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The Spatial Context of the Removal of Sustainable Rice Fields in Surakarta City

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Abstract: The area designated for agriculture is diminishing due to urban expansion. Control measures play a crucial role in preventing the conversion of agricultural land. The limited availability of land in Surakarta City serves as justification for the city government, as a regulatory body, not to designate agricultural areas in the Surakarta City spatial planning (RTRW) for the years 2021-2041. When the central government enacted a policy regarding the protection of rice fields, the Surakarta City administration requested its exclusion from the decree. This study adopts a case study approach to provide an overview of agricultural lands in Surakarta City that have been omitted from this policy. Data were gathered through interviews, observations, and document analysis. It has been observed that Surakarta City still possesses rice fields that local farmers cultivate, and these farmers are residents holding Surakarta ID cards. This situation leads to a realization that the city's planning fails to support sustainable development despite agriculture not being the predominant occupation in the area. In addition to the ineffective control efforts at the city level, this phenomenon highlights the need for agricultural empowerment to ensure the continued development of socio-cultural practices.

Keywords: Regional Planning, Agricultural Area, Urban Land Use, Protected Paddy Fields (LSD)

Introduction

A massive problem that has occurred in all countries around the world is the conversion of agricultural land. As in Lithuania, agricultural land use change often does not consider the activities of the people in the area (Edita & Dalia, 2022). People have activities and need to live with food. According to Rondhi et al. (2019), Indonesia can fulfill food self-sufficiency as long as the conversion of agricultural land is limited, especially in productive rice fields. The government is committed to safeguarding food production land from conversion. Through Ministerial Decree ATR/BPN No.1589/SK-HK.02.01/XII/2021, the government issued a map of agricultural land with a total area of 3.8 million hectares that will be maintained for national food interests, from now on referred to as the protected

paddy field policy (LSD). The above Decree is a derivative of Presidential Regulation No.59 (2019), which regulates the control of the conversion of paddy fields.

Surakarta City is one of the areas designated as having 63.62 hectares of LSD. This area accounts for 1.36% of the total area of Surakarta City. However, the contents of the LSD map contradict the Surakarta City Spatial Plan (RTRW) 2021-2041, which no longer regulates food agricultural areas in Surakarta City. The study of Antariksa et al. (2024) found that several problems, such as the unsynchronisation of LSD maps with actual field data and the lack of involvement of local governments during discussions, caused the gap in LSD policy implementation. The legal status of land use planning (LSD) remains inadequately defined, as Erwahyuningrum et al. (2023) highlighted. This uncertainty poses significant challenges for economic stakeholders, including developers and various business entities, who often overlook the principles of sustainable development in their operations. To address this issue, it is essential to harmonize the concept and technical aspects of land use plans at both the central and regional levels.

Surakarta City Government submitted an independent verification of LSD to the central government so that the land designated by the Ministry of ATR/BPN could be released from the LSD map policy. Finally, in 2022, an agreement was signed for Surakarta's LSD to be 0 hectares. Nevertheless, Surakarta City still has existing productive agricultural land. Data from the Central Java Province Agriculture and Plantation Office (2022) states that Surakarta City has 42.5 hectares of rice fields. Through BPS, the Surakarta City Agriculture Office published the rice harvest area per sub-district in 2023, totaling 88 hectares (Badan Pusat Statistik Kota Surakarta, 2024). Unfortunately, Syarifudin and Ishak (2020) mentioned that the current planning of agricultural areas only focuses on spatial structure and land use. This illustrates the condition of spatial planning in general, which prioritizes the physical aspects of the land.

The implementation of LSD policies in certain regions has faced challenges. A normative study conducted by NikenSari and Budhianti (2022) indicates that the prevailing regional autonomy system has constrained the LSD mapping policy established by the central government. Each local government possesses the authority to manage its administrative area through spatial plans that better reflect the functional land use within its jurisdiction. For instance, the Jember Regency experienced a decline in rice field areas before 2021. However, the area designated on the LSD map is part of a non-agricultural spatial pattern, highlighting a disconnect, as the central government's determinations fail to account for the actual spatial conditions in Jember Regency (H.K et al., 2023). Similar issues are evident beyond Java, as Padang City in West Sumatra Province has also encountered obstacles related to the LSD policy. According to information reported by Baren (2022), a government building in Padang City was classified under the LSD regulation.

Consequently, the Padang City Government negotiated with the central government to amend the LSD area to align with the Padang City's spatial plan (Sulimar & Rahmadhona, 2024). One area significantly impacted by the reduction of rice fields is Bali, renowned for its traditional Subak system, which involves a regulated approach to rice cultivation. Although regulations protecting agricultural land provide a legal framework for preserving Subak as a cultural heritage (Suryawan, 2018), this heritage system is under threat due to rapid conversion for the tourism industry (Lanya et al., 2015). Similarly, in the Gianyar Regency, more than 30% of the land in the LSD map is not included in delineating sustainable food agricultural areas or regional spatial plans (Graha & Fikriyah, 2024). These examples illustrate how the national LSD map policy cannot be fully implemented at the city/region level when it has a role in managing and controlling the conversion of paddy fields.

In addition to the land area required for agricultural production, the sector requires a workforce to conduct farming operations. Farmers typically organize themselves into "farmer groups" for collective action and resource mobilization. In Indonesia, farmer groups are constituted as constituent elements of agricultural institutions. Farmer associations facilitate the expansion of the market for agricultural products and provide access to resources that support the welfare of farmers or their members (Anantanyu, 2011; IFPRI, 2018). The objective of strengthening farmer groups is to assist farmers in overcoming the poverty cycle resulting from their lack of land ownership (Sariati et al., 2023).

DLH and BPS analyses indicate a declination trend of Surakarta City's agricultural land from 2018-2021 to 51.34% (DLH, 2023). Due to massive urban growth, agricultural land use has been converted to non-agricultural functions. Research by Ustaoglu and Williams (2017) identified the types of urban expansion that reduce agricultural land use: policy influences, socio-economic changes, and natural factors of the agricultural locus. The social and economic conditions faced by farmers contribute to the trend of agricultural land conversion (Gandharum et al., 2024). The quantity of inherited agricultural land is steadily declining, and farmers now possess a relatively limited paddy field. Rosdiana et al. (2018) mentioned that agricultural land conversion can have positive and negative impacts. In their research, there is a change in social structure in the community in the form of a shift in profession, from being a farmer to now being a worker in a tourist village.

The factors contributing to the reduction of agricultural land will become more diverse if the negative impacts of land conversion are not resolved. The phenomenon of shrinking agricultural land will have an impact on humans as subjects and on cities as inhabited objects. The agricultural sector has the potential to facilitate regional development. The agricultural sector attracts private investment, thereby stimulating economic growth. It also serves as a source of employment, which helps to reduce poverty. Furthermore, it plays a

role in maintaining environmental sustainability by absorbing carbon gases (World Bank, 2007). The agricultural sector must become capable of addressing the challenges of climate change and exerting a positive influence (spillover effect) on the international economy (Laborde et al., 2022).

Therefore, this study intends to discuss agriculture in Surakarta City from a spatial context. The purpose of this study is to obtain a description of the spatial context of LSD removal in Surakarta City. This research is essential to be conducted for two reasons: 1) the removal of Surakarta City's rice fields from the national LSD map has an impact on regional development plans and other regions in Indonesia, and 2) the explanation of the spatial context of agricultural land in urban areas fills the gap of previous studies that examine agricultural land policies and conversion to non-agricultural functions.

Methods

This research employs a qualitative methodology, which is appropriate for providing a detailed account of the spatial context of eliminating paddy fields in Surakarta City as depicted on LSD maps. This is consistent with the assertion of Sugiyono (2017) that qualitative research is descriptive, given that the data collected are in the form of words and do not emphasize numerical data. The decision to employ the qualitative method was motivated by the objective of comprehending agricultural land use across the four specified study areas and exploring the complexities of issues that resist quantification. Qualitative data was explicitly selected because researchers sought insights into the genuine local context, essential for describing the spatial influences on land use decisions.

Stakeholders' insights concerning land use, motivations, interests, or constraints provide a comprehensive understanding of the local context. This study was conducted using a case study approach. This research aims to gain an in-depth understanding of the phenomena occurring within the context of the case studies (Bazen et al., 2021). The scope of the research area refers to the map issued by the Decree of the Minister of ATR/BPN, 2021 (No.1589/SK-HK.02.01/XII/2021).

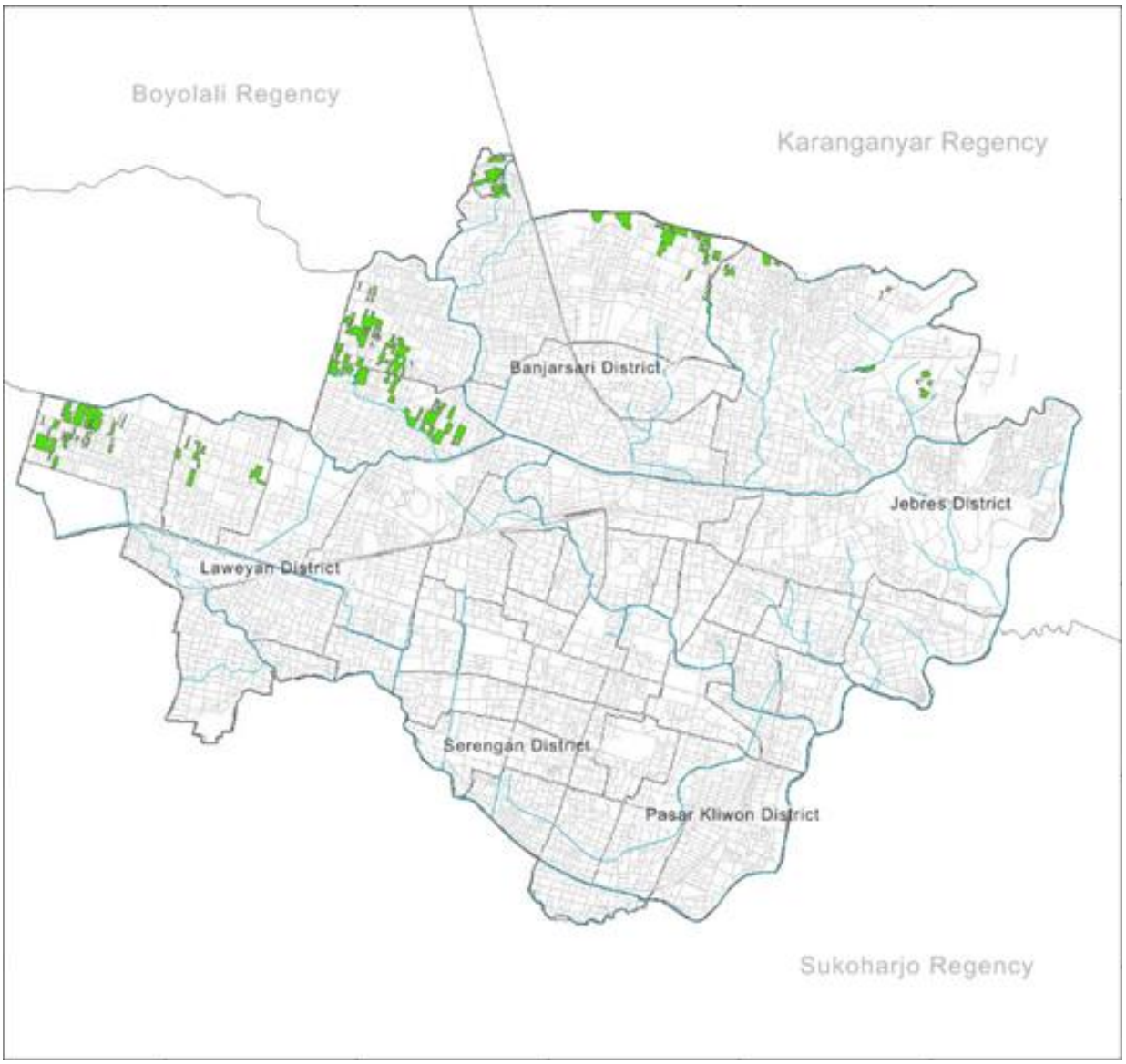

Figure 1. Distribution of LSD areas in Surakarta City
Source: Ministry of ATR/BPN (2021)

Data were collected through in-depth interviews and field observations. The informants were selected through the snowball technique, which involves starting with a small sample and then expanding it through subsequent contacts. Nurdiani (2014) notes that this technique facilitates the identification of other informants through recommendations from previous informants who perceive relevance to other parties. Information was gathered from the Surakarta City government through semi-structured questions on policy matters and the involvement of local communities in urban farming activities. The data from the interviews and observations included the informants' perspectives on the agricultural sector, the potential of agriculture in the city, the direction of spatial planning, and the actual conditions of agricultural areas in Surakarta City.

Table 1. LSD in Surakarta City

No.	Sub District	District	Area (Ha)
1	Jajar	Laweyan	3,63
2	Karangasem		13,16
3	Kerten		0,26
4	Banjarsari	Banjarsari	4,49
5	Banyuanyar		13,33
6	Kadipiro		4,13
7	Sumber		13,52
8	Mojosongo	Jebres	3,89
9	Not entered Surakarta administration		7,21
Total Area			**63,62**

Source: Department of Public Works and Spatial Planning of Surakarta City (2022)

This research observation was not conducted in all of the above areas designated as LSD but was limited to the Laweyan and Banjarsari districts. The researcher took some remaining areas with rice fields with unique characters to be observed further. The selection of observation areas was based on a pre-observation/grand tour and initial discussion with the Department of Agriculture and the Department of Public Works and Spatial Planning of Surakarta City.

Result and Discussion

A. Result

1. Banyuanyar Sub-District Case

The first study was conducted in Banyuanyar, a Banjarsari sub-district. The designated LSD agricultural land in Banyuanyar encompasses an area of 13.33 hectares. The northern and eastern boundaries are delineated by the Bengawan Solo River, which serves as the city's primary drainage system, and a series of smaller rivers traverse the Banyuanyar LSD. The agricultural zone is situated within the boundaries of a rapidly developing residential district. During the field visit, it was observed that several previously utilized locations for rice cultivation were undergoing a drainage process to facilitate housing and commercial development.

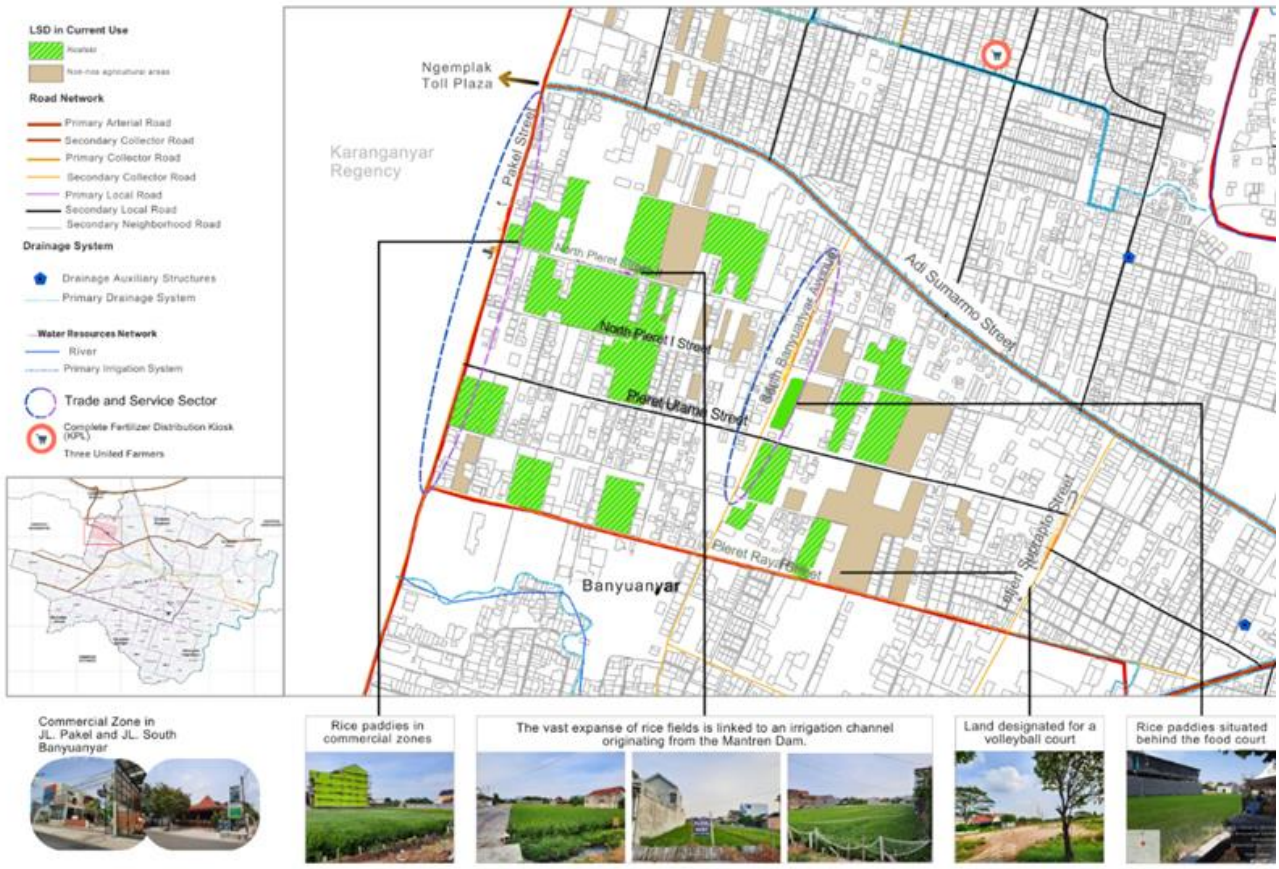

Figure 2. Case of LSD in Banyuanyar sub-district
Source: Author's processing (2024)

Banyuanyar LSD is classified as a wetland farm due to water in the rice fields during the planting season. The irrigation network at Banyuanyar farm is supplied with water from the Mantren Dam in Klodran Village, Colomadu, Karanganyar Regency. However, the functionality of the irrigation channels could be better for land irrigation, as they are obstructed by sedimentation and contaminated with wastewater from surrounding settlements.

In addition, farmers in Banyuanyar are members of the Banyuanyar Mukti Farmer Group. Although farmers do not work on their land, the group regularly meets at one of the members' houses to exchange information and receive socialization from agricultural extension officers. Farmer group activities also include cash payments by members and fertilizer subsidies from the government, which can only be obtained by joining the group.

2. Sumber Sub-District Case

The second case is that of Sumber, which is situated within the boundaries of the Banjarsari subdistrict. The area of Sumber designated on the national LSD map is 13.52 hectares. Agricultural land in Sumber is distributed in a scattered pattern on the northern side, adjacent to the Banyuanyar area. The area is undergoing a process of urban development, with the construction of new residential buildings, including housing and clusters. Rice fields in Sumber are irrigated via an irrigation channel. A review of the field observations revealed the existence of a high-voltage airline (SUTT) tower on land designated as LSD -the regulations for establishing this PLN-owned tower are in an open space.

Figure 3. Case of LSD in Sumber sub-district
Source: Author's processing (2024)

Farmers in Sumber do not have regular group meetings. As the number of paddy fields in Sumber decreases, the number of farmers also decreases.

3. Karangasem Sub-District Case

The Karangasem District encompasses an LSD area of 13.16 hectares, situated at a relatively low elevation. The entire area is on the south side of Adi Sucipto Road, the primary arterial road connecting Surakarta City with Karanganyar Regency. The current condition of the agricultural land, which is still in the form of rice fields, is 6 hectares. The Karangasem rice fields are close to several higher education institutions, including Edutorium UMS, ATMI Polytechnic, and Pignatelli Triputra University. The presence of the campus in the vicinity of LSD Karangasem has contributed to the accelerated growth of the trade and service sector, with the establishment of boarding houses, retail outlets, food stalls, and printing services. The agricultural land area is diminishing due to the conversion of these lands into commercial buildings.

Figure 4. Case of LSD in Karangasem sub-district
Source: Author's processing (2024)

Farmers in Karangasem are members of the Bulak Indah Farmer Group. The majority of these farmers grow rice, while one farmer grows corn. Although there are irrigation channels, the farmland remains dry due to the limited water that can irrigate the rice fields in Karangasem. This encourages farmers to cooperate in constructing boreholes and water distribution through farmer groups.

All farmers in Karangasem cultivate land owned by others. The most extensive ownership is by a large company in Surakarta City engaged in the tobacco sector. The interview results show that farmers do not have a strong bargaining position, so they admit they are ready if they can no longer work in the rice fields when the landowner sells the land they use.

4. Jajar Sub-District Case

The LSD area designated in Jajar is the most minor compared to other areas at 3.63 Ha. The existing condition at the time of the survey was not agricultural land but vacant land. So, in this case, there are no longer people who work as farmers doing activities in the fields. The road network is in good condition, allowing easy access to the LSD location. The surrounding land is a residential area with offices. On the eastern side, Jajar LSD is close to a warehousing area.

Figure 5. Case of LSD in Jajar sub-district
Source: Author's processing (2024)

One location associated with the use of LSD is the courtyard of BNI's archive warehouse, which is bordered by a marker wall. According to the data provided in the Green Open Space Information System of Surakarta City, the land in question constitutes a component of the green open space object situated within the designated office zone.

B. Discussion

In Indonesia, agricultural zones are allocated as protected perennial land for food security (Spatial Planning Act, 2007). However, starting in 2021, the Surakarta City Government eliminated agricultural areas in its spatial pattern plan due to the need for more urban space. The city's planning is geared towards expanding culture-based creative industries. At the end of the same year, the central government issued a policy to protect sustainable rice fields by establishing the LSD map. Being part of the LSD map area, the Surakarta City Government requested verification that the land included in the city administration be excluded from the decree.

The area of agricultural land is decreasing over time. The observations at the research location and data processing from the agriculture office show that the land in Surakarta City that is still in the form of agricultural fields is 28 Ha. Some agricultural land is no longer allowed by the owner to be planted with commodities, while others are converted into residential, commercial, and office functions. In line with what was revealed by Edita and Dalia (2022), the increase in agricultural land conversion occurred due to the encouragement of private capital towards urban development. So, dealing with this problem requires a document or regional planning policy that can organize land use. Such alignment would enhance compliance with sustainable practices and foster a more robust framework for effective land management, ensuring that economic growth does not come at the expense of environmental integrity.

The reality on the ground is that there is still land in the form of paddy fields, but it has yet to be removed from the spatial planning by policymakers. A city is not defined as a space with agriculture as its main activity. However, city dwellers still need food sourced from agriculture. The increasing population in cities increases the need for food. Therefore, urban development should look at the physical aspect of development and the future sustainability factor for city dwellers. This is in line with Syarifudin and Ishak (2020), who emphasized the importance of social space in increasing agricultural production's value. Social space in the form of a common place to gather and interact with each other is no less important than other physical land uses. If the LSD map policy is still not working to control agricultural land conversion, then the government should consider the issue of food needs. The spirit to realize food self-sufficiency needs to be planned so that the city does not develop as a space that depends on other regions.

The following discussion is about the demographic aspect, the people who work as farmers. Surakarta City's paddy fields are still worked by tenant farmers, indicating the existence of social values that live and develop in the community. Despite working on other people's land, the farmers already have an emotional connection plus decades of knowledge about paddy, so they are willing to continue working in the field. The interviews revealed

that farmers had resigned themselves, demonstrating a readiness to accept the conversion or development of the agricultural land. This sense of resignation can be attributed to farmers not owning the land they cultivate; instead, they are its cultivators. As noted by Gandharum et al. (2024), the limited land ownership among farmers catalyzes land conversion.

This situation carries profound implications for the socio-economic ramifications of the community, chiefly manifesting as a decline in the income of farming families reliant on agricultural land for subsistence. Additionally, the ability to source daily food at a community level is severely affected; families that once consumed their harvests now depend on imports from other regions. Compounding this issue is the absence of a subsequent generation to perpetuate the farming enterprise tradition, ultimately threatening the loss of local agricultural expertise and knowledge over time.

As the current farmers age, seeking alternative employment or transitioning to the informal sector, characterized by low and unstable wages, becomes a significant challenge. These circumstances contribute to growing social inequality in urban areas, further marginalizing farming communities that have lost their jobs and land. For this demographic-social value to continue, agricultural empowerment measures must be taken. Some of the things highlighted are the physical development of agriculture and farmer associations so that farmers move not alone but are supported by groups. Rusdiyana et al. (2021) found that the local wisdom of Indonesian farmers can preserve the environment.

To support the sustainability of agricultural land in the city, the city government can attract researchers and experts in urban planning and agriculture to advocate for the surrounding community's needs regarding the availability of agricultural land. In addition, local governments need to have the same spirit as the central government to preserve LSD by formulating policies collectively. The policy formulation can then actualize the needs of the agricultural community in the city. It can become a better urban spatial plan regarding social, economic, and environmental aspects.

Conclusion

The spatial planning of Surakarta City focuses on the development of creative industries. The shift in spatial utilization can be seen in the absence of agricultural areas in the 2021-2041 spatial plan. This is further emphasized by Surakarta's request to be removed from the map of protected paddy fields. With no plan for agriculture, landowners can easily apply for permits to develop their land for non-agricultural functions. A total of 28 Ha paddy fields can still be found in Surakarta City, operated by local community farmers.

The removal of Surakarta City's agricultural area from the LSD map raises two paradigms related to urban development and agricultural empowerment. With its status as an urban area, spatial planning still needs to be directed towards sustainable planning for the people and the environment. There are community roles in restoring critical land to be productive. This form of agricultural land utilization needs to be seen as a value that grows in the community. These values can be maintained through agricultural empowerment. Government advocacy is a recommended alternative to be implemented in spatial planning. However, community participation is expected to be input so that urban spatial planning can be inclusive and accommodated without any party feeling defeated.

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