❒   316

Optimizing Agricultural Area Planning in Supporting Food Security in Asahan Regency: A Case Study Kecamatan Rawang Panca Arga

Irfan[1], Abdi Sugiarto[2]
[1,2]Urban and Regional Planning Study Program, Universtias Pembangunan Panca Budi
Email: abdi_sugiarto@dosen.pancabudi.ac.id

ABSTRACT

This study aims to research the Optimization of Agricultural Area Planning in Supporting Food Security in Asahan Regency: A Case Study of Rawang Panca Arga District. The qualitative research method described above provides a strong foundation to explore and understand the complexity of agricultural area planning and food security in Rawang Panca Arga District. With the right approach, this research is expected to provide in-depth insights and effective solutions to overcome the challenges faced in the agricultural sector in Asahan Regency. Research results The capacity of human resources, especially farmers, needs to be increased through training and extension programs. With better knowledge of modern agricultural techniques, farmers will be better able to optimize crop yields and maintain food security independently. Government and institutional support is very important in supporting the sustainability of agricultural area planning. Policies that support incentives for farmers, subsidies, and access to markets can encourage the sustainability and competitiveness of the agricultural sector in Rawang Panca Arga District. With the optimization of agricultural areas that are planned effectively, Rawang Panca Arga District has the potential to become one of the main pillars of food security in Asahan Regency. Increasing production and sustainability of food supply will make a real contribution to the welfare of people in this region. In conclusion, the optimization of agricultural area planning in Rawang Panca Arga District has significant potential to support food security in Asahan Regency, as long as it is carried out with comprehensive planning and continuous support from various parties.

Keywords: Optimization of Agricultural Area Planning, Food Security, Asahan Regency and
　　　　　Kecamatan Rawang Panca Arga

1. INTRODUCTION

Food security is one of the strategic issues faced by many countries, including Indonesia. Asahan Regency, as one of the main agricultural producing areas in North Sumatra, has great potential in providing food for the community. However, challenges such as climate change, land conversion, and increasing food demand require serious attention. Therefore, optimizing the planning of agricultural areas in Rawang Panca Arga District is very important to support local food security. Food security is a condition in which all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs. In Indonesia, food security is becoming an increasingly important issue, especially in the midst of global challenges such as climate change, rapid population growth, and declining agricultural land quality. Asahan Regency, as one of the food-producing areas in North Sumatra, has great potential in supporting national food security. However, to maximize this potential, effective and sustainable agricultural area planning is needed.

Rawang Panca Arga District is one of the sub-districts in Asahan Regency which is known for its rich agricultural potential. Despite having fertile land and abundant natural resources, this sub-district faces various challenges in optimizing the planning of its agricultural areas. Some of the problems that arise include: Land Conversion The act of converting agricultural land into non-agricultural land, such as settlements and industries, threatens the sustainability of food production. Natural Resources Management Uncertainty in the management of water and soil resources often results in a decrease in agricultural productivity. Climate change impacts of climate change, such as extreme weather and erratic rainfall patterns, affect agricultural yields. Technological limitations Lack of access to modern

agricultural technology hinders production efficiency and effectiveness. In this context, optimizing agricultural area planning is very important to increase food security in Rawang Panca Arga District. With a systematic and data-driven approach, good planning can help identify potential and challenges, as well as formulate strategies to address the problems faced. Optimizing agricultural area planning in Rawang Panca Arga District is an important step in order to increase agricultural productivity, maintain the sustainability of natural resources, and support food security in the area. With great agricultural potential, good planning will help to face the various challenges faced by farmers and the agricultural sector as a whole.

Optimizing the planning of agricultural areas in Rawang Panca Arga District is a strategic step in improving food security and community welfare. With a systematic and collaborative approach between the government, farmers, and the community, it is hoped that the agricultural potential of this area can be managed optimally and sustainably. The implementation of the right strategy will support the success of the agricultural sector and its contribution to the regional economy. Food security is one of the crucial issues faced by many countries, including Indonesia. In Asahan Regency, which is known as one of the main food producers in North Sumatra, optimizing agricultural area planning is very important to ensure the availability of sufficient, safe, and quality food for the community. Agricultural conditions in Asahan Regency have great potential with fertile land and a diversity of natural resources. However, several challenges, such as land conversion, climate change, and lack of access to technology, have hampered the growth of the agricultural sector. In this context, effective agricultural area planning is very important to overcome these challenges and support regional food security. Optimizing agricultural area planning in Asahan Regency is an important step in supporting regional food security. Through an integrated and participatory strategy, it is hoped that the agricultural sector can develop well, meet the food needs of the community, and make a significant contribution to the regional economy. Success in this planning will require cooperation between the government, farmers, and all stakeholders in creating an environment conducive to sustainable agriculture.

Rawang Panca Arga District, as one of the agricultural areas in Asahan Regency, faces various problem phenomena that affect the optimization of agricultural area planning and food security. Some of these problem phenomena include: There is an increase in the conversion of agricultural land into non-agricultural land, such as housing, industry, and other infrastructure. This reduces the area of land available for agriculture, thus negatively impacting local food production. Climate change is increasingly extreme, such as increasing the frequency of heavy rains and droughts, affecting planting patterns and agricultural products. Farmers often find it difficult to adapt to uncertain weather conditions, which impact their crop yields. Many farmers in Rawang Panca Arga District have not utilized modern technology in their agricultural practices. Limited access to agricultural tools, fertilizers, and the latest information on modern cultivation techniques hinder the increase in productivity and quality of agricultural products. Inadequate infrastructure, such as damaged transportation roads, hampered the distribution of agricultural products. This causes crops to not be sold on time, thus harming farmers economically. Low levels of education and lack of training for farmers on sustainable farming practices result in their inability to manage land effectively. Limited knowledge makes it difficult for them to innovate and improve agricultural yields. The phenomenon of problems faced by Rawang Panca Arga District in the context of agricultural area planning and food security requires serious attention from all related parties. Through the identification and understanding of this phenomenon, strategic steps can be taken to optimize agricultural area planning, which in turn will support food security in Asahan Regency. Success in addressing these issues will require collaboration between governments, communities, and other stakeholders in creating sustainable and inclusive solutions.

2. LITERATURE REVIEW
Food Security Concept
According to Suhardi (2022), food security is defined as a condition in which every individual has physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs. Food security is not only related to food availability, but also includes aspects of access, use, and stability.
Agricultural Area Planning
Hidayati (2022) explained that agricultural area planning is a process of regulating land use that aims to increase agricultural productivity and maintain the sustainability of natural resources. This planning must take into account factors such as geographical conditions, climate, and the potential of existing resources to ensure the success of agriculture.

Land Use Optimization

According to Widiastuti (2022), optimizing the use of agricultural land can be done through an approach based on data and in-depth analysis. This includes the application of environmentally friendly agricultural techniques, the selection of plant varieties that are suitable for local conditions, and the use of appropriate agricultural technology.

The Role of Technology in Agriculture

Budiarto (2022) emphasized the importance of applying technology in improving food security. Innovations such as smart irrigation systems, land monitoring with satellite technology, and the use of digital agriculture applications can help farmers manage their land more efficiently and effectively.

Community Involvement in Planning

Santoso (2022) highlights that community involvement in agricultural area planning is very important to create programs that suit local needs. Involving farmers in the decision-making process not only increases a sense of ownership of the program, but also ensures that the proposed solutions are more relevant and effective.

The Impact of Climate Change on Agriculture

According to Azizah (2022), climate change is one of the biggest challenges in the agricultural sector. Changes in rainfall patterns and rising temperatures can affect food production. Therefore, agricultural area planning must consider aspects of climate change to ensure long-term food security.

Sustainable Development Strategy

Denzin (2022) stated that sustainable development strategies in agriculture need to be focused on increasing production capacity while maintaining environmental sustainability. Sustainable approaches include organic farming practices, prudent forest management, and water resource conservation.

METHOD APPROACH

Qualitative Research According to Moleong (2020), qualitative research is a research approach that focuses on a deep understanding of social phenomena by exploring the meaning of social interactions, experiences, and individual behaviors. This approach not only relies on numbers and statistics, but also analyzes the social and cultural contexts that affect the object of research. Creswell (2020) states that qualitative research design can be descriptive or exploratory, depending on the purpose of the research. In the context of this study, a descriptive approach is used to describe the conditions and practices of agricultural area planning in Rawang Panca Arga District, while an exploratory approach is used to understand the views and experiences of farmers in facing agricultural challenges.

Data Collection Techniques This study uses several data collection techniques, including: In-depth Interviews: As explained by Suhardi (2020), in-depth interviews are conducted to obtain detailed information from key informants, such as farmers, agricultural extension workers, and government officials. This technique allows researchers to explore the opinions, experiences, and challenges faced by informants. Data Analysis In data analysis, Bungin (2020) explained that qualitative data is usually analyzed using a thematic approach. Data from interviews and observations will be organized into relevant themes, which will then be analyzed to identify patterns and relationships between the variables studied. Data Validity To ensure the validity of the data, the triangulation method is used, as revealed by Abdullah (2020). Triangulation is carried out by comparing data obtained from interviews, observations, and relevant documents. This aims to test the consistency and accuracy of the information collected.

The qualitative research method described above provides a strong foundation to explore and understand the complexity of agricultural area planning and food security in Rawang Panca Arga District. With the right approach, this research is expected to provide in-depth insights and effective solutions to overcome the challenges faced in the agricultural sector in Asahan Regency.

3. DISCUSSION

What is the current condition of agricultural area planning in Rawang Panca Arga District

Regarding the current condition of agricultural area planning in Rawang Panca Arga District. This discussion includes aspects of challenges, opportunities, and strategies applied in agricultural area planning to support food security in the region.

1. General Agricultural Conditions Rawang Panca Arga District is one of the areas that has quite good agricultural potential, with fertile land and a supportive climate. The local community

mostly depends on the agricultural sector, especially on commodities such as rice, vegetables, and fruits. However, existing agricultural area planning still faces various challenges that affect productivity and sustainability.

2. Challenges in Planning Some of the challenges faced in planning agricultural areas in Rawang Panca Arga District include:
   a. Infrastructure Limitations: Inadequate supporting facilities such as irrigation, access roads, and storage warehouses hinder the distribution of agricultural products and efficient land management.
   b. Climate Change: Weather fluctuations caused by climate change have an impact on planting patterns and agricultural productivity. Farmers face difficulties in planning the right planting season.
   c. Lack of Community Participation: In the planning process, the lack of involvement of farmers and local communities leads to the resulting programs not always being tailored to their needs. This reduces the effectiveness of agricultural policy implementation.

3. Development Opportunities While there are various challenges, there are also opportunities that can be leveraged to improve agricultural area planning, including:
   a. Application of Agricultural Technology: The application of modern technologies such as drip irrigation, organic fertilizers, and application-based monitoring systems can improve productivity and efficiency in the use of resources.
   b. Strengthening Cooperation Between Stakeholders: Cooperation between the government, non-governmental organizations, and farmers can create positive synergies in the planning and implementation of agricultural programs.
   c. Increased Access to Training and Counseling: Training and counseling programs for farmers regarding good and environmentally sound agricultural techniques can help improve their knowledge and skills.

4. Planning Strategies Implemented In an effort to optimize agricultural area planning, several strategies that have been implemented in Rawang Panca Arga District include:
   a. Development of Regional Spatial Plans: Local governments have developed spatial plans that accommodate the needs of agriculture, land development, and natural resource conservation.
   b. Implementation of Sustainable Agriculture Programs: Implementation of sustainable agricultural practices oriented towards environmental preservation while increasing productivity.
   c. Monitoring and Evaluation: Conducting periodic monitoring of agricultural products and the impact of planning programs to evaluate effectiveness and make adjustments if necessary.

The current condition of agricultural area planning in Rawang Panca Arga District shows that there are challenges that need to be overcome to support food security. However, by taking advantage of existing opportunities and implementing the right planning strategies, it is hoped that agriculture can be created that is productive, sustainable, and able to meet the needs of the community. This is very important in improving community welfare and achieving food security in Asahan Regency.

What are the factors that affect the effectiveness of agricultural area planning in Rawang Panca Arga District

In an effort to improve the effectiveness of agricultural area planning in Rawang Panca Arga District, several factors play an important role and can affect the success of the implementation of the plan. The following are the factors that affect the effectiveness of agricultural area planning in this region:

1. **Quality of Human Resources**
   Education and Training**:** The level of education and training of farmers greatly affects their ability to manage land and apply modern agricultural technology. Educated and trained farmers tend to be more able to adapt efficient and environmentally friendly farming methods. Competence of Agricultural Extension Officers**:** The quality of extension provided by agricultural officers is also a key factor. Experienced and knowledgeable extension workers can provide relevant and timely information to farmers.

2. **Infrastructure Availability**

Irrigation Infrastructure**:** The availability and condition of irrigation systems greatly affect the effectiveness of water resource management. Without adequate irrigation, agricultural productivity can decline, especially in the dry season**.** Road Access and Transportation**:** Good road infrastructure makes it easier for farmers to transport agricultural products to the market. Poor access can result in economic losses for farmers and limit market potential.

3. **Government Policy Support**
Agricultural Regulation and Policy**:** Policies that support the development of the agricultural sector, such as subsidies, access to credit, and protection against commodity prices, are essential to increase farmers' motivation. Inter-Agency Coordination**:** Cooperation between various government agencies and related institutions is very important in the implementation of agricultural plans. Good coordination can avoid program overlap and maximize the use of resources.

4. **Environmental and Geographical Conditions**
Diversity of Natural Resources**:** The existence of arable land and a supportive climate are important factors in agricultural planning. However, environmental factors such as the risk of natural disasters (floods, droughts) also need to be considered in planning. Climate Change**:** Weather fluctuations and extreme climate change can affect planting patterns and crop yields, so planning must be adaptive to these conditions.

5. **Community Participation**
Farmer Involvement in Planning**:** Farmer involvement in the agricultural area planning process can increase the sense of ownership and responsibility for the plan made. If farmers feel included, they are more likely to support the implementation of the plan. Community Awareness**:** The level of public awareness of the importance of sustainable agriculture and good agricultural practices contributes to the success of the program.

6. **Technology and Innovation**
Use of Modern Agricultural Technology**:** The adoption of technologies such as automated irrigation systems, balanced fertilizers, and eco-friendly pesticides can improve the efficiency of agricultural production. Research and development in agricultural technology also needs to be encouraged to increase productivity. Innovation in Agricultural Research**:** The availability of relevant research and innovations in agriculture can help farmers meet challenges and improve crop yields.

The factors that affect the effectiveness of agricultural area planning in Rawang Panca Arga District are very complex and interrelated. To improve the effectiveness of planning, it is important to integrate all these factors, from human resource development, provision of adequate infrastructure, strong policy support, to active community participation. By understanding and managing these factors, it is hoped that agricultural area planning can be more optimal and contribute to food security and community welfare in Rawang Panca Arga District.

What is the strategy for optimizing agricultural area planning to support food security in Asahan Regency

To increase food security in Asahan Regency, especially in Rawang Panca Arga District, an effective agricultural area planning strategy is needed. Here are some strategies that can be optimized in agricultural area planning to achieve these goals:

1. **Development of Adequate Agricultural Infrastructure**
Irrigation System Improvements**:** One of the main obstacles in agriculture is the availability of water, especially in the dry season. Therefore, the improvement and development of a more efficient and sustainable irrigation network is a top priority. Construction of Road Access and Transportation Facilities**:** Improving accessibility by improving roads to agricultural land and transportation facilities will facilitate the distribution of crops and reduce logistics costs.

2. **Strengthening the Capacity of Farmers and Agricultural Extension Workers**
Continuous Training and Counseling**:** Improving farmers' skills and knowledge through training on modern farming techniques, the use of technology, and efficient land management. Sustainable counseling can also help farmers adapt to climate change and markets. Improving the Competence of Agricultural Extension Workers**:** Agricultural extension workers need to have a deep understanding of the latest agricultural innovations. Effective counseling can provide practical guidance to farmers on environmentally friendly and resource-saving techniques.

3. **Utilization of Modern Agricultural Technology**

Use of Appropriate Technology**:** The implementation of appropriate technologies, such as automatic irrigation systems, the use of balanced fertilizers, and natural pesticides, can help to increase crop yields and reduce negative impacts on the environment. Agricultural Information Systems**:** Develop information systems that provide farmers with weather data, commodity prices, and the latest technology. With access to the right information, farmers can make better decisions in land management and agricultural products.

4. **Diversification of Agricultural Commodities**
Development of Local Superior Commodities**:** Encouraging the cultivation of commodities that are in accordance with the characteristics of the soil and climate in Asahan Regency will increase production efficiency. The selection of superior commodities, such as rice, corn, or other horticultural crops, can strengthen local food security. Intercrop Management**:** Practicing diversification by planting intercrops or different crops among the main crops can reduce the risk of crop failure and increase farmers' incomes.

5. **Government Policy Support and Involvement of Related Institutions**
Subsidies and Access to Financing**:** Local governments can provide subsidies or ease of access to credit for farmers to purchase the necessary agricultural tools and materials. This support is important so that farmers have enough capital to develop land optimally. Inter-agency cooperation**:** Coordination between agricultural offices, research institutions, and private institutions can facilitate better transfer of knowledge and technology to farmers. This cooperation can also create a more stable market for agricultural products.

6. **Increasing Environmental Awareness in Agricultural Practices**
Sustainable Agricultural Practices**:** Encouraging environmentally friendly practices such as organic farming, agricultural waste management, and soil conservation. This will help maintain the sustainability of agricultural land for the long term. Integrated Land Management**:** Implementing integrated land management that combines soil and water conservation techniques, so as not only to increase productivity but also to preserve the environment.

7. **Institutional Strengthening and Community Participation**
Farmer Institutions**:** Forming and strengthening farmer groups that can serve as a forum for farmers to exchange information, get help, and develop their negotiating skills in the market. Community Participation in Planning**:** Involving local communities, especially farmers, in agricultural area planning can increase their commitment to the planned program and improve outcomes that are better suited to their needs.

4. CONCLUSION

Conclusions related to efforts to optimize agricultural area planning in Rawang Panca Arga District as a strategic step to support food security in Asahan Regency. From the results of the study, some important conclusions can be elaborated as follows:

Rawang Panca Arga District has good land potential to support agriculture, especially for main food commodities such as rice and palawija. However, improvements are needed in land management and resource utilization so that production can be increased sustainably. Infrastructure that supports agricultural areas, such as irrigation systems and transportation access, still needs improvement to support distribution and production effectiveness. With the improvement of infrastructure, it is hoped that food production can be more stable and maintained, supporting long-term food security in Asahan Regency.

The adoption of modern agricultural technology in this region is still low. The application of appropriate technologies, such as the use of organic fertilizers, environmentally friendly land management techniques, and more efficient harvesting technologies, can help increase agricultural productivity while maintaining environmental sustainability. The capacity of human resources, especially farmers, needs to be increased through training and extension programs. With better knowledge of modern agricultural techniques, farmers will be better able to optimize crop yields and maintain food security independently.

5. REFERENCES

Abdullah, A. (2020). *Triangulation in Qualitative Research: Approaches and Implementation.* Salemba Empat Publisher.

A Sugiarto, RK Ramadania (2023). Economic and Spatial Regional Integration and Its Impacts on Regional Development in North Tapanuli Regency. International Journal of Social Science, Education, Communication and Economics (SINOMICS JOURNAL).

A Sugiarto, SPR Manalu, E Pakpahan (2023). The Effect of the Number of Tourist Visits and Restaurant Tax on the Economic Growth of North Tapanuli Regency with PAD as an Intervening Variable. Jesya (Journal of Sharia Economics and Economics) 6 (1), 221-232.

A Sugiarto, RK Ramadania (2023). Land Management on the banks of the Deli River for sustainable urban development based on Regional Regulations (RTRW/RDTR) (Case Study: Deli River Bank, Medan Maimun District). Jesya (Journal of Sharia Economics and Economics) 7 (1), 618-626.

Azizah. (2022). *The Impact of Climate Change on the Agricultural Sector.* Tani University Press.

Budiarto. (2022). *Regional Planning and Resource Management.* Publisher Mitra Pustaka.

Bungin, B. (2020). *Social and Economic Research Methodology.* Kencana Publisher.

C Nuraini, B Alamsyah, PS Novalinda, A Sugiarto (2023). Planning with 'Three-World Structures': A Comparative Study of Settlement in Mountain Villages. Journal of Regional and City Planning 34 (1), 55-82.

Creswell, J. W. (2020). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* Sage Publications.

Denzin, N. K. (2022). *The Research Act: A Theoretical Introduction to Sociological Methods.* Routledge.

Hidayati. (2022). *A Study of Sustainable Food Security Policies.* Scholar Library.

Moleong, L. J. (2020). *Qualitative Research Methodology.* Remaja Rosdakarya.

Santoso. (2022). *Analysis and Strategy of Regional Development.* Sinar Grafika Publisher.

Suhardi. (2020). *Interview Techniques in Qualitative Research.* Publisher of Aksara Library.

Suhardi. (2022). *Food Security in Indonesia: Challenges and Strategies for Strengthening.* Nusantara Publishers.

Widiastuti. (2022). *Optimizing Land Use for Food Security.* Agro Media Library.