

Food Estate Management System and Policies in Pulang Pisau and Kapuas Regencies, Central Kalimantan Province, Indonesia

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Abstract: - The Indonesian government initiated the food estate program in Pulang Pisau and Kapuas Regencies, Central Kalimantan Province to increase food resilience. This paper aims to analyze: (1) the food estate management and policies in Indonesia and (2) the efforts conducted in handling food estate management. This paper employed the empirical research method and the empirical research approach. Results showed that the legal policy on rice paddy and cassava food estate management follows the juridical basis on food estate. It was implemented from 2020 to 2024 as a governmental effort to follow up on Law No. 18/2012 on Food. This juridical basis is further strengthened by Presidential Decree No. 109/2020 on the Third Amendment of Presidential Decree No. 3/2016 on the Acceleration of the Implementation of the National Strategic Project and the Decision of the Minister of the National Development Planning No. Kep.18//M.PPN/HK/03/2023 on the Main Food Estate Development Plan/Center of Food Production Area in Central Kalimantan Province. Applying the food estate program has led to an increase in the average rice production. Many facilities have also been built on the food estate land, including roads, worker barracks, water sources, buildings, etc.

Key-Words: - Management, Policies, Food Estate, Food Resilience, Kalimantan, Indonesia.

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1 Introduction

Article 1 number 4 of Law No. 18 of 2012 on Food which was amended into Law No. 11 of 2020 on Job Creation states that food resilience is a condition where the state's needs for food are fulfilled up to the individual level, reflected by the availability of adequate nutrition in terms of quantity and quality. The food must be safe, varied, and nutritious. Apart from that, the food must be able to sustainably make people live healthily, actively, and productively.

This definition was in line with what was stated by the Food and Agriculture Organization (FAO) which defined food resilience as a condition where every person has physical and economic access to adequate, safe, and nutritious food to fulfill their daily nutrition needs at any time. Based on this understanding, it can be understood that to fulfill society's needs for food consumption up to the individual level, the state has the authority and obligation to independently determine its food policies. In doing so, they cannot be dictated by any party.

Optimum resource management is required to fulfill that demand for food, by emphasizing in-state production. To achieve this, the three main points that need to be considered are as follows: (1) food availability which is based on optimum usage of resources and local wisdom, (2) physical and economic access to food for all society, and (3) adequate food and nutrition consumption for a healthy, active, and productive life, [1].

The increase in food resilience must become a developmental priority in the current era. This is the obligation and responsibility of the state at the national, provincial, city/regency, village, and district levels. It is hoped that the food estate management policy can become one of the supporting pillars of national food resilience. This can be achieved through economic stability, politics, and national security. Food estate management is a governmental effort in agricultural management to increase the contribution of food resilience, [2].

Food estate is developed to increase the welfare of society. There needs to be high and sustainable economic growth. It is hoped that long-term

economic development may bring principal changes in the economic structure that can trigger economic growth. Food estate with good management is one of the solutions and strategies carried out by the government to implement the national economic recovery program, [3].

In 2020, President Joko Widodo conducted a working visit to Pulang Pisau Regency, Central Kalimantan, accompanied by the Republic of Indonesia's Minister of Defense, Retired Lieutenant General of the Indonesian Military Force, Prabowo Subianto; the Ministry of Agriculture; and other related ministries to declare, develop, and arrange rice food estate management located in some rice fields. The rice fields they visited were located in Kapuas Regency (200,000,000 m²) and Pulang Pisau Regency (100,000,000 m²). They also visited cassava plantations in Gunung Mas Regency (6,000,000 m²), [4].

The authors' concern in this research is that the food estate that is developed in various provinces in Kalimantan Island is a highly crucial mega project. The food estate project allocates conversion on a very extensive area of forest land, namely more than three hundred-million-meter squares for reserve food storage.

Failure in the food estate will lead to environmental disasters, considering that the forest ecosystem was converted into rice fields and cassava plantations. If this project fails, it will bring negative impacts to the environment. This project puts the environment and food resources at great risk. It can be said that there is not yet much research on food estate. Considering the importance of this food estate, the writer researched this theme.

There was some other research on food estate, but none were sociological research. Thus, the researchers chose to conduct sociological research on this topic. This sociological research that the writers conducted contained novelty. Previous research includes the research, [1], [2], [4] and [5]. These previous researches were juridical normative research which used the literary approach and was not field research.

This research contributed to researchers directly observed the progress of the food estate project and its development. The writers wrote this research in the forms of research reports and research publications that were then submitted to the Central Kalimantan provincial government as a result of the review to become a consideration for the government in making decisions on the food estate.

The food estate management in Pulang Pisau and Kapuas Regencies in Central Kalimantan Province, Indonesia must be directed to create social

welfare and sustainable environmental preservation by directly involving the local society. The food estate management needs to be directed to create rice granaries as food reserves. This is to achieve food resilience and food sovereignty for society's daily life as well as for the future of the nation and the state of the Republic of Indonesia's Unitary State, [6]. The research problems in this paper are: (1) What are the food estate management and policies like in Indonesia? and (2) What are the efforts conducted in handling food estate management?

2 Research Methods

This paper employed the empirical research method, which was a research approach used to describe the condition that was observed and found. It used social facts and data as information. The data were obtained from behavior and verbal speech extracted from interview results and real actions conducted through direct observation in the field on the implementation of sustainable welfare-based food estate management in Central Kalimantan, [7].

The empirical research approach was also used to analyze both primary and secondary data in the form of analyzed products, [8]. Then, the analysis was collected into a comprehensive system. The results of the identification process were collected through a critical analysis, [9]. Next, they were processed through a logical and systematic clarification stage. The results of this research were formulated to be synergized into sustainable welfare-based food estate management and policies with an environmental perspective, [10].

3 Result

Agricultural development is one of the spearheads of stately life. Agricultural development is divided into many sectors that focus on self-production. Agriculture highly influences economic development, as the results produced from the agricultural sector may bring benefits from exporting activities, bringing foreign exchange to the state. Thus, the government strives for good food estate management to resolve the issue of food crises and to provide sustainable welfare for society.

In the food estate project in Kapuas and Pulang Pisau Regencies, the types of rice planted in the food estate management land from 2020 to 2022 were inbred rice and hybrid rice with the average production as follows:

Table 1. The increase in rice production in Pulang Pisau and Kapuas Regencies, Central Kalimantan Province, [11]

No.	Program	Year	Average Rice Production
1	Before the implementation of the food estate program	2015-2016	1,000-2,000kg/10,000m ²
		2017-2018	2,500-3,000kg/10,000m ²
2	Ex-peatland rice plantation program	2018-2019	3,600-4,700kg/10,000m ²
3	Food estate national strategic project	2020-2021	4,300-5,700kg/10,000m ²
		2022	6,500-7,000kg/10,000m ²

Table 1 shown data on increased rice production in the food estate project in Kapuas and Pulang Pisau Regencies.

These achievements were the results of the land conversion in the food estate projects. These were the width of the food estate land in Central Kalimantan province. The first-stage food estate development of the 2020-2024 period was carried out in an ex-peatland project. This land was developed into a food estate in Central Kalimantan and is targeted to harvest rice in the amount of 9,500 kg/10,000 m² over available land with an area of 1,680,000,000 m² by 2024. The achievement of food estate management implementation over 1,680,000,000 m² of land in Central Kalimantan up to 2021 is shown in the Table 2.

Table 2. The food estate management implementation in Central Kalimantan in 2021, [12]

Type of land	Area	Achievement of food estate management implementation	
		Kapuas Regency	Pulang Pisau Regency
Intensification land	855,000,000 m ²	200,000,000 m ²	100,000,000 m ²
Extensification land	795,000,000 m ²	127,692,700 m ²	38,744,000 m ²

Table 2 shown data on land extensification and intensification in Kapuas Regency and Pulang Pisau Regency:

Table 3. The rice production in the food estate of the Kapuas and Pulang Pisau Regencies from 2020 to 2022 [interview with Kuswadi at 2022]

No	Type of Rice	Average Production
1	Inbred rice (Inpari 32 and 42)	3,600 – 4,700kg/10,000m ²
2	Hybrid rice (Supadi and Sempada)	4,300 – 5,700kg/10,000m ²
3	Annual rice variety such as <i>siam gaul</i> , <i>siam kupang</i> , <i>karang dukuh</i> , <i>pandak bayar pahit</i> , <i>palas udang</i> , and <i>krulut</i>	4 kg/10,000m ²

Table 3 shown rice production in the food estate in the Kapuas Regency and Pulang Pisau Regency.

Then, during the dry rice harvest carried out by the Kapuas Regent, Ir. Ben Brahim S. Bahat, M.T. in February 2023, the rice production reached an average of 5,600 kg/10,000 m².

From 2015 to 2019, the average rice harvest reached 2,500 to 3,000 kg/10,000 m². It was known that after the application of food estate management, the amount of rice harvested annually increased in Central Kalimantan. A joyous fact showed that in 2023, the dry rice harvest reached 8,000 to 8,700 kg/10,000 m² in Blanti Siam Village, Pulang Pisau Regency, Central Kalimantan Province, [13].

4 Discussion

4.1 Food Estate Management and Policies in Central Kalimantan

The implementation of the national strategic project is an effort in manifesting a just and prosperous society based on the Republic of Indonesia's Pancasila (the Five Principles that make Indonesia's ideology) and the 1945 Constitution, [14]. The national strategic project also has a role in supporting the growth and development of the service and goods industries. Moreover, it has the role to create job opportunities for the wider society to support economic development and national welfare.

Apart from that, the national strategic project also has a great role in supporting various developmental sectors, by emphasizing physical and non-physical developments that have an important role in increasing society's economic growth. It is carried out through the approach of territorial infrastructure development through food estate development.

The legal policy on rice paddy food estate management is according to the juridical basis on food estate. It was implemented from 2020 to 2024 as a governmental effort to follow up on Law No. 18 of 2012 on Food. It was implemented in the Center of Food Production Area in Central Kalimantan Province, specifically in Kapuas Regency (200,000,000 m² of rice fields), Pulang Pisau Regency (100,000,000 m² of rice fields), and Gunung Mas Regency (6,000,000 m² of cassava plantation), [15].

This juridical basis is further strengthened by the Presidential Decree No. 109 of 2020 on the Third Amendment of the Presidential Decree No. 3 of 2016 on the Acceleration of the Implementation of the National Strategic Project as well as the Decision of the Minister of the National Development Planning/the Head of the National Development Planning Agency No. Kep.18//M.PPN/HK/03/2023 on the Main Food Estate Development Plan/Center of Food Production Area in Central Kalimantan Province.

To achieve food resilience, there needs to be legal policy management as well as the implementation of welfare and sustainability-based food estate management in Central Kalimantan. In its planning, this program is targeted to succeed sometime between 10 to 15 years after its initial establishment. It can accurately be predicted that the peatlands in Central Kalimantan may yield dry rice production results of more than 9,000 kg/10,000 m². Thus, the provision of food supply may fulfill the demand of needs for food, [16].

From the managerial aspect, the Regional Government of the Central Kalimantan Province may demand the provision of rice supply by directly purchasing them from farmers. The farmers may obtain such supply from the results of the food estate management to fulfill the consumption needs, considering that the number of farmers and the breadth of the plantations are recorded. The provincial government may also substitute the food money of civil servants/state civil apparatus with harvested rice through a new policy regulation, [17].

Such policy management will surely bring great contentment and joy to food estate farmers to increase the production of dry rice as the main material to rice supply. It is a result of the food estate management in Central Kalimantan. This is because the market of the rice harvest is clear: apart from becoming the food reserve of the Central Kalimantan Province, it can also be distributed as a substitute for food money to civil servants/state civil apparatus. Therefore, farmers do not need to sell the harvested rice to wholesalers.

The provision of rice supply that is directed to fulfill the consumption needs of civil servants/state civil apparatus in the environment Central Kalimantan Provincial Government is taken from the food estate rice. This stipulation is regulated in the law. Civil servants/state civil apparatus from the second to the fourth groups may obtain rice fulfilled from the harvest results of the food estate program.

The Pulang Pisau Regency food estate management also cooperates with the city/regency regional governments in Kalimantan to sell the increasing rice supply from the food estate program. This rice supply may be used by governments outside of Kalimantan Island according to regulations and agreements with farmers through the Regional Food Resilience Institution.

Therefore, the Central Kalimantan Provincial Government needs to follow this up by issuing Provincial and Regency Regional Regulations on the Food Estate Management/Center of Food Production Area in Central Kalimantan Province in a period of four years in one stage, [5].

The food estate policy has generally been declared and its first stage starts from 2020 to 2024 first stage. It will also be implemented by the provincial government from 2025 to 2029 (the second stage) and the regency government in the period of 2030–2034 (the third stage). Then, it will be completely submitted to farming societies and the Regional Food Resilience Institution. The government will then function to provide training and supervision. This is so that the Food Estate Management/Center of Food Production Area in Central Kalimantan Province may stay sustainable, [18].

The food estate management and policies in Central Kalimantan should be implemented in an integrated, optimum, concrete, and sustainable manner by the government, the regional governments, and society. Such a manner of implementation will lead to an increase in dry rice production in Central Kalimantan. This is according to the legal norms issued by the Indonesian government in the forms of laws, governmental regulations, and presidential decrees.

The food estate management and policies are also manifested through the Main Food Estate Development Plan/Center of Food Production Area in Central Kalimantan Province to increase the production of dry rice and its sales through policies that support the management. These policies make sure that food estate management may yield good results, especially for marketing, land status, and infrastructure development such as irrigation and roads, [19].

The food estate management in Pulang Pisau and Kapuas Regencies, Central Kalimantan Province may run well, considering that the government has provided support in the form of policies on all activities regarding food estate management. These policies should also be supported by the regional, district, and village governments. They should have a good understanding of these policies and apply and/or run them well. This is so that the food estate program may succeed in creating a national food reserve to reach food sovereignty in Indonesia.

The Main Food Estate Development Plan/Center of Food Production Area in Central Kalimantan is a form of support for food estate management. This is so that the food estate farmers may survive and reach welfare. In effect, such a condition will lead to:

1. The increasing national need for food. Thus, food becomes a strategic commodity with the increasing speed of shifts in the agricultural land function (especially in Java and Bali islands);
2. Foreign exchange outflow to fund the import of some food commodities;
3. The availability of a rather wide potential land as land for food reserve may optimally be cultivated, by still considering/protecting the interests of the local people, [20].

As a manifestation of the implementation of legal policies, the food estate management in Pulang Pisau and Kapuas Regencies, Central Kalimantan Province may slowly but surely be implemented.

Based on the data from Pandih Batu district, some Village Chiefs and Farmer Groups from several villages in Pulang Pisau Regency stated in a farmer meeting activity that at the start of the harvesting period in 2023, the farmers obtained quite a good amount of harvest, amounting to an average of 8,000-8,700 kg/10,000 m². This number has not reached the peak production as that in Java Island, where 8,000-8,700 kg/10,000 m² were the production results in 2023 which annually increases, [21].

The government has the authority to implement the Program of the Food Estate Management National Strategic Project. To implement this project well, there must be clear management regulated in legal regulations as legal protection that guarantees legal certainty, [19]. These legal regulations must specify the location/area where the food estate development is implemented. The government issued the Decision of the Minister of National Development Planning/Head of the National Development Plan Agency No.

Kep.18//M.PPN/HK/03/2023 on the Main Food Estate Development Plan/Center of Food Production Area in Central Kalimantan Province as an effort to sustainably develop food estates in Central Kalimantan

The program of the food estate management national strategic project as required above may be well implemented if its legal regulation management is clearly and strictly regulated through the governmental authority levels, starting from the central government (legal regulations), the provincial government (regulations of the provincial region), and the regency governments (regional regulations of regencies). This is so that the government's efforts in implementing sustainable development may be achieved, [22].

4.2 Efforts Conducted in Handling Food Estate Management

To make the governmental effort to achieve the sustainable welfare of local society through the food estate management program in Central Kalimantan run well, there needs to be a synergy between the central and regional governments.

Apart from that, there should be an integration between sectors and sub-sectors that are optimally managed through the effective use of agricultural technologies. Moreover, it should be strengthened by legal policies as government-issued legal protection.

The declaration of this development was carried out by President Joko Widodo on the food estate management location in Belanti Siam village, Pandih Batu district, Pulang Pisau regency, Central Kalimantan province, which was marked by the primary rice planting as the start of the National Strategic Project Program.

Apart from rice, cassava was also planted as a food reserve in the food estate management on land with an area of 6,000,000 m² in Gunung Mas Regency, Central Kalimantan Province. The development management of the strategic reserve logistic was implemented by the Republic of Indonesia's Ministry of Defense. The cassava plant food estate (cassava estate) in Central Kalimantan Province aimed to provide a strategic food reserve, increase foreign exchange, provide bio-industrial raw materials, and provide new job opportunities, [23].

To support the above target, the government focused on strategic reserve logistics (rice and cassava estate) and unimported sources of carbohydrates. Up to now, it is still at the stage of relatively complex and adequate land preparation to make sure that the plants (cassava) may grow well.

The cassava plant was one of the food products that was chosen in the food estate project, apart from

the rice paddies that have produced crops. For the cassava plantation, the project has only reached the stage of land clearing. After the land is cleared, the cassava will be planted.

The government needs to make sure that there are various alternative roads to access the cassava food estate. So far, there has only been one main road to access the plantation.

In this case, cassava plants do not need irrigation, unlike rice paddies, and they have a great application in their derivative products for the interests of the nation and the state.

The available land for the strategic reserve logistic (cassava estate) of the food estate management was 6,000,000 m². The land that has been realized through land clearing reached an area of 5,366,100 m². From 2020 up to now, the realization of land management activities reached 2,500,000 m² with the following facilities which were sourced from governmental funds:

Table 4. Facilities of the strategic reserve logistic (cassava estate) of the food estate management, [24]

No	Facility	Amount/ Length	Year
1	Main road	3,25 km	2020
2	Linking roads	1,7 km	
3	Connection roads	19,05 km	
4	Office building	1 unit	
5	Workshop/warehouse	1 unit	
6	Helipad	1 unit	
7	Source of clean water and its equipment	2 units	2021

Table 4 Shown facilities on Cassava Estate as a Part of Food Estate.

It can be seen that the supporting facilities of the food estate such as the main road, linking roads, connection roads, office building, helipad, and water purification equipment are still inadequate. In terms of its ratio, the facilities available are not enough compared to the area of the food estate land.

The main roads, linking roads, and connection roads need to be added to fulfill the minimum requirement, namely a three-fold addition of road lanes. Apart from that, there is only one water purification equipment. This becomes an issue if the available unit is broken or if there are technical obstacles. The Provincial Government of Central Kalimantan needs to add the available facilities to guarantee better application of this project.

The facilities for the cassava food estate are still incomplete, as there is still only one access through the main road. The cassava food estate has not yet

been provided with more water purification instruments and other equipment that allow the sustainable establishment of this project.

Through the food estate development program, the cassava program as food reserve (cassava estate) is directed to the current situation as well as to extraordinary situations with the urgency of food reserve that require adequate amounts of production level. [25], this aims to fulfill the provision of a national strategic food reserve, increase the state's source of income, provide industrial raw materials, and provide new job opportunities that master carbohydrate-based bio-industrial science and technologies from the upstream to the downstream, [26].

Then, while waiting for the activities in the year 2023, the management asked for permission to utilize cassava plantation land with an area of 2,500,000 m². This is so that the land is not filled with weeds and to prevent failure in the cassava plant food estate management (cassava estate) in Gunung Mas Regency, Central Kalimantan Province. This is crucial, considering that the first stage of these activities was declared by President Joko Widodo for the 2020-2024 period. This means that the management process is still ongoing. Thus, it cannot be said that the cassava plant food estate management (cassava estate) in Gunung Mas Regency, Central Kalimantan Province is unsuccessful and that it does not bring economic increase for the local society. Even, it cannot be deemed as damaging to the environment, [27].

Therefore, adequate policies that support food estate management are crucial, along with juridical bases issued by the central and regional governments to strengthen the implementation of the rice paddy/cassava plant food estate activities in Central Kalimantan. This is so that these programs may keep on developing sustainably as well as continuously bring great benefits to society and the state.

The Provincial Regional Government and the Regency Governments in Central Kalimantan have great roles in facilitating the success of food estate management, such as building irrigation networks, road networks, electricity lanes, and other facilities. These policies help the food estate management complete its programs, starting from the preparation of plant targets through land intensification in Pulang Pisau Regency with an area of 100,000,000 m² and land extensification with an area of 11,350,000 m².

The planting target for the intensification land in Kapuas Regency is 200,000,000 m² and in the land extensification, its targeted area is 130,000,000 m². The management provides technical aid and

provides superior rice seeds that are suitable to be planted in the food estate plantations, such as hybrid rice seedlings. This is to make sure of a continual increase in dry rice production, [28].

In facilitating the food estate project, the provincial government of Central Kalimantan and the central government need to develop an irrigation network that supports the plantations' irrigation system. The main obstacle in the Food State project is the continuous availability of water to support the farms.

The obstacle to irrigation is so far resolved by creating a cutout of the main river and *embung* (a small dam) along the cutout to the location of the food estate. Apart from irrigation, the main issue was how to market the harvested food estate products which requires a permanent solution, [29].

The harvested crop from the food estate project has so far collected by the regency, provincial, and central governments. This effort can still provide a temporary solution so that the food estate farmers do not need to deal with middlemen. But the government can no longer collect the crop when the food estate reaches the peak stage or if the target has been reached. A fair market mechanism needs to be created when the government can no longer collect the harvested crop from the food estate project.

The food estate management carried out training and coaching to strengthen farmers' capacity in food estate management to 974 Farmers' Groups. It also facilitated 277 assistants through Field Agricultural Extension Staff and seven Agricultural Extension Centers. It also provided 64 agricultural equipment service units and 2 agricultural equipment brigade units,

5 Conclusion

With the central and regional governments, farmers and farmer groups have the main role to participate in bringing success to the food estate management in Pulang Pisau and Kapuas Regencies of Central Kalimantan Province. They have the role of preparing the seeds to be planted; cleaning and managing the plantation; and planting and maintaining the rice paddies so that they are fertile and productive. In the end, they have a responsibility to harvest the crop. Then, after the harvesting stage, the rice plantations are maintained so that the rice plants can sustainably be replanted.

The regency and provincial governments prepared policies that can bring success to food estate management, to turn it into an Indonesian food reserve. The series of policies brings

management success to the food estate, where currently, farmers have succeeded in harvesting 8,000-8,700 kg/10,000 m² of dry rice. Meanwhile, in Kapuas Regency, the average harvest is 5,600 kg/10,000 m² of dry rice. Thus, it is shown that the food estate management in Pulang Pisau and Kapuas Regencies of Central Kalimantan Province has annually succeeded. This was proven by the increase in dry rice harvest that is declared as a strategic reserve of Indonesia's national food resilience.

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- Istani: Edited the draft, reviewed the paper, and provided materials and data for the research.
- Absori: Conceived the research and provided the original idea of the study.
- Dimiyati: Designed the methods, selected research data, analyzed and interpreted the data, and wrote the paper.
- Wardiono: Analyzed the data, provided a description, and wrote the paper
- Budiono: provided materials and data for the research and reviewed the paper.
- Achmadi: Finalized research and paper before submission, verification and validation data

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Conflict of Interest

The authors have no conflicts of interest to declare.

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