



Research Article

The Effectiveness of Institutional Governance in Controlling Agricultural and Plantation Land Conversion in Kendari City, Southeast Sulawesi, Indonesia

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Abstract | Agricultural and plantation land is essential in ensuring the sustainability and availability of food security, the welfare of farming communities, and ecosystem diversity. However, converting agricultural and plantation land for various purposes can significantly impact the survival of communities that depend on this sector for their livelihoods. Although this land conversion can benefit economic development in the short term, it can have a negative impact in the long term. This study aims to understand more deeply the potential and shrinkage of agricultural and plantation land in Kendari City and to analyze the effectiveness of institutional governance in controlling land conversion. In addition, this study also aims to identify the role of stakeholders in maintaining agricultural and plantation land. This study used data collection techniques to achieve these objectives, including focus group discussions, observation, and documentation. The data analysis used was spatial analysis and stakeholder role analysis. The findings showed that agricultural and plantation land in Kendari City experienced significant shrinkage. In addition, institutional governance in controlling land conversion is less effective, but several indicators of institutional governance fall into the practical category. The role of stakeholders in controlling land conversion is to formulate policies related to controlling land conversion, carry out integrated supervision, enforce the law, and increase community participation. This research can contribute to the development of effective strategies for managing the conversion of agricultural and plantation land, as well as in maintaining the sustainability and availability of food security, the welfare of farming communities, and the diversity of ecosystems in Kendari City.

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Introduction

One of the significant challenges faced by the Regional Government of Southeast Sulawesi Province, especially Kendari City, is the uncontrolled conversion of agricultural land and plantations. The conversion of farmland and plantations to other uses can impact the sustainability and availability of food security, the welfare of farming communities, and the diversity of ecosystems. Even though this land conversion can benefit economic development in the short term, it can significantly impact people who depend on the agricultural and plantation sectors.

Agricultural land and plantations in Kendari City strategically support the local economy, provide food, and maintain ecosystem balance. However, along with the increasing need for land for housing, commercial areas, and other infrastructure, many productive agricultural lands have been converted into non-agricultural areas. This threatens the region's food security and reduces the environment's ability to absorb water and maintain soil quality, which can trigger disasters such as flooding and soil degradation. The research results of [Busko and Szafranska \(2018\)](#), and [Arnawa et al. \(2022\)](#) show that the most significant factor influencing the conversion of agricultural land is the need for housing. In dealing with these issues, institutional governance plays a key role. Effective governance includes comprehensive planning, consistent policy implementation, close supervision, and coordination of various stakeholders.

In protecting agricultural land and plantations, the Kendari City Government has issued various policies and local regulations, such as regulations in the Regional Spatial Plan (RTRW) and establishing institutions supervising and controlling land use. However, its implementation has various obstacles and problems, including weak law enforcement, overlapping authority between institutions, and lack of community participation. This is in line with the results of research conducted by [Wulan et al. \(2022\)](#), [Moreira-Dantas and Söder \(2022\)](#), [Ustaoglu and Williams \(2023\)](#) that government agencies have the authority and power to control the conversion of agricultural land non-agricultural land.

Effective institutional governance is key in controlling and preventing uncontrolled land conversion. Policies, regulations, and monitoring systems involving the

government, communities, and the private sector are needed to ensure that land conversion is carried out sustainably and does not damage the essential functions of agricultural land and plantations. However, despite several regulations governing land management, the effective implementation of these policies in the field is often hampered by weak inter-agency coordination, lack of supervision, and indecisiveness in law enforcement. [Suardi et al. \(2022\)](#) and [Marcos-Martinez et al. \(2017\)](#) explain that strategies to control sustainable agricultural land conversion and plan and manage agrarian land more effectively need to involve various stakeholders from various sectors to increase the alignment between government policies, local wisdom, investments that benefit agriculture and strengthen agricultural institutions.

In addition, public awareness of the importance of maintaining the sustainability of agricultural land and plantations is still relatively low. Many people are tempted to convert their land for short-term economic reasons, such as high land selling prices. On the other hand, the lack of incentives for farmers to maintain their land as productive land further accelerates this conversion process. Research results by [Arnawa et al. \(2022\)](#), [Prasada and Nugroho \(2022\)](#), [Cao and Solangi \(2023\)](#), [Munadi et al., \(2023, 2024\)](#), [Kandari et al. \(2024\)](#) explain that the level of public education, the role of government's ineffective governance, and community involvement significantly increase public awareness of the importance of farmland sustainability.

Kendari city, the capital city of Southeast Sulawesi Province, is experiencing rapid development that affects changes in land use patterns. The large amount of agricultural land and plantations converted into non-agricultural land, such as settlements and industrial areas, shows the importance of institutional arrangements in controlling land conversion. Therefore, this study aims to determine the potential and shrinkage of agricultural and plantation land, analyze the effectiveness of institutional governance in preventing the conversion of agricultural and plantation land in Kendari city, and identify the role of stakeholders in maintaining agricultural and plantation land in Kendari city.

Literature review

Institutional governance: Effective institutional governance is needed to manage resources and realize

effective public services. Institutional governance will be effective if supported by good institutional structure, institutional capacity, and stakeholder involvement. Research conducted by [Wicaksono \(2022\)](#) shows that institutional structure can increase the effectiveness of regional economic development performance, which has implications for improving regional economic growth. This research emphasizes the importance of institutions as a foundation in implementing regional development, which aligns with [Yasin et al. \(2020\)](#), highlighting the need for political commitment and institutional capacity in managing water resources in Pakistan. Both suggest that the success of institutional governance depends heavily on the structure and capacity of existing institutions.

Furthermore, despite good legal frameworks, [Ali Shah and Nabeel \(2023\)](#) emphasized challenges in implementing water governance in Afghanistan and Pakistan. This research suggests strengthening internal institutions and multilevel stakeholder engagement can improve cross-border water policy coordination. This aligns with Alkhawaldeh's study, which found that institutional governance practices in Jordan showed improvements in service quality and resource use, which has implications for increasing public trust in institutions. Thus, institutional strengthening and stakeholder engagement are key to achieving good governance.

In addition, research by [Gerged \(2021\)](#) emphasizes the importance of integrating environmental governance and regulation in emerging markets. The existence of rules in an organization guides the implementation of activities so that they impact improving organizational performance. So, the research conducted by Gerged provides recommendations for managers and policymakers to strengthen sustainable governance practices. This is reinforced by research by [Gerged \(2021\)](#), which states that participatory and multilevel governance can improve the quality of environmental policies. On the other hand, this research also confirms that collaboration between government and society can achieve effective results. Therefore, effective institutional governance requires strong institutional structures, adequate institutional capacity, and active involvement of various stakeholders.

Institutionalization in agricultural land conversion control

Institutionalization in controlling the conversion of

agricultural land and plantations is an increasingly important issue amid higher population growth. The growth and increase in population demand the conversion of farmland and plantations for housing and settlement needs, including industrial development and other infrastructure. [Wulan et al. \(2022\)](#) suggested that land use competition between the agricultural and non-agricultural sectors is one of the leading causes of land conversion. This study shows that population and economic growth contribute to unplanned land conversion.

[Nepal et al. \(2020\)](#) noted that environmental factors, such as low land productivity and lack of irrigation facilities, are also causes of agricultural plantation land conversion. This is in line with the findings of [Paramasatya and Rudiarto \(2019\)](#), who pointed out that government policies in regional development are often the trigger for agricultural land conversion. Policies that do not consider long-term impacts on food security can exacerbate this situation. In the Indonesian context, [McCarthy et al. \(2012\)](#) reveal that policies that support small-scale production from oil palm plantations can help maintain land rights for smallholders. However, inappropriate policies can result in life insecurity for farmers, who become clean food buyers. In addition, [Prayitno et al. \(2021\)](#) point out that social and economic pressures make it difficult for farmers to protect their land from conversion, which often happens every year. Strong institutions and appropriate policies are essential in addressing the challenges of land conversion. [Wirawan and Chernovita \(2023\)](#) emphasized that rapid development growth, triggered by population increase, led to significant land-use changes. This research shows that complex interactions between biophysical and human dimensions contribute to land use change. Therefore, the need for an integrated approach to land management becomes very clear.

On the other hand, agricultural land protection policies in Indonesia still face various challenges. [Wirawan and Chernovita \(2023\)](#) noted that implementing sustainable agrarian land protection policies is still low, mainly due to unfavorable political factors. This suggests the need for increased awareness and commitment from the authorities to protect agricultural land from unauthorized conversion. [Silambi et al. \(2023\)](#) added that continued land conversion could result in declining domestic food reserves and farmers' welfare. It thus shows that

effective institutions and appropriate policies are essential in controlling the conversion of agricultural and plantation land.

Role of stakeholders in land conversion control

The role of stakeholders in controlling the conversion of agricultural land and plantations is crucial to achieving sustainable resource management. Stakeholders include various parties, including the government, farmers, local communities, non-governmental organizations (NGOs), and the private sector, who have interests and influence in land management. Stakeholder involvement in participatory mapping can help identify perceived land and water management conflicts. Local knowledge can be integrated into decision-making by involving local communities and improving land management's effectiveness.

Research by [Bailack et al. \(2021\)](#) emphasizes that existing regulatory mechanisms strongly influence interactions between various stakeholders in land management. They found that stakeholders use various interaction options to manage conflicts and land exploitation sustainably. This suggests that effective land management requires strong collaboration between stakeholders, where each party contributes with their knowledge and resources. In the context of water resources management, [Lim et al. \(2022\)](#) noted that stakeholder engagement is an essential element in implementing integrated watershed management. This research suggests that to address water-related issues, such as pollution and drought, there needs to be a clear framework for involving various stakeholders in the decision-making process. This engagement not only increases transparency but also promotes accountability in resource management.

Stakeholder engagement also plays a role in building trust between the parties involved. [Gornish and Roche \(2018\)](#) note that meaningful interactions between stakeholders and management agencies can help develop information and knowledge exchange networks. This trust is crucial in the context of land management, where decisions can have a direct impact on the lives of local communities and environmental sustainability. However, challenges in stakeholder engagement remain. [Tran et al. \(2022\)](#) identified that an organizational culture that supports stakeholder engagement can increase organizational value in project management. Therefore, organizations

need to develop strategies that facilitate effective stakeholder engagement. In addition, [Neef and Neubert \(2011\)](#) emphasized that participatory approaches in agricultural research can improve sustainability and natural resource management by integrating local priorities and knowledge. Thus, the role of stakeholders in controlling the conversion of farmland and plantations is crucial. Active and collaborative involvement between various parties can increase the effectiveness of land management, reduce conflict, and support environmental sustainability. These studies provide valuable insights for developing better policies and practices in land management.

Materials and Methods

Research location

The research was conducted in Kendari city, Southeast Sulawesi Province, considering that Kendari city has a high potential for land conversion due to urbanization growth and economic development.

Data type and source

The types of data used in the research are primary and secondary. Primary data was obtained from key informants, such as (a) Head of officials of relevant agencies (Head of Agriculture Office Agency, Head of Plantation Office Agency, Head of Spatial Planning Agency, Head of Regional Development Planning Agency, and Head of National Land Agency), (b) Community leaders and local farmers, and (c) Academician and spatial observer in Southeast Sulawesi. Secondary data is obtained from official documents, such as local regulations related to spatial planning and land management, statistical reports on land use from the Central Bureau of Statistics of Kendari city and related institutions, and previous studies or reports on land management in Kendari city.

Data collection technique

The collection techniques used in this study consisted of: (a) focus group discussion, which is conducted systematically and directed in a forum by a moderator discussing land conversion control issues in an informal atmosphere; The aim is to explore an in-depth understanding of institutional governance and its implementation in controlling land conversion. Details of the FGD implementation as follows: (1) Planning, including (i) Selecting relevant and diverse participants, and (ii) Selecting experienced

moderators and minutes, (2) Preparation: (i) creating a discussion guide with key topics or questions; (ii) preparing equipment such as recording devices, notes, and supporting materials, (3) Implementation: (i) The moderator opens the discussion, explains the objectives and rules; (ii) Directs the discussion according to the guidelines, and ensures all participants are engaged, and (4) Formulating the results of the discussion.

The participants involved in the FGDs were determined purposively with the consideration that they have an interest and the authority to formulate policies for the protection of agricultural land and plantations. Field observation is direct observation to see the physical condition of converted farmland and plantations and identify environmental factors that influence the process. This field observation was conducted for 2 months with a frequency of 2-to 3 times a week, and The documentation study analyzes regulatory documents, regional spatial plans (RTRW), and land management evaluation reports.

Data analysis

Data analysis for mapping the potential area of agriculture and plantations can be analyzed spatially through the geographic information system (GIS) using ArcGIS software. Spatial data was collected by taking coordinate points on agricultural land converted into non-agricultural and nonplantation land. Land conversion data was collected in 2010 and 2024 because, since 2010, there has been an expansion of residential areas characterized by many developers building housing in Kendari city. On the other hand, the development of trade areas is expanding in Kendari city.

Data analysis is used to determine the effectiveness of institutional governance in controlling land conversion through weighted average weighting on each attribute or indicator. Each weight uses a Likert scale of 1–5. Each attribute has the same weight using the following formula:

$$\text{Weighted Average Value-Average} = \frac{\text{Total Institutional Weight}}{\text{Weighted number of attributes}} \dots(a)$$

To obtain the value of the institutional index, a weighted average value approach is used with the following formula:

$$\text{Index} = \frac{\text{Total of Weighted Per Institutional Attribute Perception Score}}{\text{Total Weighted institutional attributes filled in}} \times \text{Weighted Value} \dots(b)$$

To facilitate interpretation of the institutional governance index rating, which is between 25–100, the assessment results above are converted to a base value of 25, with the formula: Index x Weighted Value (25). The index based on the perceived value is tabulated in Table 1.

Table 1: Perception score, institutional interval, institutional conversion score, and institutional performance.

Interval value	Conversion interval value	Institutional performance
1,00 – 1,75	25,00 – 43,75	Ineffective
1,76 – 2,50	43,76 – 62,50	Less effective
2,51 – 3,25	62,51 – 81,25	Effective
3,26 – 4,00	81,26 – 100,00	Very effective

The fourth objective, which is to determine the role of stakeholders in land conversion control, can be analyzed by starting with a two-time matrix according to stakeholders' interest in the problem and stakeholders' power to influence the situation. Stakeholders with a more significant role in controlling land conversion and more scope occupy the player position. This analysis matrix can be seen in Figure 1.

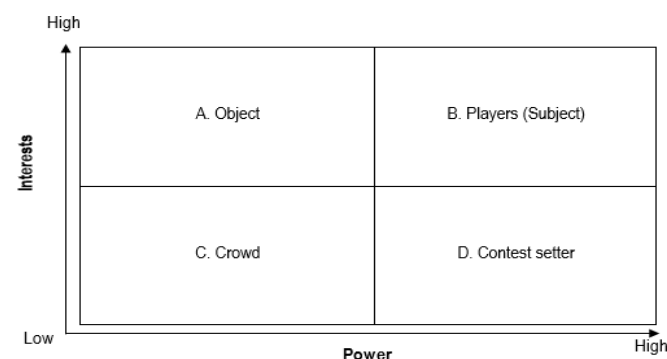


Figure 1: Stakeholder analysis matrix in controlling agricultural and plantation land conversion.

Results and Discussion

Mapping the potential and shrinkage of agricultural and plantation land in 2010 and 2024

Kendari city is an area that has the potential to develop plantation agriculture, fisheries, and marine sectors. As an area with potential for plantation agriculture in 2010, there were 8.128,11 hectares of agricultural and plantation land with rice paddy, cocoa, and coconut crops (Figure 2). However, in the period up to 2024, the area of agricultural and

plantation land is only 346.32 hectares (converted). The decrease in land area is due to the conversion of land to other uses in the context of the development of Kendari city as the center of government of Southeast Sulawesi Province. The city's development includes expanding housing and settlement developments, supermarkets, infrastructure development, and new

office building construction. These conditions are the cause of agricultural land conversion. The total area of farmland and plantations converted to other uses until 2024 can be seen in Table 2. The spatial analysis results comparing the distribution of potential agricultural land and plantations in Kendari city can be presented in Table 2 and Figure 3.

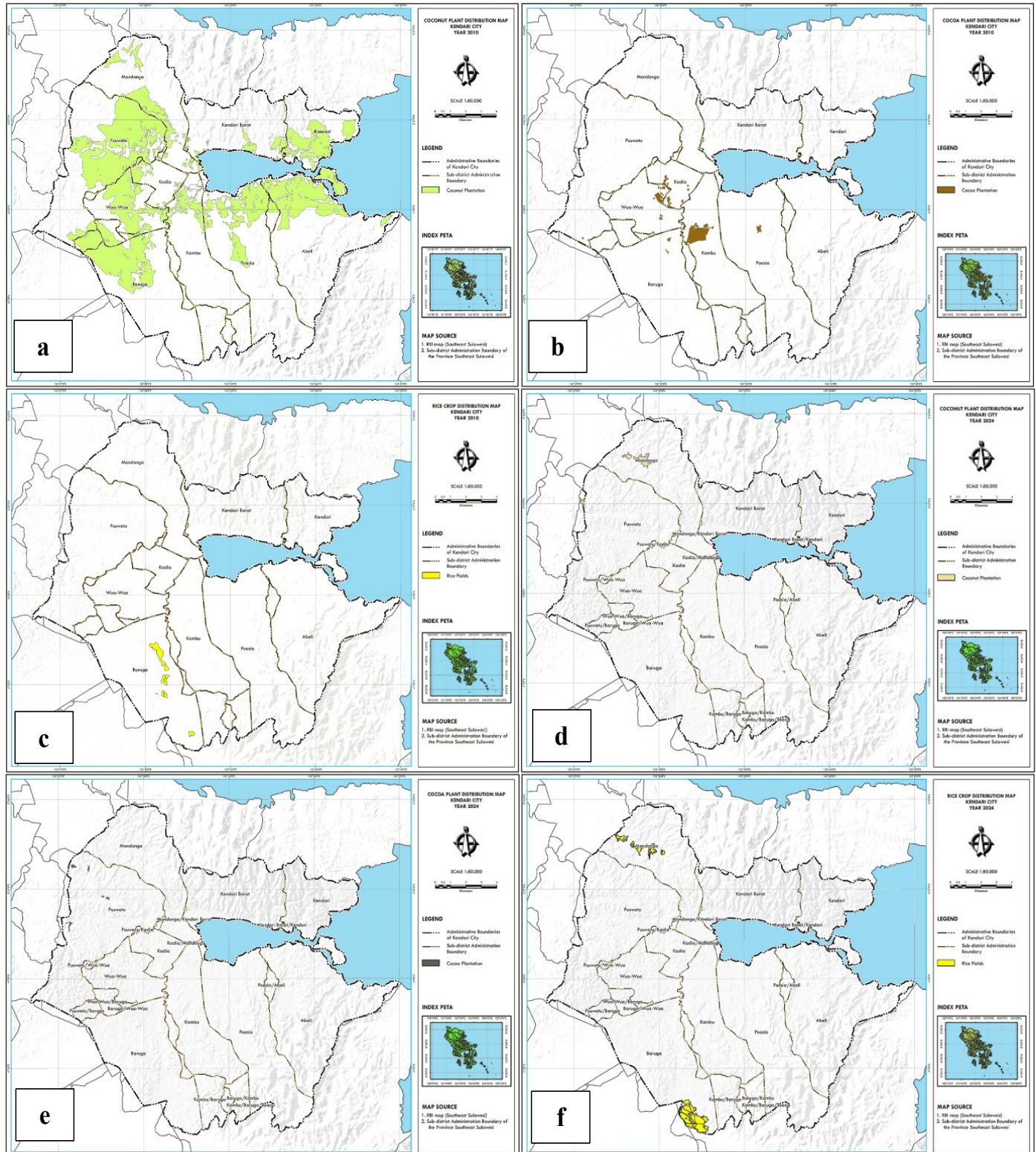


Figure 2: (a) Map of distribution of coconut plants in 2010, (b) Map of distribution of cocoa plants in 2010, (c) Map of distribution of rice plants in 2010, (d) Map of distribution of coconut plants in 2024, (e) Map of distribution of cocoa plants in 2024, (f) Map of distribution of rice plants in 2024.

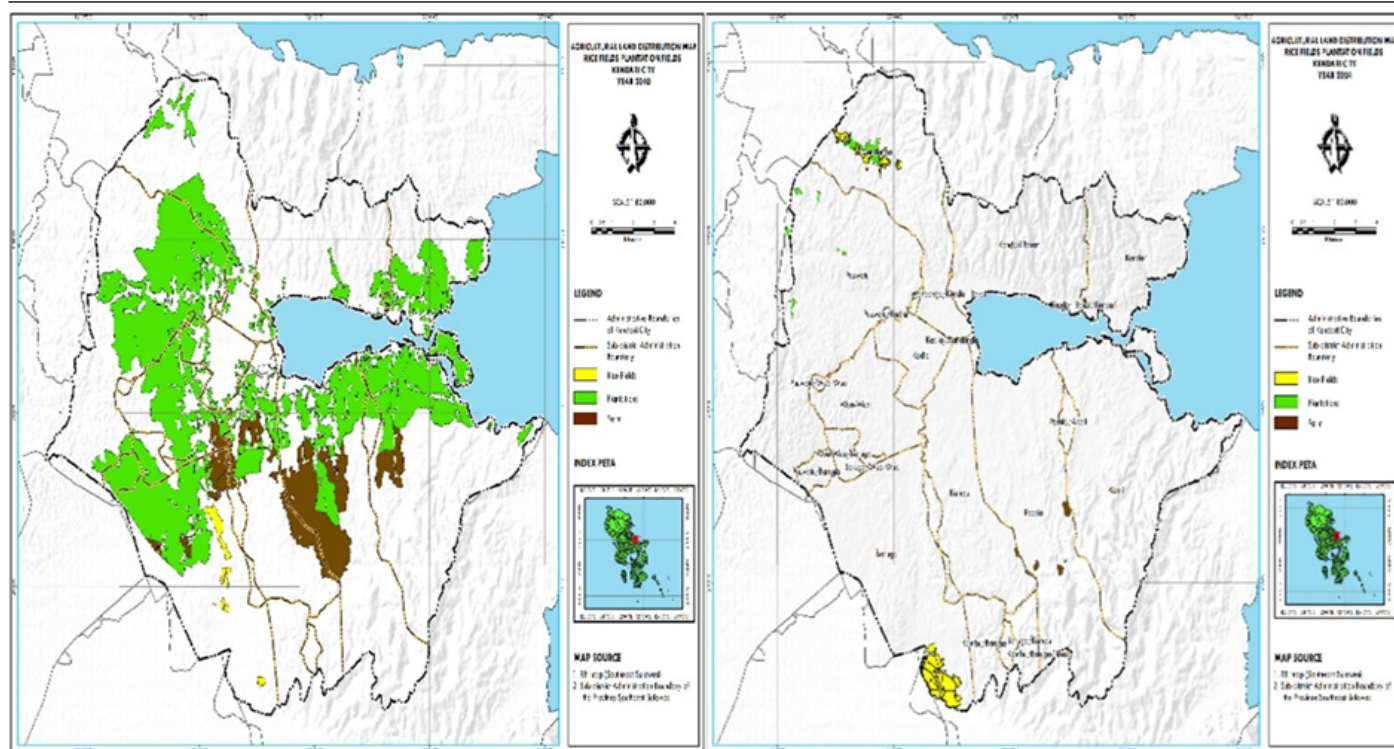


Figure 3: (a) Distribution of land potential agriculture 2010, (b) distribution of land potential plantation in 2024.

Table 2: Distribution and potential area of agricultural and plantation Land in Kendari City (Year 2010 and 2024).

No.	District	Land area in 2010			Total land area in 2010	Land area in 2024			Total land area in 2024
		Paddy fields	Dry fields	Plantation		Paddy fields	Dry fields	Plantation	
1	Abeli		143,53	962,036	1.105,57			1,1	1,10
2	Baruga	95,69	152,74	865,7	1.114,13	178,8			178,80
3	Kadia			141,39	141,39				0,00
4	Kambu		286,02	320	606,02		7,09		7,09
5	Kendari			525,76	525,76				0,00
6	Kendari Barat			157,29	157,29				0,00
7	Mandongga			439,92	439,92	67,3		46,51	113,81
8	Poasia		676,18	719,96	1.396,14		25,93	0,66	26,59
9	Puuwatu			1827,08	1.827,08			18,93	18,93
10	Wua-wua		57,06	757,75	814,81				0,00
Total		95,69	1.315,53	6.716,89	8.128,11	246,10	33,02	67,20	346,32

Based on the data in Table 2 and Figure 3, it appears that in 2010, there were 95.69 hectares of paddy fields scattered in the Baruga Sub-district of Kendari City, and this increased to 246.10 hectares in 2024 scattered in the Baruga Sub-district and Mandonga Sub-district. This increase is due to the Kendari City Government Program to establish sustainable agricultural areas (Figure 4). On the other hand, the existence of Law No. 41/2009 on the protection of sustainable food agricultural land is a manifestation of the goals and ideals of the state. The law is used to control and supervise food agricultural land and its area sustainably. Thus, the Kendari City Government

has designated 246.10 hectares of paddy fields as perennial food land in Kendari city. Dirman *et al.* (2018), Susmiyati and Al-Hidayah (2020), Harry *et al.* (2018) explained that the availability of agricultural land is essential and is the responsibility of the State to realize it, one of which is through the establishment of a land bank which has been mandated in the Indonesian constitution.

Behind the designation of paddy fields, the potential for agricultural land and plantations in Kendari city has significantly decreased from 8.128,11 hectares in 2010 to 346.32 hectares in 2024. This land use change is due

Table 3: Level of effectiveness of institutional governance in controlling agricultural and plantation land conversion in Kendari City, 2024.

No.	Institutional governance indicators in land conversion control	Index effectiveness	Category
A. Regulatory effectiveness			
1.	Enforcement of special regulations on the protection of agricultural land and plantations	56,25	Less effective
2.	Designation of sustainable agricultural areas	71,00	Effective
3.	Strengthening the land use change licensing mechanism	42,50	Ineffective
Average		56,58	Less effective
B. Economic strengthening of farming communities			
1.	Providing incentives for farmers who land preservation	35	Ineffective
2.	Development of value-added agricultural and plantation products	62,50	Less effective
3.	Improved market access and agricultural technology	77,5	Effective
Average		58,33	Less effective
C. Institutional strengthening			
1.	Improved inter-agency coordination	42,5	Ineffective
2.	Strengthening the monitoring and evaluation system	47,5	Less effective
3.	Increased capacity of supervisory human resources	61,25	Less effective
Average		50,42	Less effective
D. Farming community empowerment			
1.	Socialization of the importance of agricultural land	70,35	Effective
2.	Mentoring farmers in improving productivity	69,5	Effective
3.	Farmer group development	71,75	Effective
Average		70,53	Effective
E. Technology innovation			
1.	Implementation of a geographic information system for monitoring	37,5	Ineffective
2.	Development of modern and efficient agriculture	66,25	Effective
3.	Utilization of technology for productivity improvement	75	Effective
Average		59,58	Less effective
Effectiveness of institutional governance in controlling agricultural and plantation land conversion in Kendari City		59,09	Less effective

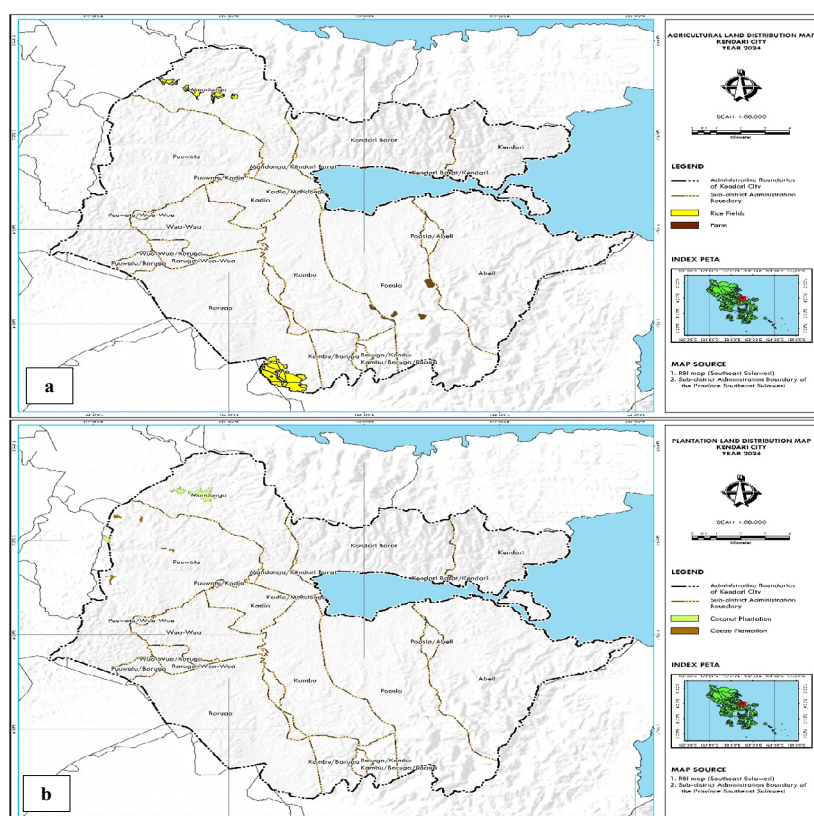


Figure 4: (a) Distribution of land potential agriculture 2024, (b) distribution of land potential plantation in 2024.

to land conversion from agriculture and plantations to settlements, infrastructure, and industrial areas. One of the factors driving the increase in agricultural land conversion is the increase in population growth and urbanization in Kendari city. In 2010, population growth in Kendari city reached 4.43%, increasing to 13.21% in 2024 (Central of Statistics. 2024). This increase in population growth requires the expansion of settlements and the development of other supporting infrastructure for the population's needs. This is to the results of research by [Harry et al. \(2018\)](#); [Oktavia et al. \(2022\)](#) that land conversion is standard, primarily agricultural land and plantations that become non-agricultural land due to housing, industry, infrastructure, and trade needs.

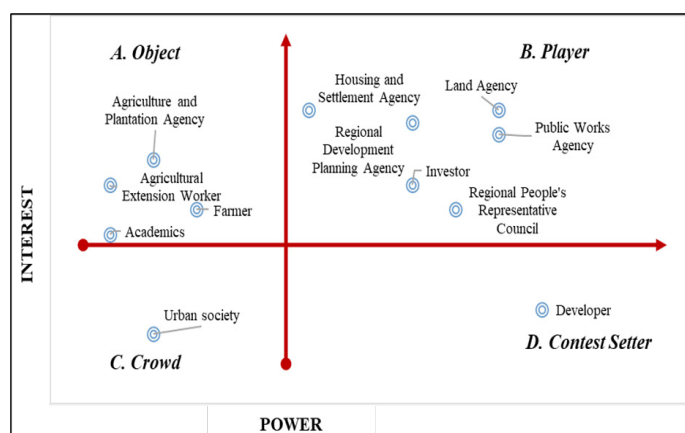


Figure 5: Stakeholders analysis in controlling agricultural and plantation land conversion in Kendari city.

Effectiveness of institutional governance in controlling agricultural and plantation land conversion in Kendari city

The effectiveness of institutional governance in controlling agricultural and plantation land conversion refers to how the various institutions' structures, policies, and processes can sustainably prevent or regulate land conversion. Kendari city is the capital city of Southeast Sulawesi Province and is experiencing rapid development ([Figure 5](#)). Land conversion is an important issue that must be appropriately managed. If the conversion of agricultural and plantation land cannot be controlled, it can reduce food availability in a region. Thus, to keep farmland and plantations from being converted to other uses, a strong and effective institutional governance system is needed. This is in line with the research of [Li et al. \(2023\)](#), [Kouassi \(2022\)](#), [Anas et al. \(2023\)](#) that good and effective institutional governance is essential to encourage better management of agricultural land oriented towards sustainable farming practices.

Based on the research results, the indicators of institutional governance in controlling land conversion consist of 5 (five) indicators of institutional governance, namely (i) the effectiveness of regulations in controlling land conversion, (ii) strengthening the economy of farming communities, (iii) strengthening institutional systems; (iv) empowering farming communities; and (v) technological innovation. Each of these indicators consists of several attributes. These indicators can determine the success or failure of controlling the conversion of agricultural land and plantations. If these indicators are implemented effectively, farmland and plantations will remain sustainable. This aligns with [Suardi et al. \(2022\)](#), who identified five indicators of institutional governance to control agricultural land conversion in Bali: Effective regulations, strengthening the agricultural economy, institutional systems, empowering farmers, and technological innovation.

Based on the analysis results, implementing the 5 (five) indicators of institutional governance in controlling the conversion of agricultural land and plantations in Kendari city is generally categorized as less effective. However, several indicators are implemented effectively, such as the enforcement of local regulations on the protection of agricultural land and plantations and the establishment of sustainable farm areas in Kendari city. This can be seen from the increasing development of paddy fields in Baruga Sub-district, Kendari city, where in 2010 an area of 95.69 hectares increased to 178.8 hectares in 2024.

Local regulations provide a strong legal basis for regulating land use, prohibiting or restricting productive land conversion. Local governments can prevent illegal land conversion with strict supervision and clear sanctions. On the other hand, establishing sustainable agricultural areas protects strategic agrarian land from the threat of conversion to non-agricultural use. This ensures the sustainability of food production and maintains ecological balance. This policy is often accompanied by incentives for farmers to preserve their land functions. This is in line with the research results of [Raharja et al. \(2021\)](#), [Kermite et al. \(2023\)](#), [Anggono et al. \(2023\)](#), [Hardjoloekito et al. \(2023\)](#), [Rosmalah et al. \(2025\)](#) that the regulation of agricultural land use in the regions through official rules stipulated by the local government can protect the conversion of agricultural land to non-agricultural land, thus providing support for food security.

The data in Table 3 shows that there are also indicators of institutional governance that are ineffective in controlling land conversion, namely strengthening the community economy, incentives for farmers to maintain their land, and developing value-added agricultural plantation products. The ineffectiveness of these two parameters is because the incentives provided are often not attractive enough compared to the potential benefits of land conversion, such as selling land for housing or commercial development as well as agricultural product processing facilities or access to modern markets is often limited, making it difficult for added value to be realized. These two factors make the policy less effective as the primary strategy to prevent the conversion of agricultural and plantation land in Kendari city. According to Limpo *et al.* (2021), the effectiveness of applicable laws and local wisdom in controlling agrarian land conversion is hampered by external economic factors and weak policies that favor agriculture.

The next indicator of ineffective institutional governance in preventing land conversion is inter-agency coordination. This is because each agency has different priorities and work programs, making it challenging to create integrated policies to protect agricultural land and plantations, and the lack of regular communication and coordination across sectors results in overlapping responsibilities or misaligned policies. The research results of Nepal *et al.* (2020), Roengtam and Agustiyara (2022), Roengtam *et al.* (2023), Siegmund-Schultze (2021) that ineffective collaboration and cooperation practices between government agencies lead to faster conversion of agricultural land. Overlapping authority occurs due to unclear division of tasks between the central government, regions, and related agencies. This has led to confusion in policy implementation and poor coordination. Meanwhile, weak law enforcement means that regulations on land conversion are often ignored, especially by large capital owners with political influence. Unstrict sanctions against violations also encourage the rampant practice of illegal land conversion. As a result, agricultural and plantation land continues to decrease without adequate control.

The role of stakeholders in controlling agricultural and plantation land conversion in Kendari city

In controlling the conversion of agricultural land and plantations in Kendari city, many parties have essential

roles, from the government sector, the community, and the private sector to non-governmental organizations. Each party or stakeholder has different but interrelated responsibilities. The roles and responsibilities of the stakeholders involved are to ensure that the conversion of agricultural land and plantations can be adequately controlled. The research results by Roengtam and Agustiyara (2022) show that the collaborative management of various interested parties is very good for sustainable land management. In their research, Wahanisa *et al.* (2021) explained that community participation in spatial planning can help prevent agricultural land conversion. One approach to increasing the role of stakeholders, especially in controlling the conversion of farmland and plantations in Kendari city, is to identify and understand the role and influence of stakeholders in an activity. This method uses a two-dimensional matrix that measures the level of interest and power seen from the quadrant of objects, Players, Crowd, and Context Setters, as presented in Figure 3.

Based on the data in Figure 3, it appears that stakeholders in the object quadrant in stakeholders who are very concerned about the success of controlling agricultural land and Plantation in Kendari city in controlling agricultural land and plantations in Kendari city but do not have the power to control land conversion effectively. According to the results of the stakeholder analysis, those included in this object quadrant are the agricultural extension workers, farmers, and academics. The results of the focus group discussion (FGD) showed that the powerlessness of these stakeholders in controlling the conversion of agricultural land and plantations is due to (i) urbanization pressure that prioritizes infrastructure development, (ii) weak regulations and law enforcement, (iii) lack of economic incentives to maintain agricultural land; and (iv) limited resources and coordination between related parties. In addition, economic pressure on farmers and less than optimal academic advocacy exacerbate the situation, resulting in land conversion continuing without effective control.

Therefore, to maintain agricultural land and plantations, the stakeholders included in this object quadrant must effectively work by their primary tasks, where the agriculture and plantation agency can strengthen its position, namely: (i) implementing policies to protect agricultural land and plantations;

(ii) supervising spatial planning and preventing violations of land-related regulations; and (iii) providing incentives to farmers to maintain their agricultural land. Similarly, agricultural extension workers can educate farmers about the importance of maintaining agricultural land for food security and help farmers increase land productivity to make it more economical and competitive. Furthermore, academics can conduct research and provide evidence-based recommendations related to the impact of land conversion and advocate for policies that support the sustainability of agricultural land.

Similarly, the player quadrant is the most influential stakeholder and has a high interest in the success of controlling land conversion. According to the results of the stakeholder analysis, those included in this quadrant are the housing and settlement agency, the regional development planning agency, the regional people's representative council, the land agency, investors, and the public works agency. These stakeholders have high influence and importance in decision-making. The regional development planning agency has an excellent interest in and authority in spatial planning. Its main tasks and functions include preparing a spatial plan that integrates the protection of agricultural land and ensuring that development proceeds according to the city's long-term strategy. Similarly, the housing and settlement agency's main tasks include planning for sustainable and spatially appropriate housing development and prioritizing using non-productive land for settlement development.

In addition, these stakeholders play a role in controlling land conversion; namely, the housing and settlement office is responsible for regulating settlement spatial planning and preventing the conversion of agricultural land into illegal residential areas. The regional development planning agency prepares regional spatial plans that regulate land zoning, including protecting farmland and plantations. The regional house of representatives has a role in making regulations and overseeing the implementation of policies related to land conversion control. The national land agency manages land ownership administration and ensures that land use is defined by its name. Investors are encouraged to invest responsibly, support sustainable development, and not convert agricultural land indiscriminately. The public works agency oversees infrastructure development to

avoid damaging farmland and plantations and ensure that projects follow the regional spatial plan.

Furthermore, the government, community leaders, and the private sector can work together more effectively to control the conversion of agricultural land and plantations through structured and synergistic collaboration. The government needs to provide clear regulations and incentives for farmers, such as capital assistance, market access, and ongoing training, while ensuring strict law enforcement against violations of land conversion. Community leaders can act as mediators who voice farmers' interests and educate the public on the importance of maintaining agricultural land. The private sector can contribute by applying sustainable business principles, such as investing in modern agriculture that is environmentally friendly and does not sacrifice productive land. The three parties can create a more effective and sustainable land conversion control system with open communication and aligned goals.

The land agency plays a role in regulating land administration, ensuring compliance with zoning, and ensuring that land conversion is carried out according to legal procedures and regulations. Another stakeholder controlling land conversion is the public works agency, which has the main task of planning and implementing infrastructure development that considers land conservation and supports drainage and water management to maintain the function of agricultural land. The regional people's representatives council has its main tasks: making and passing local regulations that support land protection and supervising spatial policies and their use as well; as stakeholders who are no less critical in this players quadrant are investors who play a role in choosing investment locations that do not harm productive agricultural land, and comply with regulations and sustainable development principles. The synergy between various stakeholders is crucial to balance the development and protection of farmland and plantations in Kendari city.

Thus, a potential strategy to increase public awareness of the long-term benefits of conserving agricultural land and plantations could be through intensive education and social campaigns. Government and community leaders can organize extension programs, workshops, or seminars explaining agricultural land's importance for food security, the environment, and the

local economy. Social media, community radio, and public posters can disseminate information widely. In addition, involving communities in pilot projects, such as sustainable agriculture or agroforestry, can provide tangible examples of the economic and ecological benefits of maintaining farmland. With a participatory and educative approach, community awareness can be significantly improved.

Stakeholders included in the crowd quadrant are groups with little interest in controlling the conversion of agricultural land and plantations. This group of stakeholders is reluctant to be the subject of an activity. Most of them are migrants from outside Kendari city. There is no sense of empathy toward controlling the conversion of agricultural land and plantations because the land they occupy is leased. Contest setters are those who have little interest in maintaining the conversion of agricultural and plantation land but have significant authority to control land conversion. Developers play the role of contest setters. Developers are private institutions and act as a supporting element of the Kendari city government. The developer's main task is to assist the Kendari city government in providing land for infrastructure and settlements without considering the sustainability of agricultural development in Kendari city.

Article findings

- Shrinkage of agricultural and plantation land: Agricultural and plantation land in Kendari city experienced significant shrinkage from 8.128. 11 hectares in 2010 to 346.32 hectares in 2024. This shrinkage is mainly due to land conversion for settlements, infrastructure, and industrial estates.
- Effectiveness of institutional governance: Institutional governance in controlling land conversion is considered less effective. However, some indicators, such as enforcing local regulations and establishing sustainable agricultural areas, fall into the practical category. However, inter-agency coordination is still weak, and law enforcement is inconsistent.
- Role of stakeholders: Various stakeholders, including the government, communities, and the private sector, have essential roles in controlling land conversion. However, community participation and inter-agency coordination still need to be improved to achieve more effective land management.

Article implications

- Need for policy reform: Stronger policy reforms and better inter-agency coordination are needed to prevent uncontrolled conversion of agricultural and plantation land. Consistent law enforcement and strict sanctions against violations are also required.
- Increased community participation: Raising public awareness about the importance of maintaining agricultural land and plantations through education and social campaigns can help reduce land conversion.
- Incentives for farmers: Providing more attractive economic incentives to maintain agricultural land can effectively prevent land conversion.
- Agricultural technology development: Modern agricultural technologies can increase land productivity and make farming more economically competitive, reducing pressure to convert land.

Conclusions and Recommendations

Based on the analysis and discussion results, it can be concluded that (1) Agricultural and plantation land in Kendari City has significantly decreased from 8.128,11 hectares in 2010 to 346.32 hectares in 2024. This land use change is due to land conversion from agriculture and plantations to settlements, infrastructure, and industrial areas. One of the factors driving the increase in agricultural land conversion is the increase in population growth and urbanization in Kendari city, (2) Controlling the conversion of farm land and plantations in Kendari city is generally considered less effective. However, several indicators of institutional governance are in the practical category in controlling land conversion, namely enforcing regional regulations, establishing sustainable agricultural areas, increasing access to markets and agricultural technology, empowering farming communities to develop modern agriculture, and utilizing technology to improve agricultural and plantation productivity, and (3) Inter-agency coordination in controlling land conversion in Kendari city has a massive role in enhancing the effectiveness of policies and land management. Institutions that play an essential role in maintaining the conversion of agricultural land and plantations in Kendari city are the housing and settlement agency, land agency, regional development planning agency, public works agency, investors, and the regional people's representatives council. These institutions each have different roles and functions and

coordinate to control the conversion of agricultural land and plantations in Kendari city.

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Novelty Statement

This study shows that agricultural and plantation land in Kendari City has experienced significant shrinkage. In addition, institutional governance in controlling land conversion is still ineffective, although several indicators of institutional governance have met the practical category. The role of stakeholders in controlling land conversion includes formulating policies related to controlling land conversion, implementing integrated supervision, law enforcement, and increasing community participation. This study contributes to developing effective strategies for managing agricultural and plantation land conversion and maintaining the sustainability and availability of food security, the welfare of farming communities, and ecosystem diversity in Kendari city.

Author's Contribution

La Ode Alwi: Conceptualization, formal analysis, investigation

R. Marsuki Iswandi: Investigation, resources

Abdul Gafaruddin: Data curation, funding acquisition, writing - review & editing

La Ode Kasno Arif: Supervision, visualization

La Ode Arfan Dedu: Data curation, funding acquisition, methodology

Musram Abadi: Software, validation

La Ode Muh. Munadi: Writing - original draft, project administration

Disclosure statement

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