

Implementation Policy Agriculture Sustainability and Its Impact To Local Economy in the District Tobadak Regency Mamuju Middle

Muhammad Iksan¹Yati Heryati² Muhammad Arsyad³

Faculty of Economics and Business, Universitas Muhammadiyah Mamuju

Email: immawaniksan@gmail.com heryati17@gmail.com arsyadstie@gmail.com

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Abstract

This research aims to analyze the implementation of agricultural sustainability policies and their impact on the local economy in Tobadak District. The focus of the study is directed at the role of agricultural extension workers, the level of farmers' acceptance, as well as the obstacles and opportunities that arise in the implementation of a sustainable agricultural system. The results of the study show that the implementation of the policy has been actively carried out through socialization, training, and assistance provided by agricultural extension workers. However, the level of farmers' acceptance remains low due to limited literacy, the affordability of organic production inputs, unstable market prices, and a strong orientation toward quick economic returns. The economic impact of the policy has not yet been significant in improving farmers' welfare, although there are opportunities for development in the agricultural input business sector. The conclusion of this study confirms that the successful implementation of sustainable agricultural policies requires strong farmer institutions, economic incentives, better market access, and continuous mentoring. The researchers recommend cross-sector collaboration and realistic transition strategies so that these policies can truly generate a positive impact on agricultural sustainability and the local economy.

1. Introduction

Agriculture is a vital sector for Indonesia's economy, not only as a source of food security but also as a sector that absorbs a large portion of the workforce. According to data from the Central Statistics Agency (BPS), agriculture remains the main source of livelihood for the majority of the population, particularly in rural areas. However, the rural agricultural sector faces major challenges in maintaining sustainability amidst threats of environmental degradation, dependence on external inputs such as chemical fertilizers and pesticides, and unstable commodity prices that affect farmers' welfare. In Tobadak District, Central Mamuju Regency, agriculture plays a central role in supporting the local economy.

Most residents depend on agricultural products as their main source of income. However, farming methods that rely heavily on conventional practices have begun to create various environmental and economic problems. The intensive use of chemical fertilizers and pesticides has caused land quality degradation,

environmental damage, and water pollution. Consequently, agricultural productivity has declined year after year, leading to reduced farmer income and weakening community food security.

Based on data from BPS West Sulawesi (2024), the agriculture, forestry, and fisheries sectors remain the largest sources of employment, absorbing 46.34% of the total workforce in the province. Additionally, in 2023 these sectors contributed 44.19% to regional economic growth. Nevertheless, most farmers in West Sulawesi still rely on unsustainable conventional farming methods. Dependence on chemical fertilizers and pesticides increases production costs while crop yields tend to decline. In the long term, this situation places significant economic pressure on small-scale farmers who have limited access to modern agricultural technologies and stable marketing systems.

In Tobadak District, food agriculture is dominated by rice and corn production. Rice serves as the main staple food, while corn is used

not only for direct consumption but also as livestock feed and raw material for the food processing industry. According to data from the Central Mamuju Regency Agriculture Office (2024), these two commodities contribute significantly to local agricultural output and serve as the primary source of income for most farmers. Therefore, the implementation of sustainable agricultural policies in the rice and corn sectors is crucial, not only to maintain productivity and quality but also to ensure food availability and strengthen the sustainability of the local economy. One of the main challenges in adopting sustainable agriculture in Tobadak District is the low level of farmers' understanding regarding its long-term benefits. Limited access to information and training has caused many farmers to continue relying on unsustainable practices.

In addition, capital constraints represent a major obstacle in transitioning toward environmentally friendly farming systems. The initial costs of adopting sustainable agricultural technologies—such as efficient irrigation systems or the use of organic fertilizers—are often too high for smallholder farmers who already face economic uncertainty. The dependence on conventional agriculture affects not only farmers but also the overall regional economy. Declining land productivity results in lower yields, which ultimately undermines food supply stability and the purchasing power of the community.

Furthermore, the instability of agricultural prices worsens farmers' conditions, as they are often forced to sell their products at unfavorable prices due to the dominance of middlemen and limited access to broader markets. In the long run, these conditions may increase rural poverty and reduce the agricultural sector's contribution to regional economic growth. Islamic teachings also emphasize the importance of preserving ecological balance and wisely utilizing natural resources.

As stated in Surah Al-Baqarah verse 205: "And when he turns away (from you), he strives throughout the land to cause corruption therein and destroy crops and livestock. And Allah does not like corruption." (Qur'an 2:205) This verse

serves as a reminder for humans not to damage the environment, including through agricultural activities. Therefore, the implementation of sustainable agricultural systems is essential to preserve natural balance and prevent environmental destruction on a broader scale. The objective of this study is to analyze the extent to which sustainable agricultural policies have been implemented in Tobadak District and to examine their impact on the local economy.

2.Literature Review

2.1 Economic Development

Economic development is a process of increasing total income and per capita income while considering population growth, accompanied by fundamental changes in the economic structure of a country and the equitable distribution of income among its citizens.

Economic development is a complex and multifaceted process that aims to improve public welfare through income growth and job creation. According to Dutt and Ros (2022:45), economic development involves the transformation of structural supports, particularly in strengthening the agricultural sector's sustainability and resilience in developing countries.

In Tobadak District, Central Mamuju Regency, economic development relies heavily on the agricultural sector, which serves as the main source of livelihood for the local population. Based on BPS (2024) data, the contribution of the agricultural sector to the Gross Regional Domestic Product (GRDP) of Tobadak reached **32.5% in 2023**. This shows that agriculture is not only essential for food security but also plays a significant role in driving local economic growth.

2.2 Definition and Concept of Sustainable Agriculture

Sustainable agriculture is a systemic approach to farming practices that aims to meet present food needs without compromising the ability of future generations to meet their own. This approach is not solely focused on increasing production but also considers long-

term impacts on the environment, social welfare, and economic sustainability.

According to the Food and Agriculture Organization (FAO, 2014:3), sustainable agriculture is defined as the management and conservation of natural resources, as well as the orientation toward technological and institutional changes, in order to ensure the fulfillment of human needs both now and in the future. Similarly, the Law of the Republic of Indonesia No. 19 of 2013 on Farmer Protection and Empowerment emphasizes that agricultural practices must be carried out sustainably to build a resilient agricultural system, improve farmers' welfare, and conserve natural resources.

Pretty et al. (2018:440) further argue that sustainable agriculture requires a multi-level approach that combines technological innovation with institutional, ecological, and economic reforms. Thus, sustainable agriculture is not only about technology, but also institutional restructuring and social-economic support systems for long-term agricultural management.

2.3 Principles of Sustainable Agriculture

Sustainable agriculture is based on three main principles—ecological, economic, and social. These principles are interrelated and form the foundation of a resilient, fair, and competitive agricultural system in the long run.

1. Ecological Principle

This principle emphasizes the need to maintain ecosystem balance in the agricultural production process. It covers soil and water conservation, biodiversity preservation, and the environmentally responsible use of agricultural inputs such as fertilizers and pesticides. Practices such as crop rotation, organic farming, agroforestry, and efficient irrigation systems represent the implementation of this principle. Tilman et al. (2020:265) highlight that intensive agricultural practices that neglect ecology are the main causes of land degradation, water pollution, and biodiversity loss globally.

2. Economic Principle

This principle stresses the importance of efficiency and economic sustainability in farming activities. Farmers must be able to obtain fair profits from their agricultural products, gain access to fair markets, and reduce dependence on costly external inputs. Economic sustainability also means that farming systems should withstand economic shocks such as price fluctuations or food crises. Altieri and Nicholls (2021:75) state that farmers' economic sustainability is strongly influenced by institutional support, including cooperatives, credit access, training, and commodity price protection.

3. Social Principle

This principle focuses on achieving social justice and community welfare in the agricultural sector. It includes securing land rights, farmer participation in decision-making, women's empowerment, and access to education and training. Without social justice, agriculture cannot be comprehensively sustainable. Gliessman (2015:189) emphasizes that sustainable agriculture requires structural changes to reduce social inequality and ensure that small farmers are not continually marginalized.

2.4 Sustainable Agriculture Policy

A sustainable agriculture policy is a set of strategies designed to increase agricultural productivity while ensuring ecosystem and natural resource sustainability. In the local context—especially in Tobadak District—such policies are expected to address key challenges faced by farmers, including declining soil fertility, climate change, unstable prices, and limited market access.

According to Djibran et al. (2023:45–50), sustainable agriculture policies not only focus on increasing agricultural output but also address broader social and economic dimensions, including protecting farmers' welfare. This aligns with the sustainable development approach that integrates ecological, economic, and social aspects into

farming practices.

The Government of Indonesia has introduced several regulations as the legal and operational foundation for sustainable agriculture policies. Law No. 22 of 2019 on Sustainable Agricultural Cultivation Systems emphasizes the preservation of agricultural natural resources and the protection of ecological land functions. Furthermore, the Minister of Agriculture Regulation No. 14 of 2021 provides incentives for farmers who adopt environmentally friendly practices such as using organic fertilizers and efficient irrigation systems.

Additionally, Law No. 19 of 2013 on Farmer Protection and Empowerment serves as an important foundation in supporting sustainable agriculture. It stresses improving farmers' access to production inputs, price protection, and technical education and training. Farmers' welfare is regarded as a key prerequisite for the successful implementation of sustainable agricultural policies.

2.5 Policy Implementation at the Local Level

The implementation of sustainable agriculture policies at the local level is a crucial process that determines the success of environmentally friendly, productive, and socio-economically sustainable farming. This policy does not only focus on technical agricultural aspects but also involves natural resource management, farmer empowerment, and integration with the socio-cultural and economic conditions of local communities.

Saputra and Wulandari (2021:78) argue that the implementation of sustainable agriculture policies at the regional level is strongly influenced by the readiness of local government officials and the active participation of farmers in adopting sustainable agricultural innovations. These factors are key to adapting nationally designed programs to local characteristics.

Hartono et al. (2022:112) reveal that the main obstacles to implementing sustainable agricultural policies at the regional level include limited access to technology, capital, and information. Therefore, synergy between local

governments, extension institutions, and communities is necessary for effective policy implementation.

2.6 Impacts of Sustainable Agriculture Policy

The impacts of sustainable agriculture policies can be observed from economic, social, and environmental aspects.

- **Economic Impact:** The adoption of sustainable agricultural practices can improve productivity and farmers' income. Setiawan et al. (2022:45) report that farmers who apply sustainable practices experience income increases of up to 40% compared to those using conventional methods. This indicates that sustainable agriculture policies not only benefit the environment but also enhance farmers' welfare.
- **Environmental Impact:** Environmentally friendly practices reduce soil and water pollution and help preserve biodiversity. With reduced use of chemical fertilizers and pesticides, soil quality is maintained, which in turn increases long-term fertility and ensures the sustainability of food production in Tobadak District.

Overall, the impacts of sustainable agriculture policies in Tobadak District need to be analyzed comprehensively to understand both the benefits and challenges.

2.7 Local Economy

1. Definition of Local Economy

The local economy refers to the economic system that operates within a specific geographic area, where the production, distribution, and consumption of goods and services take place dynamically and interdependently. This system reflects the conditions and potential of natural resources, human resources, and socio-economic structures of local communities (Fauzi & Sari, 2020:45). The local economy emphasizes an area's ability to manage its resources to sustainably support the welfare of its population.

2. The Role of the Agricultural Sector in the Local Economy

The agricultural sector is the backbone of the local economy, particularly in rural areas such as Tobadak District. Agriculture contributes significantly as the main source of income for most residents, provides employment, and ensures community food security (Wahyuni et al., 2021:78). Moreover, this sector drives other economic activities such as agricultural trade, processing services, and product distribution to local and regional markets.

In the context of sustainable development, agriculture must not only function as an economic activity but also be carried out with principles of environmental and resource conservation. Sustainable agriculture policies are expected to increase productivity while simultaneously improving the welfare of farmers and communities in Tobadak District.

3. Research Methods

3.1 Location and Time of Research

This study was conducted in Tobadak District, Central Mamuju Regency. The location was chosen because it is one of the areas where sustainable agricultural policy has been implemented and is expected to have an impact on the local economy. Tobadak District also serves as a government priority area for sustainable agricultural development. The research was carried out over six months, from January to June 2025.

3.2 Types of Data

The types of data used in this study consist of:

- 1. Qualitative Data**
Qualitative data are descriptive in nature and presented narratively based on observations, interviews, and documentation. According to Monique (2020:36), qualitative research is an approach that allows researchers to observe experiences in detail using specific methods such as in-depth interviews, observation, virtual methods, content analysis, and biography.

2. Quantitative Data

According to Sugiyono (2017:23), quantitative data are numerical data that can be analyzed using statistical methods or techniques. These data are usually obtained through measurement tools, questionnaires, or scoring systems where answers are given specific weights.

3.3 Sources of Data

The research data sources include:

- 1. Primary Data**
Primary data are original data collected directly by the researcher (Amruddin et al., 2022:121).
- 2. Secondary Data**
Secondary data refer to data that already exist and have been collected by other parties, serving as complementary sources to enrich the research (Amruddin et al., 2022:121).

3.4 Informant Selection Technique

The informants were selected using **purposive sampling**. According to Sugiyono (2009:85), purposive sampling is a technique of determining informants based on specific considerations and objectives to ensure that the data obtained are valid. The criteria for informants in this study include:

1. Officials or staff of the Tobadak Subdistrict Agriculture Office involved in the implementation of sustainable agricultural policies.
2. Local farmers who directly participate in sustainable agricultural programs.
3. Community leaders or village heads who understand the economic impacts of the policy in the region.
4. Small business owners or cooperatives affected by the agricultural policy.

3.5 Methods of Data Collection

The methods of data collection used in this study include:

- 1. Interviews**
According to Sugiyono (2017:114), interviews are a meeting between two people to exchange information and ideas

through questions and answers, allowing for a deeper understanding of the issues studied.

2. Observation

Observation is the process of systematically collecting data through direct involvement in the research setting (Sugiyono, 2017:203).

3. Documentation

Documentation involves collecting notes of past events in the form of written materials, photographs, or official records (Sugiyono, 2020:124). Documentation serves as supporting evidence to strengthen data obtained from interviews and observations.

3.6 Data Management and Analysis Techniques

After collecting data through interviews, observations, and documentation, the next step was data analysis. According to Sugiyono (2020:131), data analysis is the process of systematically organizing and interpreting data obtained from the field. Miles and Huberman in Sugiyono (2020:133) state that qualitative data analysis is conducted interactively and continuously through the following steps:

1. Data Reduction

Data obtained in the field are raw and need to be selected, simplified, and grouped. Researchers categorized data based on responses from informants and research themes.

2. Data Display

The organized data are then presented in a narrative form to provide a clear description of the research findings.

3. Conclusion Drawing

The final step is drawing conclusions based on reduced and presented data. In qualitative research, conclusions are drawn to clarify findings that were initially unclear, so that they can be better understood and explained.

4. Result and Discussion

4.1 Potential of Agriculture and Local Economy

Agriculture is the main sector supporting the community's economy in Tobadak Subdistrict. The availability of large

agricultural land, relatively stable rainfall, and fertile soil serve as supporting factors for cultivating food and horticultural crops. The main commodities cultivated include paddy fields, corn, and vegetables.

According to the West Sulawesi Statistics Agency (BPS, 2024), the agriculture, forestry, and fisheries sector absorbed **46.34% of the total workforce** in the province. Specifically in Tobadak Subdistrict, the agricultural sector contributed around **32.5% to the Gross Regional Domestic Product (GRDP) in 2023**, showing that agriculture is the backbone of the local economy.

4.2 Sustainable Agricultural Policy in Tobadak Subdistrict

The Central Mamuju Regency Government has demonstrated its commitment to promoting sustainable agriculture through regulations and field programs. One key policy is **Regulation of the Regent of Central Mamuju No. 32 of 2021 concerning the Protection of Sustainable Agricultural Land (LP2B)**, aimed at protecting farmland from land conversion and environmental degradation.

The local government, through the Agricultural Office, actively provides training and counseling to farmers, focusing on the use of organic fertilizers, crop rotation systems, and soil and water conservation. These activities are carried out gradually in several villages that serve as food production centers. The provision of agricultural tools, technical training, and farmer group partnerships are also part of the strategy to realize environmentally friendly and sustainable farming systems.

However, implementation at the village level still faces challenges. Many farmers, especially those in remote hamlets with limited access to information, have yet to fully understand the long-term benefits of sustainable practices and still depend on conventional methods. Thus, more intensive and continuous support from the government is needed to make the transition to sustainable agriculture more effective and comprehensive.

4.3 Research Findings

4.3.1 *Implementation of Sustainable Agricultural Policies*

The government's step in formulating and implementing sustainable agricultural policies aims not only to address current agricultural challenges—such as land degradation, climate change, and declining productivity—but also to ensure long-term food security and farmer welfare.

Field findings show that agricultural extension workers (penyuluh) play a **strategic role** as policy intermediaries. They are responsible for disseminating information, providing technical mentoring, and facilitating behavioral change among farmers. Interviews with extension workers (e.g., B, W, and MK) emphasized that farmers are trained in organic fertilizer use, intercropping systems, and environmentally friendly pest control.

However, adoption remains limited. Farmers often revert to chemical fertilizers due to their **immediate visible results**, unlike organic methods that require more time and patience. As W (extension worker, July 31, 2025) stated:

"If farmers see direct examples, they understand more easily. But when the harvest does not immediately increase, many return to chemical fertilizers because the results are faster."

Other challenges include **low farmer literacy levels, busy working hours**, and skepticism toward new methods. Community leaders such as village heads confirmed that despite extension workers' maximum efforts, many farmers remain hesitant, considering sustainable practices "complicated" or less profitable in the short term.

This indicates that sustainable agricultural policies cannot rely solely on socialization and counseling. They must be supported by **practical demonstrations, market incentives, and institutional support** to align with farmers' daily economic realities.

4.3.2 *Economic Impact of Policy Implementation*

Sustainable agricultural policies are

expected to contribute not only to environmental preservation but also to farmer welfare and local economic growth. However, based on interviews with farmers, extension workers, and business actors, the **economic impact has not yet been fully realized**.

Most farmers reported that yields from sustainable practices have not yet matched those of conventional methods. The additional costs, labor, and time required for organic farming further discourage adoption. As FW (a rice farmer, July 28, 2025) expressed:

"I tried using organic fertilizer from cow dung and straw, but the harvest was less than usual. For small farmers like me, what matters is the immediate result, because we rely on the harvest to pay debts and daily needs."

Similarly, local agricultural input suppliers noted fluctuating demand. Initially, enthusiasm for organic fertilizers and bio-pesticides was high after government socialization, but demand declined as farmers returned to conventional products like urea and NPK. This shows that without stable market demand and price guarantees, adoption of sustainable methods remains fragile.

Another critical issue is the **lack of institutional support**. Farmers often operate individually, without strong cooperatives to collectively purchase inputs, market their products, or negotiate better prices. As a result, they remain highly dependent on middlemen.

From an economic perspective, the findings indicate that while sustainable agricultural policies in Tobadak are well-intentioned, their **impact on local welfare and business activities is still limited**. Effective transformation requires not only technical training but also **economic incentives, secure market access, and farmer institutions** that reduce risks and costs.

4.4 Discussion

The findings confirm that the implementation of sustainable agricultural policies in Tobadak is **ongoing but not yet optimal**. Extension workers have made consistent efforts through socialization and mentoring, but adoption among farmers

remains low due to:

1. **Short-term economic orientation** – Farmers prioritize immediate income over long-term environmental benefits.
2. **Limited access to markets** – Organic products lack price differentiation, making conventional farming more attractive.
3. **Weak farmer institutions** – Absence of cooperatives reduces collective bargaining power and access to resources.
4. **Insufficient incentives** – Lack of subsidies, guaranteed prices, or credit schemes for sustainable practices.

Previous studies support these findings. For example:

- Syamsul & Wulandari (2021) highlight the role of farmer literacy and economic incentives in sustainable agriculture adoption.
- Lestari & Prabowo (2020) emphasize that resistance often arises from uncertainty in yields and limited organic market access.
- Mardiana & Siregar (2023) stress that top-down approaches without participatory strategies often fail to achieve lasting change.

Thus, sustainable agricultural policies in Tobadak require a **holistic and adaptive approach**. Beyond technical training, the government should:

- Provide **economic incentives** (e.g., subsidies for organic inputs, guaranteed purchase prices).
- Strengthen **farmer cooperatives** for collective marketing and input procurement.
- Expand **market access** for organic products through local government and private sector collaboration.
- Ensure **continuous mentoring** with a participatory and context-sensitive approach.

5. Closing

5.1 Conclusion

The implementation of sustainable agricultural policies in Tobadak District has been actively carried out through a series of socialization, training, and mentoring programs facilitated by the Agricultural Extension Center

(BPP) and village governments. These activities include routine farmer group meetings, demonstration plots (demplot), technical training on producing organic fertilizers from livestock manure and crop residues, the application of intercropping systems, water-saving planting techniques, and the reduction of chemical pesticide use. Agricultural extension workers serve as the main bridge between government policies and farmers, not only delivering information but also providing direct assistance in the field.

However, several challenges hinder effective implementation. Farmers' literacy levels remain relatively low, their limited time due to busy farming activities reduces participation, and many are reluctant to adopt new methods that do not provide immediate results. The majority of farmers in Tobadak are still oriented toward short-term yields, relying heavily on chemical fertilizers considered more practical and faster in producing outcomes. Only a small portion—particularly younger farmers—have begun experimenting with intercropping systems and organic fertilizers, but overall adoption remains limited. Other obstacles include the limited availability of organic production inputs, lack of initial capital, and the absence of strong farmer institutions to support distribution and marketing. These conditions indicate that, despite good efforts from extension services, the practical application at the farmer level remains suboptimal.

From an economic perspective, the implementation of sustainable agricultural policies in Tobadak District has not yet provided a significant impact on improving farmer welfare or strengthening the local economy. During the early stages of socialization, there was a temporary increase in demand for organic production inputs such as manure and compost, which positively affected local agricultural supply shops. However, this trend did not last long, as many farmers reverted to chemical fertilizers such as urea, NPK, and SP-36. The main reasons behind this shift include the faster and more visible results of chemical fertilizers, their relatively affordable prices, and the

perception of lower risk of crop failure.

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