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# IMPLEMENTABLE FACTORS FOR SUSTAINABLE AGRICULTURAL POLICY IN METRO CITY

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**ABSTRACT**

Conservation of agricultural land for food sovereignty is one of the SDGs' agenda. In Indonesia, this objective is stated in the Sustainable Food Agricultural Land (LP2B) policy outlined in Law No. 41/2009, followed by regulations below the Regional Regulation level. In the Metro City, this is stated in Regional Regulation No. 21/2016 to be the basis for a policy of protecting 1.567,5 hectares of paddy fields. This regulation aims to support food sovereignty and maintain the ecological balance of the environment. The problem arises because the paddy fields designated by LP2B are private land, so that not all owners are willing to implement this policy. This study aims to analyze the factors that affect the level of willingness of landowners with a quantitative approach by analyzing land data with multiple linear regression analysis techniques. A sample of 513 parcels was taken from the Farmers Owning Farmers population of 6.060 HHs based on Agricultural Survey data, BPS Lampung 2018. In general, from the analysis results, the highest coefficient on object characteristics was variable land productivity while the characteristics of subjects were multifunctional knowledge of paddy fields.

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## 1. Introduction

Food security is one of the important imperative in Sustainable Development Goals (SDGs). All SDGs are directly and indirectly related to the work of the City and Regional Governments. Increasing the knowledge of LGs and then inviting them to implement SDGs is a challenge. Especially for countries like Indonesia, which has around 500 cities and regencies, each of which has a different political, economic, and social situation. In Indonesia, the policy is strongly enforced to be integrally incorporated in the spatial plan, especially at the local level (https://www.sdg2030indonesia.org/page/28-lokal).

However, without a strong policy from the local government, paddy fields will be quickly replaced by other land uses. This fact has been happening. As supporting data, Mulyani et al. (2016) analyzed the national paddy field conversion using multitemporal high-resolution images between 2000 and 2015 identify that, nationally, paddy field conversion was around 96.512 ha per year with the highest rate of conversion in West Java Regency. Sulaiman et al. (2018) explained that based on BPS data analysis from 2011 to 2016, the paddy field conversion in Indonesia was around 8 million ha with an average conversion of 0,02% per year. Paddy fields conversion is divided into irrigated paddy fields 0,65% per year and non-irrigated paddy fields 1,76% per year. In the local area, Adipka (2018) said that there had been a conversion of paddy land to built-up land before the issuance of the LP2B Policy in Metro City covering 879 hectares in 15 years (2000 to 2015), so that the number of changes in paddy fields to non-agriculture usage each year was 58,6 ha.

The problem that arises from the goal of supporting food sovereignty and environmental ecological functions is that the paddy fields stipulated by LP2B are private lands (Utama, 2019). Some paddy field owners are not willing to voluntarily implement this policy. Some people own paddy fields because it is attractive for investment that is financially profitable, especially in cities. They probably feel objection and feel injustice.

To solve the problem, creative planning is requested to find innovative land use integration function within the spatial planning and to explore incentive as well as disincentive instrument for implementation. For those purposes, it is useful to understand agricultural landowner's attitude to support, especially in the

urbanizing area where policies are also to be implemented. Theoretically, it should be staggered to implement agricultural land conservation in the urbanized area. Moreover, there is such agricultural urbanism to be important campaign in the new urbanism movement to support global sustainability (Born, 2014). According to the FAO (Food and Agricultural Organization), Agriculture has a big role to play in the sustainability of suburban communities. Agricultural development provides an opportunity for cities to preserve the urban environment while issuing social and economic benefits. Urban agriculture is a strategic issue of international development because of its association with poverty and food shortages in cities (Ayambire, 2019).

Paddy fields, for instance, would have other functions besides food production, so paddy fields conservation may still be relevant in some parts of the city. Paddy fields have a function to maintain food sovereignty and maintain an ecological balance, the same as Green Open Space. The environmental function benefits of agricultural land characterize as public goods that can be enjoyed by everyone without paying. Therefore, economic valuation is needed to give compensation to the landowners from the agricultural profit produced by paddy fields (Irawan, 2007).

Hence, the application of the LP2B policy should ideally use land assets belonging to the City Government. For example, this application combines with the demands of the Spatial Planning Law that mandates a minimum of 20% of public green space must come from government land assets. As an example, the Kediri City that has an area and a population almost the same as the Metro City has determined the LP2B paddy fields to come from the city government's total land assets. This policy states in the City Regulation of Kediri number 8/2019 in article 9 (5), which contains LP2B covering an area of 509.96 ha is a regional asset area.

## 2. Literature Review

To understand the attitude of landowners to maintain or allow paddy fields to be converted, previous research conducted in Ciampea Subdistrict, Bogor Regency by Pambudi (2008) states that many of the functions of agricultural land have changed into non-agricultural land due to differences in economic value (land rent) between residential land and land agriculture up to 79 times. That is, if the landowner retains his function as agricultural land, then he tends to lose the opportunity to get economic value from his land up to 79 times. Meanwhile, Sudirman's research (2012) in Sleman Regency explained that public perceptions in the context of maintaining the sustainability of farming decreased along with the increase in conversion of agricultural land to buildings and the ability of farmers to maintain the sustainability of farming decreased towards the city center.

Supriyono (1999) defines the opportunity cost as an alternative income that sacrificed by choosing other alternatives (Palupi, 2017). Someone who has chosen one choice will certainly leave the other choice. Leaving other choices is what is called the opportunity cost. In this study, the opportunity cost in question is the opportunity benefits inherent in the land. For example, landowners in Metro City continue to use their land for paddy fields, so the loss of benefit is the monetary value of the land if it is used for housing. If the owner changes the function of paddy fields to housing, so the opportunity cost that is lost is the value of paddy fields, both in the form of direct production of rice and the results of environmental services and their socio-cultural functions. The choice of opportunity cost of landowners finally makes land-use patterns based on the costs and benefits inherent in the nature of the land. Owners who have strategic land certainly have a high value of land rent, so landowners tend to want to use it not for agriculture. On the other owners who have land with a low land rent value will be more profitable if used for agriculture.

This condition has been explained by William Alonso (1964) in The Theory of Urban Land Use. With this theory, the availability of landowners will reflect the distribution of locations that are suitable for being converted to non-agriculture or land that is suitable for maintaining agricultural land use. Thus, conflicts of interest between the city government and landowners in the implementation of LP2B protection policies can be minimized so that the determination of LP2B locations on private land can support the objectives of the policy.

Based on this background, a study was carried out on the implementation of the policy of protecting sustainable agricultural land in Metro City based on the willingness of the landowners' characteristics. The purpose of this study is to determine the responsiveness of landowners as a consequence of the implementation of LP2B protection policies and to know the order of the factors that most significantly affect them. The results of the study are expected to support the integration of agricultural urbanism as a prospective sustainable concept of urban development and design through spatial planning and policy implementation. The expected benefit from the results of this study is to be input for the Regional Government to determine the location of LP2B on private land.

## 3. Research Method

The willingness of landowners is very important to know because the determination of LP2B location is on private land where the participation of landowners greatly influences the successful implementation of the policy. To find out the relevance of the determination of the location, it must be known whether the landowner is willing to support the determination of the location to achieve the objective of implementing the LP2B protection policy or vice versa. Responses/answers from landowners are then given 4 Linkert scales, namely 1) very unwilling, 2) unwilling, 3) willing, and 4) very willing. Thus, the landowner is given 9 questions, namely:

**Table 3.1.** The List of Dependent Questions

| No. | Question | Relevance with the Aim of LP2B Protection | Assumption |
|---|---|---|---|
| 1 | Willing to will not sell parcels of land although prices high | Protect agricultural land ownership | The higher the willingness of the owner to maintain his assets, the more protected the ownership of agricultural land |
| 2 | Willing to will not do separation/sell in part | Protect agricultural areas in a sustainable manner | More spacious parcels of ownership then will increasingly ensure the region agriculture sustainable, increasingly narrow parcels or sold most of the existence of regional agriculture is very easy to switch functions |
| 3 | Willing to defend the land of rice fields because the result is already sufficiently meet the needs of life | Increase prosperity and well-being | More and more owners of land were fulfilled needs of land fields means increasingly feel the land of rice fields can provide prosperity and welfare |
| 4 | Willing to not do land-use change, although the activities of non-farming more profitable | Realizing independence, resilience, and sovereignty food | Getting high desire owners not going to transfer their functioned land means the increasingly higher willingness of owners to participate and realize the resilience of food |
| 5 | Willing to process and maintain rice productivity | Guaranteeing the availability of agricultural land in a sustainable manner | The higher the desire of landowners to keep planting rice means the more the guarantee of the availability of agricultural land in a sustainable manner |
| 6 | Willing to keep the paddy fields as having a value of ecology | Maintain ecological balance | Getting high desire owners maintaining to be a wetland means that increasingly play a role in maintaining the balance of the ecological |
| 7 | Willing to maintain the existence of paddy field as the basic capital of empowerment for farmers | Increase farmer protection and empowerment | Getting high desire owners keeping the fields means getting involved as well as in improving the protection and empowerment of farmers |
| 8 | Willing to maintain the existence of paddy fields to provide employment for farmers | Increase the provision of employment for a decent life | Getting high desire owners keeping the fields that can be fieldwork for farmers means getting involved and lifted job for life are worthy |
| 9 | Willing to keep paddy fields as the media group of farmers to socialize/exchange information, to join together to realize the revitalization of farmers | Realizing the revitalization of farmers | Getting high desire owners maintaining the fields as media/forums communication means getting involved as well as in realizing the revitalization of farmers |

In the theory of perception, landowners will be influenced by internal and external factors in perceiving LP2B. Internal factors that are expected to influence include profession, age, sex, marital status, monthly expenditure, length of time for farming. External factors that are estimated to have an influence include: level of education, knowledge of farming, multifunctional knowledge of the benefits of rice fields, knowledge of LP2B, knowledge of the consequences of establishing LP2B.

To explain the distribution of landowners' willingness can be done with the Bid rent theory approach. Starting from the theory of the location of Von Thunen for the determination of agricultural commodities so that land use becomes efficient, the theory was later developed by William Alonso (1964) into the Theory of Urban Land Use. In its development, this concept was further developed by Alonso to explain the distribution of business locations in urban areas. This theory states that capital owners will compete with one another to get the most optimal location to support their business. Based on this theory, the characteristics of land object characteristics that are estimated to influence the willingness of landowners include: land area, road access, land value zones, distance of parcels to drainage, distance of parcels to collector roads, distance of plots to city centers, NJOP/$m^2$, average land productivity.

This research methodology uses a quantitative positivistic paradigm with a statistical approach to multiple linear regression. The data used is registered land parcels that have been mapped on the Metro City GeoKKP, which was downloaded on 31 August 2019. The research unit is the population of 6.060 HHs farmers who are based on BPS data on the Metro City Agricultural Census (SUTAS) in 2018, then samples are taken 513 parcels of ownership (95% confidence level) based on the Isaac and Michael sample tables.

The stages of this research are: 1) taking a random parcel sample with the main consideration that the owner is easy to find and willing to do an interview, 2) conducting an interview with a questioner, 3) analyzing questioner data with SPSS, 4) describing the findings on the basis of the theory of opportunity costs and theory of bid rent.

The hypothesis in this study is that the level of willingness of landowners is significantly influenced by the characteristics of landowners, among others: profession, age, sex, marital status, monthly expenditure, length of farming, education level, farming knowledge, multifunctional knowledge of rice field benefits, knowledge of LP2B, knowledge concerning the consequences of LP2B determination and land tenure, and will be significantly influenced by the characteristics of land objects, among others: land area, road access, land value zones, distance of parcels to drainage, distance of parcels to collector roads, distance of plots to city centers, NJOP/$m^2$, and average land productivity.

## 4. Results and Discussions

### 4.1. Characteristic of LP2B Land and Landowners

Object in this study (paddy fields) is in the administrative area of Metro City. As many as 21% of rice fields are on the side of the road (have access to the road), while 79% are not on the side of the road. Paddy fields are in the zone with an average land value of Rp271.091,00/$m^2$, with a minimum land value of Rp60.019,00/$m^2$, while the highest land value is Rp852.515,00/$m^2$. The average productivity is 43,73 kw/ha one harvest, with the lowest value being 0 and the highest is 58,21 kw/ha. The average land area is 1.827 $m^2$ with the narrowest land area of 102 $m^2$ and the widest area is 9.123 $m^2$. Plot NJOP has an average value of Rp16.586,00/$m^2$, with the lowest value being Rp10.000,00/$m^2$ and the highest value is Rp27.000,00/$m^2$. The closest parcel to the city center is 740 m, and the farthest is 6,8 km. The closest parcel to drainage is 0 m, and the farthest is 784 m. The location of parcels against the nearest collector road is 0 m and the farthest is 2,5 km.

The farmer profession is increasingly decreasing both in rural areas, especially in urban areas. This is directly proportional to the reduction in the area of control of agricultural land at each head of the family, so agriculture cannot be a decent source of livelihood for the owner and his family. Increasing economic needs and the high demand for land in urban areas make farmers sell some of their rice fields to other parties and then switch professions to become non-farmers. From the results of the distribution of questionnaires to 513 respondents of sample landowners, data were obtained that farmers, entrepreneurs and household managers dominate the LP2B rice field ownership in Metro City, with details of 25,3% whose main professions are farmers, 17,3% as entrepreneurs, 20,7% as housekeeper, 9,9% as casual daily laborers, 8,2% are civil servants, 1,9% are military/police, 9% are employees, 3,9% are students, 2,7% are not working, and the last 1% are retired civil servants. Age the average landowner is 48,7 years with the youngest age at the time of the study is 15 years and the oldest age is 87 years. In terms of gender, male owners are more dominant than female owners, which is 64% compared to 36%. Based on marital status, 80% of respondents are married, 13% are single, and the remaining 7% are divorced. The average number of landowners is 3 people, with an average monthly expenditure of Rp1.900.000,00. Based on the length of farming, the average landowner already has about 20 years' experience.

Most landowners have a high school diploma/package C as much as 42%, the rest have a junior high school diploma/package B as much as 25%, have a primary school diploma/package A as much as 30%, do not have a formal diploma as much as 2%, and have a bachelor's degree/equivalent as much as 1% landowners who have knowledge of managing paddy fields are 61,4%, and the remaining 38,6% do not know how to manage paddy fields. Landowners who knew about multifunctionality in rice fields were 62,2%, while the remaining 37,8% did not know about multifunctionality in rice fields. Landowners who know about LP2B policies are 13,5% and the remaining 86,5% do not know what LP2B is. Landowners who know the consequences of LP2B policy are 10%, and the remaining 90% do not know the consequences. Based on land ownership, 48% of the owners are farmers who work on their land, while the remaining 52% of the owners do not work on their land.

### 4.2. The Landowner's Willingness to Conserve Their Agricultural Land

The level of willingness of landowners is the accumulation of scores on the nine questions raised. The lowest score of the respondent is 9 and the highest is 36. If divided into two classes, namely a low level of willingness with a score (9 to 18) and a high level of willingness (19 to 36), a low grade percentage of 26% is obtained and a high class of 74%.

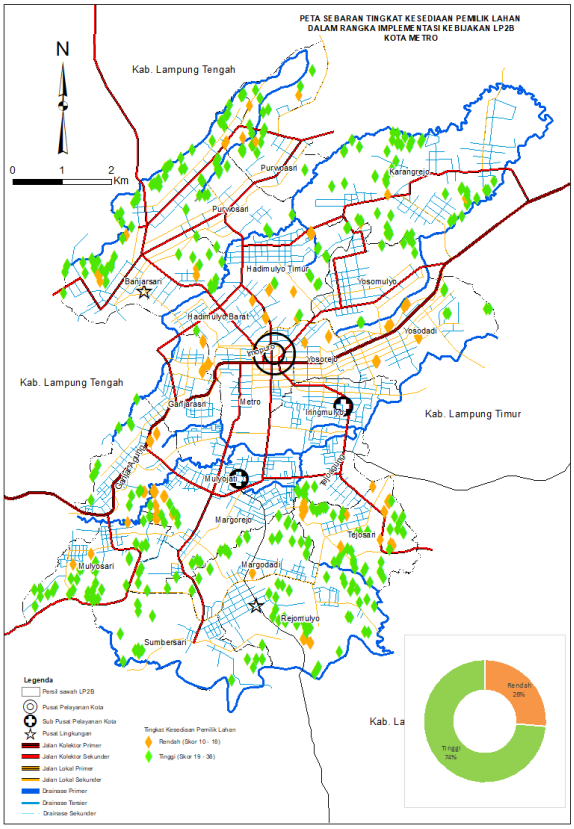


**Figure 4.1. Distribution of Sample and Its Willingness**

### 4.3. Determinants of Landowner's Willingness to Conserve Their Agricultural Land

The results of the linear regression analysis using the Stepwise model obtained $R^2$ values are 0,784, meaning that 78% in this study, the dependent (willingness of landowners) is influenced significantly by the independent variables, namely 1) land productivity, 2) knowledge of landowners about multi-benefit paddy fields, 3) land area, 4) distance of parcels from the city center, 5) access roads, 6) length of farming, and 7) distance of parcels to drainage. The greater $R^2$, the independent variable has a strong correlation in influencing the dependent. The stepwise method was chosen because it is one of the computational methods to produce the highest of $R^2$.

**Table 4.1.** Model Summary[h]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 7 | .885[g] | .784 | .781 | 3.52599 | 1.098 |

g. Predictors: (Constant), Zscore: Land productivity, Zscore: Knowledge of multifunctional of paddy field, Zscore: Land area, Zscore: Distance to CBD, Zscore: Road access, Zscore: Experience of farming, Zscore: Distance to drainage

**Table 4.2.** ANOVA

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 7 | Regression | 22747.098 | 7 | 3249.585 | 261.377 | .000[h] |
| | Residual | 6278.450 | 505 | 12.433 | | |
| | Total | 29025.548 | 512 | | | |

a. Dependent Variable: Level of willingness

h. Predictors: (Constant), Zscore: Land productivity, Zscore: Knowledge of multifunctional of paddy field, Zscore: Land area, Zscore: Distance to CBD, Zscore: Road access, Zscore: Experience of farming, Zscore: Distance to drainage

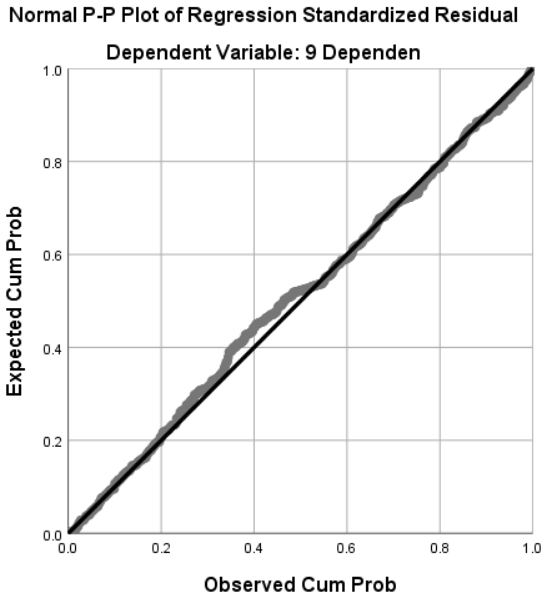


**Figure 4.2. PP-plots of Availability Level on Normal Curve**

**Table 4.3.** Coefficients[a]

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | 95.0% Confidence Interval for B | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Lower Bound | Upper Bound | Tolerance | VIF |
| 7 | (Constant) | 23.218 | .156 | | 149.145 | .000 | 22.912 | 23.524 | | |
| | (X15) Land productivity | 2.524 | .204 | .335 | 12.399 | .000 | 2.124 | 2.924 | .586 | 1.707 |
| | (X10) Knowledge of multifunctional of paddy field | 2.309 | .191 | .307 | 12.085 | .000 | 1.934 | 2.685 | .665 | 1.504 |
| | (X14) Land area | 1.881 | .176 | .250 | 10.672 | .000 | 1.535 | 2.228 | .781 | 1.280 |
| | (X17) Distance to CBD | .917 | .173 | .122 | 5.310 | .000 | .578 | 1.256 | .814 | 1.228 |
| | (X21) Road access | -1.092 | .180 | -.145 | -6.074 | .000 | -1.446 | -.739 | .751 | 1.332 |
| | (X8) Experience of farming | .709 | .165 | .094 | 4.308 | .000 | .386 | 1.033 | .896 | 1.117 |
| | (X19) Distance to drainage | -.632 | .160 | -.084 | -3.955 | .000 | -.946 | -.318 | .952 | 1.051 |

a. Dependent Variable: Level of willingness

Thus the following regression equation is produced:

Y = 23.22 + 2.52 X15 + 2.31 X10 + 1.88 X14 + 0.92 X17 – 1.09 X21 + 0.71 X8 – 0.63 X19

*(t= 12.399) (t= 12.085) (t= 4.218) (t= 10.672) (t= 5.31) (t= -6.074) (t= -3.955) F=261.377*

Characteristics of the objects that most influence the level of availability of landowners are land productivity. The higher the productivity of the land, the higher the willingness of the owner. Paddy fields in Metro City have productivity between 52 quintals per hectare to 58 quintals per hectare. The highest productivity paddy fields are in west metro sub-district at 58,21 kw/ha, east metro sub-district at 57,96 kw/ha, metro central sub-district at 57,6 kw/ha, while rice fields with the lowest productivity are in the sub-district metro south of 52,22 kw/ha. In direct proportion to land productivity, the land area variable also becomes independent which has a significant effect on the level of landowners' willingness, the more land they have, the higher the landowner's willingness.

The location of parcels also has an influence on the level of availability of landowners. The farther the location of the parcel from the city center, the higher the willingness of landowners. The level of willingness of the landowner is inversely proportional to the existence of the access road of the vehicle to the parcels, the landowner will be higher in the level of readiness if the land owned does not have access to the vehicle road. The distance factor to drainage also has an inverted nature, the closer it is to the drainage, the higher the level of availability of landowners. Based on multiple linear regression analysis, landowners who know about multifunctionality of the benefits of paddy fields will have higher levels of willingness. Landowners who have multi-benefit knowledge of rice fields also have a significant influence on the level of availability of landowners. Landowners who understand that rice fields are not only producing rice, but also an ecology that helps protect the environment, control water runoff and reduce pollution, the higher the level of availability. In addition, the variable length of farming also has a significant effect on the level of willingness of landowners.

Based on the results of the multiple linear regression analysis, the hypothesis is accepted, namely the level of willingness of the land owner is significantly influenced by the characteristics of the subject and its object. The most influential sequences are average land productivity, landowners' knowledge of the benefits of rice fields, land area, the presence of road access, distance of parcels to the city center, length of farming/farming experience, and distance of parcels to drainage.

## 4.4. Discussion

The results of this study are the distribution of the level of willingness of landowners to maintain the existence and function of their paddy fields. These results are modeling the direction of urban land-use according to bid rent theory. In direct proportion to the level of willingness of landowners to choose to maintain the existence and function of their paddy fields, the pattern of readiness reflects the pattern of land prices and patterns of land-use change. Alonso with the bid rent theory explains that the high value of bid rent is directly proportional to the price of land, the higher the demand for rent, the higher the price of land, as well as the fewer available land objects, the higher the price of land. City Center (CBD) has a limited location but demand for land is very much, so the

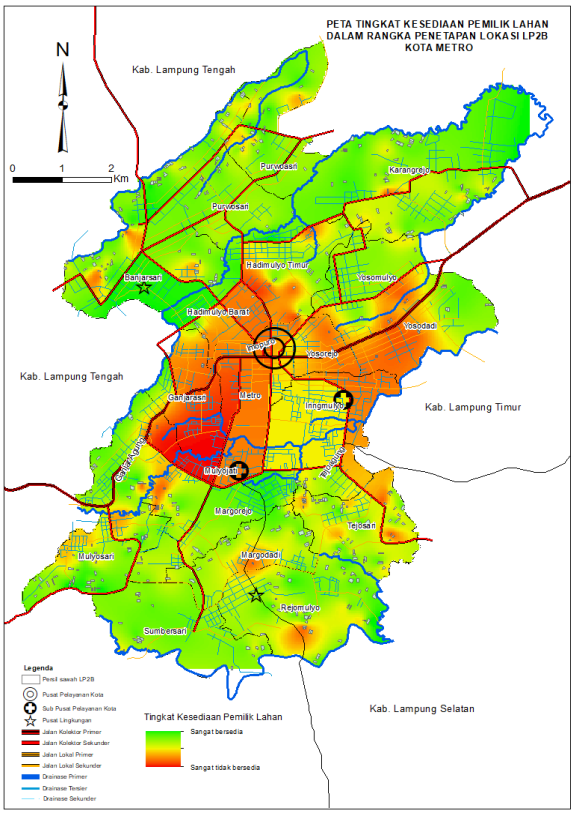


**Figure 4.3. Model of Willingness Level Map**

price of land will go up. Thus, land in the middle of the city is very suitable for business and housing activities while urban agricultural activities are economically possible only on suburban land. The reason is because agricultural activities require more land with low land prices.

In economics, landowners are rational agents who will choose land use according to the highest benefit available. This implies that the property right or the utilization of private ownership assets is directly proportional to the level of availability of landowners. The map of the level of landowners' willingness in the determination of LP2B location is a reflection of the opportunity cost chosen by the landowner. In the green zone, landowners tend to stay with the use of agricultural land because the use of the land is considered to have the highest benefit value. On the other hand, the red zone, especially in the CBD area, shows that the highest benefit in that location is using the land owned for non-agricultural activities, such as services, housing, and industry.

The landowner's willingness distribution model provides information that the determination of LP2B location will be lower in conflict with landowners if it is set in the green zone, otherwise the potential for land-use conflicts between the city government and the owner will be high if the determination is done in the red zone. After determining the location of LP2B in the green zone, for the continuation of LP2B policy implementation in Metro City, the city government needs to pay attention to the factors that have a significant influence on the level of willingness of landowners, as explained by the multiple linear regression equation.

Based on the characteristics of the object, average land

productivity is the most influential factor, so programs/activities in agriculture must be prioritized at the LP2B location so that soil productivity is maintained. In addition to productivity, the land area also has a significant effect on the level of availability of landowners. The city government must make a derivative regulation ATR/BPN Regulation No. 18/2016 on controlling agricultural land tenure so that the area of ownership is not reduced, either by selling in part or whole. Road presence/road access factors also need to be considered, paddy fields that have access to road vehicles, their owners tend not to be willing to maintain the function of their fields. Farming roads that were originally built to facilitate the distribution of crops can be a trigger for land conversion to land objects along the road. On the characteristics of the subjects, the knowledge of landowners on the multifunctionality of the benefits of rice fields and length of farming are significant factors affecting the level of willingness of the owner. Based on these results, the city government must strengthen/improve the quality of human resources, especially for the owner farmers through a program/work that is prioritized at the LP2B location.

## 5. Conclusion

Landowners in Metro City have been willing to maintain the function of rice fields to support LP2B protection policies, on the other hand, they have not received compensation from the policies that have been set. The factors that most influence the level of availability are average land productivity, landowner's knowledge of the benefits of multifunctional rice fields, land area, the existence of access roads, the distance of parcels to the city center, length of farming/farming experience, and distance of parcels to drainage. Data and land parcel map ownership from the results of this study will greatly assist the city government in implementing LP2B, including managing it intensively according to needs. It could be that landowners get two incentives at once, namely incentives from the city government and incentives from the central government, or incentives as landowners and incentives as farmers working on the land. Provision of incentives by the central government to the community is done if the community owns and/or manages the paddy fields stipulated in the protected paddy field map as a security regulated in Presidential Decree Number 59 of 2019 concerning Control over the Function of Paddy Fields.

The dilemma of landowners to utilize their private assets can be obtained from the results of this study. Landowners who have a strategic position such as close to the road, close to the CBD, close to other facilities want to get more profit by changing the function of their paddy fields, whereas landowners who have private assets at low prices and are not in a strategic position, the landowner will continue to use his private assets for agricultural activities.

Furthermore**,** the implementation of the LP2B policy, it must be understood that the paddy ecosystem produces public goods whose existence is very ecologically beneficial to the city. Because of the importance of this matter, the conservation of agricultural land food became one of the SDGs' agenda, then it was made a national strategic program by the central government through Law 41/2009. Thus, the total economic value of LP2B procurement must be calculated to ensure the sustainability of this policy. This figure can be used as a reference for how much the cost/budget is needed to manage the fields and who has to bear these costs. After analyzing the LP2B TEV analysis, the government can adopt a policy scheme related to appropriate incentives for landowners to provide a stimulus so that the existing paddy field ecosystems remain sustainable and fertile.

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