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The 3-in-1 Policy Model for Strengthening Urban Food Security: An Integrated Approach

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Abstract:

Urban food security in Kediri City is facing a critical threat due to extensive agricultural land conversion, driven by farmer impoverishment resulting from high operational costs, volatile harvest prices, and insufficient state support. While prior research identifies economic pressures as the primary cause, it fails to offer a comprehensive policy framework that integrates regulatory, empowerment, and land management solutions. This study proposes an integrative 3-in-1 policy model to strengthen food security through simultaneous farmer empowerment, land extensification reorganization, and regulatory reform. Employing empirical legal research with a Participatory Action Research (PAR) approach, qualitative data were gathered from farmers in Pesantren District via in-depth interviews and field observations. Findings confirm that declining farmer welfare is the root cause of land conversion, jeopardizing local food production. The proposed model presents a novel, structured approach by linking welfare improvement, land expansion via public interest designation, and stricter conversion bans into a single sustainable agricultural policy. The study concludes that this integrated strategy can serve as a pilot for enhancing urban food security in Kediri and similar regions.

Keywords: *Food Security, Farmer Empowerment, Conversion of Agricultural Land*

Abstrak:

Ketahanan pangan perkotaan di Kota Kediri menghadapi ancaman serius akibat alih fungsi lahan pertanian yang masif, yang dipicu oleh pemiskinan petani karena biaya operasional tinggi, harga panen tidak menentu, dan dukungan negara yang tidak optimal. Meski penelitian terdahulu mengidentifikasi tekanan ekonomi sebagai penyebab utama, kajian tersebut belum menawarkan kerangka kebijakan komprehensif yang mengintegrasikan solusi regulasi, pemberdayaan, dan tata kelola lahan. Penelitian ini mengusulkan model kebijakan integratif 3-in-1 untuk memperkuat ketahanan pangan melalui pemberdayaan petani, penataan ulang ekstensifikasi lahan, dan reformasi regulasi secara simultan. Dengan metode penelitian hukum empiris pendekatan Participatory Action Research (PAR), data kualitatif dikumpulkan dari petani di Kecamatan Pesantren melalui wawancara mendalam dan observasi lapangan. Temuan mengonfirmasi bahwa penurunan kesejahteraan petani adalah akar penyebab konversi lahan yang membahayakan produksi pangan lokal. Model yang diusulkan menghadirkan pendekatan terstruktur dan baru dengan menghubungkan peningkatan kesejahteraan, perluasan lahan melalui penetapan kepentingan umum, dan pelarangan konversi yang lebih ketat dalam satu kebijakan pertanian berkelanjutan. Disimpulkan bahwa strategi terpadu ini dapat menjadi pilot project untuk meningkatkan ketahanan pangan perkotaan di Kediri dan wilayah serupa.

Kata Kunci: *Ketahanan Pangan, Pemberdayaan Petani, Alih Fungsi Lahan Pertanian*

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Introduction

The notion of Indonesia as an agricultural country appears to be fading as various government development concepts have diminished this identity (Kiloes et al., 2024; White et al., 2023a). Normatively, several policies appear to promote national agricultural development, including the 2020–2024 Medium-Term Development Plan (RPJMN) (Sayer et al., 2021). The RPJMN is derived from the vision and mission of the elected president and is implemented during the five-year term of office. The 2020-2024 RPJMN contains 7 priority development agendas, one of which is "Strengthening Economic Resilience for Quality and Equitable Growth" (Muni & others, 2023). This agenda is further specified in program targets, including the management of economic resources such as food and agriculture, maritime and fisheries, water, energy, and forestry.

The RPJMN seems to provide opportunities for further development of the agricultural sector. However, this policy is not supported by consistent derivative policies (Mahfud & Djohan, 2024). In practice, the government still neglects agricultural management. Instead of addressing core issues, it has overlooked critical aspects such as agricultural land conversion (Jahani Chehrehbargh et al., 2024; Juniyanti et al., 2021). The Ministry of Agriculture reported that at least 90,000–100,000 hectares of agricultural land were converted between 2020 and 2022. Agrarian conflicts resulting from land conversion and inadequate management of the agricultural sector remain widespread (Lee, 2022; White et al., 2023b). According to the Agrarian Reform Consortium (KPA), at least 935.5 hectares of agricultural land were involved in conflicts in 2021 alone, affecting no fewer than 80 farming households.

In Kediri City, agricultural land conversion has also occurred on a large scale. According to Tirta Wijaya, citing the 2013 Agricultural Census conducted by the Central Statistics Agency, the rate of agricultural land conversion in Kediri City reached 61,723 hectares per year, which is considered high. The number of farming households also declined to 3,930, representing approximately 46.69% (Prayitno et al., 2020). In this regard, two studies are noteworthy. First, Mujiono et al. (2024) examined the conversion of agricultural land use between 2005 and 2016. They found that land conversion was driven primarily by the rapid expansion of industrial and residential areas, as well as by the high contribution of the non-agricultural GRDP (Gross Regional Domestic Product) in Kediri Regency (Kardiono et al., 2023). Second, Prayitno et al. examined agricultural land conversion in Batu Regency during the 2014–2019 period. The study identified four main factors driving land conversion: financial pressure, rising land prices, which made land sales more profitable, declining agricultural commodity prices, and limited government support for agricultural enterprises (Prayitno et al., 2020).

Based on the two studies, it can be concluded that farmer poverty is the main problem in the effort to achieve national food independence. Poverty drives farmers to convert agricultural land, either by selling it or converting it. This process reduces the amount of national agricultural land, which in turn decreases food production (Azadi et al., 2021). Therefore, to realize food independence, improvements in agricultural management are required to enhance farmer welfare and prevent further conversion.

Given the social conditions of the community in Kediri City, a systematic and well-structured policy is needed to address this issue. If the central government has not yet implemented a significant agricultural development program, Kediri City can play a role by providing a successful model for other regions. Based on this background, the researcher conducted research entitled The 3-in-1 Policy Model for Strengthening Urban Food Security in Kediri City. This model serves as a policy framework for the city's agricultural sector, encompassing the upstream and downstream sectors. It is expected to improve farmer welfare and ensure food security in Kediri City.

Method

There are 2 major views in legal research methods. On the one hand, some scholars view legal research as a form of social research; on the other hand, others regard it as a distinct field (Negara, 2023) with its own characteristics, approaches, and procedures. This study adopts the first perspective, treating legal research as part of social research and, accordingly, employing empirical legal research. Empirical legal research situates legal issues within broader social problems. It is used, first, to identify the causes of a problem, then to examine its underlying roots, and finally to formulate legally appropriate solutions.

The approach employed in this study is Participatory Action Research (PAR). PAR is an empirical research method that involves collaboration between researchers and participants at all stages of the study. In this research, PAR was applied to obtain accurate responses to the research questions. It was implemented through problem identification, collaborative planning, action implementation, and action evaluation (Cornish et al., 2023). All stages involve farmers as the central actors in agricultural land conversion. Farmers' input serves as the basis for implementing the 3-in-1 Policy in Kediri City.

This study employs three data collection methods: in-depth interviews with informants, direct observation of agricultural conditions in Kediri City, and a literature review of existing conditions in relation to relevant theories, laws, and regulations. The field findings will serve as the basis for formulating the 3-in-1 policy concept outlined at the outset of this study.

This research was conducted in Kediri City, particularly in areas that serve as sources of agricultural land. According to data from the Central Statistics Agency, the main agricultural area in Kediri City is located in Pesantren District, which covered approximately 1,088 hectares of rice fields in 2018. Therefore, this study also focuses on that district. Primary data were obtained directly from five farmers in Pesantren District, Kediri City. In addition, secondary data were collected from laws and regulations relevant to this study, while tertiary data comprised books, journals, and other legal documents.

Results and Discussion

Result

1. Agricultural Conditions and Farmer Welfare in Kediri City

One of the key instruments for determining regional development and work programs is the Regional Medium-Term Development Plan (RPJMD). The RPJMD is designed to address the problems faced by the region. Valid for five years, it articulates the work program of the elected regional head and is aligned with the Regional Long-Term Development Plan (RPJPD). The RPJMD is then translated into annual programs, which form the basis for preparing the Regional Revenue and Expenditure Budget (APBD). Thus, the RPJMD occupies a central position in determining the region's development direction over the next five years.

The Kediri City RPJMD was initially established through Kediri City Regional

Regulation Number 11 of 2019 concerning the 2020–2024 Regional Medium-Term Development Plan. This RPJMD identifies seven strategic issues that form the basis of the city government's work program over the next five years. In its revised version, one additional strategic issue was introduced: economic recovery and public health recovery from the impact of COVID-19.

Among the programs outlined in the RPJMD, those relevant to this study concern the development of trade, industry, agriculture, and fisheries. The Kediri City Government acknowledges that regional income from the agricultural sector's Gross Domestic Product (GDP) is relatively limited due to the scarcity of agricultural land in Kediri City. The government also considers increased agricultural and fisheries productivity as part of its strategy to achieve urban food security. However, the approach adopted appears to be inadequate.

This is evidenced by the alarming number of farmers in Kediri City. According to the Central Statistics Agency, there were 7,140 farmers in 2018, comprising 5,985 men and 1,155 women. This places Kediri City fourth from the bottom in terms of farmer population among cities in East Java. Another indicator of the program's ineffectiveness is the decline in rice production in Kediri City. In 2023, rice production reached 8.27 thousand tons, representing a decrease of 1.93 thousand tons, or approximately 18.92%, compared with the previous year. Of this total, 4.98 thousand tons were allocated for food consumption, also reflecting a decline of 1.11 thousand tons from the previous year.

According to information obtained by the researcher, farmers are increasingly struggling to earn a profit from farming. This difficulty arises from several factors, including fertilizer prices, the scarcity of subsidized fertilizer, rising labor costs, and declining crop prices as the harvest season approaches. An anonymous farmer stated:

> *"It's getting harder and harder to farm, sir. It would be better to just sell the land. The money is clearer, it can be used for other businesses and for children's school fees. Rather than now, farming is getting harder. Also, the unpredictable seasons. Lately the weather has been very hot. The cost of irrigation is also getting more and more inflated."* (Interview results of Respondent 1 dated September 22, 2024)

In addition, some farmers remain determined to continue farming despite these challenges. One farmer stated that this occupation has been passed down through generations and will be maintained, at minimum, within his own generation. He added that his child's choice of profession will be left entirely to the child. Furthermore, the respondent stated:

> *"Basically, I want to farm, sir. Whatever happens. Well, I only know how to farm. I can't do other jobs. Besides, this job has been passed down from generation to generation. So, whatever the results and whatever income I get, I will still farm.* (Interview results of Respondent 3 dated September 23, 2024)

All interviews with respondents were conducted confidentially for the purposes of this research. Accordingly, any respondent-related information, including photographs and interview transcripts, cannot be disclosed by the research team. Nevertheless, these accounts indicate that the local government has made limited efforts to improve agricultural conditions in Kediri City. In response, the researcher proposes a 3-in-1 policy to strengthen urban food security in Kediri City. This policy comprises farmer empowerment, the reorganization of land extensification, and regulatory reform. Each of these components is discussed in the following section.

Table. 1

Field Findings

No	Field Findings
1	Farmers are not prosperous, which has led to a continued decline in their numbers

	and a significant occupational shift from farming to other professions.
2	Some factors contributing to farmers' lack of prosperity include declining commodity prices during the harvest season, high labor costs, expensive fertilizer and irrigation inputs, and seasonal uncertainty, all of which increase operational costs.
3	Unsuccessful farmers are the cause of the conversion of agricultural land to non-agricultural use.
4	The ever-decreasing amount of land threatens urban food independence in Kediri City

Note. Farmer impoverishment, driven by low commodity prices and high operational costs, is the primary cause of the decline in the number of farmers and the conversion of agricultural land, thereby threatening urban food security.

The analysis yielded a proposed 3-in-1 policy framework consisting of farmer empowerment, agricultural land extensification, and regulatory reform. The framework responds to the documented economic pressures on farmers and the continuing conversion of agricultural land in Kediri City. These components represent policy proposals derived from the study rather than measures whose implementation or effectiveness has been empirically evaluated.

2. Agricultural Land Extensification Policy

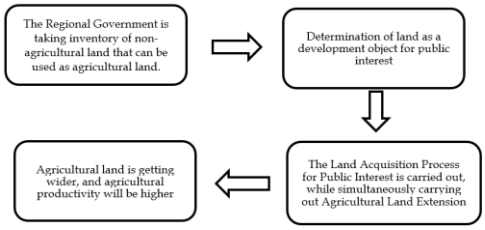
The second component of the proposed framework is agricultural land extensification. The study identifies the designation of suitable land for public-interest agricultural development, followed by land inventory and acquisition with fair compensation, as a proposed sequence for expanding the agricultural land base. The sequence is summarized in Diagram 1; its legal feasibility and practical outcomes require further assessment.

The question is: what is the social function of land? The concept of the social function of land has been subject to continuous critique and reinterpretation. Traditionally, it has been understood as prohibiting landowners from using land solely for private interests. Over time, however, this concept has evolved into a legal basis for state acquisition of land for public development projects. For example, when the state constructs a toll road, which is categorized as a public-interest project, landowners are required to transfer their land to the state in exchange for adequate and fair compensation.

The government should be able to designate the development of new agricultural land as a public-interest project. The process of creating new agricultural land, known as extensification, would therefore become easier, For example, if the Kediri City Government planned to expand agricultural land that is currently unused for farming, landowners would be required to transfer it to the state with fair compensation, since land acquisition for agricultural development falls within the public interest. This approach would facilitate extensification and increase the total area of agricultural land, thereby enhancing agricultural productivity. To improve readability, this second policy is illustrated in the following diagram:

Diagram 1.

Sustainable Food Farming Land Expansion Policy in Kediri City



Note. The policy for sustainable food farming land expansion in Kediri City by designating

land as a public interest object, conducting inventory, acquisition, and ultimately extensification to increase productivity

Based on the foregoing description, the process of agricultural land extensification in Kediri City is expected to become easier. To date, the main obstacle has been the limited capacity of the state, at both the central and regional levels, to create new food crop agricultural land. Rather than increasing the area of agricultural land, the total area has often declined. Accordingly, this new policy on agricultural land extensification has the potential to increase the availability of food crop agricultural land in Kediri City.

3. Regulatory Gaps in Agricultural Land Conversion

The third component is regulatory reform. Documentary analysis of Kediri City Regional Regulation Number 8 of 2019 on the Protection of Sustainable Food Crop Land identified provisions concerning exceptions to conversion restrictions, replacement-land obligations, and conversions following transfers of ownership that warrant further policy review. Figure 1 presents the provisions and the researchers' recommended changes.

Figure 1

Changes in Regulations on Conversion of Agricultural Land

No	Article	Contents	Recommended Changes
1	30 verse (2)	The prohibition on conversion as referred to in paragraph (1) is an exception for conversion of LP2B in the context of: (a) for the public interest (b) provision of infrastructure damaged by natural disasters	As explained previously, LP2B must be included in the category of public interest. Therefore, this article is irrelevant. Even if LP2B is not included in the public interest, the conversion of agricultural land into a toll road should not be carried out. Considering that the amount of agricultural production continues to decrease, the existence of LP2B is necessary. Therefore, due to the whatever reason, the conversion should not be carried out.
2	Article 30 verse (3) dan verse (5)	(3) The transfer of LP2B function for public interest as referred to in paragraph (2) letter a is carried out in accordance with the provisions of applicable laws and regulations. (5) Regarding the transfer of LP2B function as referred to in paragraph (3), the Party making the transfer is obliged to replace the area of land that is being transferred.;	So far, the party that converts agricultural land for public interest is the state itself. And when the state procures land, there is almost never a replacement of new agricultural land. In many cases, what happens is that the state only provides compensation. Therefore, this regulation is irrelevant to the reality that occurs.
3	Article 31 verse (1)	Provision of replacement land for LP2B which has been converted as referred to in Article 30 paragraph (4) is carried out on the basis of land suitability, with the following provisions:	This regulation does not discuss the conversion of agricultural land by individuals. For example, a farmer sells his land to another person. It turns out that the person does not use his land for agricultural purposes. Instead, it is converted to something else. In many cases, the new owner is never asked to provide new agricultural land as a replacement, even though he has clearly converted the function of agricultural land.

Note. Regulatory changes on agricultural land conversion to tighten conversion bans and strengthen land replacement mechanisms.

As summarized in Figure 1, the proposed regulatory amendments emphasize stronger restrictions on conversion and clearer accountability when agricultural land is transferred to new owners. These are recommendations arising from the legal analysis, not amendments already enacted.

Discussion

The findings indicate that urban food security in Kediri City requires an integrated policy response linking farmer welfare, agricultural land extensification, and stronger control of land conversion. This integration is necessary because declining farm profitability can encourage land sales, while the resulting loss of agricultural land narrows the city's food production capacity (Zhang et al., 2023). Addressing land availability without improving livelihoods or reviewing regulatory safeguards would therefore leave important drivers of conversion unresolved (Akmal & Mohammadi, 2025a). Interviews with farmers in Pesantren District described expensive fertilizer, irrigation and labor, uncertain weather, and falling harvest prices as pressures on continued farming (Liebenehm et al., 2023; Vos et al., 2025). Local agricultural statistics reported a decline in rice production in 2023, reinforcing concerns about the sustainability of agricultural activity rather than establishing a single cause for that decline (Sudaryanto et al., 2023). The study consequently formulated an extensification pathway in Diagram 1 and identified proposed amendments to land conversion provisions in Figure 1, consistent with broader concerns over farmers' welfare and agricultural land protection (Finger et al., 2024; Wang et al., 2024). Together, these findings position the 3-in-1 model as a coherent policy proposal whose practical effectiveness still requires assessment.

The social relevance of the findings lies in the tension between preserving agricultural land for urban food security and sustaining the livelihoods of households that depend on farming (Zhang et al., 2023). Farmers make decisions under immediate financial constraints, so restrictions on land conversion may be ineffective or inequitable when agricultural work remains economically insecure (von Groß et al., 2024). Urban growth also increases competition for land, making the distribution of policy burdens between farmers, landowners, and the wider public especially important (Ambarwulan et al., 2023). In interviews, farmers in Pesantren District linked their difficulties to input prices, irrigation expenses, volatile harvest returns, and uncertainty about future farming opportunities (Faoziyah et al., 2024a). One respondent regarded selling land as a more predictable way to support family needs, whereas another emphasized commitment to farming as an inherited occupation. These contrasting accounts illuminate the livelihood dynamics described in Indonesian agrarian research and the wider multidimensional character of food security (Tabe-Ojong et al., 2023). Accordingly, a socially responsive policy should protect food-producing land while reducing the economic vulnerabilities that influence individual land-use decisions.

The findings suggest that the proposed 3-in-1 policy model is best understood as an institutional coordination framework connecting household economic incentives, land governance, and regulatory enforcement (Meckelburg & Wardana, 2024a; Zhang et al., 2023). Its underlying logic is that farmers' decisions are shaped not only by personal preferences but also by the economic returns and legal arrangements surrounding agricultural land (Githinji et al., 2024; von Groß et al., 2024). Likewise, expanding agricultural area cannot guarantee lasting food security unless newly protected or acquired land remains viable for cultivation and is governed through accountable procedures (Akmal & Mohammadi, 2025b; Yin et al., 2024). The field accounts identify financial and operational pressures that help explain why continued cultivation may become less

attractive than selling land (Saqib et al., 2024). Diagram 1 translates the land availability concern into a proposed sequence of identification, public-interest designation, and acquisition, while Figure 1 specifies perceived gaps in the conversion rules (Alpuche Álvarez et al., 2024). These elements resonate with scholarship on agrarian change, land-use decisions, and agricultural systems as foundations of food security (Zhang et al., 2023). The theoretical contribution is therefore an integrated explanatory proposition, not evidence that the three interventions have already produced measurable outcomes.

The central lesson of this research is that agricultural land protection is unlikely to endure when the people expected to cultivate that land cannot sustain their livelihoods (Li et al., 2024). Land has both productive and social significance, so a policy framed solely around acreage risks overlooking the economic insecurity and differing aspirations of farmers (H. Liu et al., 2024). Conversely, supporting farm income without establishing credible land-use safeguards may improve short-term welfare while leaving productive space vulnerable to conversion (Zhang et al., 2023). The interviews reveal these competing realities through accounts of costly production and contrasting decisions about whether to remain in farming (Chen et al., 2024). The proposed extensification diagram foregrounds land availability, while the regulatory analysis shows that rules governing exceptions and replacement land also shape the possibilities for protection (Qie et al., 2023). Together, these observations align with studies emphasizing farmer welfare, agrarian change, and the role of governance in sustaining agricultural systems (Appelt et al., 2022; Berchoux et al., 2023). The research thus advances a practical principle: durable food security policy should reconcile legal protection of land with meaningful economic security for farmers.

Compared with earlier studies, this research shifts the emphasis from identifying drivers of agricultural land conversion toward assembling related policy responses into one locally grounded framework (Faoziyah et al., 2024b). Existing scholarship has established that livelihood pressures, land ownership considerations, and wider agrarian transformation influence choices about agricultural land, but identifying these factors alone does not specify an integrated local policy sequence (Afrizal et al., 2024; Valcourt et al., 2024). The present study extends that discussion by pairing farmer accounts with a proposed land extensification pathway and an article-level appraisal of Kediri City's land protection regulation (Meckelburg & Wardana, 2024b). Its interviews reinforce findings that economic insecurity and livelihood dynamics matter for farmers' decisions (Z. Liu et al., 2024). Its attention to ownership and conversion issues also parallels research on farmland decision-making in Kediri (Delina et al., 2024). Meanwhile, its combined focus on land availability and regulation is consistent with literature linking agricultural land systems to food security and questioning governance arrangements in land development. The distinction is therefore one of policy integration and local application rather than demonstrated superiority over previously tested interventions.

The principal policy implication is that Kediri City should assess the proposed 3-in-1 framework through a phased, participatory process before considering wider adoption (Peskett et al., 2023). Initial action should prioritize feasible measures that respond directly to farmers' reported constraints, while keeping land protection objectives and public accountability visible. Subsequent decisions about extensification and regulatory amendments require legal review, budget assessment, and consultation with affected landowners to avoid treating conceptual proposals as established legal authority (De Maria et al., 2023). As a first step, relevant agencies could document fertilizer access, irrigation costs, farm income, and farmers' land-use intentions to establish a baseline for targeted support (Shahpari & Eversole, 2024; Zewdie et al., 2025). A second step would evaluate the suitability and ownership status of potential agricultural land, including the legality and

fairness of any proposed acquisition mechanism illustrated in Diagram 1. A third step would review the exceptions, replacement obligations, and enforcement arrangements examined in Figure 1, drawing on scholarship about agricultural systems, subsidies, and land governance (Tuan, 2023). Pilot evaluation should then determine whether coordinated interventions are workable and improve outcomes before policymakers present the model as effective.

Conclusion

The study identified several important findings. First, agriculture at the national level, particularly in Kediri City, is in a concerning condition. Declining productivity, coupled with the reduction of agricultural land, hinders the achievement of urban food security. Second, the 3-in-1 policy model should be prioritized in Kediri City. Policies addressing farmer welfare, agricultural land extensification, and regulations governing agricultural land conversion must be implemented without delay.

The 3-in-1 policy model for improving urban food security is a novel approach that has not yet been implemented in other regions or at the national level. Kediri City can serve as a pilot area for this policy, which may later be adopted by other regions and central institutions. Conceptually, the model offers a strategic and integrative approach that links farmer welfare, land-use policy, and food security within a single framework.

However, this policy is not without limitations. It does not fully address the conversion of agricultural land by new landowners, a practice that frequently occurs in society. Therefore, the researcher hopes that subsequent research will further examine this issue to strengthen the comprehensiveness and applicability of the proposed policy model.

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