



Potential for Agropolitan Area Development Through Agribusiness-Based Development in Dwi Tiro Village, Bontotiro District, Bulukumba Regency, South Sulawesi Province, Indonesia

Irfa Dewi Anugrah^{1*}

Universitas Islam Negeri Alauddin
Makassar,
Indonesia

Hasaruddin²

Universitas Islam Negeri Alauddin
Makassar,
Indonesia

Asni Djamereng³

Universitas Islam Negeri Alauddin
Makassar,
Indonesia

***Corresponding author:**

Irfa Dewi Anugrah, Universitas Islam Negeri
Alauddin Makassar, Indonesia.

✉ Irfadewia@gmail.com

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Abstract

Background: Most of the people of Dwi Tiro Village, South Sulawesi Province, Indonesia had a livelihood as farmers, which causes the area to have great potential in its agricultural sector but the ongoing problems of development inequality hinder this potential.

Objective: The development of agropolitan areas in this region represents the most appropriate government effort to accelerate development. Using a qualitative case study approach with observation, interviews, and documentation, this study aims to analyze the potential of agropolitan areas through agribusiness-based development in Dwi Tiro Village by examining the forms and strategies of agropolitan area development.

Methods: This study uses a qualitative approach with a case study design to analyze in depth the potential and development of agropolitan areas based on agribusiness systems in Dwi Tiro Village, Bontotiro District, Bulukumba Regency, South Sulawesi.

Results: The results of this study show that the development of agropolitan areas in Dwi Tiro Village is carried out with several strategies: namely village deliberation before determining the program, strengthening institutions and capacity of agribusiness actors and providing infrastructure and supporting facilities for agribusiness. Furthermore, the form of agropolitan area development includes several things, namely development based on superior potentials and commodities, integrated development of agricultural and livestock businesses and finally strengthening institutions and supporting facilities.

Conclusion: This study is expected to serve as a guide for village governments in developing agropolitan areas founded on superior local potential and agribusiness-based development, and as a reference for strengthening institutions and supporting facilities to sustain agribusiness activities.

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INTRODUCTION

Indonesia is an agrarian country that has great potential in the agricultural sector, which is one of the main pillars of the national economy. This sector not only includes food production but also contributes significantly to the income of the village community, especially Dwi Tiro Village, which is located in Bontotiro District, Bulukumba Regency, South Sulawesi Province, Indonesia. Most of the residents of Dwi Tiro Village depend on agricultural activities for their livelihood, including the production of food crops, horticulture, and livestock, coupled with the potential of human resources in this village in the form of a diversity of local skills and knowledge, the potential for skilled labor, cooperative village institutions, as well as improvements in the

quality of education and training, all of which give this village considerable potential for local economic development (Ella & Andari, 2018; Fafurida et al., 2023).

This potential can be important capital in encouraging sustainable village development, especially through strengthening the agricultural sector that is integrated with the development of local resource-based businesses (Nurkomala et al., 2023; B. K. Putra & Salahudin, 2022). By utilizing the potential of available agricultural land and increasing the capacity of human resources, Dwi Tiro Village can increase productivity, added value of agricultural products, and community welfare. However, this potential has not been properly utilized because there are still various problems faced by the people of Dwi Tiro Village, such as the development gap between rural and urban areas, the potential of natural resources that have not been optimally managed, the high dependence on traditional agricultural systems, and a high level of urbanization, causing this area to have difficulty developing to its full potential.

In addition, some of the main technical problems faced by the community in Dwi Tiro Village include limited market access for agricultural products, lack of application of modern agricultural technology, and lack of support for agribusiness development. For this reason, a systematic approach is needed that can integrate various aspects from upstream to downstream in the agribusiness value chain. Therefore, appropriate government assistance is needed to address this issue. The development of agropolitan areas is believed to be the best answer to accelerate village development. An agropolitan area refers to an area that integrates the agricultural sector with development between rural and urban areas. Regional development with this concept is believed to increase the efficiency and productivity of the agricultural sector in rural areas. Agropolitan development is carried out so that the community has sufficient economic resources and autonomy to design and control the steps of the development process themselves (Anshar et al., 2021; Prakoso et al., 2024; Sleman, 2019).

The concept of agropolitan can also be interpreted as the development of agriculture-based areas accompanied by infrastructure development, increased market access, and the development of other supporting sectors. In this case, agropolitan areas not only focus on agricultural production, but also on processing agricultural products into value-added products, thereby creating more jobs and expanding the market for distributing these agricultural products. The development of this agropolitan area can be carried out by creating an agribusiness system that is oriented towards sustainability and improving the welfare of the community. This system involves various parties, including farmers, business actors, the government, and educational and research institutions, to create an ecosystem that supports the development of agricultural products, increased added value, and wider market access.

The development of the Agropolitan Area aims to increase the income and welfare of the community through the acceleration of regional development and strengthening the linkage between villages and cities. This can be realized through the development of competitive, community-based, sustainable, and decentralized agribusiness systems and businesses in the Agropolitan Area. Spatial analysis can be the basis for grouping regions that have similar characteristics and have clear differences compared to other groups (Bahasoan, 2021). An area can be developed into an agropolitan area if it has superior agricultural commodities and processed agricultural products, has good carrying capacity and physical potential, an area, an adequate population, and the availability of support for facilities and infrastructure (Azizia & Huda, 2022).

The success of agropolitan area development is inseparable from the important role played by the government. The government, both at the central and regional levels, has the responsibility to create policies and regulations that support the achievement of agropolitan area development goals (Ahmad & Saleh, 2019; Surya et al., 2021). One of the first steps that needs to be taken is the preparation of an integrated development plan based on local potential. The government must ensure that basic infrastructure such as roads, bridges, irrigation, as well as communication and electricity networks are readily available to support economic activities in agropolitan areas. Adequate infrastructure will facilitate access for farmers and local business actors in marketing their products and increase the efficiency of production and distribution activities. The centrality of government coordination in agropolitan development has been documented across Indonesian contexts, where local government capacity is consistently identified as a decisive variable in program effectiveness (Khairani & Hidayah, 2023).

In addition, the government also plays a role in facilitating training and capacity-building of human resources in rural areas. This includes training in modern agricultural technology, sustainable natural resource management, as well as skills in business management and marketing. Effective agricultural extension is also indispensable so that farmers can understand the importance of diversifying their agricultural businesses and adopting the latest technology in their operations. The government can also provide incentives in the form of financing or low-interest loans to support business actors in agropolitan areas, both in terms of purchasing modern agricultural equipment and developing the processing industry. Community empowerment programs must also be implemented properly to ensure that the benefits of development are felt by all levels of society, including vulnerable groups such as women and smallholders. In the context of local government implementation in Indonesia, villages have an important role, namely as suppliers of agricultural commodities to cities and partners for urban development. Synergy between the community and the government can realize agriculture-based economic development (Khairani & Hidayah, 2023). Capacity-building interventions, including agricultural extension and skills training, have shown measurable impacts on agribusiness productivity and income diversification in rural Indonesia (Harianti et al., 2023).

In addition to the government, the private sector also plays a critically important role in the development of agropolitan areas. Large companies in the agribusiness sector, the agricultural product processing industry, and the technology sector must be involved in providing support in the form of investment, training, and the adoption of more efficient and environmentally friendly technologies. Cooperation among the private sector, financial institutions, and the government can also accelerate the development of agropolitan areas by creating a mutually supportive ecosystem. The application of technology and innovation in the agricultural sector such as precision agriculture and the use of renewable energy can accelerate the transformation of agropolitan areas into areas that are not only productive, but also sustainable and capable of meeting future challenges (Rifani et al., 2020). The success of agropolitan areas is expected to serve as a model for other regions in realizing equitable and environmentally sustainable development. Public-private partnership models have been shown to accelerate agropolitan area development by combining government infrastructure provision with private-sector investment in value-chain development and technology adoption (Azizia & Huda, 2022).

Development can be carried out in various aspects, such as economic, social, technological, or educational. Development involves two main elements, namely the subject and the object. The subject of development is the party that plans and implements changes, such as the government, society, or organization, while the object of development is the aspect that is to be improved, such as natural resources, human resources, or infrastructure. An effective development process occurs when the subject understands the needs of the object to be developed, by involving all parties participally to achieve optimal results (Alia Miranti & Eppy Yuliani, 2023).

The development of agropolitan areas from an agribusiness perspective focuses on efforts to create agriculture-based areas, which not only depend on food production, but also include the entire chain of connected economic activities, from production, processing, distribution, to marketing of agricultural products. This approach aims to improve the welfare of farmers and local communities through the empowerment of the agricultural sector. According to Government Regulation of the Republic of Indonesia Number 5 of 2010 concerning the Implementation of Spatial Planning of Agropolitan Areas, an agropolitan area is defined as a system of agricultural production and management of certain natural resources consisting of one or more activity centers in rural areas, which is indicated by the existence of functional relationships and spatial hierarchies of settlements.

Agropolitan areas must meet the following criteria: a) Rural agricultural areas that grow and develop as a result of the operation of agribusiness systems and businesses that can serve, attract, and stimulate agribusiness operations in the vicinity; b) Rural areas with ideal geomorphological, climatic, and topographic characteristics and agribusiness activities in an agropolis; and c) Rural areas with institutional support for agribusiness development (Damayanti, 2023). Income and community welfare can be increased by accelerating regional development and linkages between villages and cities, which is the goal of agropolitan area development. Agropolitan areas are implemented centrally and integrated into the empowerment of the poor. Agropolitan is an important strategy that supports reducing poverty levels in rural areas with

support for accelerating rural economic growth based on the agricultural industry (Khairani & Hidayah, 2023). The development of agribusiness-based agropolitan areas is a strategic step in optimizing agricultural potential through an integrated system from upstream to downstream. The involvement of various stakeholders, supported by strong infrastructure and institutional facilities, is key to realizing sustainable rural development, competitiveness, and improving people's living standards while reducing disparities between villages and cities.

The development of agropolitan areas is an agriculture-based development process that integrates various regional potentials comprehensively, is competitive, oriented toward community empowerment, and is sustainable. In the context of Dwi Tiro Village, this development is directed at the use of potential land resources, the availability of agribusiness infrastructure and facilities, as well as the support of public facilities and social welfare of the community. The strategies carried out include the optimization and intensification of agricultural land in a sustainable manner, the preparation of regional regulations to control land conversion due to increased land demand, the empowerment of local human resources through the strengthening of the processing industry sector, and the implementation of training and outreach to increase the capacity of the community in managing superior commodities. In addition, the development of agropolitan areas is also supported by the provision of telecommunication facilities to facilitate the flow of information, strengthening the government's role in fostering agropolitan and KUD management institutions, and increasing public awareness through sustainable agricultural extension, so that all of these efforts are expected to be able to encourage the improvement of the quality of human resources, agricultural productivity, and the economic welfare of village communities (Khairani & Hidayah, 2023). The development of agropolitan areas requires proper land use, government regulatory support, and empowerment of local human resources. Land is a strategic resource that has high social, economic, and legal value, while its availability is limited and does not increase. In addition, institutional strengthening, processing industry support, and telecommunications facilities are needed to operate effectively and to improve the welfare of rural communities.

In general, regional development theory emphasizes four main aspects, namely regional prosperity, sustainable use of natural resources and the environment, institutional roles and effective decision-making processes, and improvement of community welfare. In this context, the theory of location put forward by Alfred Weber in his work *Über den Standort der Industrien* (1909) stated that the location of economic activities, including industry, should be chosen in a place with the lowest production and transportation costs. This theory is based on several assumptions, such as the uniformity of regional conditions, the availability of raw materials, labor costs, transportation costs, industrial competition, and the rationality of economic actors. These principles are relevant to the development of agropolitan areas, especially in determining the location of agribusiness and agricultural product processing industries that take into account the factors of resources, labor, and distribution efficiency, so as to increase value-added, regional competitiveness, and foster sustainable rural economic growth (I. M. Putra, 2023).

Regional planning and integrated development are important concepts in managing regions effectively and sustainably by viewing regions as a system that is interconnected between physical, economic, social, and environmental aspects. Regional development aims to increase regional productivity through population growth, employment opportunities, income, processing industry, and improvement of social services such as health, education, and environmental quality without overexploiting resources. In a theoretical framework, regional development is influenced by several main approaches, namely the Neo-Classical growth theory put forward by Adam Smith, which emphasizes the role of market mechanisms and local potentials in driving regional development, and the Myrdal–Hirschman theory of regional inequality, which explains the existence of phenomena such as the backwash effect, which is the flow of resources from underdeveloped areas to developed areas that can widen the gap (Alia Miranti & Eppy Yuliani, 2023; Harianti et al., 2023).

Development from an Islamic perspective is a development approach that integrates the values of Islamic teachings in economic, social, and environmental aspects with the aim of realising a just, prosperous, and sustainable society through a balance between worldly and ukhrawi interests. This principle emphasises justice, equality, cooperation, kindness (ihsan), and human responsibility as a caliph in maintaining environmental sustainability, so that the

management of natural resources and agribusiness is carried out wisely, inclusively, and oriented towards the common good. In the context of the development of agropolitan areas, Islamic values encourage community empowerment through increasing the capacity of individuals and communities to be economically independent while maintaining social and ecological harmony. Its normative foundation is reflected in the Qur'an, especially the message that the change of a society begins with their own efforts, and is strengthened by the Hadith which emphasizes the importance of human resource development through education and coaching. Thus, the synergy between Islamic values, community empowerment, and agribusiness development can form a development system that is not only oriented towards economic growth, but also towards social justice, spiritual well-being, and environmental sustainability (Bagus, 2021; Hasan & Juhannis, 2024; Tandos, 2025).

Recent empirical research has provided important insights into agropolitan development in the Indonesian context, yet significant gaps remain in understanding the mechanisms through which local institutional arrangements facilitate sustainable agricultural transformation. Khairani and Hidayah (2023) examined agropolitan development strategies in Deli Serdang Regency, North Sumatra Province, identifying government coordination, infrastructure provision, and community participation as critical success factors, while Harianti et al. (2023) analyzed agribusiness system development in South Konawe, emphasizing the role of value chain integration and capacity building in enhancing farmer incomes and productivity. However, both studies exhibit important limitations that this current research addresses. First, Khairani and Hidayah (2023) focus primarily on government-led initiatives and policy frameworks while providing limited empirical examination of how village-level institutions such as Badan Usaha Milik Desa (BUMDes, Village-Owned Enterprises) and farmer groups actually function as economic catalysts and collective action platforms in daily practice, thus leaving underexplored the micro-institutional mechanisms through which participatory governance translates into tangible development outcomes. Second, Harianti et al. (2023) emphasize value chain development and technical capacity building but offer insufficient analysis of how social capital embedded in traditional cultural practices such as gotong royong (mutual cooperation) interacts with modern agribusiness systems, and how this interaction shapes both the adoption of innovations and the sustainability of development interventions.

Based on the background described earlier, this study aims to analyze the development potential of agropolitan areas and their development models in Dwi Tiro Village, Bontotiro District, Bulukumba Regency, South Sulawesi Province by considering natural resource utilization, human resource quality improvement, and sustainable agribusiness development. In addition, this study examines community development from an Islamic perspective as a value foundation in resource management and regional development. Thus, this study seeks to answer two main questions, namely how to develop the potential of agropolitan areas in Dwi Tiro Village and how to formulate a model for agropolitan area development that can effectively strengthen the local economy in a sustainable manner.

METHOD

This study used a qualitative approach with a case study design to analyze in depth the potential and development of agropolitan areas based on agribusiness systems in Dwi Tiro Village, Bontotiro District, Bulukumba Regency, South Sulawesi. This approach was chosen because it allowed researchers to understand phenomena contextually through direct interaction with the social, economic, and institutional conditions of the local community. The research location was chosen purposively because this area is a highland area with geographical characteristics and potential natural resources that support agricultural and agribusiness activities, and showed the active involvement of the community in the development of the agricultural and agribusiness sector, making it suitable for the establishment of an agropolitan area.

Data collection was conducted using an empirical field approach, gathering information directly from real conditions at the study site to obtain an objective picture of the agribusiness system, opportunities, and challenges in the development of agropolitan areas in Dwi Tiro Village. The research data consisted of primary data and secondary data. Primary data were obtained through in-depth interviews with community leaders, farmers, agribusiness actors, and government stakeholders involved in agropolitan area development, supplemented by direct

observation of agricultural activities, infrastructure, and socio-economic conditions. Secondary data were collected from village administrative documents, regional development reports, and relevant policy documents.

Data collection was carried out through three main techniques, namely observation, interviews, and documentation. Observations were carried out to directly understand the dynamics of community activities and the planning process for regional development. The interviews were used to explore the experiences, views, and expectations of the informants related to the development of agropolitan areas. Documentation was used to complete research data through various relevant documents, reports, and archives. The research instruments included observation guidelines, interview guidelines, and supporting documents, with the aid of audio recorders, notebooks, and cameras to document field data (Luthfiyah et al., 2025).

Data analysis was carried out qualitatively through the process of collecting, reducing, presenting, and drawing conclusions from the data obtained. This analysis process aimed to identify patterns, relationships, and factors that affected the development of agropolitan areas in Dwi Tiro Village. To ensure the validity and credibility of the data, this study used source and method triangulation, which involved comparing data obtained from observations, interviews, and documentation. In addition, data verification was carried out by involving informants in the process of confirming research results and associating research findings with regional development theory, integrated regional planning, and community development, so that the research results could be scientifically justified and contribute to the sustainable development of agropolitan areas.

RESULT AND DISCUSSION

Result

The results of this research were obtained through in-depth interviews with informants consisting of the village government, hamlet officials, and the people of Dwi Tiro Village. The informants included the Head of Dwi Tiro Village, hamlet heads from several regions, as well as people directly involved in agricultural and agribusiness activities. Based on the results of the interviews, Dwi Tiro Village has considerable potential to be developed as an agribusiness-based agropolitan area. This potential can be seen from the availability of natural resources, the dominance of community livelihoods in the agricultural sector, as well as village institutional support and community participation in the development process. Informants from the village government said that the development of agropolitan areas began with the process of identifying village potential and community needs through the Village Development Planning Conference (Musrenbangdes), which then became the basis for the preparation of village development programs. This showed that development planning was carried out in a participatory manner by involving the village government, business actors, and community leaders, so that agribusiness development programs could run in a more targeted manner and in accordance with local needs.

Table 1 presents a systematic overview of the agropolitan development planning process, illustrating the sequential stages, key activities, participants involved, and expected outputs at each stage. This framework demonstrates the village's commitment to participatory governance and evidence-based planning, which are essential prerequisites for sustainable rural development.

Table 1. Agropolitan Development Planning Process in Dwi Tiro Village

Stage	Activity	Participants	Output
1. Identification	Village potential assessment; Community needs analysis	Village government; Hamlet heads; Community representatives	Potential inventory; Priority needs list
2. Musrenbangdes	Participatory planning conference; Priority Resource setting; deliberation	Village government; Business actors; Community leaders; Farmers' groups; BUMDes	Village development plan; Agribusiness program priorities; Consensus on resource allocation
3. Program Formulation	Design of agribusiness interventions; Technical	Village government; BUMDes management;	Detailed agribusiness development

Stage	Activity	Participants	Output
	planning; Budget allocation; Stakeholder coordination	Sector experts; Extension agents	programs; Budget allocation framework; Implementation guidelines
4. Implementation	Socialization and awareness campaigns; Capacity-building training; Infrastructure provision; Program execution	Village government; Farmers' groups; Community members; External partners	Operational programs; Enhanced community capacity; Improved infrastructure; Active participation
5. Monitoring & Evaluation	Progress tracking; Impact assessment; Participatory review; Adaptive adjustments	Village government; Community representatives; Monitoring team; BUMDes	Performance reports; Impact documentation; Adjustment recommendations; Lessons learned

Source: Interview data and field observations, 2025

Furthermore, the results of interviews with the head of the hamlet and the community show that the strategy for developing agropolitan areas in Dwi Tiro Village includes socialization through village deliberations, strengthening institutions and the capacity of agribusiness actors, and providing supporting infrastructure. Village deliberations are an important means to determine development priorities, while institutional strengthening is carried out through the formation of farmer groups, the involvement of Village-Owned Enterprises (BUMDes), and various training programs for the community. In addition, the village government also provides supporting facilities such as farm road repairs, seed and fertilizer assistance, and agricultural machinery to support agricultural production and distribution activities. This strategy shows that the development of agropolitan areas focuses not only on increasing production, but also on strengthening institutional capacity and access to production facilities.

Table 2 provides a comprehensive sectoral analysis that details the main commodities, current status, key challenges, and specific development opportunities for each productive sector in Dwi Tiro Village. This analysis reveals both the diversity of potential and the multifaceted nature of constraints that must be addressed through integrated development strategies.

Table 2. Sectoral Potential and Challenges in Dwi Tiro Village

Sector	Main Commodities	Current Status	Key Challenges	Development Opportunities
Agriculture	Rice, corn, food crops, horticulture (vegetables, fruits)	Different commodity advantages across hamlets based on agro-ecological conditions; Dominant livelihood activity; Fragmented smallholder systems	Non-systematic land management; Fragmented production units; Limited access to improved varieties; Inadequate extension services; Climate vulnerability	Systematic land use planning; Integrated farming systems adoption; Improved seed varieties introduction; Strengthened extension services; Climate-smart agriculture practices; Farmer field schools establishment
Plantation	Coconut, cocoa, bananas, cloves, pepper	Existing production base with established tree crops; Traditional management practices; Limited value addition	Low productivity due to aging trees; Suboptimal agronomic practices; Absence of post-harvest processing infrastructure; Limited market linkages; Price volatility	Replanting programs with improved varieties; Enhanced agronomic practices training; Processing facility establishment; Value chain integration; Collective

Sector	Main Commodities	Current Status	Key Challenges	Development Opportunities
Livestock	Poultry (chickens, ducks), cattle (beef, dairy)	Small-scale household operations; Limited commercial orientation; Minimal integration with crop production	Low productivity and genetic quality; Limited feed resources; Inadequate veterinary services; Weak market infrastructure; Environmental management issues	marketing mechanisms; Quality certification systems Crop-livestock integration systems; Improved breed introduction; Feed production and management; Veterinary service strengthening; Market infrastructure development; Environmental safeguards implementation
Fisheries	Freshwater fish (tilapia, catfish, carp)	Underdeveloped potential; Limited aquaculture activities; Small-scale pond systems	Limited technical knowledge; Initial capital constraints; Inadequate infrastructure (ponds, water systems); Weak market linkages; Feed availability issues	Aquaculture extension programs; Access to credit and inputs; Infrastructure development (pond construction, water management); Market linkage facilitation; Feed production systems; Group-based fish farming
Human Resources	Farmers, agricultural laborers, millennial farmer youth	Dominance of agricultural workforce; Active farmer groups; Emerging youth organizations; Traditional knowledge base	Limited technical and entrepreneurial skills; Low educational levels; Out-migration of youth; Aging farmer population; Gender disparities in participation	Systematic capacity building programs; Technical and vocational training; Youth engagement initiatives; Leadership development; Gender-sensitive programs; Farmer-to-farmer learning; Digital literacy training
Social Capital	<i>Gotong royong</i> culture, traditional institutions, community networks	Strong tradition of mutual cooperation; Active community participation; Collective problem-solving mechanisms	Maintaining engagement in commercializing context; Channeling collective action effectively; Potential erosion due to modernization; Ensuring inclusive participation	Community-based development approaches; Strengthening traditional institutions; Participatory planning mechanisms; Collective marketing organizations; Community enterprise development; Conflict resolution mechanisms; Inclusive governance structures

Source: Field interviews, direct observations, and participatory assessments, 2025

In addition, the main potential for the development of agropolitan areas in Dwi Tiro Village is supported by several sectors. First, the agricultural sector, which has main commodities such as rice, corn, secondary food crops, and horticulture, with different commodity advantages in each hamlet. However, the informants also said that agricultural land management is still not systematically integrated, so better arrangements are needed to increase productivity. Second, the plantation sector, which includes coconut, cocoa, bananas, cloves, and pepper, which has the potential to be developed through increased productivity and post-harvest processing to create added value. Third, the livestock sector, especially poultry and cattle, which can be integrated with agriculture to improve business efficiency and support sustainable agricultural systems. In addition, the potential of freshwater fisheries, human resources dominated by farmers, the existence of farmer groups and millennial farmer youth, and the culture of community mutual cooperation are also recognized by the informants as important social capital in supporting the development of agropolitan areas.

Discussion

Furthermore, agribusiness development in Dwi Tiro Village has an important role in encouraging local economic growth. According to the informants, agribusiness activities do not only include agricultural production, but also involve the provision of means of production, product processing, distribution, and marketing of agricultural products. This chain of activities is considered capable of creating added value that can increase community income and strengthen the contribution of the agricultural sector to the village economy. Thus, strengthening an integrated agribusiness system has the potential to encourage more sustainable village economic growth.

However, there are several challenges in the development of agribusiness in Dwi Tiro Village. These challenges include dependence on climatic conditions, fluctuations in agricultural production, and limited sustainability of community economic empowerment programs. Some informants said that certain agricultural products declined during the rainy season, while some economic training programs have not been running consistently. Therefore, the informants assessed that a more integrated development strategy is needed, including increasing innovation, strengthening agribusiness entrepreneurship, and optimizing the role of village institutions so that their potential can be utilized to the fullest.

Table 3 synthesizes the key challenges identified across different domains and proposes corresponding solutions along with the actors responsible for implementation. This framework provides a roadmap for coordinated action to overcome constraints and unlock the agribusiness potential of Dwi Tiro Village.

Table 3. Challenges and Proposed Solutions for Agribusiness Development in Dwi Tiro Village

Challenge Category	Specific Challenges	Proposed Solutions	Responsible Actors	Implementation Timeline
Environmental & Climate	High dependence on favorable climatic conditions; Pronounced seasonal production fluctuations; Vulnerability to weather variability and extreme events; Increased pest and disease pressures; Soil degradation and fertility decline	Climate-smart agriculture practices (drought-resistant varieties, water conservation); Diversified cropping systems to spread risk; Improved water management infrastructure (irrigation, drainage); Integrated pest management programs; Soil fertility management through organic amendments and	Village government; Farmers' groups; Agricultural extension services; District agriculture office; Research institutions; NGOs	Short-term (1-2 years) for awareness and training; Medium-term (3-5 years) for infrastructure and practice adoption

Challenge Category	Specific Challenges	Proposed Solutions	Responsible Actors	Implementation Timeline
Knowledge & Skills	Limited technical knowledge in modern agricultural practices; Weak entrepreneurial and business management skills; Low innovation adoption rates; Inadequate understanding of post-harvest handling and processing; Limited financial literacy	conservation agriculture Regular and systematic training programs on technical aspects; Farmer field schools for experiential learning; Business management and entrepreneurship training; Technology demonstration plots; Processing and value addition skill development; Financial literacy and record-keeping training; Farmer-to-farmer learning exchanges	BUMDes; Extension services; NGOs; Government agencies (agriculture, cooperatives); Private sector trainers; Successful farmer-entrepreneurs; Research institutions	Ongoing capacity building with annual training cycles; Intensive initial phase (1-2 years) followed by continuous learning
Institutional	Inconsistent and sporadic program implementation; Weak coordination among stakeholders; Limited institutional capacity of farmer organizations; Absence of systematic monitoring and evaluation; Low participation of women and youth	Strengthening farmer organizations through governance training; Capacity building for BUMDes management; Establishment of inter-institutional coordination mechanisms; Development of monitoring and evaluation systems; Gender-sensitive and youth-inclusive program design; Institutionalization of participatory planning processes	Village government; BUMDes board; Farmer group leaders; External facilitators (NGOs, universities); District government; Women's groups; Youth organizations	Medium-term (2-3 years) for institutional strengthening; Ongoing for coordination and M&E
Market Access	Limited market linkages and dependence on middlemen; Price volatility and weak bargaining position; Absence of market information systems; Inadequate quality standards and certification; Limited access to formal and remunerative markets	Market information systems establishment and dissemination; Collective marketing through farmer groups and cooperatives; Contract farming arrangements with processors and buyers; Value chain development initiatives; Quality standards implementation and certification; Direct marketing channels (farmers markets, online platforms); Aggregation and bulking mechanisms	BUMDes as market facilitator; Farmer cooperatives; Private sector partners (processors, buyers); District trade and commerce office; NGOs; Market information service providers	Short-term (1 year) for market information systems; Medium-term (2-4 years) for contract farming and certification
Value Chain Integration	Fragmented value chain operations; Limited post-harvest	Integrated value chain development programs; Processing facility	BUMDes as value chain coordinator;	Medium to long-term (3-6 years) for

Challenge Category	Specific Challenges	Proposed Solutions	Responsible Actors	Implementation Timeline
	processing capacity; Weak horizontal and vertical linkages; Absence of quality standards along the chain; High transaction costs; Limited value capture at producer level	establishment through BUMDes or cooperatives; Strengthening horizontal linkages (farmer group consolidation); Vertical integration through partnerships; Quality standards implementation across the chain; Transaction cost reduction through collective action; Fair value distribution mechanisms	Private investors; Farmer cooperatives; Village government; Processor partners; Retailer partners; NGOs and development agencies	comprehensive value chain development; Phased approach starting with priority commodities
Infrastructure	Poor farm-to-market road conditions; Inadequate storage facilities; Absence of processing equipment; Limited access to agricultural machinery; Weak market infrastructure (collection points, wholesale markets)	Farm road rehabilitation and maintenance; Storage facility construction (village level, group level); Acquisition of processing equipment through BUMDes; Agricultural machinery sharing schemes through farmer groups; Market infrastructure development (collection centers, weighing stations)	Village government; District public works department; BUMDes; Farmer groups; Private sector (machinery suppliers); District market development agency	Short-term (1-2 years) for critical repairs; Medium-term (3-5 years) for major infrastructure; Ongoing maintenance
Financial Access	Limited access to affordable credit; High interest rates from informal lenders; Inadequate financial services for agriculture; Risk of indebtedness; Lack of agricultural insurance	Facilitating access to formal credit institutions (banks, microfinance); BUMDes as credit provider with reasonable terms; Group-based lending schemes through farmer cooperatives; Introduction of agricultural insurance schemes; Financial literacy training to improve credit management	BUMDes financial services unit; Formal financial institutions (banks, cooperatives); District cooperative office; Insurance providers; Microfinance institutions; NGOs	Medium-term (2-3 years) for establishing credit facilities and insurance; Ongoing for financial service delivery

Source: Interview analysis, field observations, and participatory problem analysis, 2025

Furthermore, the results of the study show that the development of agropolitan areas is carried out through several main approaches, namely potential-based development of leading commodities such as corn, cocoa, coconut, beans, cloves, and pepper, which are adjusted to the land conditions in each hamlet; the development of agricultural and livestock businesses in an integrated manner that includes production, processing, and marketing activities to create a more stable source of income for the community; as well as strengthening local institutions such as farmer groups, millennial farmer groups, and BUMDes, which are supported by the provision of

agricultural infrastructure such as farm roads and joint agricultural tools.

Community support and participation are important factors in the success of the development of agropolitan areas. The community not only plays a role as agribusiness actors, but also as a driver of village programs through involvement in planning, labor contributions, idea sharing, and partnerships with the village government in the implementation of agribusiness activities. This participation encourages the creation of a sense of ownership of development programs while increasing the effectiveness of policy implementation at the village level. On the other hand, the development of agropolitan areas still faces several obstacles, such as the limited knowledge and skills of the community and the dynamics of changing natural conditions that affect agricultural products. Overall, the results of the study show that the synergy between the use of local potential, institutional strengthening, and active community participation is a key factor in supporting the sustainable development of agropolitan areas and contributing to improving the economic and social welfare of the people of Dwi Tiro Village.

CONCLUSION

Based on the results of the research obtained through interviews with the village government, hamlet heads, and the community of Dwi Tiro Village, Bontotiro District, Bulukumba Regency, South Sulawesi Province, it can be concluded that the development of agropolitan areas through agribusiness activities has great potential and is supported by a planned and participatory strategy. Development is carried out through village deliberations in determining the priorities of development programs, strengthening institutions and the capacity of agribusiness actors through farmer groups and BUMDes support, as well as the provision of infrastructure and supporting facilities such as farm roads, agricultural tools, seed assistance, and fertilizers to support agricultural production and distribution activities. In addition, the form of agropolitan area development is carried out by utilizing the potential and superior commodities in each hamlet, integrating agricultural and livestock activities within the agribusiness system, and strengthening institutions and supporting facilities so that agribusiness activities run more effectively and sustainably. The findings of this research are expected to serve as a reference for village governments in formulating development policies based on local potential and strengthening agribusiness institutions and supporting facilities, so as to increase community income, strengthen village economic independence, and support sustainable rural development.

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AUTHOR CONTRIBUTION STATEMENT

Irfa Dewi Anugrah contributed to the research conceptualization, data collection, analysis, and manuscript writing. Hasaruddin contributed to research supervision, methodological guidance, and manuscript review. Asni Djamereng contributed to literature review development, data interpretation, and final editing of the manuscript. All authors approved the final version of the manuscript.

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