent of inconsistency between the LSD and the RTRW was obtained as follows:

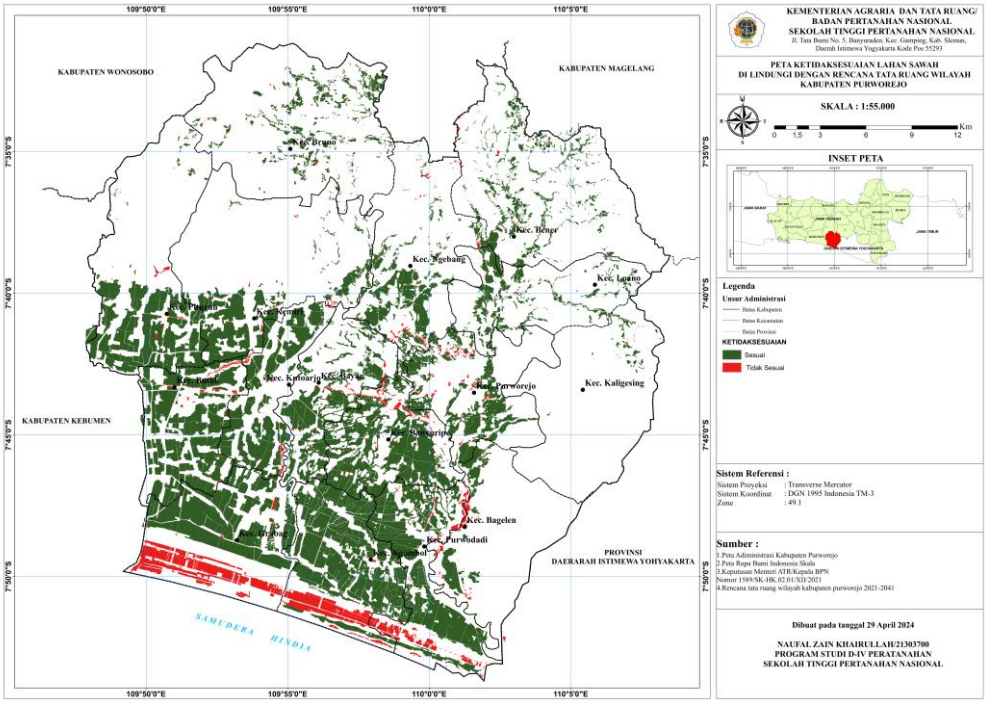


Figure 2. Map of Non-Conformity of Protected Rice Fields with RTRW in Purworejo Regency
Source: Protected Rice Fields Map and Spatial Plan Map of Purworejo Regency

Table 2. Calculation of the Extent of Incompatibility of LSD with RTRW

No	RTRW	RTRW Area (Ha)	LSD Entry Area (Ha)	Non Entry Area LSD (Ha)	Percentage LSD (%)
1	Water bodies	1330,475801	34,0236	1296,452	2,55%
2	Mangrove Ecosystem Area	91,94	4,87	87,06	5,30%
3	Horticultural Area	9297,38	722,31	8575,06	7,76%
4	Limited Production Forest Areas	6076,71	43,93	6032,77	0,72%
5	Limited Production Forest Area/Tourism Area	52,10	0	52,10	0
6	Permanent Production Forest Areas	2192,91	4,4636	2188,45	0,20%
7	Tourism Areas	343,33	41,06	302,27	11,95%
8	Aquaculture Fisheries Area	18,07	10,70	7,36	59,24%
9	People's Plantation Areas	28213,98	72,82	28141,16	0,25%
10	Rural Settlement Areas	18863,40	202,10	18661,29	1,07%
11	Urban Residential Areas	9654,11	471,72	9182,38	4,88%
12	Defense and Security Zone	51,93	1,21	50,71	2,34%
13	Industrial Allocation Area	1250,40	840,16	410,23	67,19%
14	Rock Mining Allocation Area	96,36	0	96,36	0
15	Food Crop Area	29784,74	26641,67	3143,07	89,44%

16	Coastal Sanctuary		827,11	133,02	694,09	16,08%
		Total	**108145,01**	**29224,14**	**78920,88**	**27,02%**

Source: Map of Non-Conformity of Protected Rice Fields with the Regional Spatial Plan of Purworejo Regency, 2025.

Table 3. Wide Discrepancy

No	Mismatch	Area (Ha)
1	Included in the Regional Spatial Planning Area	29224,14
2	Not included in the regional spatial planning area	78920,88

Source: Map of Non-Conformity of Protected Rice Fields with the Regional Spatial Plan of Purworejo Regency

Based on the data table above, it can be seen that there are Protected Rice Fields (LSD) included in the Regional Spatial Plan (RTRW) outside the Food Crop Area. The LSD area in accordance with the RTRW directive for food crop areas is 26,641.6709 ha. Meanwhile, the largest LSD is included in the Urban Residential Area, namely 471.7274 ha, while the smallest is included in the Defense and Security Area, with an area of 1.2185 ha.

Table 4. Percentage of Incompatibility of RTRW with LSD

NO	District	Extent of LSD	Unsuitable Area (Ha)	Suitable area LSD (Ha)	Percentage of LSD RTRW Nonconformity (%)
1	Bagelen	1567,75	55,32	525,26	13.63%
2	Banyurip	1012,27	47,73	2572,40	4.41%
3	Bayan	882,53	45,15	1512,43	3.53%
4	Bener	2767,73	75,36	964,53	4.72%
5	Bruno	1255,06	69,53	837,38	5.12%
6	Butuh	3495,17	926,16	2692,38	2.72%
7	Gebang	93,25	4,79	1185,53	5.54%
8	Grabag	1567,75	55,32	2569,01	26.50%
9	Kaligesing	1012,27	47,73	88,45	5.14%
10	Kemiri	1484,81	45,50	1439,31	3.06%
11	Kutoarjo	1959,10	55,98	1903,12	2.86%
12	Loano	815,65	18,09	797,56	2.22%
13	Ngombol	3819,17	558,12	3261,04	14.61%
14	Pituruh	2408,02	47,33	2360,69	1.97%
15	Purwodadi	2930,83	339,58	2591,25	11.59%
16	Purworejo	1433,49	92,17	1341,32	6.43%
	Total	**29224,14**	**2582,46**	**26641,66**	**6,94%**

Source: Map of Non-Conformity of Protected Rice Fields with the Regional Spatial Plan of Purworejo Regency

Table 5. The Extent of Disagreement at the Sub-district Level

No	Mismatch	Area (Ha)
1	Appropriate	26641,66
2	Inappropriate	2582,46

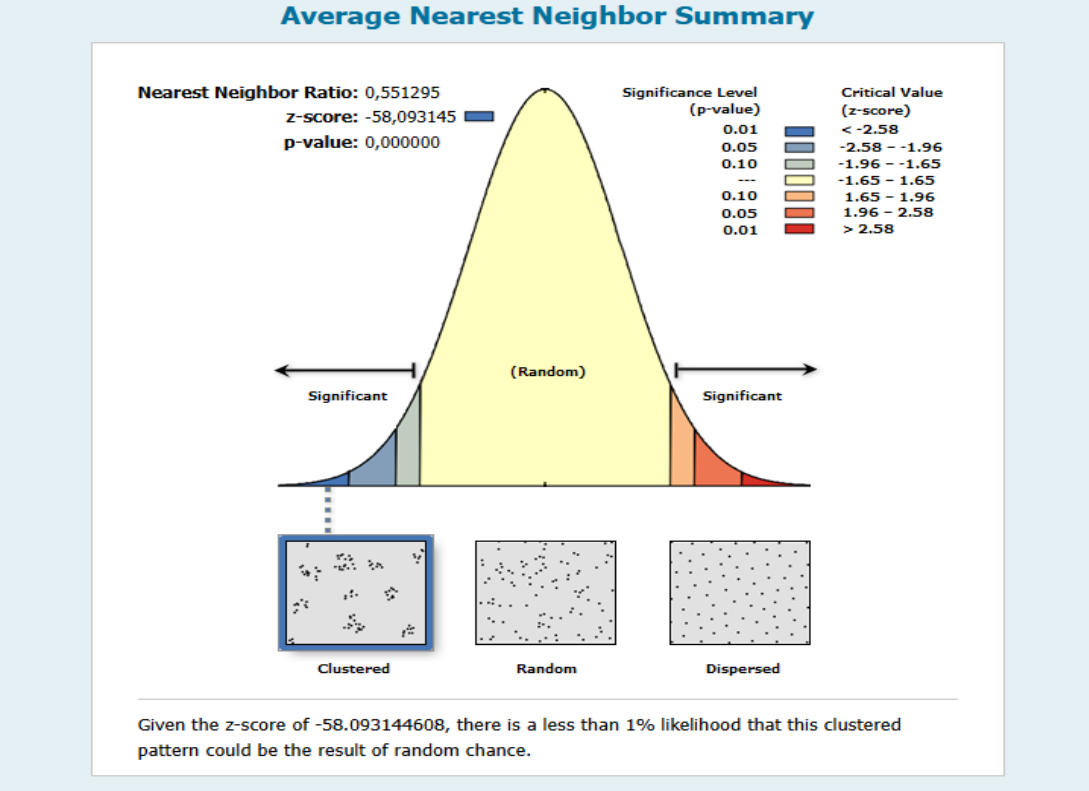
Source: Map of Non-Conformity of Protected Rice Fields with RTRW of Purworejo Regency

Based on the results of a spatial analysis of the conformity between Protected Rice Fields (LSD) and the Regional Spatial Plan (RTRW) in Purworejo Regency, it was found that only approximately 26,641.67 hectares of LSD align with the spatial designation in the RTRW. Meanwhile, 29,224.13 hectares of LSD do not align with the rice field zoning in the RTRW. This result is despite the total LSD area previously designated by the central government as 37,659.20 hectares. This discrepancy indicates that the majority of LSD in Purworejo Regency lies outside the designated agricultural zones in the RTRW document.

This discrepancy arises because the LSD data is compiled top-down by the central government, based on satellite imagery and interpretation of existing rice fields, without fully considering the legal and formal regional spatial plan. The regional government, on the other hand, puts together the RTRW by looking at different parts of local policy, the needs of regional development, and how land is used. As a result, some areas are used as rice fields and included in the LSD (Large-Scale Area Plan), but in the regional Spatial Plan (RTRW), they are designated for non-agricultural uses such as residential, industrial, or protected areas.

This imbalance not only impacts the clarity of agricultural land protection policies but also has the potential to trigger conflicts in development implementation and the granting of spatial use permits. Therefore, these findings emphasize the importance of aligning central and regional policies, particularly in establishing LSDs and revising the RTRW (Regional Spatial Plan), to ensure effective agricultural land protection and avoid overlapping policies at the site level.

Ngombol District had the highest level of compliance because its spatial planning structure was mostly made up of food crops and rural areas. On the other hand, Grabag District had the highest level of non-compliance because its complex spatial zoning included industrial, forest, urban, and rural areas, not all of which could protect rice fields. The differences in compliance levels between districts reflect significant spatial variability in RTRW implementation, indicating potential conflicts between spatial policies and agricultural conservation. Analysis of the distribution pattern of non-conformities using the Average Nearest Neighbor (ANN) method produces a Z-score value that serves as the basis for pattern classification: clustered ($Z < -1.65$), random ($-1.65 < Z < 1.65$), and scattered ($Z > 1.65$). These results confirm that non-conformities do not occur randomly, but rather reflect specific geographic trends that require spatial and sectoral attention. The results of the non-conformity distribution pattern are shown in Figure 5 below:



Gambar 3. Average Nearest Neighbor Summary
Source: Map of Non-Conformity of Protected Rice Fields with the Regional Spatial Plan of Purworejo Regency

The analysis results using the Average Nearest Neighbor method show that the distribution of non-conformity of Protected Rice Fields (LSD) with the Regional Spatial Plan (RTRW) in Purworejo Regency follows a significant spatial grouping pattern (clustered). The Z value of -58.09 and p value of 0.000 indicate that this pattern does not occur by chance but is the result of certain factors such as inappropriate spatial planning policies or concentrated development pressures. This clustered pattern indicates that points of non-conformity tend to be close together and form distinct clusters in certain areas, indicating the existence of priority areas that require special handling. This analysis also distinguishes between three spatial distribution patterns, namely clustered ($Z < -1.65$), random ($-1.65 \leq Z \leq 1.65$), and dispersed ($Z > 1.65$). In the context of Purworejo, the very low Z result indicates a strong spatial influence in the distribution of non-conformity LSD, thus providing a basis for more targeted and efficient spatial planning policy interventions. These findings also open up opportunities for further investigation into the factors causing clustering, such as economic activity, land-use change, or population density. Thus, this spatial information is a crucial tool in strategic and adaptive spatial planning, as well as in the ongoing monitoring of rice field conversions that are inconsistent with the Spatial Planning (RTRW). The following table provides a detailed view of these patterns.

Table 7. Spatial Clustering Patterns in Purworejo Regency

No	District	Average Nearest Neighborhood	Grouping Pattern
1	Bagelen	The ANN value for Bagelen indicates spatial grouping	(*Clustered*)
2	Banyurip	The ANN value for Banyurip shows spatial grouping	(*Clustered*)

No	District	Average Nearest Neighborhood	Grouping Pattern
3	Bayan	The ANN value for Bayan indicates spatial grouping	(*Clustered*)
4	Bener	The ANN value for Bener indicates spatial grouping	(*Clustered*)
5	Bruno	The ANN value for Bruno indicates spatial grouping	(*Clustered*)
6	Butuh	The ANN value for Need indicates spatial grouping	(*Clustered*)
7	Gebang	The ANN value for Gebang indicates spatial grouping	(*Clustered*)
8	Grabag	The ANN value for Grabag indicates spatial grouping	(*Clustered*)
9	Kaligesing	Nilai ANN untuk Kaligesing menunjukkan pengelompokan spasial	(*Clustered*)
10	Kemiri	The ANN value for Pecan indicates spatial grouping	(*Clustered*)
11	Kutoarjo	The ANN value for Kutoarjo shows spatial grouping	(*Clustered*)
12	Loano	The ANN value for Loano indicates spatial grouping	(*Clustered*)
13	Ngombol	The ANN value for Ngombol indicates spatial grouping	(*Clustered*)
14	Pituruh	The ANN value for Pituruh indicates spatial grouping	(*Clustered*)
15	Purwodadi	The ANN value for Purwodadi shows spatial grouping	(*Clustered*)
16	Purworejo	The ANN value for Purworejo indicates spatial grouping	(*Clustered*)

Source: Map of Non-Conformity of Protected Rice Fields with the Regional Spatial Plan of Purworejo Regency

1. The Concept of Clustering patterns, according to Getis

   According to Getis (2009), clustering patterns are important indicators in understanding the distribution of objects, reflecting underlying social, economic, or environmental phenomena. These patterns indicate the tendency of objects to be spatially close together and can be used to identify relationships or interconnections between regions.

2. Clustering Patterns in Protected Rice Fields (LSD) in Purworejo Regency

   In the context of Protected Rice Fields (LSD) in Purworejo Regency, the clustering patterns that emerged in each sub-district indicate that LSD tends to cluster in close spatial proximity. This indicates an ecological or social connection between rice fields connected within a single production and land-use system.

3. The Relationship between Clustering Patterns and Non-Compliance with the Spatial Plan (RTRW)

   Clustering patterns are important to analyze, especially when the LSD clusters are located in zones inconsistent with the Regional Spatial Plan (RTRW). The presence of LSD in zones not designated for agriculture can indicate potential spatial conflicts that require special attention from policymakers.

4. Clustering as a Spatial Planning Evaluation Tool

   Clustering can be used as an evaluation tool for the effectiveness of spatial planning policies. If a cluster of rice fields is located within the appropriate RTRW zone, this indicates that the policy is on target. However, if it is located in an inappropriate zone, a revision of the RTRW or stricter regulatory enforcement is necessary.

5. Classification of Land Use Non-Compliance Levels (LSD)

   To support policy formulation, the level of LSD noncompliance with the RTRW in each subdistrict is calculated. The results are classified into three categories: high, medium, and low, using a

systematic interval division method based on the difference between the maximum and minimum values of non-compliance.

6. Classification Interval Formula

The formula used to determine class intervals is

$$I = \frac{tmaks - tmin}{K}$$

$$I = \frac{26{,}50\% - 1{,}97\%}{3}$$

I = Class intervals
tmaks = Maximum value
tmin = Minimum score
k = the number of classes/classifications created

7. Purpose of Classification and Use in Planning

This classification is useful to assist planners in determining intervention priorities and allocating resources in a targeted manner. Districts with high levels of nonconformity are the main focus of spatial improvement, while areas with low nonconformity can be used as a reference in sustainable policy formulation.

The classification of the level of inconsistency between Protected Rice Fields (LSD) and the Regional Spatial Plan (RTRW) at the sub-district level is divided into three categories: high, medium, and low. This division is based on calculating class intervals using the highest (26.50%) and lowest (1.97%) percentages of inconsistencies, which are divided into three levels. The interval calculation results in 8.18%, resulting in the following classification: high inconsistency is in the range of 18.33% - 26.50%, medium inconsistency is in the range of 10.16% - 18.32%, and low inconsistency is in the range of 1.97% - 10.15%. This classification helps in determining the priority of spatial planning interventions and the development of more targeted strategies for controlling land conversion based on the level of urgency in each region. Figure 6 and the following table provide details of the inconsistency classification for each sub-district.

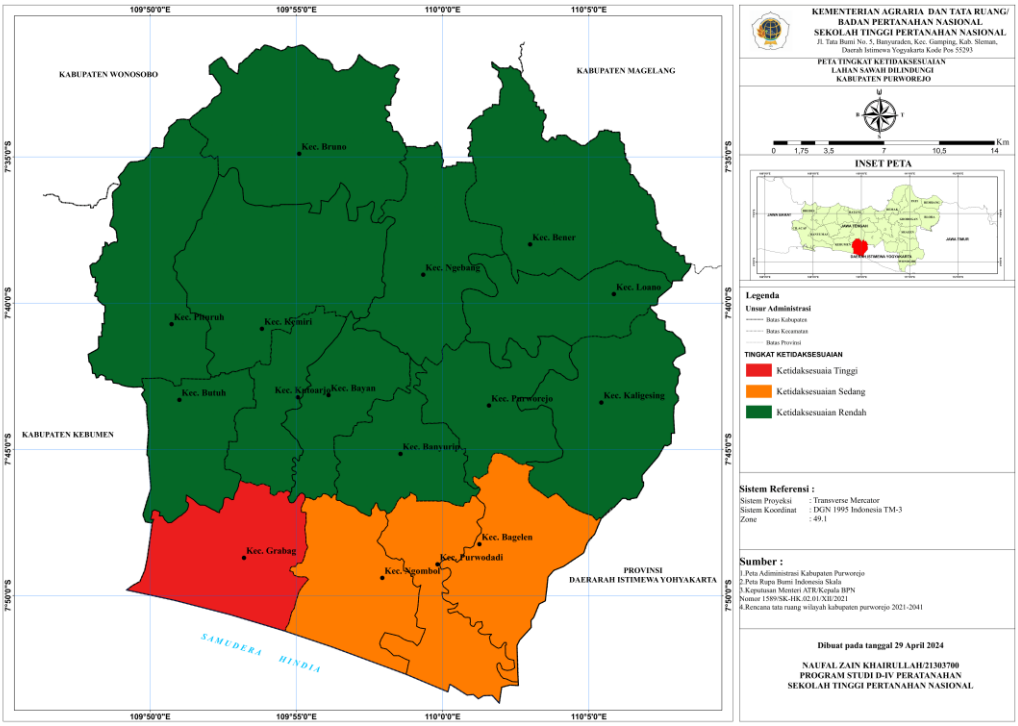


Figure 4. Map of the level of nonconformity

Source: Map of Non-Conformity of Protected Rice Fields with the Regional Spatial Plan of Purworejo Regency

Table 6. Classification of Non-Conformity of Each Sub-district in Purworejo Regency

NO	District	Percentage of LSD RTRW Nonconformity (%)	Degree of Nonconformity
1	Bagelen	13.63%	Medium
2	Banyurip	4.41%	Low
3	Bayan	3.53%	Low
4	Bener	4.72%	Low
5	Bruno	5.12%	Low
6	Butuh	2.72%	Low
7	Gebang	5.54%	Low
8	Grabag	26.50%	High
9	Kaligesing	5.14%	Low
10	Kemiri	3.06%	Low
11	Kutoarjo	2.86%	Low
12	Loano	2.22%	Low
13	Ngombol	14.61%	Medium
14	Pituruh	1.97%	Low
15	Purwodadi	11.59%	Medium
16	Purworejo	6.43%	Low

Source: Created by Researcher (2025)

Based on the table, it can be seen that the overall level of non-conformity for the LSD is mostly low.

1. Low (<7%): Land conditions are still relatively in accordance with the Spatial Plan (RTRW), with minimal risk of land function violations.

2. Moderate (7% - <15%): There are indications of significant changes in land function, requiring stricter monitoring and policy intervention to prevent further expansion.
3. High (≥15%): A fairly serious condition, indicating that a large portion of protected rice fields is no longer in accordance with the RTRW. To keep these areas safe, management, monitoring, and law enforcement must focus on them.

1. Impacts of Non-Conformity Between the LSD and RTRW Maps

The establishment of the Protected Rice Field (LSD) map in Purworejo Regency based on the Decree of the Minister of ATR/KBPN has had a significant impact, both positively on agricultural land protection and negatively due to non-conformity with the Regional Spatial Plan (RTRW). This nonconformity has implications for various government sectors and the community. The most significant impact is seen in the permitting process, which has become complex, slow, and full of uncertainty due to overlapping land statuses. For the Land Office, although its primary task is to issue Land Technical Considerations (PTP), the inconsistency between the Land Destination Plan (LSD) and the Spatial Plan (RTRW) complicates the process. In certain cases, such as the construction of a grocery store in Sendangsari Village, Bener District, land located in a residential area within the RTRW was actually included in the LSD, requiring it to be removed from the LSD through a release procedure with the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN). A similar issue also impacts the permitting process at the DINPMPTSP, where many applicants, especially investors, are unable to process land use change permits even though their land complies with the RTRW. Businesses located within the LSD pose significant challenges for approximately 10 applicants, impeding their ability to invest and pursue development opportunities.

The Food Security and Agriculture Agency (Dishub) also feels the impact, which observes that, although the LSD is beneficial for maintaining agricultural land functions and reducing land conversion rates, inconsistencies with the RTRW actually hinder the development of critical infrastructure, such as industrial estates and national strategic projects. Purworejo Regency, which has a 75% agricultural surplus, still requires infrastructure to support regional development. However, the LSD status, which is inconsistent with spatial planning, makes infrastructure development difficult, as ideal agricultural land cannot be utilized. In this situation, the Head of the Food Sector stressed how important it is to find a balance between protecting land and being able to move around.

Regionally, the impact of the mismatch between the LSD and the Spatial Plan (RTRW) varies significantly across sub-districts. Grabag District, which has the highest level of mismatch, faces significant pressure due to the reduction of productive rice fields, which are being converted into non-agricultural areas, such as residential areas and public facilities. This creates potential spatial planning conflicts between community groups seeking to maintain agricultural land use and those supporting development. The sub-district government is also being forced to increase oversight, cross-sector coordination, and public education to ensure that LSD and RTRW policies are understood and accepted equitably. Conversely, in Pituruh District, which has a low mismatch, the direct impact is relatively

small, but confusion remains among farmers due to discrepancies in map information, and weak oversight opens up opportunities for uncontrolled land use conversion.

In the spatial planning sector, according to an employee at the Public Works and Housing Agency (DPUPR), the impact of the mismatch is felt more by business actors. The licensing process, which previously only required PKKPR, KRK, and OSS, now requires the release of the Land Use Plan (LSD) at the central level, even if the land is in accordance with the RTRW (Regional Spatial Plan). This contradiction increases time, costs, and uncertainty, as well as creating significant bureaucratic hurdles. This mismatch indicates the need for a comprehensive revision of the LSD map, based on valid, real-time data, to align with field needs. This misalignment also creates technical and regulatory challenges and demonstrates weak cross-sectoral planning coordination.

Overall, the mismatch between the LSD and the RTRW is a source of complex and multidimensional problems in Purworejo Regency. Therefore, we need an updated LSD map based on accurate and participatory data, regulatory alignment between the central and regional governments, and ongoing public outreach. Cross-sectoral coordination must be strengthened to ensure that agricultural land protection can coexist with development efforts, investment, and adaptive and sustainable spatial planning. With this approach, Purworejo Regency can avoid spatial planning conflicts and optimize land use according to community needs and regional development.

2. Solutions to Problems Caused by Mismatches Between the LSD and the RTRW

Solutions are essential to resolve the discrepancy between the Protected Rice Field (LSD) map and the Spatial Plan (RTRW) in Purworejo Regency and minimize the impacts arising from the discrepancy. This issue primarily impacts relevant government agencies such as the Purworejo Regency Land Office, the Department of Public Works and Spatial Planning (DPUPR), the Department of Food Security and Agriculture, and the Department of Integrated Investment and One-Stop Integrated Services (DINPMPTSP), which have strategic roles in LSD management and RTRW implementation. To find appropriate solutions, researchers conducted interviews and document analysis from these relevant agencies. The Land Office, as an agency under the Ministry of ATR/BPN, is responsible for issuing LSD maps; the DPUPR manages district-level spatial planning, particularly in the field of spatial planning; the DINPMPTSP handles permits affected by map discrepancies; and the Department of Food Security and Agriculture handles the agricultural sector, which is the main object of LSD. Sub-districts with low levels of non-conformity, such as Pituruh Sub-district, tend to experience relatively minor impacts, although they still require increased coordination and oversight to ensure land conditions are maintained in accordance with the Spatial Plan (RTRW). Conversely, sub-districts with high levels of non-conformity face greater impacts, including potential spatial planning conflicts, increased land use violations, and greater socio-economic pressures on the community. Therefore, the solution measures taken include synchronizing and updating map data based on valid field data, strengthening coordination between relevant agencies, outreach and education for the community and land managers, as well as providing technical assistance and developing alternative income

streams to mitigate the economic pressures caused by restrictions on rice field use. This approach is expected to effectively and sustainably resolve the issue of the inconsistency between the LSD map and the RTRW, while also preserving rice fields as a source of food security in Purworejo Regency.

As the Head of Grabag Sub-district, I recognize the importance of immediately addressing the inconsistency between the Protected Rice Field map and the current Regional Spatial Plan. Therefore, we continue to strengthen coordination with the Purworejo Regency Government and related agencies, particularly the Spatial Planning Agency, to ensure that the data and maps used are synchronized and accurate in accordance with the latest RTRW (Regional Spatial Plan), to avoid overlapping information that could lead to confusion and conflict in the field. We also participate in outreach and education programs for the community, especially farmers and stakeholders, to raise awareness of the importance of protecting rice fields as a source of livelihood and food, preventing detrimental exploitation. Supervision and enforcement of regulations are carried out in a disciplined manner, involving relevant officials, to ensure land use in accordance with spatial planning and minimize violations. Furthermore, we support the revision and updating of the Protected Rice Fields map based on valid field data so that spatial planning is responsive to actual conditions on the ground. We also provide technical assistance to farmers and land managers to ensure more sustainable land management in accordance with spatial planning regulations and environmental conservation. To alleviate the economic pressures caused by rice field restrictions, we are working together to develop alternative sources of income for affected communities. Finally, we utilize information technology such as Geographic Information Systems (GIS) to monitor land conditions in real time and facilitate transparent and accurate data updates for sustainable land management in Grabag District. With these steps, we hope to quickly resolve the discrepancy between the LSD map and the RTRW (Regional Spatial Plan) and allow Grabag District to maintain a balance between development and environmental preservation, ensuring the benefits for the entire community.

Interviews with employees from the sub-district office, especially the sub-district head, revealed that to deal with the problems caused by the differences between the LSD map and the RTRW (Regional Spatial Plan) in Pituruh District, the sub-district government is taking important steps to improve teamwork, provide education, and enhance oversight. First, map data is regularly updated using accurate field data to ensure more accurate and reliable information. Second, public outreach and education are being intensified to reduce confusion and raise awareness of the importance of preserving rice fields as a source of food security. Third, the sub-district government is strengthening inter-agency coordination to ensure that spatial planning implementation is carried out according to regulations and is strengthening oversight to promptly prevent inappropriate land conversion activities. The use of information technology for monitoring is also part of the strategy to ensure effective and transparent land management. With these steps, it is hoped that the sustainability of rice fields in Pituruh District can be maintained, supporting sustainable development and community welfare.

Interviews with employees of the Purworejo Regency Land Office, particularly those in the Land Management and Empowerment Section, are ongoing. According to the Land Use Substance Coordinator, the solution to the discrepancy between the Land Use Plan (LSD) and the Spatial Planning (RTRW) is Actual Verification, which involves field inspections to determine which are truly rice fields and which are not. Afterward, if any are included in protected rice fields, they are released or removed. A recommendation letter is then prepared, as can be seen in Appendix 7 for the release of protected rice fields, which is sent to the Ministry of Agrarian Affairs and Spatial Planning (ATR/BPN) in Jakarta. Because the central government has the authority to release protected rice fields, the Purworejo Regency Land Office has no authority whatsoever to release protected rice fields.

Based on an interview with an employee in the Spatial Planning Division of the Public Works and Spatial Planning Agency (DPUPR) of Purworejo Regency, specifically an employee in the Spatial Planning Division, he explained the solution to the discrepancy between Protected Rice Fields (LSD) and the Regional Spatial Planning Plan (RTRW) in Purworejo Regency. According to him, DPUPR has coordinated with the Ministry of Agrarian Affairs and Spatial Planning (ATR/BPN) to resolve the discrepancy. The resolution is carried out through an Actual Verification activity between the LSD data and the Purworejo Regency Spatial Plan (RTRW). This verification is carried out through direct field inspections to determine which land is truly rice fields and which is not. If land is listed as LSD but is not actually rice fields, it can be removed from the LSD data. However, the mechanism for resolving discrepancies between the LSD and the RTRW is currently a technical agreement in the form of Actual Verification Minutes. This document is jointly prepared by the central and regional governments after field inspections. However, this agreement is not yet legally binding because it has not been formalized through an official decree from the ministry and therefore cannot be used as a legal basis for spatial planning revisions or changes to the LSD data.

Based on the Actual Verification Agreement Minutes, as of Monday, August 15, 2022, the retained LSD area is 27,630.79 hectares, with the following breakdown: LSDs corresponding to Food Crop Areas: 26,574.25 hectares; LSDs not corresponding to Food Crop Areas: 1,008.19 hectares; and 276.08 hectares of unsustainable LSD. In addition to the field verification process, the Public Works and Housing Agency (DPUPR) also provides the community with the opportunity to independently apply for land release from LSD status through established procedures.

Based on interviews with licensing staff at the Purworejo Regency Department of Public Works and Public Housing (DPMPTSP), it was explained that the solution to the discrepancy between Protected Rice Fields (LSD) and the Regional Spatial Plan (RTRW) must comply with established national policies. Because these are considered nationally applicable provisions, all parties are asked to adapt, without considering the spatial conditions planned by the region. In practice, the DPMPTSP can only facilitate administrative resolution, such as assisting business actors in coordinating with the Public Works and Public Housing Agency (PUPR) and the National Land Agency (BPN). However, this approach demonstrates a logical inconsistency with the principle of regulatory harmonization, in which national and regional policies should be mutually adjusted, rather than operating in one

direction. Prioritizing unilateral compliance with central regulations without efforts to align with regional RTRWs actually risks reinforcing policy inequalities, complicating investment, and ignoring the spatial and social context of the region. If business actors, especially those that are not MSMEs or those with investments exceeding one billion rupiah, apply for permits, they are required to obtain a Spatial Utilization Activity Conformity Approval (PKKPR). The issuance of PKKPR (Planning for Land Use) is carried out by the Department of Agricultural and Food Security (DPMPTSP) through several stages, one of which is a coordination forum. This forum provides support for locations that request removal from the Protected Rice Fields area.

The Purworejo Regency Food Security and Agriculture Office also plays a role in resolving the issue of inconsistencies between the Protected Rice Fields (LSD) and the Regional Spatial Plan (RTRW). Researchers were directed to interview the Head of the Food Sector, who explained that the solution to the LSD and RTRW inconsistencies is achieved through actual verification activities, as is also carried out by the Purworejo Regency Land Office and the Purworejo Regency Public Works and Spatial Planning Agency (DPUPR). The purpose of the actual verification is to pinpoint land parcels that do not adhere to the RTRW. If land is found to be within the LSD area but not within the Food Crop Area (yellow zone), a statement will be provided stating that the land is registered as part of the LSD.

Furthermore, the Head of the Food Sector also proposed a solution to the problem of decreasing agricultural land, namely land intensification. This intensification is carried out by increasing the cropping index, where land that was previously only planted once a year can now be planted two to three times. One method used is a pumped irrigation system, which draws water from shallow groundwater sources to irrigate dry land. This method can significantly increase agricultural productivity.

D. Conclusion

Based on the results of this study, the following conclusions were drawn:

1. The discrepancy between the Protected Rice Field (LSD) map and the Regional Spatial Plan (RTRW) shows a clustered pattern. Grabag District recorded the largest discrepancy, covering 926.16 hectares, while Pituruh District had the smallest discrepancy, at 47.33 hectares. Based on Purworejo Regency Regional Regulation Number 10 of 2021, there are 16 types of spatial designations. In terms of discrepancy, one district showed a high level of discrepancy, three districts were at a medium level, and twelve districts had a low level of discrepancy.
2. The impact of the mismatch between the LSD and the RTRW is evident through analysis and field findings. This mismatch disrupts legal certainty in land use, creates obstacles in the licensing process, limits investment and development realization, and reduces the effective area of agricultural land. The results of the mismatch classification indicate that the most serious impacts occur in areas with a high level of mismatch, such as Grabag District, which experiences spatial planning conflicts and obstacles to land development. Conversely, Pituruh District, which falls into

the low mismatch category, shows relatively minimal impacts, characterized by smooth licensing and land use alignment with the RTRW.

3. The proposed solutions include different approaches depending on the level of mismatch in the area: agricultural intensification and the use of GIS technology for monitoring in heavily impacted districts, submitting recommendations for LSD release to the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN), actual verification through collective applications, and the establishment of a cross-agency forum to align the RTRW and LSD.

D. Recommendations

Based on the results of this study, the researcher makes several recommendations, as follows:

1. The Importance of Making Sure the Protected Rice Field (LSD) Map and the Regional Spatial Plan (RTRW) Are in Sync Given that the Protected Rice Field (LSD) map aims to maintain the sustainability of agricultural land, its preparation should consider its alignment with the Regional Spatial Plan (RTRW) of each region. This synchronization is necessary to ensure effective implementation of policies that protect rice fields and to avoid overlapping land use regulations.
2. The Need for Service Standards for Handling LSD Discrepancies. Based on the findings of discrepancies between the LSD and the RTRW, consideration is needed to develop service standards related to the process of resolving these discrepancies. These standards can include procedures, time limits, and other technical provisions and can be developed through coordination between the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (BPN) and land offices at the district/city level.
3. The Role of Regional Governments in Spatial Planning Revision In the regional context, specifically Purworejo Regency, research findings demonstrate the importance of coordination between the regency government, the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN), and the Central Java Provincial Government in reviewing or revising the RTRW. This aims to provide legal certainty, clarify zoning, and align central policies with local needs and conditions.

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