



Agricultural Land Protection for Food Security: Policy Integration of Protected Rice Field Map in Spatial Planning in Demak Regency

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ARTICLE INFO	ABSTRACT
<p>Keywords: LSD, Food Security, Agriculture, Map Integration.</p> <p>Date logs: Received: July 02, 2024 Reviewed: July 04, 2024 Accepted: August 17, 20234 Published: August 19, 2024</p> <p>How To Cite: Dewi, C.K. & Wulansari, H. (2024). Agricultural Land Protection for Food Security: Policy Integration of Protected Rice Field Map in Spatial Planning in Demak Regency. <i>Marcapada: Jurnal Kebijakan Pertanahan</i>, 3(2), 81–94. https://doi.org/10.31292/mj.v3i2.52</p>	<p>Indonesia is a major agricultural country in Southeast Asia. According to the results of integrated food crop agricultural statistics data gathering operations in 2023, the area designated for rice harvesting is 10.21 million hectares. Indonesia imports rice from numerous nations to address its population's unmet food demands. This rice import activity indicates that Indonesia's food security is not yet fully established. When there was a mismatch between the Protected Rice Fields (LSD) map and the RTRW laws in effect in the region, difficulties emerged. Many lands with spatial designs were classified as LSD. We have yet to completely apply the new agricultural land preservation legislation. This is due to several flaws in the map caused by the determination of protected rice fields. This study intends to determine LSD's position in respect to LP2B, examine the potential impact of map disintegration during policy implementation, and suggest new LSD methods and policies to protect agricultural land through integration with RTRW. This study employs a qualitative research methodology. The conclusions of this study indicate that the LSD policy must immediately improve spatial data; with adequate and accurate spatial data, the LSD policy can be implemented in tandem with other policies. The LSD provided to PSN land suppliers can be replaced with Protected Rice Field Reserve Land, or by identifying locations with surplus food security and putting in place mechanisms to protect rice fields in such regions. The concept entails protecting LSD by securing protected rice field reserve area to preserve its long-term viability, as well as combining the LSD map with the RTRW to allow regional development and expansion.</p>

A. Introduction

Indonesia is one of the largest agricultural countries in Southeast Asia. Coupled with fertile soil and a good climate, it is not surprising that food crop production, especially rice, ranks first in 2021, as released by the ASEAN Secretariat (2022). Indonesia has a rice harvest area of 10.41 million hectares according to the results of integrated food crop agricultural statistics data collection activities (Central Statistics Agency 2021) using the area sample frame method recorded in 2021. With this harvest area, rice production that can be produced is 57.449 million tons. Indonesia has not been able to meet the food needs of its population. Indonesia imports rice from several countries, as stated by the Minister

of Trade Zulkifli Hasan. The reason for this rice import is to stabilize rice prices amidst disruptions to the national rice supply (Abidin, 2015). This rice import is expected to meet the Government Rice Reserve (CBP). From this rice import activity, it can be concluded that food security in Indonesia is not yet fully strong. Food security can be interpreted as a form of balance between rice production and rice consumption needs. Food security itself can be classified into surplus food security and minus food security. A region can be said to have surplus food security if the level of rice production in the region can meet the rice consumption of its population, while a region can be said to have minus food security if rice production cannot meet the food needs of its population (Pratama et al., 2021; Dewi, 2018). The food security program has been included by the government in the priority programs of the 2015–2019, 2019–2024 RPJMN, in accordance with the mandate of Law No. 41 of 2009 concerning the Protection of LP2B (Sustainable Food Agricultural Land). The government's efforts to protect agricultural land have begun since 2009, namely with the issuance of Law No. 41 of 2009. Annual report of the food security agency 2019. Jakarta: Ministry of Agriculture (Food, B.K. 2019). In the law, there is a term Sustainable Food Agriculture Area hereinafter referred to as KP2B and Sustainable Food Agriculture Land hereinafter referred to as LP2B. In Law No. 41 of 2009, the definition of LP2B is a field of agricultural land that is designated to be protected land and must be developed consistently. The definition of KP2B is an agricultural area that contains a stretch of sustainable food agriculture land or LP2B reserve land. After the LP2B was established, the government again issued a Decree of the Head of BPN Number: 354 / KEP-100.18 / IX / 2011, which discussed the consolidation of rice field area by forming a coordination team for consolidation of rice field area. The output produced in the ministerial decree is the existence of definite data on LBS (basic rice field land) nationally. Standard rice field land is rice field land planted with rice or other crops periodically and consistently. In 2013, through the Decree of the Head of the National Land Agency of the Republic of Indonesia Number 3296/Kep-100.18/IV/2013, mapping of previously identified rice field land was carried out. In 2019, the government determined rice field land nationally with the Decree of the Minister of ATR/Head of BPN Number 686 of 2019 concerning the determination of the National LBS Area in 2019. Following up on the ministerial decree, Presidential Regulation Number 59 of 2019 concerning Control of Rice Field Land Conversion was issued. The presidential regulation has discussed LSD (Protected Rice Field Land), namely rice field land whose use is consistently maintained in accordance with its function to maintain food security. Along the way, the creation of this LSD map requires the contribution of various government institutions, such as the Ministry of PUPR, Ministry of Agriculture, KLHK, BIG, etc. This is done to synchronize the data held by each government institution so that in determining the LSD there is no overlapping regulation (Sulistiyono et al., 2020; Imanullah, 2013).

Problems began to arise when there was a discrepancy between the LSD map and the RTRW regulations in force in the area. Many lands were found with residential spatial plans; however, these lands were included in the LSD category. The lack of firmness in regulating protected rice fields means land conversion is still rampant. The regulations regarding protected rice fields are considered less firm in determining punishments for changes in land function, accompanied by data on the protected

rice field map that is less accurate and in sync with the RTRW (Regional Spatial Plan). This further clarifies the picture that the policy has not been properly prepared by the government. The Map of Protected Rice Fields in Demak Regency according to the latest map data, namely the 2022 LSD Map, is 56,140.14 ha. Protected rice fields are divided into 2 characteristics, namely protected rice fields outside forest areas and protected rice fields inside forest areas. The LSD grouping is based on the location and real conditions of the rice fields in question. Protected rice fields in Demak Regency for those outside the forest area are 56,086.44 ha, and for those inside the forest area, 53.69 ha.

The issuance of new regulations regarding the protection of food crop land has not been fully implemented properly. This is because there are still many shortcomings in the map resulting from the determination of protected rice fields. The availability of supporting data, including numerical data and geospatial data, is very much needed when determining rice fields that will become LSD objects. The supporting data is in the form of data from government agencies involved in making the LSD map. The LSD map that has been produced has not been integrated with the RTRW map; this has caused overlapping land use and its regulations. Overcoming the problem of land conversion is not only by issuing policies that only protect the object, but it is also necessary to improve the quality of the subject, and it is necessary to build cooperation between government agencies in realizing Indonesia's food security.

Several previous studies have been conducted, including Malthus's (2022) work, showing that showing that land with a lower land rent value tends to undergo land conversion more quickly than land with a higher land rent value. Fahri's (2016) research, conversion of rice fields to plantations. This study highlights the effects of competition for land use causing an increase in land rent. The use of agricultural land for food is considered to be below the use of oil palm plantations because agricultural production is lower than the value of oil palm production. Janah and Eddy's (2017) study in Sayung, Demak Regency, is one of the developing areas in Demak Regency because the area is an area affected by urban sprawl from the growth of the Semarang City area. This study shows that population growth in areas affected by urban sprawl tends to be faster and has an impact on food agricultural production in the form of rice and corn, which have decreased productivity. Of course, many other studies have emerged, especially focusing on the factors and causes of land conversion. This study will analyze the suitability of the LSD map with the RTR map in Sayung District and Karangtengah District, Demak Regency.

B. Research Methods

This study uses a qualitative research method with a descriptive analysis approach. Qualitative methods are used to study and understand social problems that arise in society by asking certain questions and procedures, collecting information, analyzing data inductively, and interpreting the meaning of the data (Creswell, 2010, Nasution, 2023). In this study, a descriptive qualitative method is used to describe the analysis of problems regarding the new policy at the Ministry of ATR/BPN, namely the Protected Rice Fields policy. Some of the statistical data used are descriptive statistics,

which are described and calculated in tabular form in the form of diagrams/percentages and processed to describe existing problems. Image interpretation and map overlay are carried out only to determine areas of surplus/minus land and are analyzed through overlay maps of LSD, LP2B with RTRW and comparisons are made. This research was conducted in Sayung District and Karangtengah District, Demak Regency. The following is a map of the research location in map form.

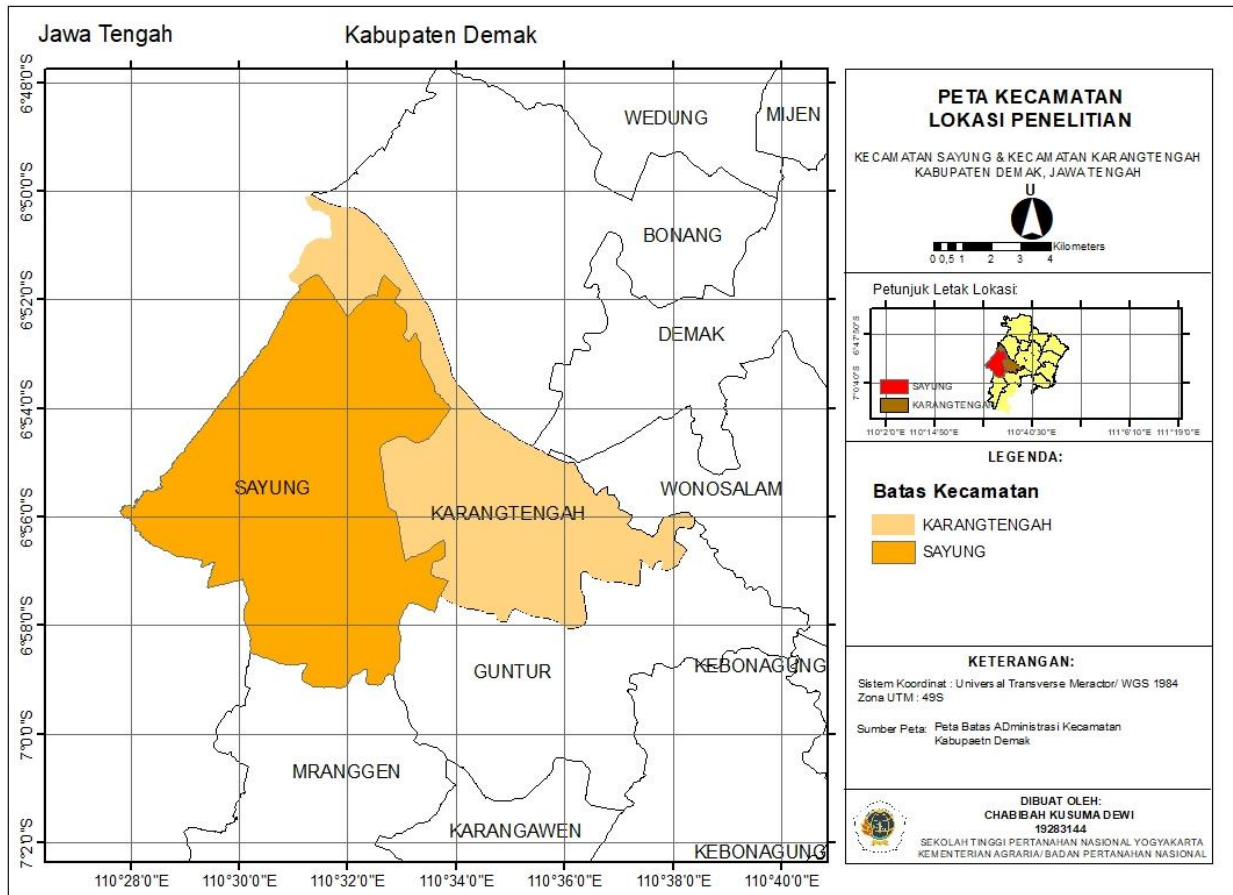


Figure 1. Research Location Map
Created by: Author, 2023

C. Agricultural Land Protection Policy in Demak Regency

1. Existence of LP2B and LSD Policies for Agricultural Land Protection

The LP2B and LSD policies represent government efforts to protect agricultural land through legislation. The LP2B policy has been in place since 2009, having its legal foundation in Law No. 41 of 2009. The law explains the purpose of protecting sustainable food agricultural land, namely to protect and guarantee the availability of food agricultural land. In this case, protection encompasses not only preserving the existence of agricultural land, but also safeguarding the ownership of agricultural land and ensuring the welfare of farmers. But up until now, this policy hasn't been thought to have worked very well because the rate at which land is turned into homes keeps going up. To slow this down, the government has made new rules based on Law No. 41 of 2009. These rules cover protecting agricultural land, and finally, the Protected Rice Field Policy was created as a result of efforts to protect

agricultural land. The Protected Rice Field Policy is a policy program from the Ministry of ATR/BPN that is legally based on Presidential Regulation No. 59 of 2019. Law No. 41 of 2009 mandated the LP2B policy, which is the precursor to this LSD policy. Presidential Decree No. 59 of 2019 mandates the acceleration of protected rice field map determination. The Central Government and Regional Governments use this LSD map as a resource to identify sustainable agricultural land for food production, which they then incorporate into their spatial planning plans. The Demak Regency Land Office, along with other land offices, has been implementing the LSD policy since the establishment of the Demak Regency LSD map on December 16, 2021. The implementation of this policy will take into account all matters or applications related to changes in land function.

The purpose of this LSD policy is to reduce the rate of land conversion, which is increasing every year; however, this LSD policy still has several shortcomings and obstacles. In fact, there are concerns that the LSD map may not be prepared to represent a significant advancement in efforts to protect agricultural land. Following the introduction of this policy, a number of issues surfaced, two of which stem from the inconsistency between the LSD map and the RTRW map. These issues affect land-related activities like the licensing process for land conversion. The RTRW should convert this land into non-agricultural land, but the inclusion of the land in the LSD hinders this process. This also has an indirect impact on regional investment. The inclusion of land in the LSD will hinder the allocation of land in the RTRW, which is part of the industrial area and should be suitable for industrial sector development, as it cannot be converted (Erwahyuningrum et al., 2023; Syahroni, 2023).

From a legal perspective and based on the hierarchy of laws and regulations in Indonesia, the LP2B policy holds a higher position than the LSD policy. Law regulates the LP2B policy, while Presidential Regulation regulates the LSD policy. Presidential Regulation No. 59 of 2019 stipulates that while the LSD map serves as the basis for the LP2B map, the land office uses it for technical land considerations. Indeed, Demak Regency already has an LP2B map that is more in sync with its RTRW map. When considering the suitability of the land use in the RTRW, the LP2B map is deemed more appropriate than the LSD map. The Demak Regency RTRW has an area of 56,763.25. The area of the LSD of Demak Regency is 56,140.13 ha, and the area of the LP2B of Demak Regency is 55,520.26 ha.

Table 1. Difference in area of RTRW Food Crop Area, LSD, and RTRW

Area of RTRW for Food Crop Agricultural Area	56.763,25 Ha	SELISIH
LP2B Area	55.520,26 Ha	1.242,99 Ha
LSD Area	56.140,13 Ha	623,12 Ha

Source: 2023 field data.

If seen from the difference in area between the RTRW for the allocation of Food Agriculture Areas with LSD and LP2B, it is concluded that LSD is more in sync with RTRW than LP2B with RTRW. However, if seen from the overlay of the three maps, then for suitability with RTRW, the LP2B map is more appropriate than the LSD map. It can be seen on the map below as an example of the overlay of the three maps:

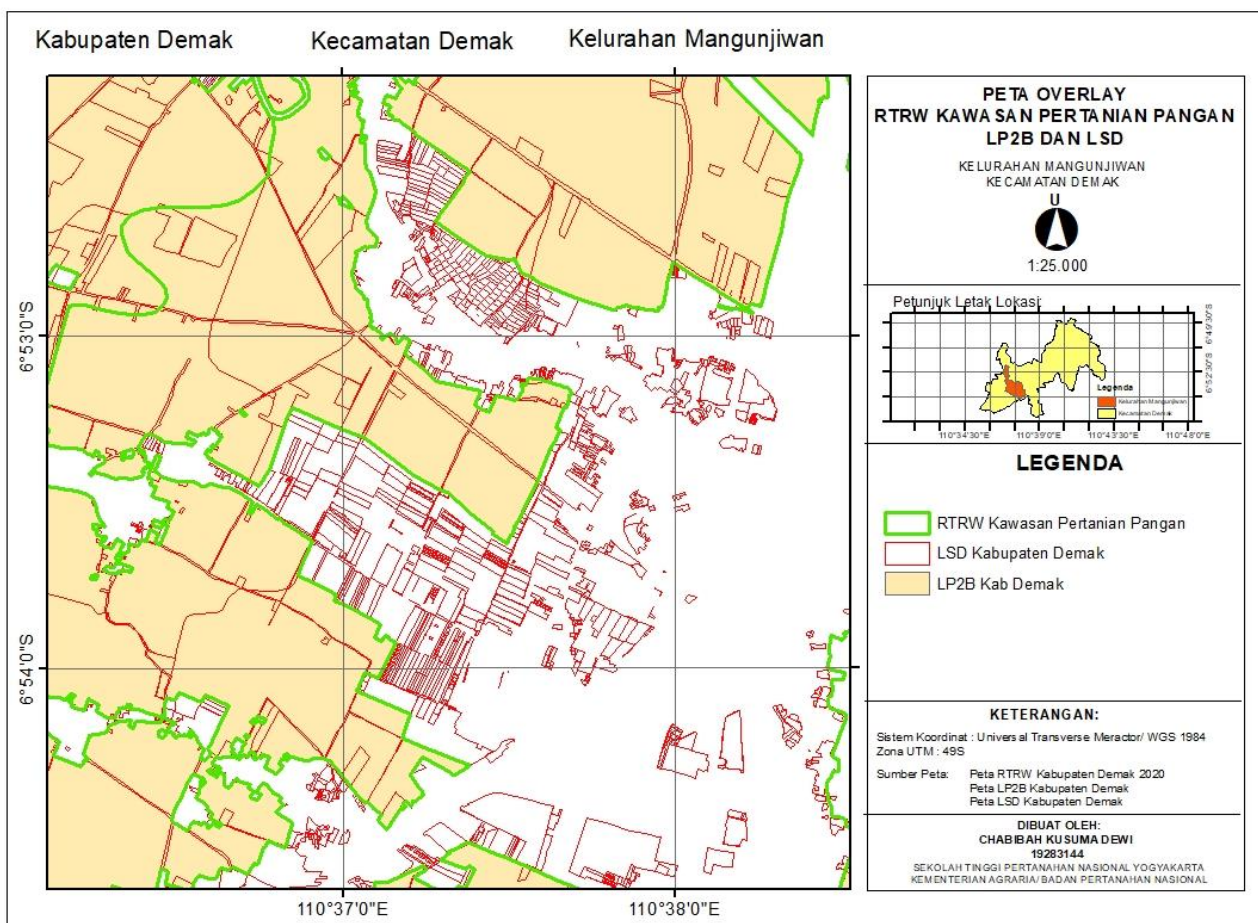


Figure 2. Overlay Map of RTRW, LSD, and LP2B
Source: Created by the author, 2023

The brown area is the LP2B zone; the area with the red outline is the LSD area, while the RTRW Food Crop Agriculture Area is marked with a green outline. Based on the analysis of the overlay results of the RTRW, LP2B, and LSD maps, it was concluded that the LP2B map is more in line with the food crop agriculture area in the RTRW than the LSD map. In fact, according to the applicable regulations, this LSD map functions as a consideration in determining the LP2B, but in fact there are many LSD areas that are outside the food crop agriculture area (overlap with other designations in the RTRW regulations). There is another difference between the LSD and LP2B policies, namely regarding incentives and disincentives. To enforce the regulations of a policy is supported by the existence of incentives and disincentives as controlling factors. The provision of incentives can be a factor in influencing landowners who enter the LP2B/LSD area not to convert their land. In the LP2B policy, incentives and disincentives are regulated in Government Regulation No. 12 of 2012 concerning Incentives for the Protection of Sustainable Food Crop Agriculture Land. The regulation explains that incentives are given to farmers from each government differently; these incentives come from the central government, provincial government, and district/city government. Examples of incentives given by the central government are infrastructure development, provision of facilities and infrastructure, guarantees for issuing land rights certificates, research funding, and so on. In the LP2B policy, the central government provides incentives for guarantees for issuing land rights certificates

so that, in addition to being protected physically, agricultural land can be protected legally. Of course, if there are incentives, the recipients of these incentives have obligations regulated in PP No. 12 of 2012 (Karim & Ariastita, 2017; Widyani, 2018). Government Regulation No. 12 of 2012 has explained in detail the provision of incentives on land included in the LP2B area, starting from the form of incentives, procedures for providing incentives, obligations of farmers receiving incentives, and revocation of incentives to control and supervise. Meanwhile, in the LSD policy, there are no further regulations governing incentives. Incentives in the LSD policy are discussed in Presidential Regulation No. 59 of 2019 Articles 18–20. For the funding of LSD incentives, it is still under discussion, which is planned through the General Allocation Fund (DAU) and Special Allocation Fund (DAK) policies. If the idea is realized soon, it can be capital for the LSD policy in protecting problematic rice fields such as those in Demak Regency. In addition to the differences above, there are still differences between LSD and LP2B, namely regarding the availability of reserve land in each policy. In LP2B there is reserve land referred to as LCP2B (Sustainable Food Agriculture Reserve Land). According to Law No. 41 of 2009, LCP2B is potential land whose use is protected so that its suitability and availability remain controlled to be used as Sustainable Food Agriculture Land in the future.

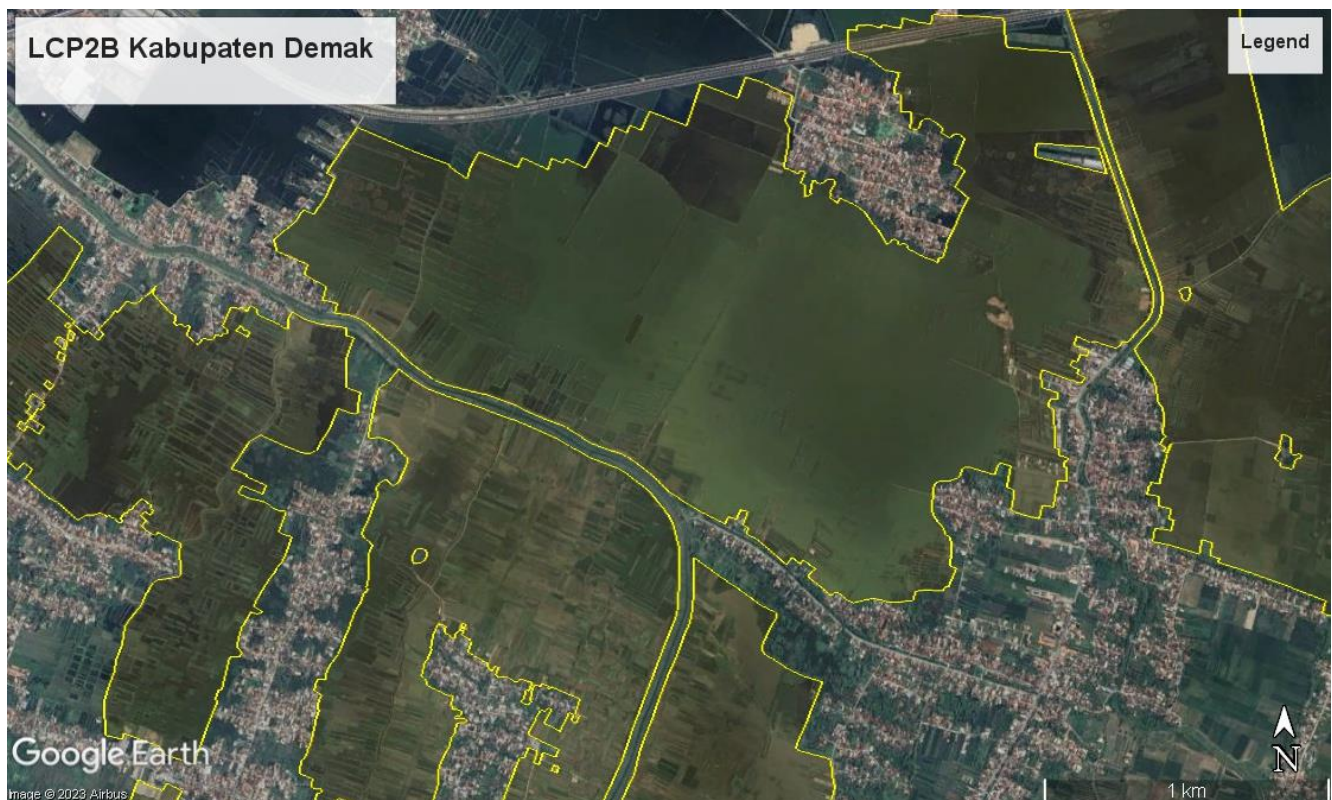


Figure 3. Sustainable Food Agriculture Reserve Land
Source: Processed field data, 2023.

The area of LCP2B Demak Regency is 1,009.82 Ha, the location of LCP2B Demak Regency is in Sayung District and there is a small part in Karangtengah District. The determination of LCP2B when viewed from the field conditions is very inappropriate, because the LCP2B area is a minus area and

does not have good food security and when viewed from the current conditions, the longer the land close to the North Coast of Java is increasing the amount of sinking land. Meanwhile, in this LSD policy, there is still no determination of LSD reserves, so there is no potential land that can be used for LSD in the future, so this can be a problem in the LSD policy because there is no solution for LSD that is permitted to be issued.

2. Resolution Efforts

Technical considerations for land issued by the land office currently use the LSD map as a consideration in granting land conversion permits. To control land conversion by granting land conversion permits, the Ministry of ATR/BPN has prepared this LSD map as a consideration in granting permits. The Ministry of ATR/BPN, which produced this LSD map, can directly supervise everything from the map to the issued permits. Given the aforementioned issues, the Regional Government, PUPR Service, Agriculture Service, and other relevant agencies can conduct a re-verification of the LSD map, which still exhibits significant discrepancies in the designation of food crop agricultural areas in the RTRW. When it comes to land verification, we can utilize the LP2B map as a benchmark when determining whether to keep or remove land from the LSD. Besides using the LP2B map for comparison, land verification can also incorporate the latest satellite imagery and aerial photos. We can integrate the results of this verification into the RTRW Map. The Demak Regency Regional Regulation No. 1 of 2020, an amendment to the Demak Regency Regional Regulation No. 6 of 2011, marked the last review of the Demak Regency RTRW. The Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency of the Republic of Indonesia No. 6 of 2017, Article 4, stipulates that the RTRW review should occur at least once every 5 years, allowing for an update of the LSD map in the Demak Regency RTRW review. The image below is an example of an LSD map that is not in sync with the food agriculture area designation. We need a Demak Regency LSD map, a Demak Regency LP2B map, a Demak Regency RTRW map, and the latest Google satellite from June 2023 to identify it. This satellite serves the purpose of evaluating whether the LSD warrants issuance or requires maintenance in compliance with relevant regulations and real-world conditions.

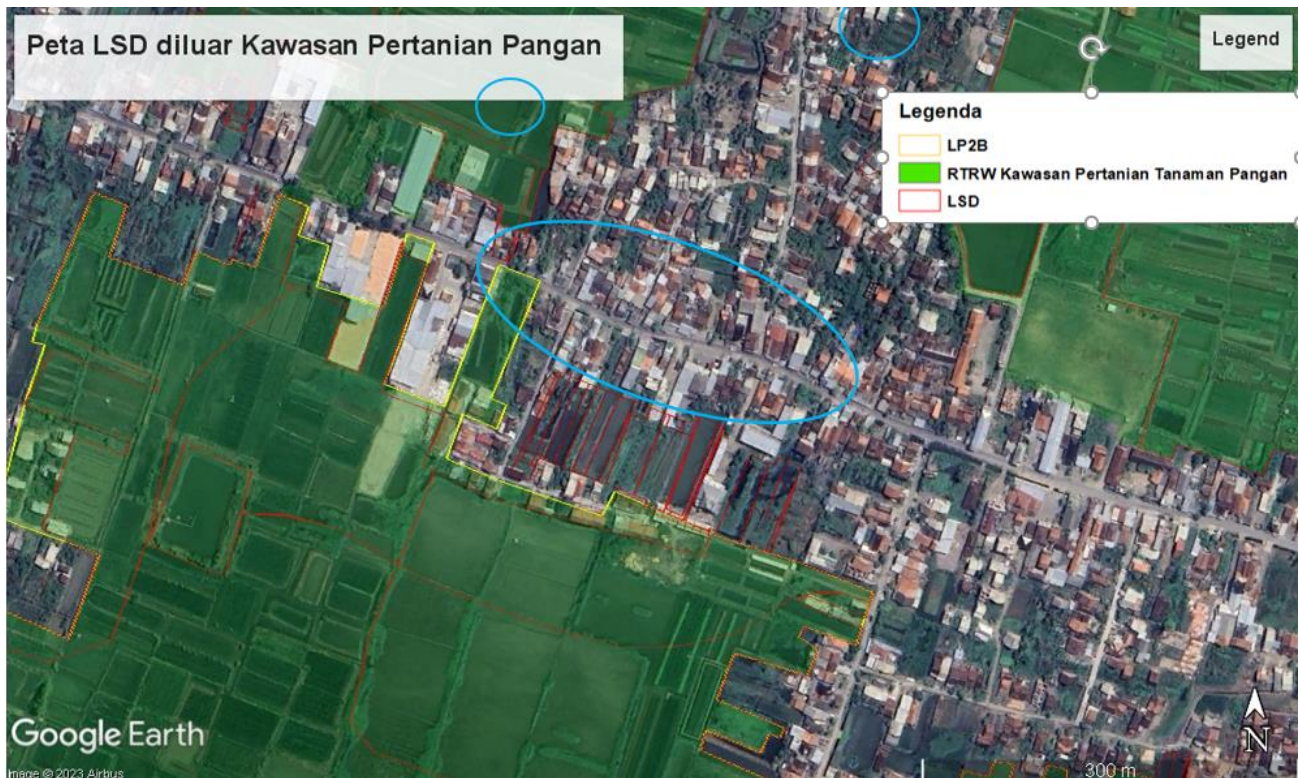


Figure 4. LSD that can be considered for issuance
Source: Field Data Processing Results, 2023.

The image above indicates that the land in the blue circle falls within the LSD area, but the RTRW regulations do not classify it as a food crop agricultural area, nor does it qualify as an LP2B. The land also satisfies a criterion for correction or exclusion from the LSD, specifically the 5,000 m² LSD area, and is encircled by buildings on three sides. Therefore, it is possible to exclude these lands from the RTRW. Involving the community or village officials to gather information on the rice fields is necessary to determine their maintenance potential. The community or village officials will usually know more about the condition of the rice fields in the area. For the problem of reserve land in the LSD and LP2B policies, reserve land should be determined in areas that have surplus agricultural conditions and are areas with good food security. This effort can maximize agricultural production; besides that, it can also maximize agricultural land protection.

D. Integration of LSD, RTRW, and Identification of Submerged Rice Field Land

Currently, there is no integration between the LSD map and the RTRW map. There is an overlapping map between the LSD area and the non-food agriculture RTRW area. This problem creates a conflict of interest between the two policies, specifically the LSD and RTRW regulations. The lack of synchronization allows the Ministry of ATR/BPN to change or not establish an absolute LSD map, potentially leading to a gradual decrease in the LSD area. The Minutes of the Agreement on the Actual Verification of the Settlement of Protected Rice Fields (LSD) Not in Accordance with the Spatial Plan (RTR) of Demak Regency reveal several LSD lands that do not align with the RTR's designation. Here are the specific details:

- Total LSD of Demak Regency based on Decree of the Minister of ATR/BPN No: 1589/SK-HK.02.01/XII/2021: 56,182.99 Ha
- Area of Food Crop Area in the RTRW of Demak Regency: 56,763 Ha
- Area of LSD in accordance with the RTRW Food Crop Area: 51,504.61 Ha
- Area of LSD not in accordance with the RTRW Food Crop Area: 3,390.79 Ha
- Area of LSD affected by the PSN of the Semarang-Demak Toll Road: 41.07 Ha

The agreed-upon LSD area was 54,255.85 ha. This figure was derived from the LSD area in accordance with the RTRW Food Crop Area, which is 51,504.61 ha, and the LSD area not in accordance with the RTRW, which is maintained at 3,390.79 ha. The reducing factor, namely the construction of the Semarang-Demak Toll PSN 41.07 ha, further reduced this amount. The LSD area will continue to decrease because it is directly proportional to the need for land, which increases every year. LSD land contributes to the reduction of the area, but it does not contribute to its expansion; hence, it is crucial to promptly establish an LSD map that aligns with existing regulations. This ensures that land designated as LSD cannot be disturbed, unless it serves a common interest.

The second issue stems from the lack of synchronization between the LSD map and the field conditions. The author's observations in Demak Regency revealed numerous rice fields submerged after years of flooding, placing them within the LSD zone. Submerged rice fields resulted in total crop failure. Upon assessment, the productivity of these rice fields has declined, rendering them unsuitable for inclusion in the LSD, with some even remaining completely unproductive. The LSD in Dukun Village, Karangtengah District, includes submerged rice fields, as shown in the following picture:

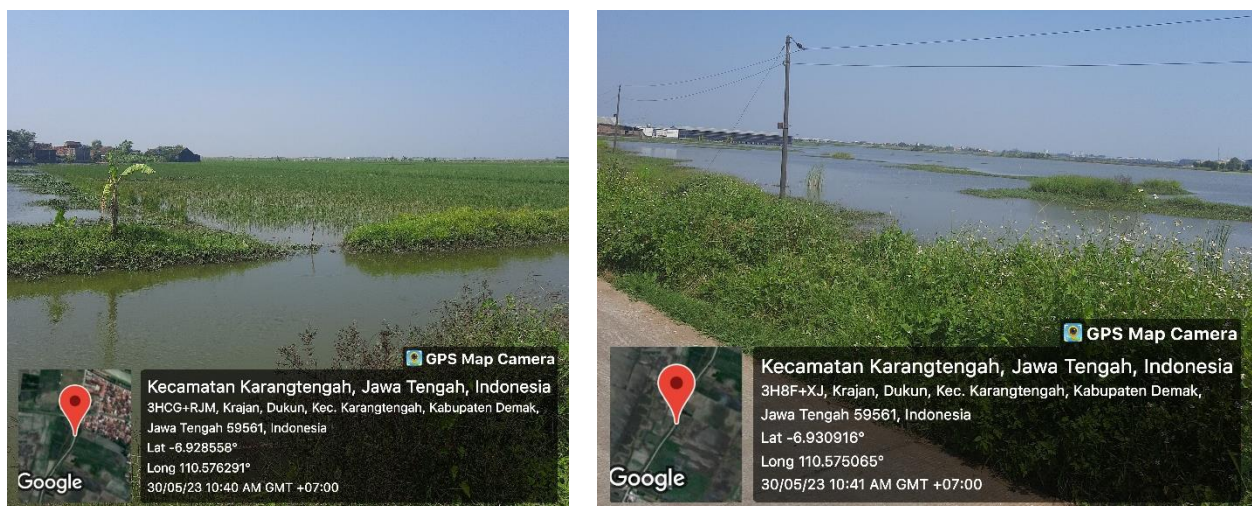


Figure 5. Sunken Rice Fields in Dukun Village, Karangtengah District
Source: Author's Documentation, 2023

The picture above shows the submerged rice fields in Dukun Village, Karangtengah District, which are not only part of the LSD zone but also designated as industrial areas. The community, which

originally worked as farmers, is now starting to switch because their rice fields can no longer be planted. Villages near Java's North Coast, including those in Sayung District and Karangtengah District, boast numerous submerged rice fields. Dukun Village, in Karangtengah District, is one of the villages with submerged rice fields. An interview with Mr. Kastono, the Dukun Village official, revealed that approximately 80 hectares of rice fields in Dukun Village have flooded, resulting in complete crop failure for the majority. The village has attempted to seek assistance from the government, other agencies, and even local companies. However, to date, the government has not provided any assistance or follow-up to address this problem. To identify the above problems, it is necessary to process the latest data from the LSD map, RTRW, and adjust it to the conditions in the field. The goal of these efforts is to ensure the effective implementation of government policies. You can use the ArcGIS version 10.8 application to synchronize LSD with RTRW by overlaying the two maps. You can correct any land included in the LSD that is outside the food agriculture area, and determine whether it should remain in the LSD or if it needs to be removed to align with the RTRW regulations. We require satellite imagery to view the field during the synchronization of LSD and RTRW maps, eliminating the need to visit the field for LSD determination, thereby saving time and reducing costs. You can source the satellite imagery from the ArcGIS basemap, specifically ESRI, or utilize the Google Earth Pro application to process the satellite imagery. An example of the results of map synchronization in Dukun Village, Karangtengah District, can be found below:

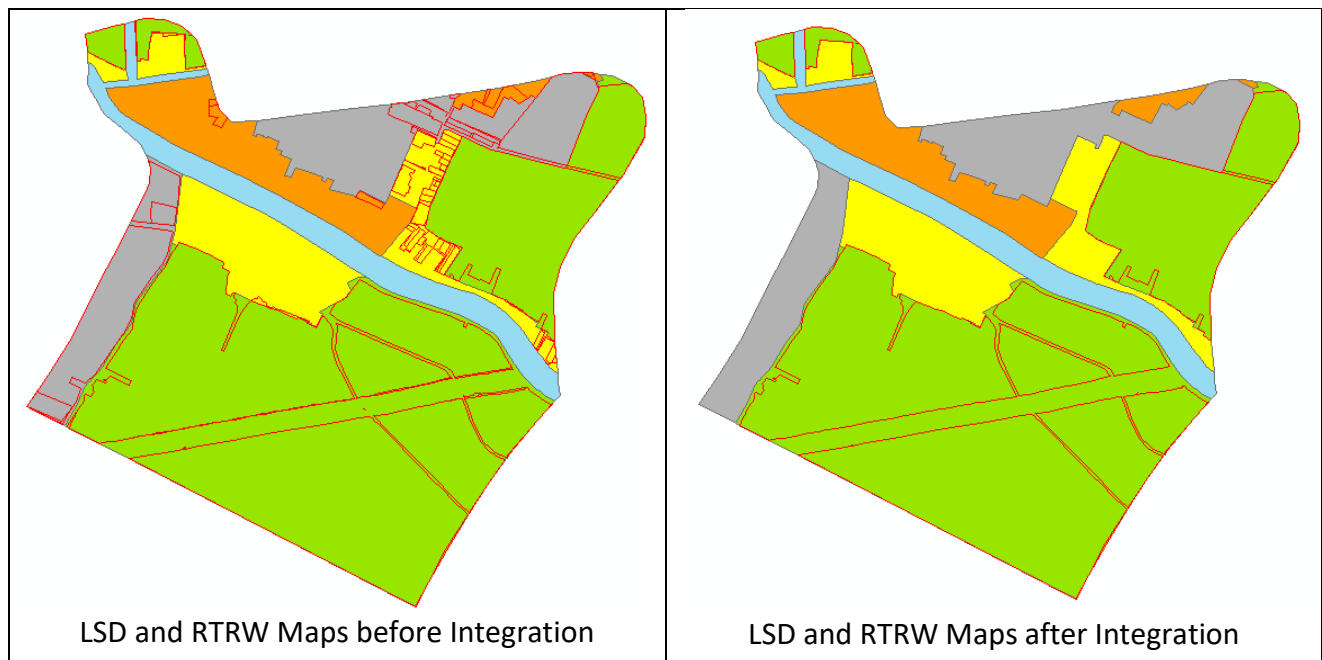


Figure 6. LSD and RTRW Maps Before and After Synchronization
Source: Created by the author, 2023

Because of the shortcomings and constraints mentioned above, this policy is not yet considered absolute. Therefore, during its implementation, it is still possible to remove land that was initially included in the LSD. Therefore, this policy remains flexible in its implementation.

D. Conclusion

The Demak Regency Land Office does not currently use the LP2B map in the licensing process for land technical considerations. Currently, the LSD policy is taken into account when granting land conversion permits in the context of land techn. When viewed from the perspective of policy readiness, the LP2B policy is considered more complex and ready, starting from compliance with the RTRW, incentive regulations, and the existence of LCP2B, all of which are not yet owned by the LSD policy. d by the LSD policy. The Ministry of ATR/BPN, which produced this LSD Map, can directly supervise everything from the map to the issued permits.

The community, through its participation in organizing, supervising, and maintaining the LSD, can not only implement the strategy's policy components but also carry it out. Additionally, updating spatial data plays a crucial role in maintaining the LSD. The latest and accurate data is used to ensure that there are no conflicts or disagreements with the policy during its implementation. The Demak Regency Government must currently focus on maintaining the LSD, which has decreased due to the impact of the toll flood. The smooth implementation of the LSD policy requires map synchronization. Already synchronized maps allow policies to collaborate effectively in their implementation. You can achieve synchronization by using the ArcGIS application to process LSD and RTRW shapefile data, and then rectifying or removing LSD outside the food agriculture area. Furthermore, it's crucial to synchronize the map with the actual conditions to identify any issues that align with the real world and to identify potential solutions.

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